

**Union Calendar No. 94**108<sup>TH</sup> CONGRESS  
1<sup>ST</sup> SESSION**H. R. 238****[Report No. 108–128, Part I]**

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

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## IN THE HOUSE OF REPRESENTATIVES

JANUARY 8, 2003

Mr. BOEHLERT (for himself and Mr. HALL) introduced the following bill; which was referred to the Committee on Science, and in addition to the Committee on Resources, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

MAY 22, 2003

Reported from the Committee on Science with an amendment  
[Strike out all after the enacting clause and insert the part printed in *italic*]

MAY 22, 2003

Referral to the Committee on Resources extended for a period ending not later than June 27, 2003

JUNE 27, 2003

Committee on Resources discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed  
[For text of introduced bill, see copy of bill as introduced on January 8, 2003]

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**A BILL**

To provide for Federal energy research, development, dem-

onstration, 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; TABLE OF CONTENTS.**

4        (a) *SHORT TITLE.*—*This Act may be cited as the “En-*  
 5 *ergy Research, Development, Demonstration, and Commer-*  
 6 *cial Application Act of 2003”.*

7        (b) *TABLE OF CONTENTS.*—*The table of contents for*  
 8 *this Act is as follows:*

*Sec. 1. Short title; table of contents.*

*Sec. 2. Purposes.*

*Sec. 3. Goals.*

*Sec. 4. Definitions.*

*TITLE I—RESEARCH AND DEVELOPMENT*

*Subtitle A—Energy Efficiency*

*PART 1—AUTHORIZATION OF APPROPRIATIONS*

*Sec. 104. Energy efficiency.*

*PART 2—LIGHTING SYSTEMS*

*Sec. 105. Next Generation Lighting Initiative.*

*PART 3—BUILDINGS*

*Sec. 106. National Building Performance Initiative.*

*Sec. 106A. Electric motor control technology.*

*PART 4—VEHICLES*

*Sec. 107. Definitions.*

*Sec. 108. Establishment of secondary electric vehicle battery use program.*

*PART 5—ENERGY EFFICIENCY SCIENCE INITIATIVE*

*Sec. 110. Energy Efficiency Science Initiative.*

*PART 6—ADVANCED ENERGY TECHNOLOGY TRANSFER CENTERS*

*Sec. 110A. Advanced energy technology transfer centers.*

*Subtitle B—Distributed Energy and Electric Energy Systems**PART 1—AUTHORIZATION OF APPROPRIATIONS*

- Sec. 111. Distributed energy and electric energy systems.*  
*Sec. 111A. Demonstration and field test.*

*PART 2—DISTRIBUTED POWER*

- Sec. 112. Strategy.*  
*Sec. 113. High power density industry program.*  
*Sec. 114. Micro-cogeneration energy technology.*

*PART 3—TRANSMISSION SYSTEMS*

- Sec. 115. Transmission infrastructure systems research, development, demonstration, and commercial application.*

*PART 4—GENERAL PROVISIONS*

- Sec. 116. Definitions.*  
*Sec. 117. Voluntary consensus standards.*

*Subtitle C—Renewable Energy**PART 1—AUTHORIZATION OF APPROPRIATIONS*

- Sec. 121. Renewable energy.*

*PART 2—BIOENERGY*

- Sec. 122. Bioenergy programs.*

*PART 3—MISCELLANEOUS PROJECTS*

- Sec. 126. Miscellaneous projects.*  
*Sec. 127. Renewable energy in public buildings.*

*Subtitle D—Nuclear Energy**PART 1—AUTHORIZATION OF APPROPRIATIONS*

- Sec. 131. Nuclear energy.*

*PART 2—NUCLEAR ENERGY RESEARCH PROGRAMS*

- Sec. 132. Nuclear energy research programs.*

*PART 3—ADVANCED FUEL RECYCLING*

- Sec. 133. Advanced fuel recycling program.*

*PART 4—UNIVERSITY PROGRAMS*

- Sec. 134. University nuclear science and engineering support.*

*PART 5—GEOLOGICAL ISOLATION OF SPENT FUEL*

- Sec. 135. Geological isolation of spent fuel.*

*Subtitle E—Fossil Energy**PART 1—AUTHORIZATION OF APPROPRIATIONS**Sec. 141. Fossil energy.**PART 2—RESEARCH PROGRAMS**Sec. 142. Fossil energy research programs.**Sec. 143. Research and development for coal mining technologies.**PART 3—ULTRA-DEEPWATER AND UNCONVENTIONAL NATURAL GAS AND OTHER  
PETROLEUM RESOURCES**Sec. 144. Program authority.**Sec. 145. Ultra-deepwater program.**Sec. 146. Unconventional natural gas and other petroleum resources program.**Sec. 147. Additional requirements for awards.**Sec. 148. Advisory committees.**Sec. 149. Limits on participation.**Sec. 150. Fund.**Sec. 150A. Transfer of advanced oil and gas exploration and production technologies.**Sec. 151. Sunset.**Sec. 152. Definitions.**Subtitle F—Science**PART 1—AUTHORIZATION OF APPROPRIATIONS**Sec. 161. Science.**PART 2—FUSION ENERGY SCIENCES**Sec. 161A. ITER.**Sec. 162. Plan for fusion experiment.**Sec. 163. Plan for fusion energy sciences program.**PART 3—SPALLATION NEUTRON SOURCE**Sec. 164. Definition.**Sec. 165. Report.**Sec. 166. Limitations.**PART 4—MISCELLANEOUS**Sec. 167. Facility and infrastructure support for nonmilitary energy laboratories.**Sec. 168. Research regarding precious metal catalysis.**Sec. 169. Nanotechnology research and development.**Sec. 170. Advanced scientific computing for energy missions.**Sec. 170A. Nitrogen fixation.**PART 5—GENOMES TO LIFE**Sec. 170B. Genomes to Life.**Sec. 170C. Department of Energy Science and Technology Scholarship Program.**Subtitle G—Energy and Environment**Sec. 171. Authorization of appropriations.*

- Sec. 172. United States-Mexico energy technology cooperation.*  
*Sec. 173. Waste reduction and use of alternatives.*  
*Sec. 174. Coal gasification.*  
*Sec. 175. Petroleum coke gasification.*  
*Sec. 176. Other biopower and bioenergy.*  
*Sec. 177. Coal technology loan.*  
*Sec. 178. Fuel cell test center.*

*Subtitle H—Hydrogen*

- Sec. 181. Short title.*  
*Sec. 182. Matsunaga Act amendment.*  
*Sec. 183. Repeal of Hydrogen Future Act of 1996.*

