

## Union Calendar No. 352

109<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 5656

[Report No. 109-611]

To provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes.

---

### IN THE HOUSE OF REPRESENTATIVES

JUNE 21, 2006

Mrs. BIGGERT (for herself, Mr. BOEHLERT, Mr. HALL, Mr. SMITH of Texas, Mr. CALVERT, Mr. EHLERS, Mr. INGLIS of South Carolina, and Mr. WAMP) introduced the following bill; which was referred to the Committee on Science

JULY 28, 2006

Additional sponsors: Mr. McCAUL of Texas, Mr. SCHWARZ of Michigan, Mr. AL GREEN of Texas, Mr. BARTLETT of Maryland, Mr. GILCHREST, Mr. REICHERT, Mr. MARIO DIAZ-BALART of Florida, Mr. WELDON of Pennsylvania, and Mr. ROHRBACHER

JULY 28, 2006

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]

[For text of introduced bill, see copy of bill as introduced on June 21, 2006]

---

## A BILL

To provide for Federal energy research, development, demonstration, and commercial application activities, 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 “Energy Research, Devel-*  
5 *opment, Demonstration, and Commercial Application Act*  
6 *of 2006”.*

7 **SEC. 2. DEFINITIONS.**

8 *For the purposes of this Act—*

9 *(1) the term “biomass” has the meaning given*  
10 *that term in section 932(a)(1) of the Energy Policy*  
11 *Act of 2005 (42 U.S.C. 16232(a)(1));*

12 *(2) the term “cellulosic feedstock” has the mean-*  
13 *ing given the term “lignocellulosic feedstock” in sec-*  
14 *tion 932(a)(2) of the Energy Policy Act of 2005 (42*  
15 *U.S.C. 16232(a)(2));*

16 *(3) the term “Department” means the Depart-*  
17 *ment of Energy;*

18 *(4) the term “engineering-scale” means the min-*  
19 *imum size required to predict with confidence all*  
20 *physical processes controlling the performance of a*  
21 *full-scale industrial facility;*

22 *(5) the term “institution of higher education”*  
23 *has the meaning given that term in section 101(a) of*  
24 *the Higher Education Act of 1965 (20 U.S.C.*  
25 *1001(a));*

1           (6) the term “National Laboratory” has the  
2           meaning given the term “nonmilitary energy labora-  
3           tory” in section 903(3) of the Energy Policy Act of  
4           2005 (42 U.S.C. 16182(3)); and

5           (7) the term “Secretary” means the Secretary of  
6           Energy.

7 **SEC. 3. FUTUREGEN.**

8           (a) *IN GENERAL.*—The Secretary shall carry out a  
9           project of research, development, and demonstration de-  
10          signed to demonstrate the feasibility of the commercial ap-  
11          plication of advanced clean coal energy technology, includ-  
12          ing carbon capture and geological sequestration, for elec-  
13          tricity generation.

14          (b) *INDUSTRY INVOLVEMENT.*—The Secretary may  
15          conduct the project through a financial assistance coopera-  
16          tive agreement with a consortium of coal-fired power pro-  
17          ducers, coal companies, and others.

18          (c) *REQUIREMENTS.*—The Secretary shall ensure  
19          that—

20                 (1) a FutureGen demonstration facility is oper-  
21                 ating by 2012;

22                 (2) the FutureGen demonstration facility is de-  
23                 signed to be able—

24                         (A) to achieve at least a 99 percent reduc-  
25                         tion in sulfur dioxide emissions or, when burn-

1            *ing coal containing 3 pounds or less of sulfur per*  
2            *million British thermal units, the project shall*  
3            *be able to emit no more than 0.03 pounds of sul-*  
4            *fur dioxide emissions per million British ther-*  
5            *mal units;*

6            *(B) to emit no more than 0.05 pounds of*  
7            *nitrogen oxide emissions per million British*  
8            *thermal units;*

9            *(C) to achieve at least a 90 percent reduc-*  
10           *tion in mercury emissions;*

11           *(D) to emit no more than 0.005 pounds of*  
12           *total particulate emissions in the flue gas per*  
13           *million British thermal units;*

14           *(E) to achieve at least a 90 percent reduc-*  
15           *tion in carbon dioxide emissions;*

16           *(F) to demonstrate that the technology can*  
17           *be applied to a diversity of United States coal*  
18           *types; and*

19           *(G) to demonstrate the feasibility of elec-*  
20           *tricity generation from coal using advanced*  
21           *clean coal technology with carbon capture and*  
22           *geological sequestration at a cost not greater*  
23           *than 10 percent higher than the average of all*  
24           *commercial integrated coal gasification combined*  
25           *cycle electric generating plants operating in the*



1       **(b) SYSTEMS ANALYSIS.**—

2               **(1) IN GENERAL.**—*The Secretary shall develop a*  
3       *comprehensive modeling and simulation capability to*  
4       *enable a thorough analysis of possible advanced nu-*  
5       *clear fuel cycle systems. The modeling and simulation*  
6       *capability shall be capable of examining—*

7               **(A)** *all of the components of each advanced*  
8       *nuclear fuel cycle system analyzed, including—*

9               **(i)** *spent fuel separations technologies;*

10              **(ii)** *advanced recycling reactor tech-*  
11       *nologies;*

12              **(iii)** *fuel fabrication technologies;*

13              **(iv)** *advanced thermal reactor tech-*  
14       *nologies, including advanced thermal reac-*  
15       *tor designs that would be capable of reduc-*  
16       *ing the toxicity or radioactivity of spent*  
17       *nuclear fuel components; and*

18              **(v)** *waste disposal technologies;*

19              **(B)** *the manner in which possible technology*  
20       *and engineering choices for individual compo-*  
21       *nents might affect the overall system, and how*  
22       *various system components would interact with*  
23       *one another;*

24              **(C)** *quantitative mass flows of nuclear fuel*  
25       *and spent nuclear fuel, including projected in-*

1            *ventories and transportation requirements for*  
2            *nuclear fuel and spent nuclear fuel, for any ex-*  
3            *amined system; and*

4            *(D) estimated costs associated with building*  
5            *and operating the examined fuel cycle system,*  
6            *including a comparison with the estimated costs*  
7            *of building and operating a more conventional*  
8            *future fuel cycle system that includes geologic se-*  
9            *questration of high-level nuclear waste but that*  
10           *does not include recycling of spent fuel compo-*  
11           *nents.*

12           *(2) ADVANCED NUCLEAR FUEL CYCLE TECH-*  
13           *NOLOGIES PLAN.—*

14           *(A) ANALYSIS.—The Secretary shall conduct*  
15           *a thorough analysis of more than 1 possible con-*  
16           *figuration of an advanced nuclear fuel cycle sys-*  
17           *tem using the analytical capability developed*  
18           *under paragraph (1). Each analysis of a possible*  
19           *configuration of an advanced nuclear fuel cycle*  
20           *system shall examine—*

21           *(i) the compatibility of fuel cycle sys-*  
22           *tem components, including each of the sys-*  
23           *tem component technologies described in*  
24           *paragraph (1)(A); and*

1                   (ii) the degree to which the examined  
2                   system would—

3                   (I) minimize the toxicity and ra-  
4                   dioactivity of spent nuclear fuel;

5                   (II) increase the proliferation re-  
6                   sistance of commercial nuclear power  
7                   reactors and their associated fuel sys-  
8                   tems and infrastructure;

9                   (III) maximize the amount of use-  
10                  ful energy that can be extracted from  
11                  nuclear fuel; and

12                  (IV) minimize the costs of con-  
13                  struction and operation of commercial  
14                  nuclear power reactors and their asso-  
15                  ciated fuel systems and infrastructure.