*Subtitle I—Management*

- Sec. 184. Availability of funds.*  
*Sec. 185. Cost sharing.*  
*Sec. 186. Merit review of proposals.*  
*Sec. 187. External technical review of departmental programs.*  
*Sec. 188. Improved coordination of technology transfer activities.*  
*Sec. 189. Small business advocacy and assistance.*  
*Sec. 190. Mobility of scientific and technical personnel.*  
*Sec. 191. National Academy of Sciences report.*  
*Sec. 192. Outreach.*  
*Sec. 193. Limits on use of funds.*  
*Sec. 194. Reprogramming.*  
*Sec. 195. Construction with other laws.*  
*Sec. 196. University collaboration.*  
*Sec. 197. Federal laboratory educational partners.*  
*Sec. 198. Interagency cooperation.*

*TITLE II—DEPARTMENT OF ENERGY MANAGEMENT*

- Sec. 201. Improved coordination and management of civilian science and technology programs.*  
*Sec. 202. Report on equal employment opportunity practices.*  
*Sec. 203. External regulation of Department of Energy.*

*TITLE III—CLEAN SCHOOL BUSES*

- Sec. 301. Establishment of pilot program.*  
*Sec. 302. Fuel cell bus development and demonstration program.*  
*Sec. 303. Diesel retrofit program.*  
*Sec. 304. Authorization of appropriations.*

*TITLE IV—ALTERNATIVE FUELED AND ADVANCED VEHICLES*

- Sec. 401. Definitions.*  
*Sec. 402. Pilot program.*  
*Sec. 403. Reports to Congress.*  
*Sec. 404. Fuel cell transit bus demonstration.*  
*Sec. 405. Authorization of appropriations.*

*TITLE V—CLEAN COAL*

- Sec. 501. Authorization of appropriations.*  
*Sec. 502. Project criteria.*

*Sec. 503. Report.*

*Sec. 504. Clean coal centers of excellence.*

1 **SEC. 2. PURPOSES.**

2 *The purposes of this Act are to—*

3 *(1) contribute to a national energy strategy*  
4 *through an energy research and development program*  
5 *that supports basic energy research and provides*  
6 *mechanisms to develop, demonstrate, and promote the*  
7 *commercial application of new energy technologies in*  
8 *partnership with industry;*

9 *(2) protect and strengthen the Nation's economy,*  
10 *standard of living, and national security by reducing*  
11 *dependence on imported energy;*

12 *(3) meet future needs for energy services at the*  
13 *lowest total cost to the Nation, giving balanced and*  
14 *comprehensive consideration to technologies that im-*  
15 *prove the efficiency of energy end uses and that en-*  
16 *hance energy supply;*

17 *(4) reduce the environmental impacts of energy*  
18 *production, distribution, transportation, and use;*

19 *(5) help increase domestic production of energy,*  
20 *increase the availability of hydrocarbon reserves, and*  
21 *lower energy prices; and*

22 *(6) stimulate economic growth and enhance the*  
23 *ability of United States companies to compete in fu-*  
24 *ture markets for advanced energy technologies.*

1 **SEC. 3. GOALS.**

2       (a) *IN GENERAL.*—*In order to achieve the purposes of*  
3 *this Act, the Secretary shall conduct a balanced set of pro-*  
4 *grams of energy research, development, demonstration, and*  
5 *commercial application, guided by the following goals:*

6           (1) *ENERGY EFFICIENCY.*—

7               (A) *BUILDINGS.*—*Develop, in partnership*  
8 *with industry, technologies, designs, and produc-*  
9 *tion methods that will enable an average 25 per-*  
10 *cent increase by 2010 in the energy efficiency of*  
11 *all new buildings, as compared to a new build-*  
12 *ing in 1996.*

13               (B) *INDUSTRY.*—*Develop, in partnership*  
14 *with industry, technologies, designs, and produc-*  
15 *tion methods that will enable the energy inten-*  
16 *sity of the major energy-consuming industries to*  
17 *improve by at least 25 percent by 2010 as com-*  
18 *pared to 1991.*

19               (C) *VEHICLES.*—*Develop, in partnership*  
20 *with industry, technologies that will enable—*

21                   (i) *by 2010, mid-sized passenger auto-*  
22 *mobiles with a fuel economy of 80 miles per*  
23 *gallon;*

24                   (ii) *by 2010, light trucks (classes 1 and*  
25 *2a) with a fuel economy of 60 miles per gal-*  
26 *lon;*

1                   (iii) by 2010, medium trucks and buses  
2                   (classes 2b through 6 and class 8 transit  
3                   buses) with a fuel economy, in ton-miles per  
4                   gallon for trucks and passenger miles per  
5                   gallon for buses, that is 3 times that of year  
6                   2000 equivalent vehicles;

7                   (iv) by 2010, heavy trucks (classes 7  
8                   and 8) with a fuel economy, in ton-miles  
9                   per gallon, that is 2 times that of year 2000  
10                  equivalent vehicles; and

11                  (v) by 2020, meeting the goal described  
12                  in section 103(a)(2) of the Spark M. Matsu-  
13                  naga Hydrogen Research, Development, and  
14                  Demonstration Act of 1990.

15                  (2) *DISTRIBUTED ENERGY AND ELECTRIC EN-*  
16                  *ERGY SYSTEMS.—*

17                  (A) *DISTRIBUTED GENERATION.—Develop,*  
18                  *in partnership with industry, technologies based*  
19                  *on natural gas that achieve electricity generating*  
20                  *efficiencies greater than 40 percent by 2015 for*  
21                  *on-site, or distributed, generation technologies.*

22                  (B) *ELECTRIC ENERGY SYSTEMS AND STOR-*  
23                  *AGE.—Develop, in partnership with industry—*

24                  (i) *technologies for generators and*  
25                  *transmission, distribution, and storage sys-*

1            *tems that combine high capacity with high*  
2            *efficiency (particularly for electric trans-*  
3            *mission facilities in rural and remote*  
4            *areas);*

5            *(ii) new transmission and distribution*  
6            *technologies, including flexible alternating*  
7            *current transmission systems, composite*  
8            *conductor materials, advanced protection*  
9            *devices, and controllers;*

10           *(iii) technologies for interconnection of*  
11           *distributed energy resources with electric*  
12           *power systems;*

13           *(iv) high-temperature superconducting*  
14           *materials for power delivery equipment such*  
15           *as transmission and distribution cables,*  
16           *transformers, and generators; and*

17           *(v) real-time transmission and dis-*  
18           *tribution system control technologies that*  
19           *provide for continual exchange of informa-*  
20           *tion between generation, transmission, dis-*  
21           *tribution, and end-user facilities.*

22           *(3) RENEWABLE ENERGY.—*

23           *(A) WIND POWER.—Develop, in partnership*  
24           *with industry, technologies and designs that*  
25           *will—*

- 1                   (i) reduce the cost of wind power by 40  
2                   percent by 2012 as compared to 2000; and  
3                   (ii) expand utilization of class 3 and 4  
4                   winds.