16                  (B) *PLAN.*—Using the results of the anal-  
17                  yses developed under subparagraph (A), and not  
18                  later than June 30, 2007, the Secretary shall de-  
19                  velop a detailed plan for research, development,  
20                  and demonstration for advanced nuclear fuel  
21                  cycle system technologies, including proposed  
22                  technology options for each of the system compo-  
23                  nent technologies described in paragraph (1)(A)  
24                  and any proposed engineering-scale demonstra-  
25                  tions of such system component technologies. The

1            *plan shall include an estimate of the design, en-*  
2            *gineering, construction, and lifetime operating*  
3            *costs of any proposed engineering-scale dem-*  
4            *onstration, including decontamination and de-*  
5            *commissioning costs. In developing the plan, the*  
6            *Secretary shall consider the integration into an*  
7            *advanced nuclear fuel cycle system of advanced*  
8            *thermal reactors capable of reducing the toxicity*  
9            *or radioactivity of spent nuclear fuel compo-*  
10           *nents.*

11            *(C) CONSULTATION.—In developing the*  
12            *plan under subparagraph (B), the Secretary*  
13            *shall consult with—*

14                    *(i) technical experts from United*  
15                    *States and foreign companies that design or*  
16                    *engineer nuclear power plants or nuclear*  
17                    *fuel reprocessing facilities;*

18                    *(ii) technical experts from United*  
19                    *States electric utilities that operate nuclear*  
20                    *power plants;*

21                    *(iii) economists with expertise in nu-*  
22                    *clear power and electricity markets;*

23                    *(iv) the Nuclear Energy Research Ad-*  
24                    *visory Committee;*

1                   (v) the Chairman of the Nuclear Regu-  
2                   latory Commission; and

3                   (vi) the Administrator of the Environ-  
4                   mental Protection Agency.

5                   (3) NATIONAL ACADEMY OF SCIENCES REVIEW.—  
6                   The Secretary shall enter into an arrangement with  
7                   the National Academy of Sciences to conduct a review  
8                   of the plan developed under paragraph (2)(B), includ-  
9                   ing by reviewing the validity of the underlying anal-  
10                  yses required under paragraph (2)(A).

11                  (c) REPORT.—Not later than June 30, 2008, the Sec-  
12                  retary shall transmit to Congress a report that includes—

13                   (1) the research, development, and demonstration  
14                   plan developed under subsection (b)(2)(B), and the re-  
15                   port from the National Academy of Sciences on the  
16                   review conducted under subsection (b)(3);

17                   (2) a revised research, development, and dem-  
18                   onstration plan that takes into account the findings,  
19                   conclusions, and recommendations of the report from  
20                   the National Academy of Sciences; and

21                   (3) an explanation of any instances where the  
22                   Secretary does not concur with the findings, conclu-  
23                   sions, and recommendations of the report from the  
24                   National Academy of Sciences.

1           (d) *PROHIBITION.*—*The Secretary shall not initiate*  
2 *detailed design or construction of any demonstration facil-*  
3 *ity that is capable of processing 750 kilograms or more per*  
4 *year of nuclear fuel or spent nuclear fuel and that is de-*  
5 *signed to demonstrate the advanced nuclear fuel system*  
6 *component technologies described in subsection (b)(1)(A)(ii)*  
7 *and (iii) until 90 days after the report under subsection*  
8 *(c) has been transmitted to Congress.*

9 **SEC. 5. ADVANCED BIOFUEL TECHNOLOGIES.**

10           (a) *IN GENERAL.*—*The Secretary shall carry out a*  
11 *program of research, development, demonstration, and com-*  
12 *mercial application for production of motor and other fuels*  
13 *from biomass.*

14           (b) *OBJECTIVES.*—*The Secretary shall design the pro-*  
15 *gram under this section to—*

16                   (1) *develop technologies that would make ethanol*  
17 *produced from cellulosic feedstocks cost competitive*  
18 *with ethanol produced from corn by 2012;*

19                   (2) *conduct research and development on how to*  
20 *apply advanced genetic engineering and bio-*  
21 *engineering techniques to increase the efficiency and*  
22 *lower the cost of industrial-scale production of liquid*  
23 *fuels from cellulosic feedstocks; and*

1           (3) *conduct research and development on the pro-*  
2           *duction of hydrocarbons other than ethanol from bio-*  
3           *mass.*

4           (c) *INSTITUTION OF HIGHER EDUCATION GRANTS.—*  
5           *The Secretary shall designate not less than 10 percent of*  
6           *the funds appropriated under subsection (d) for each fiscal*  
7           *year to carry out the program for grants to competitively*  
8           *selected institutions of higher education around the country*  
9           *focused on meeting the objectives stated in subsection (b).*

10          (d) *AUTHORIZATION OF APPROPRIATIONS.—From*  
11          *amounts authorized to be appropriated under section 931(c)*  
12          *of the Energy Policy Act of 2005 (42 U.S.C. 16231(c)), there*  
13          *are authorized to be appropriated to the Secretary to carry*  
14          *out this section—*

15                 (1) *\$150,000,000 for fiscal year 2007;*

16                 (2) *\$160,000,000 for fiscal year 2008; and*

17                 (3) *\$175,000,000 for fiscal year 2009.*

18          **SEC. 6. ADVANCED HYDROGEN STORAGE TECHNOLOGIES.**

19           (a) *IN GENERAL.—The Secretary shall carry out a*  
20           *program of research, development, demonstration, and com-*  
21           *mercial application for technologies to enable practical on-*  
22           *board storage of hydrogen for use as a fuel for light-duty*  
23           *motor vehicles.*

24           (b) *OBJECTIVE.—The Secretary shall design the pro-*  
25           *gram under this section to develop practical hydrogen stor-*

1 *age technologies that would enable a hydrogen-fueled light-*  
2 *duty motor vehicle to travel 300 miles before refueling.*

3 **SEC. 7. ADVANCED SOLAR PHOTOVOLTAIC TECHNOLOGIES.**

4 (a) *IN GENERAL.*—*The Secretary shall carry out a*  
5 *program of research, development, demonstration, and com-*  
6 *mercial application for advanced solar photovoltaic tech-*  
7 *nologies.*

8 (b) *OBJECTIVES.*—*The Secretary shall design the pro-*  
9 *gram under this section to develop technologies that*  
10 *would—*

11 (1) *make electricity generated by solar photo-*  
12 *voltaic power cost-competitive by 2015; and*

13 (2) *enable the widespread use of solar photo-*  
14 *voltaic power.*

15 (c) *AUTHORIZATION OF APPROPRIATIONS.*—*There are*  
16 *authorized to be appropriated to the Secretary to carry out*  
17 *this section—*

18 (1) *\$148,000,000 for fiscal year 2007;*

19 (2) *\$155,000,000 for fiscal year 2008;*

20 (3) *\$165,000,000 for fiscal year 2009; and*

21 (4) *\$180,000,000 for fiscal year 2010.*

22 **SEC. 8. ADVANCED WIND ENERGY TECHNOLOGIES.**

23 (a) *IN GENERAL.*—*The Secretary shall carry out a*  
24 *program of research, development, demonstration, and com-*  
25 *mercial application for advanced wind energy technologies.*

1           (b) *OBJECTIVES.*—*The Secretary shall design the pro-*  
2 *gram under this section to—*

3                 (1) *improve the efficiency and lower the cost of*  
4 *wind turbines;*

5                 (2) *minimize adverse environmental impacts;*  
6 *and*

7                 (3) *develop new small-scale wind energy tech-*  
8 *nologies for use in low wind speed environments.*

9           (c) *AUTHORIZATION OF APPROPRIATIONS.*—*There are*  
10 *authorized to be appropriated to the Secretary to carry out*  
11 *this section—*

12                 (1) *\$44,000,000 for fiscal year 2007;*

13                 (2) *\$48,400,000 for fiscal year 2008;*

14                 (3) *\$53,240,000 for fiscal year 2009; and*

15                 (4) *\$58,564,000 for fiscal year 2010.*

16 **SEC. 9. CONTINUING PROGRAMS.**

17           *The Secretary shall continue to carry out the research,*  
18 *development, demonstration, and commercial application*  
19 *activities authorized in sections 921(b)(1) (for distributed*  
20 *energy), 923 (for micro-cogeneration technology), and*  
21 *931(a)(2)(C), (D), and (E)(i) (for geothermal energy, hydro-*  
22 *power, and ocean energy) of the Energy Policy Act of 2005.*

1 **SEC. 10. PLUG-IN HYBRID ELECTRIC VEHICLE TECHNOLOGY**  
2 **PROGRAM.**

3 (a) *SHORT TITLE.*—*This section may be cited as the*  
4 *“Plug-In Hybrid Electric Vehicle Act of 2006”.*

5 (b) *DEFINITIONS.*—*In this section:*

6 (1) *BATTERY.*—*The term “battery” means a de-*  
7 *vice or system for the electrochemical storage of en-*  
8 *ergy.*

9 (2) *E85.*—*The term “E85” means a fuel blend*  
10 *containing 85 percent ethanol and 15 percent gasoline*  
11 *by volume.*

12 (3) *ELECTRIC DRIVE TRANSPORTATION TECH-*  
13 *NOLOGY.*—*The term “electric drive transportation*  
14 *technology” means—*

15 (A) *vehicles that use an electric motor for*  
16 *all or part of their motive power and that may*  
17 *or may not use offboard electricity, including*  
18 *battery electric vehicles, hybrid electric vehicles,*  
19 *plug-in hybrid electric vehicles, flexible fuel plug-*  
20 *in hybrid electric vehicles, and electric rail; and*

21 (B) *related equipment, including electric*  
22 *equipment necessary to recharge a plug-in hy-*  
23 *brid electric vehicle.*

24 (4) *FLEXIBLE FUEL PLUG-IN HYBRID ELECTRIC*  
25 *VEHICLE.*—*The term “flexible fuel plug-in hybrid elec-*  
26 *tric vehicle” means a plug-in hybrid electric vehicle*

1       warranted by its manufacturer as capable of oper-  
2       ating on any combination of gasoline or E85 for its  
3       onboard internal combustion or heat engine.

4               (5) *HYBRID ELECTRIC VEHICLE.*—The term “hy-  
5       brid electric vehicle” means a vehicle that—

6                       (A) can be propelled using liquid combus-  
7       tible fuel and electric power provided by an on-  
8       board battery; and

9                       (B) utilizes regenerative power capture tech-  
10      nology to recover energy expended in braking the  
11      vehicle for use in recharging the battery.

12               (6) *PLUG-IN HYBRID ELECTRIC VEHICLE.*—The  
13      term “plug-in hybrid electric vehicle” means a hybrid  
14      electric onroad light-duty vehicle that can be propelled  
15      solely on electric power for a minimum of 20 miles  
16      under city driving conditions, and that is capable of  
17      recharging its battery from an offboard electricity  
18      source.

19               (c) *PROGRAM.*—The Secretary shall conduct a pro-  
20      gram of research, development, demonstration, and commer-  
21      cial application on technologies needed for the development  
22      of plug-in hybrid electric vehicles and electric drive trans-  
23      portation, including—

24                       (1) high capacity, high efficiency batteries, to—

1           (A) improve battery life, energy storage ca-  
2           pacity, and power delivery capacity, and lower  
3           cost; and

4           (B) minimize waste and hazardous mate-  
5           rial production in the entire value chain, includ-  
6           ing after the end of the useful life of the batteries;

7           (2) high efficiency onboard and offboard charg-  
8           ing components;

9           (3) high power drive train systems for passenger  
10          and commercial vehicles and for supporting equip-  
11          ment;

12          (4) onboard energy management systems, power  
13          trains, and systems integration for plug-in hybrid  
14          electric vehicles, flexible fuel plug-in hybrid electric  
15          vehicles, and hybrid electric vehicles, including effi-  
16          cient cooling systems and systems that minimize the  
17          emissions profile of such vehicles; and

18          (5) lightweight materials, including research, de-  
19          velopment, demonstration, and commercial applica-  
20          tion to reduce the cost of materials such as steel alloys  
21          and carbon fibers.

22          (d) *PLUG-IN HYBRID ELECTRIC VEHICLE DEM-*  
23          *ONSTRATION PROGRAM.*—

24                 (1) *ESTABLISHMENT.*—*The Secretary shall estab-*  
25          *lish a competitive grant pilot demonstration program*

1       to provide not more than 25 grants annually to State  
2       governments, local governments and public entities,  
3       metropolitan transportation authorities, or combina-  
4       tions thereof to carry out a project or projects for  
5       demonstration of plug-in hybrid electric vehicles.