5                   (B) PHOTOVOLTAICS.—Develop, in partner-  
6                   ship with industry, total photovoltaic systems  
7                   with installed costs of \$5,000 per peak kilowatt  
8                   by 2005 and \$2000 per peak kilowatt by 2015.

9                   (C) SOLAR THERMAL SYSTEMS.—Develop,  
10                  in partnership with industry, solar power tech-  
11                  nologies (including baseload solar power) that  
12                  combine high-efficiency and high-temperature re-  
13                  ceivers with advanced thermal storage and power  
14                  cycles to accommodate peak loads and reduce  
15                  lifecycle costs.

16                  (D) GEOTHERMAL ENERGY.—Develop, in  
17                  partnership with industry, technologies and  
18                  processes based on advanced hydrothermal sys-  
19                  tems and advanced heat and power systems, in-  
20                  cluding geothermal or ground source heat pump  
21                  technology, with a specific focus on—

- 22                         (i) improving exploration and charac-  
23                         terization technology to increase the prob-  
24                         ability of drilling successful wells from 20  
25                         percent to 40 percent by 2010;

1           (ii) reducing the cost of drilling by  
2           2008 to an average cost of \$225 per foot;

3           (iii) developing enhanced geothermal  
4           systems technology with the potential to  
5           double the usable geothermal resource base,  
6           as compared to the date of enactment of this  
7           Act; and

8           (iv) reducing the cost of installing the  
9           ground loop of ground-source heat pumps  
10          by 30 percent by 2007 compared to the cost  
11          in 2000.

12          (E) *BIOMASS-BASED POWER SYSTEMS.*—De-  
13          velop, in partnership with industry, integrated  
14          power generating systems, advanced conversion,  
15          and feedstock technologies capable of producing  
16          electric power that is cost-competitive with fossil-  
17          fuel generated electricity by 2010, through co-  
18          production of fuels, chemicals, and other prod-  
19          ucts under subparagraph (F).

20          (F) *BIOFUELS.*—Develop, in partnership  
21          with industry, new and emerging technologies  
22          and biotechnology processes capable of making—

23               (i) gaseous and liquid biofuels that are  
24               price-competitive, by 2010, with gasoline or

1           *diesel in either internal combustion engines*  
2           *or fuel cells; and*

3                   *(ii) biofuels, biobased polymers, and*  
4           *chemicals, including those derived from*  
5           *lignocellulosic feedstock, with particular em-*  
6           *phasis on developing biorefineries that use*  
7           *enzyme-based processing systems.*

8           (G) *HYDROPOWER.*—*Develop, in partner-*  
9           *ship with industry, a new generation of turbine*  
10          *technologies that will increase generating capac-*  
11          *ity and be less damaging to fish and aquatic eco-*  
12          *systems.*

13          (4) *FOSSIL ENERGY.*—

14                  (A) *POWER GENERATION.*—*Develop, in*  
15          *partnership with industry, technologies, includ-*  
16          *ing precombustion technologies, by 2015 with the*  
17          *capability of realizing—*

18                          (i) *electricity generating efficiencies of*  
19                          *75 percent (lower heating value) for natural*  
20                          *gas; and*

21                          (ii) *widespread commercial applica-*  
22                          *tion of combined heat and power with ther-*  
23                          *mal efficiencies of more than 85 percent*  
24                          *(higher heating value).*

1                   (B) *OFFSHORE OIL AND GAS RESOURCES.*—  
2                   Develop, in partnership with industry, tech-  
3                   nologies to—

4                   (i) *extract methane hydrates in coastal*  
5                   *waters of the United States; and*

6                   (ii) *develop natural gas and oil re-*  
7                   *serves in the ultra-deepwater of the Central*  
8                   *and Western Gulf of Mexico, with a focus on*  
9                   *improving, while lowering costs and reduc-*  
10                   *ing environmental impacts, the safety and*  
11                   *efficiency of—*

12                   (I) *the recovery of ultra-deepwater*  
13                   *resources; and*

14                   (II) *sub-sea production technology*  
15                   *used for such recovery.*

16                   (C) *ONSHORE OIL AND GAS RESOURCES.*—  
17                   Advance the science and technology available to  
18                   domestic onshore petroleum producers, particu-  
19                   larly independent producers of oil or gas,  
20                   through—

21                   (i) *advances in technology for explo-*  
22                   *ration and production of domestic petro-*  
23                   *leum resources, particularly those not acces-*  
24                   *sible with current technology;*

1                   (ii) *improvement in the ability to ex-*  
2                   *tract hydrocarbons (including heavy oil)*  
3                   *from known reservoirs and classes of res-*  
4                   *ervoirs; and*

5                   (iii) *development of technologies and*  
6                   *practices that reduce the impact on the en-*  
7                   *vironment from petroleum exploration and*  
8                   *production.*

9                   (D) *TRANSPORTATION FUELS.—Increase the*  
10                  *availability of transportation fuels by focusing*  
11                  *research on—*

12                  (i) *reducing the cost of producing*  
13                  *transportation fuels from coal and natural*  
14                  *gas; and*

15                  (ii) *indirect liquefaction of coal and*  
16                  *biomass.*

17                  (5) *NUCLEAR ENERGY.—*

18                  (A) *EXISTING REACTORS.—Support re-*  
19                  *search to extend the lifetimes of existing United*  
20                  *States nuclear power reactors, and increase their*  
21                  *reliability while optimizing their current oper-*  
22                  *ations for greater efficiencies.*

23                  (B) *ADVANCED REACTORS.—Develop, in*  
24                  *partnership with industry—*

1                   (i) *advanced, efficient, lower cost, and*  
2                   *passively safe reactor designs;*

3                   (ii) *proliferation-resistant and high-*  
4                   *burn-up nuclear fuels; and*

5                   (iii) *technologies to minimize genera-*  
6                   *tion of radioactive materials and improve*  
7                   *the management of nuclear waste.*