6               (2) *APPLICATIONS.*—

7                       (A) *REQUIREMENTS.*—The Secretary shall  
8       issue requirements for applying for grants under  
9       the demonstration pilot program. The Secretary  
10      shall require that applications, at a minimum,  
11      include a description of how data will be—

12                               (i) collected on the—

13                                       (I) performance of the vehicle or  
14                                       vehicles and the components, including  
15                                       the battery, energy management, and  
16                                       charging systems, under various driv-  
17                                       ing speeds, trip ranges, traffic, and  
18                                       other driving conditions;

19                                       (II) costs of the vehicle or vehicles,  
20                                       including acquisition, operating, and  
21                                       maintenance costs, and how the project  
22                                       or projects will be self-sustaining after  
23                                       Federal assistance is completed; and

24                                       (III) emissions of the vehicle or  
25                                       vehicles, including greenhouse gases,

1                   *and the amount of petroleum displaced*  
2                   *as a result of the project or projects;*  
3                   *and*

4                   *(ii) summarized for dissemination to*  
5                   *the Department, other grantees, and the*  
6                   *public.*

7                   *(B) PARTNERS.—An applicant under sub-*  
8                   *paragraph (A) may carry out a project or*  
9                   *projects under the pilot program in partnership*  
10                   *with one or more private or nonprofit entities,*  
11                   *which may include institutions of higher edu-*  
12                   *cation, including Historically Black Colleges and*  
13                   *Universities, Hispanic Serving Institutions, and*  
14                   *other minority-serving institutions.*

15                   *(3) SELECTION CRITERIA.—*

16                   *(A) PREFERENCE.—When making awards*  
17                   *under this subsection, the Secretary shall con-*  
18                   *sider each applicant's previous experience involv-*  
19                   *ing plug-in hybrid electric vehicles and shall give*  
20                   *preference to proposals that—*

21                   *(i) provide the greatest demonstration*  
22                   *per award dollar, with preference increas-*  
23                   *ing as the number of miles that a plug-in*  
24                   *hybrid electric vehicle can be propelled sole-*

1            *ly on electric power under city driving con-*  
2            *ditions increases; and*

3            *(ii) maximize the non-Federal share of*  
4            *project funding and demonstrate the great-*  
5            *est likelihood that each project proposed in*  
6            *the application will be maintained or ex-*  
7            *panded after Federal assistance under this*  
8            *subsection is completed.*

9            *(B) BREADTH OF DEMONSTRATIONS.—In*  
10           *awarding grants under this subsection, the Sec-*  
11           *retary shall ensure the program will demonstrate*  
12           *plug-in hybrid electric vehicles under various*  
13           *circumstances, including—*

14           *(i) driving speeds;*

15           *(ii) trip ranges;*

16           *(iii) driving conditions;*

17           *(iv) climate conditions; and*

18           *(v) topography,*

19           *to optimize understanding and function of plug-*  
20           *in hybrid electric vehicles.*

21           *(4) PILOT PROJECT REQUIREMENTS.—*

22           *(A) SUBSEQUENT FUNDING.—An applicant*  
23           *that has received a grant in one year may apply*  
24           *for additional funds in subsequent years, but the*  
25           *Secretary shall not provide more than*

1           \$10,000,000 in Federal assistance under the pilot  
2           program to any applicant for the period encom-  
3           passing fiscal years 2007 through fiscal year  
4           2011.

5                   (B) *INFORMATION.*—The Secretary shall es-  
6           tablish mechanisms to ensure that the informa-  
7           tion and knowledge gained by participants in  
8           the pilot program are shared among the pilot  
9           program participants and are available to other  
10          interested parties, including other applicants.

11                   (5) *AWARD AMOUNTS.*—The Secretary shall de-  
12          termine grant amounts, but the maximum size of  
13          grants shall decline as the cost of producing plug-in  
14          hybrid electric vehicles declines or the cost of con-  
15          verting a hybrid electric vehicle to a plug-in hybrid  
16          electric vehicle declines.

17                   (e) *COST SHARING.*—The Secretary shall carry out the  
18          program under this section in compliance with section  
19          988(a) through (d) and section 989 of the Energy Policy  
20          Act of 2005 (42 U.S.C. 16352(a) through (d) and 16353).

21                   (f) *AUTHORIZATION OF APPROPRIATIONS.*—There are  
22          authorized to be appropriated to the Secretary—

23                           (1) for carrying out subsection (c), \$250,000,000  
24          for each of fiscal years 2007 through 2011, of which

1       up to \$50,000,000 may be used for the program de-  
2       scribed in paragraph (5) of that subsection; and

3               (2) for carrying out subsection (d), \$50,000,000  
4       for each of fiscal years 2007 through 2011.

5       **SEC. 11. PHOTOVOLTAIC DEMONSTRATION PROGRAM.**

6       (a) *SHORT TITLE.*—This section may be cited as the  
7       “Solar Utilization Now Demonstration Act of 2006” or the  
8       “SUN Act of 2006”.

9       (b) *IN GENERAL.*—The Secretary shall establish a pro-  
10      gram of grants to States to demonstrate advanced photo-  
11      voltaic technology.

12      (c) *REQUIREMENTS.*—

13              (1) *ABILITY TO MEET REQUIREMENTS.*—To re-  
14      ceive funding under the program under this section,  
15      a State must submit a proposal that demonstrates, to  
16      the satisfaction of the Secretary, that the State will  
17      meet the requirements of subsection (g).

18              (2) *COMPLIANCE WITH REQUIREMENTS.*—If a  
19      State has received funding under this section for the  
20      preceding year, the State must demonstrate, to the  
21      satisfaction of the Secretary, that it complied with the  
22      requirements of subsection (g) in carrying out the  
23      program during that preceding year, and that it will  
24      do so in the future, before it can receive further fund-  
25      ing under this section.

1           (3) *FUNDING ALLOCATION.*—*Except as provided*  
2 *in subsection (d), each State submitting a proposal*  
3 *that meets the requirements under subsection (c) shall*  
4 *receive funding under the program based on the pro-*  
5 *portion of United States population in the State ac-*  
6 *cording to the 2000 census. In each fiscal year, the*  
7 *portion of funds attributable under this paragraph to*  
8 *States that have not submitted proposals that meet*  
9 *the requirements under subsection (c) in the time and*  
10 *manner specified by the Secretary shall be distributed*  
11 *pro rata to the States that have submitted proposals*  
12 *that meet the requirements under subsection (c) in the*  
13 *specified time and manner.*

14           (d) *COMPETITION.*—*If more than \$80,000,000 is avail-*  
15 *able for the program under this section for any fiscal year,*  
16 *the Secretary shall allocate 75 percent of the total amount*  
17 *of funds available according to subsection (c)(3), and shall*  
18 *award the remaining 25 percent on a competitive basis to*  
19 *the States with the proposals the Secretary considers most*  
20 *likely to encourage the widespread adoption of photovoltaic*  
21 *technologies. In awarding funds under this subsection, the*  
22 *Secretary may give preference to proposals that would dem-*  
23 *onstrate the use of newer materials or technologies.*

24           (e) *PROPOSALS.*—*Not later than 6 months after the*  
25 *date of enactment of this Act, and in each subsequent fiscal*

1 *year for the life of the program, the Secretary shall solicit*  
2 *proposals from the States to participate in the program*  
3 *under this section.*

4 *(f) COMPETITIVE CRITERIA.—In awarding funds in a*  
5 *competitive allocation under subsection (d), the Secretary*  
6 *shall consider—*

7 *(1) the likelihood of a proposal to encourage the*  
8 *demonstration of, or lower the costs of, advanced pho-*  
9 *tovoltaic technologies; and*

10 *(2) the extent to which a proposal is likely to—*

11 *(A) maximize the amount of photovoltaics*  
12 *demonstrated;*

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

15 *(C) limit State administrative costs.*

16 *(g) STATE PROGRAM.—A program operated by a State*  
17 *with funding under this section shall provide competitive*  
18 *awards for the demonstration of advanced photovoltaic tech-*  
19 *nologies. Each State program shall—*

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

1           (2) *limit awards for any single project to a maximum of \$1,000,000;*

2  
3           (3) *prohibit any nongovernmental recipient from receiving more than \$1,000,000 per year;*

4  
5           (4) *endeavor to fund recipients in the commercial, industrial, institutional, governmental, and residential sectors;*

6  
7  
8           (5) *limit State administrative costs to no more than 10 percent of the grant;*

9  
10          (6) *report annually to the Secretary on—*

11                 (A) *the amount of funds disbursed;*

12                 (B) *the amount of photovoltaics purchased;*

13                 *and*

14                 (C) *the results of the monitoring under paragraph (7);*

15  
16          (7) *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;*

17  
18  
19  
20          (8) *require that applicant buildings must have received an independent energy efficiency audit during the 6-month period preceding the filing of the application; and*

21  
22  
23  
24          (9) *encourage Historically Black Colleges and Universities, Hispanic Serving Institutions, and*

25

1        *other minority-serving institutions to apply for*  
2        *grants under this program.*

3        *(h) UNEXPENDED FUNDS.—If a State fails to expend*  
4        *any funds received under subsection (c) or (d) within 3*  
5        *years of receipt, such remaining funds shall be returned to*  
6        *the Treasury.*

7        *(i) REPORTS.—The Secretary shall report to Congress*  
8        *5 years after funds are first distributed to the States under*  
9        *this section—*

10            *(1) the amount of photovoltaics demonstrated;*

11            *(2) the number of projects undertaken;*

12            *(3) the administrative costs of the program;*

13            *(4) the amount of funds that each State has not*  
14        *received because of a failure to submit a qualifying*  
15        *proposal, as described in subsection (c)(3);*

16            *(5) the results of the monitoring under subsection*  
17        *(g)(7); and*

18            *(6) the total amount of funds distributed, includ-*  
19        *ing a breakdown by State.*

20        *(j) AUTHORIZATION OF APPROPRIATIONS.—There are*  
21        *authorized to be appropriated to the Secretary for the pur-*  
22        *poses of carrying out this section—*

23            *(1) \$50,000,000 for fiscal year 2007;*

24            *(2) \$100,000,000 for fiscal year 2008;*

25            *(3) \$150,000,000 for fiscal year 2009;*

1           (4) \$200,000,000 for fiscal year 2010; and

2           (5) \$300,000,000 for fiscal year 2011.

3 **SEC. 12. ENERGY EFFICIENT BUILDING GRANT PROGRAM.**

4       (a) *ENERGY EFFICIENT BUILDING PILOT GRANT PRO-*  
5 *GRAM.*—

6           (1) *IN GENERAL.*—Not later than 6 months after  
7 the date of enactment of this Act, the Secretary shall  
8 establish a pilot program to award grants to busi-  
9 nesses and organizations for new construction of en-  
10 ergy efficient buildings, or major renovations of build-  
11 ings that will result in energy efficient buildings, to  
12 demonstrate innovative energy efficiency technologies,  
13 especially those sponsored by the Department.

14           (2) *AWARDS.*—The Secretary shall award grants  
15 under this subsection competitively to those appli-  
16 cants whose proposals—

17                   (A) best demonstrate—

18                           (i) likelihood to meet or exceed the  
19 standards referred to in subsection (b)(2);

20                           (ii) likelihood to maximize cost-effec-  
21 tive energy efficiency opportunities; and

22                           (iii) advanced energy efficiency tech-  
23 nologies; and

1           (B) maximize the leverage of private invest-  
2           ment for costs related to increasing the energy ef-  
3           ficiency of the building.

4           (3) *CONSIDERATION.*—The Secretary shall give  
5           due consideration to proposals for buildings that are  
6           likely to serve low and moderate income populations.

7           (4) *AMOUNT OF GRANTS.*—Grants under this  
8           subsection shall be for up to 50 percent of design and  
9           energy modeling costs, not to exceed \$50,000 per  
10          building. No single grantee may be eligible for more  
11          than 3 grants per year under this program.

12          (5) *GRANT PAYMENTS.*—

13               (A) *INITIAL PAYMENT.*—The Secretary shall  
14               pay 50 percent of the total amount of the grant  
15               to grant recipients upon selection.

16               (B) *REMAINDER OF PAYMENT.*—The Sec-  
17               retary shall pay the remaining 50 percent of the  
18               grant only after independent certification, by a  
19               professional engineer or other qualified profes-  
20               sional, that operational buildings are energy effi-  
21               cient buildings as defined in subsection (b).