8                   (C) *NUCLEAR SCIENTISTS AND ENGI-*  
9                   *NEERS.—Attract new students and faculty to the*  
10                   *nuclear sciences, nuclear engineering, and re-*  
11                   *lated fields (including health physics, nuclear*  
12                   *medicine, nuclear chemistry, and*  
13                   *radiochemistry).*

14                   (6) *HYDROGEN.—Carry out the Spark M. Mat-*  
15                   *sunaga Hydrogen Research, Development, and Dem-*  
16                   *onstration Act of 1990.*

17                   (b) *REVIEW AND ASSESSMENT OF GOALS.—*

18                   (1) *EVALUATION AND MODIFICATION.—Based on*  
19                   *amounts appropriated and developments in science*  
20                   *and technology, the Secretary shall evaluate the goals*  
21                   *set forth in subsection (a) at least once every 5 years,*  
22                   *and shall report to the Congress any proposed modi-*  
23                   *fications to the goals.*

1           (2) *CONSULTATION.*—*In evaluating and pro-*  
2           *posing modifications to the goals as provided in para-*  
3           *graph (1), the Secretary shall solicit public input.*

4           (3) *PUBLIC COMMENT.*—(A) *After consultation*  
5           *under paragraph (2), the Secretary shall publish in*  
6           *the Federal Register a set of draft modifications to the*  
7           *goals for public comment.*

8           (B) *Not later than 60 days after the date of pub-*  
9           *lication of draft modifications under subparagraph*  
10          *(A), and after consideration of any public comments*  
11          *received, the Secretary shall publish the final modi-*  
12          *fications, including a summary of the public com-*  
13          *ments received, in the Federal Register.*

14          (4) *EFFECTIVE DATE.*—*No modification to goals*  
15          *under this section shall take effect before the date*  
16          *which is 5 years after the date of enactment of this*  
17          *Act.*

18          (c) *EFFECT OF GOALS.*—(1) *Nothing in paragraphs*  
19          *(1) through (6) of subsection (a), or any subsequent modi-*  
20          *fication to the goals therein pursuant to subsection (b),*  
21          *shall—*

22                 (A) *create any new—*

23                         (i) *authority for any Federal agency; or*

24                         (ii) *requirement for any other person;*

1           (B) be used by a Federal agency to support the  
2           establishment of regulatory standards or regulatory  
3           requirements; or

4           (C) alter the authority of the Secretary to make  
5           grants or other awards.

6           (2) Nothing in this subsection shall be construed to  
7           limit the authority of the Secretary to impose conditions  
8           on grants or other awards based on the goals in subsection  
9           (a) or any subsequent modification thereto.

10 **SEC. 4. DEFINITIONS.**

11           For purposes of this Act:

12           (1) *DEPARTMENT.*—The term “Department”  
13           means the Department of Energy.

14           (2) *DEPARTMENTAL MISSION.*—The term “de-  
15           partmental mission” means any of the functions vest-  
16           ed in the Secretary of Energy by the Department of  
17           Energy Organization Act (42 U.S.C. 7101 et seq.) or  
18           other law.

19           (3) *INDEPENDENT PRODUCER OF OIL OR GAS.*—

20           (A) *IN GENERAL.*—The term “independent  
21           producer of oil or gas” means any person who  
22           produces oil or gas other than a person to whom  
23           subsection (c) of section 613A of the Internal  
24           Revenue Code of 1986 does not apply by reason  
25           of paragraph (2) (relating to certain retailers) or

1 paragraph (4) (relating to certain refiners) of  
2 section 613A(d) of such Code.

3 (B) RULES FOR APPLYING PARAGRAPHS (2)  
4 AND (4) OF SECTION 613A(d).—For purposes of  
5 subparagraph (A), paragraphs (2) and (4) of  
6 section 613A(d) of the Internal Revenue Code of  
7 1986 shall be applied by substituting “calendar  
8 year” for “taxable year” each place it appears in  
9 such paragraphs.

10 (4) INSTITUTION OF HIGHER EDUCATION.—The  
11 term “institution of higher education” has the mean-  
12 ing given that term in section 101(a) of the Higher  
13 Education Act of 1965 (20 U.S.C. 1001(a)).

14 (5) JOINT VENTURE.—The term “joint venture”  
15 has the meaning given that term under section 2 of  
16 the National Cooperative Research and Production  
17 Act of 1993 (15 U.S.C. 4301).

18 (6) NATIONAL LABORATORY.—The term “Na-  
19 tional Laboratory” means any of the following lab-  
20 oratories owned by the Department:

21 (A) Ames National Laboratory.

22 (B) Argonne National Laboratory.

23 (C) Brookhaven National Laboratory.

24 (D) Fermi National Laboratory.

1                   (E) *Idaho National Engineering and Envi-*  
2                   *ronmental Laboratory.*

3                   (F) *Lawrence Berkeley National Labora-*  
4                   *tory.*

5                   (G) *Lawrence Livermore National Labora-*  
6                   *tory.*

7                   (H) *Los Alamos National Laboratory.*

8                   (I) *National Energy Technology Labora-*  
9                   *tory.*

10                  (J) *National Renewable Energy Laboratory.*

11                  (K) *Oak Ridge National Laboratory.*

12                  (L) *Pacific Northwest National Laboratory.*

13                  (M) *Princeton Plasma Physics Laboratory.*

14                  (N) *Sandia National Laboratories.*

15                  (O) *Thomas Jefferson National Accelerator*  
16                  *Facility.*

17                  (7) *NONMILITARY ENERGY LABORATORY.—The*  
18                  *term “nonmilitary energy laboratory” means any of*  
19                  *the following laboratories of the Department:*

20                         (A) *Ames National Laboratory.*

21                         (B) *Argonne National Laboratory.*

22                         (C) *Brookhaven National Laboratory.*

23                         (D) *Fermi National Laboratory.*

24                         (E) *Lawrence Berkeley National Labora-*  
25                         *tory.*

1                   (F) *Oak Ridge National Laboratory.*

2                   (G) *Pacific Northwest National Laboratory.*

3                   (H) *Princeton Plasma Physics Laboratory.*

4                   (I) *Stanford Linear Accelerator Center.*

5                   (J) *Thomas Jefferson National Accelerator*  
6                   *Facility.*

7                   (8) *SECRETARY.—The term “Secretary” means*  
8                   *the Secretary of Energy.*

9                   (9) *SINGLE-PURPOSE RESEARCH FACILITY.—The*  
10                   *term “single-purpose research facility” means any of*  
11                   *the following primarily single-purpose entities owned*  
12                   *by the Department:*

13                   (A) *East Tennessee Technology Park.*

14                   (B) *Fernald Environmental Management*  
15                   *Project.*

16                   (C) *Kansas City Plant.*

17                   (D) *Nevada Test Site.*

18                   (E) *New Brunswick Laboratory.*

19                   (F) *Pantex Weapons Facility.*

20                   (G) *Savannah River Technology Center.*

21                   (H) *Stanford Linear Accelerator Center.*

22                   (I) *Y-12 facility at Oak Ridge National*  
23                   *Laboratory.*

24                   (J) *Waste Isolation Pilot Plant.*

1                   (K) Any other similar organization of the  
2                   Department designated by the Secretary that en-  
3                   gages in technology transfer, partnering, or li-  
4                   censing activities.

5                   **TITLE I—RESEARCH AND**  
6                   **DEVELOPMENT**

7                   **Subtitle A—Energy Efficiency**

8                   **PART 1—AUTHORIZATION OF APPROPRIATIONS**

9                   **SEC. 104. ENERGY EFFICIENCY.**

10                  (a) *IN GENERAL.*—The following sums are authorized  
11                  to be appropriated to the Secretary for energy efficiency and  
12                  conservation research, development, demonstration, and  
13                  commercial application activities, including activities au-  
14                  thorized under this subtitle:

15                   (1) For fiscal year 2004, \$616,000,000.

16                   (2) For fiscal year 2005, \$695,000,000.

17                   (3) For fiscal year 2006, \$772,000,000.

18                   (4) For fiscal year 2007, \$865,000,000.

19                  (b) *ALLOCATIONS.*—From amounts authorized under  
20                  subsection (a), the following sums are authorized:

21                   (1) *LIGHTING SYSTEMS.*—For activities under  
22                  section 105, \$50,000,000 for each of fiscal years 2004  
23                  through 2007.

1           (2) *ELECTRIC MOTOR CONTROL TECHNOLOGY.*—  
2           *For activities under section 106A, \$2,000,000 for each*  
3           *of fiscal years 2004 through 2007.*

4           (3) *SECONDARY ELECTRIC VEHICLE BATTERY*  
5           *USE PROGRAM.*—*For activities under section 108—*

6                     (A) *for fiscal year 2004, \$4,000,000;*

7                     (B) *for fiscal year 2005, \$7,000,000;*

8                     (C) *for fiscal year 2006, \$7,000,000; and*

9                     (D) *for fiscal year 2007, \$7,000,000.*

10          (4) *ENERGY EFFICIENCY SCIENCE INITIATIVE.*—

11          *For activities under section 110—*

12                     (A) *for fiscal year 2004, \$20,000,000;*

13                     (B) *for fiscal year 2005, \$25,000,000;*

14                     (C) *for fiscal year 2006, \$30,000,000; and*

15                     (D) *for fiscal year 2007, \$35,000,000.*

16          (c) *EXTENDED AUTHORIZATION.*—*There are author-*  
17          *ized to be appropriated to the Secretary for activities under*  
18          *section 105, \$50,000,000 for each of fiscal years 2008*  
19          *through 2012.*

20          (d) *LIMITS ON USE OF FUNDS.*—*None of the funds au-*  
21          *thorized to be appropriated under this section may be used*  
22          *for—*

23                     (1) *the promulgation and implementation of en-*  
24                     *ergy efficiency regulations;*

1           (2) *the Weatherization Assistance Program*  
2           *under part A of title IV of the Energy Conservation*  
3           *and Production Act;*

4           (3) *the State Energy Program under part D of*  
5           *title III of the Energy Policy and Conservation Act;*  
6           *or*

7           (4) *the Federal Energy Management Program*  
8           *under part 3 of title V of the National Energy Con-*  
9           *servation Policy Act.*

10                                   **PART 2—LIGHTING SYSTEMS**

11           **SEC. 105. NEXT GENERATION LIGHTING INITIATIVE.**

12           (a) *IN GENERAL.*—*The Secretary shall carry out a*  
13           *Next Generation Lighting Initiative in accordance with this*  
14           *section to support research, development, demonstration,*  
15           *and commercial application activities related to advanced*  
16           *solid-state lighting technologies based on white light emit-*  
17           *ting diodes.*

18           (b) *OBJECTIVES.*—*The objectives of the initiative shall*  
19           *be—*

20                           (1) *to develop, by 2012, advanced solid-state*  
21           *lighting technologies based on white light emitting di-*  
22           *odes that, compared to incandescent and fluorescent*  
23           *lighting technologies, are—*

24                                   (A) *longer lasting;*

25                                   (B) *more energy-efficient; and*

1                   (C) cost-competitive;

2                   (2) to develop an inorganic white light emitting  
3 diode that has an efficiency of 160 lumens per watt  
4 and a 10-year lifetime; and

5                   (3) to develop an organic white light emitting  
6 diode with an efficiency of 100 lumens per watt with  
7 a 5-year lifetime that—

8                   (A) illuminates over a full color spectrum;

9                   (B) covers large areas over flexible surfaces;

10                   and

11                   (C) does not contain harmful pollutants,  
12 such as mercury, typical of fluorescent lamps.

13                   (c) *FUNDAMENTAL RESEARCH.*—

14                   (1) *CONSORTIUM.*—*The Secretary shall carry out*  
15 *the fundamental research activities of the Next Gen-*  
16 *eration Lighting Initiative through a private consor-*  
17 *tium (which may include private firms, trade asso-*  
18 *ciations and institutions of higher education), which*  
19 *the Secretary shall select through a competitive proc-*  
20 *ess. Each proposed consortium shall submit to the*  
21 *Secretary such information as the Secretary may re-*  
22 *quire, including a program plan agreed to by all par-*  
23 *ticipants of the consortium.*

24                   (2) *JOINT VENTURE.*—*The consortium shall be*  
25 *structured as a joint venture among the participants*

1       of the consortium. The Secretary shall serve on the  
2       governing council of the consortium.

3               (3) *ELIGIBILITY.*—To be eligible to be selected as  
4       the consortium under paragraph (1), an applicant  
5       must be broadly representative of United States solid-  
6       state lighting research, development, and manufac-  
7       turing expertise as a whole.

8               (4) *GRANTS.*—(A) The Secretary shall award  
9       grants for fundamental research to the consortium,  
10      which the consortium may disburse to researchers, in-  
11      cluding those who are not participants of the consor-  
12      tium.

13              (B) To receive a grant, the consortium must pro-  
14      vide a description to the Secretary of the proposed re-  
15      search and list the parties that will receive funding.

16              (C) Grants shall be matched by the consortium  
17      pursuant to section 185.