22               (C) *FAILURE TO COMPLY.*—The Secretary  
23               shall not provide the remainder of the payment  
24               unless the building is certified within 6 months  
25               after operation of the completed building to meet

1           *the requirements described in subparagraph (B),*  
2           *or in the case of major renovations the building*  
3           *is certified within 6 months of the completion of*  
4           *the renovations.*

5           (6) *REPORT TO CONGRESS.*—*Not later than 3*  
6           *years after awarding the first grant under this sub-*  
7           *section, the Secretary shall transmit to Congress a re-*  
8           *port containing—*

9                   (A) *the total number and dollar amount of*  
10                  *grants awarded under this subsection; and*

11                   (B) *an estimate of aggregate cost and en-*  
12                  *ergy savings enabled by the pilot program under*  
13                  *this subsection.*

14           (7) *ADMINISTRATIVE EXPENSES.*—*Administra-*  
15           *tive expenses for the program under this subsection*  
16           *shall not exceed 10 percent of appropriated funds.*

17           (b) *DEFINITION OF ENERGY EFFICIENT BUILDING.*—  
18           *For purposes of this section the term “energy efficient build-*  
19           *ing” means a building that—*

20                   (1) *achieves a reduction in energy consumption*  
21                  *of—*

22                           (A) *at least 30 percent for new construction,*  
23                          *compared to the energy standards set by the*  
24                          *2004 International Energy Conservation Code*

1           *(in the case of residential buildings) or*  
2           *ASHRAE Standard 90.1–2004; or*

3                     *(B) at least 20 percent for major renova-*  
4                     *tions, compared to energy consumption before*  
5                     *renovations are begun;*

6           *(2) is constructed or renovated in accordance*  
7           *with the most current, appropriate, and applicable*  
8           *voluntary consensus standards, as determined by the*  
9           *Secretary, such as those listed in the assessment under*  
10           *section 914(b), or revised or developed under section*  
11           *914(c), of the Energy Policy Act of 2005; and*

12                     *(3) after construction or renovation—*

13                             *(A) uses heating, ventilating, and air condi-*  
14                             *tioning systems that perform at no less than En-*  
15                             *ergy Star standards; or*

16                             *(B) if Energy Star standards are not appli-*  
17                             *cable, uses Federal Energy Management Pro-*  
18                             *gram recommended heating, ventilating, and air*  
19                             *conditioning products.*

20           *(c) AUTHORIZATION OF APPROPRIATIONS.—There are*  
21           *authorized to be appropriated to the Secretary for carrying*  
22           *out this section \$10,000,000 for each of the fiscal years 2008*  
23           *through 2012.*

1 **SEC. 13. ENERGY TECHNOLOGY TRANSFER.**

2 *Section 917 of the Energy Policy Act of 2005 (42*  
3 *U.S.C. 16197) is amended to read as follows:*

4 **“SEC. 917. ADVANCED ENERGY EFFICIENCY TECHNOLOGY**  
5 **TRANSFER CENTERS.**

6 *“(a) GRANTS.—Not later than 18 months after the date*  
7 *of enactment of the Energy Research, Development, Dem-*  
8 *onstration, and Commercial Application Act of 2006, the*  
9 *Secretary shall make grants to nonprofit institutions, State*  
10 *and local governments, cooperative extension services, or*  
11 *universities (or consortia thereof), to establish a geographi-*  
12 *cally dispersed network of Advanced Energy Efficiency*  
13 *Technology Transfer Centers, to be located in areas the Sec-*  
14 *retary determines have the greatest need of the services of*  
15 *such Centers. In establishing the network, the Secretary*  
16 *shall consider the special needs and opportunities for in-*  
17 *creased energy efficiency for manufactured and site-built*  
18 *housing, including construction, renovation, and retrofit. In*  
19 *making awards under this section, the Secretary shall—*

20 *“(1) give priority to applicants already oper-*  
21 *ating or partnered with an outreach program capable*  
22 *of transferring knowledge and information about ad-*  
23 *vanced energy efficiency methods and technologies;*

24 *“(2) ensure that, to the extent practicable, the*  
25 *program enables the transfer of knowledge and infor-*  
26 *mation—*

1                   “(A) about a variety of technologies and

2                   “(B) in a variety of geographic areas; and

3                   “(3) give preference to applicants that would sig-  
4                   nificantly expand on or fill a gap in existing pro-  
5                   grams in a geographical region.

6                   “(b) *ACTIVITIES.*—Each Center shall operate a pro-  
7                   gram to encourage demonstration and commercial applica-  
8                   tion of advanced energy methods and technologies through  
9                   education and outreach to building and industrial profes-  
10                  sionals, and to other individuals and organizations with  
11                  an interest in efficient energy use. Funds awarded under  
12                  this section may be used for the following activities:

13                  “(1) Developing and distributing informational  
14                  materials on technologies that could use energy more  
15                  efficiently.

16                  “(2) Carrying out demonstrations of advanced  
17                  energy methods and technologies.

18                  “(3) Developing and conducting seminars, work-  
19                  shops, long-distance learning sessions, and other ac-  
20                  tivities to aid in the dissemination of knowledge and  
21                  information on technologies that could use energy  
22                  more efficiently.

23                  “(4) Providing or coordinating onsite energy  
24                  evaluations, including instruction on the commis-

1        *sioning of building heating and cooling systems, for*  
2        *a wide range of energy end-users.*

3            *“(5) Examining the energy efficiency needs of*  
4        *energy end-users to develop recommended research*  
5        *projects for the Department.*

6            *“(6) Hiring experts in energy efficient tech-*  
7        *nologies to carry out activities described in para-*  
8        *graphs (1) through (5).*

9            *“(c) APPLICATION.—A person seeking a grant under*  
10       *this section shall submit to the Secretary an application*  
11       *in such form and containing such information as the Sec-*  
12       *retary may require. The Secretary may award a grant*  
13       *under this section to an entity already in existence if the*  
14       *entity is otherwise eligible under this section. The applica-*  
15       *tion shall include, at a minimum—*

16            *“(1) a description of the applicant’s outreach*  
17        *program, and the geographic region it would serve,*  
18        *and of why the program would be capable of transfer-*  
19        *ring knowledge and information about advanced en-*  
20        *ergy technologies that increase efficiency of energy*  
21        *use;*

22            *“(2) a description of the activities the applicant*  
23        *would carry out, of the technologies that would be*  
24        *transferred, and of any other organizations that will*

1       *help facilitate a regional approach to carrying out*  
2       *those activities;*

3               “(3) *a description of how the proposed activities*  
4       *would be appropriate to the specific energy needs of*  
5       *the geographic region to be served;*

6               “(4) *an estimate of the number and types of en-*  
7       *ergy end-users expected to be reached through such ac-*  
8       *tivities; and*

9               “(5) *a description of how the applicant will as-*  
10       *sess the success of the program.*

11       “(d) *SELECTION CRITERIA.—The Secretary shall*  
12       *award grants under this section on the basis of the following*  
13       *criteria, at a minimum:*

14               “(1) *The ability of the applicant to carry out the*  
15       *proposed activities.*

16               “(2) *The extent to which the applicant will co-*  
17       *ordinate the activities of the Center with other entities*  
18       *as appropriate, such as State and local governments,*  
19       *utilities, universities, and National Laboratories.*

20               “(3) *The appropriateness of the applicant’s out-*  
21       *reach program for carrying out the program described*  
22       *in this section.*

23               “(4) *The likelihood that proposed activities could*  
24       *be expanded or used as a model for other areas.*