18              (5) *NATIONAL LABORATORIES.*—National Lab-  
19      oratories may participate in the research described in  
20      this section, and may receive funds from the consor-  
21      tium.

22              (6) *INTELLECTUAL PROPERTY.*—Participants in  
23      the consortium and the Federal Government shall  
24      have royalty-free nonexclusive rights to use intellec-

1 *tual property derived from research funded pursuant*  
2 *to this subsection.*

3 *(d) DEVELOPMENT, DEMONSTRATION, AND COMMER-*  
4 *CIAL APPLICATION.—The Secretary shall carry out the de-*  
5 *velopment, demonstration, and commercial application ac-*  
6 *tivities of the Next Generation Lighting Initiative through*  
7 *awards to private firms, trade associations, and institu-*  
8 *tions of higher education. In selecting awardees, the Sec-*  
9 *retary may give preference to members of the consortium*  
10 *selected pursuant to subsection (c).*

11 *(e) PLANS AND ASSESSMENTS.—(1) The consortium*  
12 *shall formulate an annual operating plan which shall in-*  
13 *clude research priorities, technical milestones, and plans for*  
14 *technology transfer, and which shall be subject to approval*  
15 *by the Secretary.*

16 *(2) The Secretary shall enter into an arrangement*  
17 *with the National Academy of Sciences to conduct periodic*  
18 *reviews of the Next Generation Lighting Initiative. The*  
19 *Academy shall review the research priorities, technical mile-*  
20 *stones, and plans for technology transfer established under*  
21 *paragraph (1) and evaluate the progress toward achieving*  
22 *them. The Secretary shall consider the results of such re-*  
23 *views in evaluating the plans submitted under paragraph*  
24 *(1).*

1       (f) *AUDIT.*—*The Secretary shall retain an inde-*  
2 *pendent, commercial auditor to perform an audit of the*  
3 *consortium to determine the extent to which the funds au-*  
4 *thorized by this section have been expended in a manner*  
5 *consistent with the purposes of this section. The auditor*  
6 *shall transmit a report annually to the Secretary, who shall*  
7 *transmit the report to the Congress, along with a plan to*  
8 *remedy any deficiencies cited in the report.*

9       (g) *SUNSET.*—*The Next Generation Lighting Initia-*  
10 *tive shall terminate no later than September 30, 2013.*

11       (h) *DEFINITIONS.*—*As used in this section:*

12           (1) *ADVANCED SOLID-STATE LIGHTING.*—*The*  
13 *term “advanced solid-state lighting” means a*  
14 *semiconducting device package and delivery system*  
15 *that produces white light using externally applied*  
16 *voltage.*

17           (2) *FUNDAMENTAL RESEARCH.*—*The term “fun-*  
18 *damental research” includes basic research on both*  
19 *solid-state materials and manufacturing processes.*

20           (3) *INORGANIC WHITE LIGHT EMITTING DIODE.*—  
21 *The term “inorganic white light emitting diode”*  
22 *means an inorganic semiconducting package that pro-*  
23 *duces white light using externally applied voltage.*

24           (4) *ORGANIC WHITE LIGHT EMITTING DIODE.*—  
25 *The term “organic white light emitting diode” means*



1 *role in the Initiative. The plan shall be based on whole*  
2 *building principles and shall include—*

3 *(1) research, development, demonstration, and*  
4 *commercial application of systems and materials for*  
5 *new construction and retrofit relating to the building*  
6 *envelope and building system components; and*

7 *(2) the collection, analysis, and dissemination of*  
8 *research results and other pertinent information on*  
9 *enhancing building performance to industry, govern-*  
10 *ment entities, and the public.*

11 *(d) DEPARTMENT OF ENERGY ROLE.—Within the Fed-*  
12 *eral portion of the Initiative, the Department shall be the*  
13 *lead agency for all aspects of building performance related*  
14 *to use and conservation of energy.*

15 *(e) ADVISORY COMMITTEE.—*

16 *(1) ESTABLISHMENT.—The Director of the Office*  
17 *of Science and Technology Policy shall establish an*  
18 *advisory committee to—*

19 *(A) analyze and provide recommendations*  
20 *on potential private sector roles and participa-*  
21 *tion in the Initiative; and*

22 *(B) review and provide recommendations on*  
23 *the plan described in subsection (c).*

24 *(2) MEMBERSHIP.—Membership of the advisory*  
25 *committee shall include representatives with a broad*

1 range of appropriate expertise, including expertise  
2 in—

3 (A) building research and technology;

4 (B) architecture, engineering, and building  
5 materials and systems; and

6 (C) the residential, commercial, and indus-  
7 trial sectors of the construction industry.

8 (f) CONSTRUCTION.—Nothing in this section provides  
9 any Federal agency with new authority to regulate building  
10 performance.

11 **SEC. 106A. ELECTRIC MOTOR CONTROL TECHNOLOGY.**

12 The Secretary shall conduct a research, development,  
13 demonstration, and commercial application program on  
14 advanced control devices to improve the energy efficiency  
15 of electric motors used in heating, ventilation, air condi-  
16 tioning, and comparable systems.

17 **PART 4—VEHICLES**

18 **SEC. 107. DEFINITIONS.**

19 For purposes of this part, the term—

20 (1) “battery” means an energy storage device  
21 that previously has been used to provide motive power  
22 in a vehicle powered in whole or in part by elec-  
23 tricity; and

1           (2) “associated equipment” means equipment lo-  
2           cated where the batteries will be used that is necessary  
3           to enable the use of the energy stored in the batteries.

4 **SEC. 108. ESTABLISHMENT OF SECONDARY ELECTRIC VEHI-**  
5 **CLE BATTERY USE PROGRAM.**

6           (a) *PROGRAM.*—The Secretary shall establish and con-  
7           duct a research, development, demonstration, and commer-  
8           cial application program for the secondary use of batteries.  
9           Such program shall be—

10           (1) *designed to demonstrate the use of batteries*  
11           *in secondary application, including utility and com-*  
12           *mercial power storage and power quality;*

13           (2) *structured to evaluate the performance, in-*  
14           *cluding useful service life and costs, of such batteries*  
15           *in field operations, and evaluate the necessary sup-*  
16           *porting infrastructure, including reuse and disposal*  
17           *of batteries; and*

18           (3) *coordinated with ongoing secondary battery*  
19           *use programs at the National Laboratories and in in-*  
20           *dustry.*

21           (b) *SOLICITATION.*—(1) *Not later than 6 months after*  
22           *the date of the enactment of this Act, the Secretary shall*  
23           *solicit proposals to demonstrate the secondary use of bat-*  
24           *teries and associated equipment and supporting infrastruc-*  
25           *ture in geographic locations throughout the United States.*

1 *The Secretary may make additional solicitations for pro-*  
2 *posals if the Secretary determines that such solicitations are*  
3 *necessary to carry out this section.*

4 *(2)(A) Proposals submitted in response to a solicita-*  
5 *tion under this section shall include—*

6 *(i) a description of the project, including the bat-*  
7 *teries to be used in the project, the proposed locations*  
8 *and applications for the batteries, the number of bat-*  
9 *teries to be demonstrated, and the type, characteris-*  
10 *tics, and estimated life-cycle costs of the batteries com-*  
11 *pared to other energy storage devices currently used;*

12 *(ii) the contribution, if any, of State or local*  
13 *governments and other persons to the demonstration*  
14 *project;*

15 *(iii) the type of associated equipment and sup-*  
16 *porting infrastructure to be demonstrated; and*

17 *(iv) any other information the Secretary con-*  
18 *siders appropriate.*

19 *(B) If the proposal includes a lease arrangement, the*  
20 *proposal shall indicate the terms of such lease arrangement*  
21 *for the batteries and associated equipment.*

22 *(c) SELECTION OF PROPOSALS.—(1)(A) The Secretary*  
23 *shall, not later than 3 months after the closing date estab-*  
24 *lished by the Secretary for receipt of proposals under sub-*

1 *section (b), select at least 5 proposals to receive financial*  
2 *assistance under this section.*

3 *(B) No one project selected under this section shall re-*  
4 *ceive more than 25 percent of the funds authorized under*  
5 *this section. No more than 3 projects selected under this sec-*  
6 *tion shall demonstrate the same battery type.*

7 *(2) In selecting a proposal under this section, the Sec-*  
8 *retary shall consider—*

9 *(A) the ability of the proposer to acquire the bat-*  
10 *teries and associated equipment and to successfully*  
11 *manage and conduct the demonstration project, in-*  
12 *cluding satisfying the reporting requirements set forth*  
13 *in paragraph (3)(B);*

14 *(B) the geographic and climatic diversity of the*  
15 *projects selected;*

16 *(C) the long-term technical and competitive via-*  
17 *bility of the batteries to be used in the project and of*  
18 *the original manufacturer of such batteries;*

19 *(D) the suitability of the batteries for their in-*  
20 *tended uses;*

21 *(E) the technical performance of the batteries,*  
22 *including the expected additional useful life and the*  
23 *batteries' ability to retain energy;*

1           (F) *the environmental effects of the use of and*  
2 *disposal of the batteries proposed to be used in the*  
3 *project selected;*

4           (G) *the extent of involvement of State or local*  
5 *government and other persons in the demonstration*  
6 *project and whether such involvement will—*

7                 (i) *permit a reduction of the Federal cost*  
8 *share per project; or*

9                 (ii) *otherwise be used to allow the Federal*  
10 *contribution to be provided to demonstrate a*  
11 *greater number of batteries; and*

12           (H) *such other criteria as the Secretary considers*  
13 *appropriate.*

14           (3) *CONDITIONS.—The Secretary shall require that—*

15                 (A) *as a part of a demonstration project, the*  
16 *users of the batteries provide to the proposer informa-*  
17 *tion regarding the operation, maintenance, perform-*  
18 *ance, and use of the batteries, and the proposer pro-*  
19 *vide such information to the battery manufacturer,*  
20 *for 3 years after the beginning of the demonstration*  
21 *project;*

22                 (B) *the proposer provide to the Secretary such*  
23 *information regarding the operation, maintenance,*  
24 *performance, and use of the batteries as the Secretary*  
25 *may request;*

1           (C) the proposer provide to the Secretary such  
2           information regarding the disposal of the batteries as  
3           the Secretary may require to ensure that the proposer  
4           disposes of the batteries in accordance with applicable  
5           law; and

6           (D) the proposer provide at least 50 percent of  
7           the costs associated with the proposal.

8           **PART 5—ENERGY EFFICIENCY SCIENCE**

9                           **INITIATIVE**

10          **SEC. 110. ENERGY EFFICIENCY SCIENCE INITIATIVE.**

11           (a) *ESTABLISHMENT.*—The Secretary shall establish  
12           an Energy Efficiency Science Initiative to be managed by  
13           the Assistant Secretary in the Department with responsi-  
14           bility for energy conservation under section 203(a)(9) of the  
15           Department of Energy Organization Act (42 U.S.C.  
16           7133(a)(9)), in consultation with the Director of the Office  
17           of Science, for grants to be competitively awarded and sub-  
18           ject to peer review for research relating to energy efficiency.

19           (b) *REPORT.*—The Secretary shall submit to the Con-  
20           gress, along with the President’s annual budget request  
21           under section 1105(a) of title 31, United States Code, a re-  
22           port on the activities of the Energy Efficiency Science Ini-  
23           tiative, including a description of the process used to award  
24           the funds and an explanation of how the research relates  
25           to energy efficiency.

1       **PART 6—ADVANCED ENERGY TECHNOLOGY**

2                       **TRANSFER CENTERS**

3       **SEC. 110A. ADVANCED ENERGY TECHNOLOGY TRANSFER**

4                       **CENTERS.**

5           (a) *GRANTS.*—Not later than 18 months after the date  
6 of the enactment of this Act, the Secretary shall make grants  
7 to nonprofit institutions, State and local governments, or  
8 universities (or consortia thereof), to establish a nationwide  
9 network of at least 10 Advanced Energy Technology Trans-  
10 fer Centers, to be located in areas the Secretary determines  
11 have the greatest need of the services of such Centers.

12           (b) *ACTIVITIES.*—(1) Each Center shall operate a pro-  
13 gram to encourage demonstration and commercial applica-  
14 tion of advanced energy methods and technologies through  
15 education and outreach to building and industrial profes-  
16 sionals, and to other individuals and organizations with  
17 an interest in efficient energy use.

18           (2) Each Center shall establish an advisory panel to  
19 advise the Center on how best to accomplish the activities  
20 under paragraph (1).

21           (c) *APPLICATION.*—A person seeking a grant under  
22 this section shall submit to the Secretary an application  
23 in such form and containing such information as the Sec-  
24 retary may require. The Secretary may award a grant  
25 under this section to an entity already in existence if the  
26 entity is otherwise eligible under this section.