1       “(e) *COST-SHARING.*—*In carrying out this section, the*  
2 *Secretary shall require cost-sharing in accordance with the*  
3 *requirements of section 988 for commercial application ac-*  
4 *tivities.*

5       “(f) *DURATION.*—

6           “(1) *INITIAL GRANT PERIOD.*—*A grant awarded*  
7 *under this section shall be for a period of 5 years.*

8           “(2) *INITIAL EVALUATION.*—*Each grantee under*  
9 *this section shall be evaluated during its third year*  
10 *of operation under procedures established by the Sec-*  
11 *retary to determine if the grantee is accomplishing*  
12 *the purposes of this section described in subsection*  
13 *(a). The Secretary shall terminate any grant that*  
14 *does not receive a positive evaluation. If an evalua-*  
15 *tion is positive, the Secretary may extend the grant*  
16 *for 3 additional years beyond the original term of the*  
17 *grant.*

18           “(3) *ADDITIONAL EXTENSION.*—*If a grantee re-*  
19 *ceives an extension under paragraph (2), the grantee*  
20 *shall be evaluated again during the second year of the*  
21 *extension. The Secretary shall terminate any grant*  
22 *that does not receive a positive evaluation. If an eval-*  
23 *uation is positive, the Secretary may extend the grant*  
24 *for a final additional period of 3 additional years be-*  
25 *yond the original extension.*

1           “(4) *LIMITATION.*—No grantee may receive more  
2           than 11 years of support under this section without  
3           reapplying for support and competing against all  
4           other applicants seeking a grant at that time.

5           “(g) *PROHIBITION.*—None of the funds awarded under  
6           this section may be used for the construction of facilities.

7           “(h) *DEFINITIONS.*—For purposes of this section:

8           “(1) *ADVANCED ENERGY METHODS AND TECH-*  
9           *NOLOGIES.*—The term ‘advanced energy methods and  
10           technologies’ means all methods and technologies that  
11           promote energy efficiency and conservation, including  
12           distributed generation technologies, and life-cycle  
13           analysis of energy use.

14           “(2) *CENTER.*—The term ‘Center’ means an Ad-  
15           vanced Energy Technology Transfer Center estab-  
16           lished pursuant to this section.

17           “(3) *DISTRIBUTED GENERATION.*—The term ‘dis-  
18           tributed generation’ means an electric power genera-  
19           tion technology, including photovoltaic, small wind  
20           and micro-combined heat and power, that is designed  
21           to serve retail electric consumers on-site.

22           “(4) *COOPERATIVE EXTENSION.*—The term ‘Co-  
23           operative Extension’ means the extension services es-  
24           tablished at the land-grant colleges and universities  
25           under the Smith-Lever Act of May 8, 1914.

1           “(5) *LAND-GRANT COLLEGES AND UNIVER-*  
2           *SITIES.—The term ‘land-grant colleges and univer-*  
3           *sities’ means—*

4                   “(A) *1862 Institutions (as defined in sec-*  
5                   *tion 2 of the Agricultural Research, Extension,*  
6                   *and Education Reform Act of 1998 (7 U.S.C.*  
7                   *7601));*

8                   “(B) *1890 Institutions (as defined in sec-*  
9                   *tion 2 of that Act); and*

10                   “(C) *1994 Institutions (as defined in sec-*  
11                   *tion 2 of that Act).*

12           “(i) *AUTHORIZATION OF APPROPRIATIONS.—In addi-*  
13           *tion to amounts otherwise authorized to be appropriated in*  
14           *section 911, there are authorized to be appropriated for the*  
15           *program under this section such sums as may be appro-*  
16           *priated.”.*

17   **SEC. 14. GREEN ENERGY EDUCATION.**

18           (a) *DEFINITION.—For the purposes of this section:*

19                   (1) *DIRECTOR.—The term “Director” means the*  
20                   *Director of the National Science Foundation.*

21                   (2) *HIGH PERFORMANCE BUILDING.—The term*  
22                   *“high performance building” has the meaning given*  
23                   *that term in section 914(a) of the Energy Policy Act*  
24                   *of 2005 (42 U.S.C. 16194(a)).*

1       **(b) GRADUATE TRAINING IN ENERGY RESEARCH AND**  
2 **DEVELOPMENT.—**

3           **(1) FUNDING.—***In carrying out research, devel-*  
4 *opment, demonstration, and commercial application*  
5 *activities authorized for the Department, the Sec-*  
6 *retary may contribute funds to the National Science*  
7 *Foundation for the Integrative Graduate Education*  
8 *and Research Traineeship program to support*  
9 *projects that enable graduate education related to*  
10 *such activities.*

11           **(2) CONSULTATION.—***The Director shall consult*  
12 *with the Secretary when preparing solicitations and*  
13 *awarding grants for projects described in paragraph*  
14 *(1).*

15       **(c) CURRICULUM DEVELOPMENT FOR HIGH PERFORM-**  
16 **ANCE BUILDING DESIGN.—**

17           **(1) FUNDING.—***In carrying out advanced energy*  
18 *technology research, development, demonstration, and*  
19 *commercial application activities authorized for the*  
20 *Department related to high performance buildings,*  
21 *the Secretary may contribute funds to curriculum de-*  
22 *velopment activities at the National Science Founda-*  
23 *tion for the purpose of improving undergraduate or*  
24 *graduate interdisciplinary engineering and architec-*  
25 *ture education related to the design and construction*

1       *of high performance buildings, including development*  
2       *of curricula, of laboratory activities, of training*  
3       *practicums, or of design projects. A primary goal of*  
4       *curriculum development activities supported under*  
5       *this section shall be to improve the ability of engi-*  
6       *neers, architects, and planners to work together on the*  
7       *incorporation of advanced energy technologies during*  
8       *the design and construction of high performance*  
9       *buildings.*

10           (2) *CONSULTATION.*—*The Director shall consult*  
11       *with the Secretary when preparing solicitations and*  
12       *awarding grants for projects described in paragraph*  
13       *(1).*

14           (3) *PRIORITY.*—*In awarding grants with respect*  
15       *to which the Secretary has contributed funds under*  
16       *this subsection, the Director shall give priority to ap-*  
17       *plications from departments, programs, or centers of*  
18       *a school of engineering that are partnered with*  
19       *schools, departments, or programs of design, architec-*  
20       *ture, and city, regional, or urban planning, and due*  
21       *consideration to applications from Historically Black*  
22       *Colleges and Universities and other minority serving*  
23       *institutions.*

1 **SEC. 15. ARPA-E STUDY.**

2       (a) *IN GENERAL.*—*The Secretary shall enter into an*  
3 *arrangement with the National Academy of Sciences to con-*  
4 *duct a detailed study of, and make further recommendations*  
5 *on, the October 2005 National Academy of Sciences rec-*  
6 *ommendation to establish an Advanced Research Projects*  
7 *Agency-Energy (in this section referred to as ARPA-E).*

8       (b) *REPORT.*—*Not later than 12 months after the date*  
9 *of enactment of this Act, the Secretary shall transmit to*  
10 *Congress the study described in subsection (a) and the Sec-*  
11 *retary's response to the findings, conclusions, and rec-*  
12 *ommendations of that study.*

13       (c) *TERMS OF REFERENCE.*—*The Secretary shall en-*  
14 *sure that the study described in subsection (a) addresses the*  
15 *following questions:*

16               (1) *What basic research related to new energy*  
17 *technologies is occurring now, what entities are fund-*  
18 *ing it, and what is preventing the results of that re-*  
19 *search from reaching the market?*

20               (2) *What economic evidence indicates that the*  
21 *limiting factor in the market penetration of new en-*  
22 *ergy technologies is a lack of basic research on path-*  
23 *breaking new technologies? What barriers do those*  
24 *trying to develop new energy technologies face during*  
25 *later stages of research and development?*

1           (3) *To what extent is the Defense Advanced Re-*  
2           *search Projects Agency an appropriate model for an*  
3           *energy research agency, given that the Federal Gov-*  
4           *ernment would not be the primary customer for its*  
5           *technology and where cost is an important concern?*

6           (4) *How would research and development spon-*  
7           *sored by ARPA-E differ from research and develop-*  
8           *ment conducted by the National Laboratories or spon-*  
9           *sored by the Department through the Office of*  
10          *Science, the Office of Energy Efficiency and Renew-*  
11          *able Energy, the Office of Fossil Energy, the Office of*  
12          *Electricity Delivery and Energy Reliability, and the*  
13          *Office of Nuclear Energy?*

14          (5) *Should industry or National Laboratories be*  
15          *recipients of ARPA-E grants? What institutional or*  
16          *organizational arrangements would be required to en-*  
17          *sure that ARPA-E sponsors transformational, rather*  
18          *than incremental, research and development?*

19 **SEC. 16. COAL METHANATION.**

20          (a) *PROGRAM.*—*The Secretary shall establish a pro-*  
21          *gram of research, development, demonstration, and commer-*  
22          *cial application of coal gasification facilities that convert*  
23          *coal into pipeline quality gaseous fuels for direct use or sub-*  
24          *sequent chemical or physical conversion.*

1           (b) *PROCEDURES.*—*The program established under*  
2 *subsection (a) shall be carried out using procedures de-*  
3 *scribed in title XVII of the Energy Policy Act of 2005.*

4 **SEC. 17. ALTERNATIVE BIOBASED FUELS AND ULTRA LOW**  
5 **SULFUR DIESEL.**

6           (a) *ALTERNATIVE FUEL AND ULSD INFRASTRUCTURE*  
7 *AND ADDITIVES RESEARCH AND DEVELOPMENT.*—*The Sec-*  
8 *retary, in consultation with the National Institute of*  
9 *Standards and Technology, shall carry out a program of*  
10 *research, development, demonstration, and commercial ap-*  
11 *plication of materials to be added to alternative biobased*  
12 *fuels and Ultra Low Sulfur Diesel fuels to make them more*  
13 *compatible with existing infrastructure used to store and*  
14 *deliver petroleum-based fuels to the point of final sale. The*  
15 *program shall address—*

16           (1) *materials to prevent or mitigate—*

17                   (A) *corrosion of metal, plastic, rubber, cork,*  
18 *fiberglass, glues, or any other material used in*  
19 *pipes and storage tanks;*

20                   (B) *dissolving of storage tank sediments;*

21                   (C) *clogging of filters;*

22                   (D) *contamination from water or other*  
23 *adulterants or pollutants;*

24                   (E) *poor flow properties related to low tem-*  
25 *peratures;*

1           (F) oxidative and thermal instability in  
2           long-term storage and use;

3           (G) increased volatile emissions;

4           (H) microbial contamination;

5           (I) problems associated with electrical con-  
6           ductivity; and

7           (J) increased nitrogen oxide emissions;

8           (2) alternatives to conventional methods for re-  
9           furbishment and cleaning of gasoline and diesel tanks,  
10          including tank lining applications; and

11          (3) other problems as identified by the Secretary  
12          in consultation with the National Institute of Stand-  
13          ards and Technology.

14          (b) *SULFUR TESTING FOR DIESEL FUELS.*—

15           (1) *PROGRAM.*—The Secretary, in consultation  
16           with the National Institute of Standards and Tech-  
17           nology, shall carry out a research, development, and  
18           demonstration program on portable, low-cost, and ac-  
19           curate methods and technologies for testing of sulfur  
20           content in fuel, including Ultra Low Sulfur Diesel  
21           and Low Sulfur Diesel.

22           (2) *SCHEDULE OF DEMONSTRATIONS.*—Not later  
23           than 1 year after the date of enactment of this Act,  
24           the Secretary shall begin demonstrations of tech-  
25           nologies under paragraph (1).

1           (c) *STANDARD REFERENCE MATERIALS AND DATA*  
2 *BASE DEVELOPMENT.*—Not later than 6 months after the  
3 date of enactment of this Act, the National Institute of  
4 Standards and Technology shall develop a physical prop-  
5 erties data base and standard reference materials for alter-  
6 native fuels. Such data base and standard reference mate-  
7 rials shall be maintained and updated as appropriate as  
8 additional alternative fuels become available.

9 **SEC. 18. BIOENERGY.**

10           (a) *AUTHORIZATION OF APPROPRIATIONS.*—Section  
11 931 of the Energy Policy Act of 2005 (42 U.S.C. 16231)  
12 is amended—

13                 (1) in subsection (c)(1), by inserting “, including  
14 \$25,000,000 for section 932(d)(1)(B)(v)” after “sec-  
15 tion 932(d)”;

16                 (2) in subsection (c)(2), by inserting “, including  
17 \$25,000,000 for section 932(d)(1)(B)(v)” after “sec-  
18 tion 932(d)”;

19                 (3) in subsection (c)(3), by inserting “, including  
20 \$25,000,000 for section 932(d)(1)(B)(v)” after “sec-  
21 tion 932(d)”.

22           (b) *BIOENERGY PROGRAM.*—Section 932(d)(1)(B) of  
23 the Energy Policy Act of 2005 (42 U.S.C. 16232(d)(1)(B))  
24 is amended—

1           (1) *by striking “and” at the end of clause (iii);*

2           *and*

3           (2) *by adding after clause (iv) the following new*

4           *clause:*

5                       *“(v) biodegradable natural plastics*

6                       *from biomass; and”.*

Union Calendar No. 352

109<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

**H. R. 5656**

[Report No. 109-611]

---

---

## **A BILL**

To provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes.

---

---

JULY 28, 2006

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