1           (d) *SELECTION CRITERIA.*—*The Secretary shall award*  
2 *grants under this section on the basis of the following cri-*  
3 *teria, at a minimum:*

4                   (1) *The ability of the applicant to carry out the*  
5 *activities in subsection (b).*

6                   (2) *The extent to which the applicant will co-*  
7 *ordinate the activities of the Center with other enti-*  
8 *ties, such as State and local governments, utilities,*  
9 *and educational and research institutions.*

10           (e) *MATCHING FUNDS.*—*The Secretary shall require a*  
11 *non-Federal matching requirement of at least 50 percent*  
12 *of the costs of establishing and operating each Center.*

13           (f) *ADVISORY COMMITTEE.*—*The Secretary shall estab-*  
14 *lish an advisory committee to advise the Secretary on the*  
15 *establishment of Centers under this section. The advisory*  
16 *committee shall be composed of individuals with expertise*  
17 *in the area of advanced energy methods and technologies,*  
18 *including at least 1 representative from—*

19                   (1) *State or local energy offices;*

20                   (2) *energy professionals;*

21                   (3) *trade or professional associations;*

22                   (4) *architects, engineers, or construction profes-*  
23 *sionals;*

24                   (5) *manufacturers;*

25                   (6) *the research community; and*

1           (7) *nonprofit energy or environmental organiza-*  
2           *tions.*

3           (g) *DEFINITIONS.—For purposes of this section—*

4           (1) *the term “advanced energy methods and tech-*  
5           *nologies” means all methods and technologies that*  
6           *promote energy efficiency and conservation, including*  
7           *distributed generation technologies, and life-cycle*  
8           *analysis of energy use;*

9           (2) *the term “Center” means an Advanced En-*  
10          *ergy Technology Transfer Center established pursuant*  
11          *to this section; and*

12          (3) *the term “distributed generation” means an*  
13          *electric power generation facility that is designed to*  
14          *serve retail electric consumers at or near the facility*  
15          *site.*

16        ***Subtitle B—Distributed Energy and***  
17        ***Electric Energy Systems***

18        ***PART 1—AUTHORIZATION OF APPROPRIATIONS***

19        ***SEC. 111. DISTRIBUTED ENERGY AND ELECTRIC ENERGY***  
20        ***SYSTEMS.***

21          (a) *IN GENERAL.—The following sums are authorized*  
22          *to be appropriated to the Secretary for distributed energy*  
23          *and electric energy systems activities, including activities*  
24          *authorized under this subtitle:*

25          (1) *For fiscal year 2004, \$190,000,000.*

1           (2) *For fiscal year 2005, \$200,000,000.*

2           (3) *For fiscal year 2006, \$220,000,000.*

3           (4) *For fiscal year 2007, \$240,000,000.*

4           **(b) MICRO-COGENERATION ENERGY TECHNOLOGY.—**

5 *From amounts authorized under subsection (a), the fol-*

6 *lowing sums shall be available for activities under section*

7 *114:*

8           (1) *For fiscal year 2004, \$5,000,000.*

9           (2) *For fiscal year 2005, \$5,500,000.*

10          (3) *For fiscal year 2006, \$6,000,000.*

11          (4) *For fiscal year 2007, \$6,500,000.*

12 **SEC. 111A. DEMONSTRATION AND FIELD TEST.**

13          *The Secretary shall conduct a demonstration and field*

14 *test of distributed generation systems. Such test shall be con-*

15 *ducted in both geographically concentrated and dispersed*

16 *regions and shall define the full range of communications*

17 *and control system needs in distributed generation systems.*

18 *This test should be used to identify future research priorities*

19 *and the scale-up challenges necessary to meet the Depart-*

20 *ment's goals for distributed energy over the next 10 years.*

21                           **PART 2—DISTRIBUTED POWER**

22 **SEC. 112. STRATEGY.**

23          **(a) REQUIREMENT.—***Not later than 1 year after the*

24 *date of enactment of this Act, the Secretary shall develop*

25 *and transmit to the Congress a strategy for a comprehensive*

1 *research, development, demonstration, and commercial ap-*  
2 *plication program to develop hybrid distributed power sys-*  
3 *tems that combine—*

4           (1) *one or more renewable electric power genera-*  
5 *tion technologies of 10 megawatts or less located near*  
6 *the site of electric energy use; and*

7           (2) *nonintermittent electric power generation*  
8 *technologies suitable for use in a distributed power*  
9 *system.*

10 *(b) CONTENTS.—The strategy shall—*

11           (1) *identify the needs best met with such hybrid*  
12 *distributed power systems and the technological bar-*  
13 *riers to the use of such systems;*

14           (2) *provide for the development of methods to de-*  
15 *sign, test, integrate into systems, and operate such hy-*  
16 *brid distributed power systems;*

17           (3) *include, as appropriate, research, develop-*  
18 *ment, demonstration, and commercial application on*  
19 *related technologies needed for the adoption of such*  
20 *hybrid distributed power systems, including energy*  
21 *storage devices and environmental control tech-*  
22 *nologies;*

23           (4) *include research, development, demonstra-*  
24 *tion, and commercial application of interconnection*  
25 *technologies for communications and controls of dis-*

1        *tributed generation architectures, particularly tech-*  
2        *nologies promoting real-time response to power mar-*  
3        *ket information and physical conditions on the elec-*  
4        *trical grid; and*

5            *(5) describe how activities under the strategy*  
6        *will be integrated with other research, development,*  
7        *demonstration, and commercial application activities*  
8        *supported by the Department of Energy related to*  
9        *electric power technologies.*

10    **SEC. 113. HIGH POWER DENSITY INDUSTRY PROGRAM.**

11        *The Secretary shall establish a comprehensive research,*  
12        *development, demonstration, and commercial application*  
13        *program to improve energy efficiency of high power density*  
14        *facilities, including data centers, server farms, and tele-*  
15        *communications facilities. Such program shall consider*  
16        *technologies that provide significant improvement in ther-*  
17        *mal controls, metering, load management, peak load reduc-*  
18        *tion, or the efficient cooling of electronics.*

19    **SEC. 114. MICRO-COGENERATION ENERGY TECHNOLOGY.**

20        *The Secretary shall make competitive, merit-based*  
21        *grants to consortia for the development of micro-cogenera-*  
22        *tion energy technology. The consortia shall explore the use*  
23        *of small-scale combined heat and power in residential heat-*  
24        *ing appliances.*

1                   **PART 3—TRANSMISSION SYSTEMS**  
2   **SEC. 115. TRANSMISSION INFRASTRUCTURE SYSTEMS RE-**  
3                   **SEARCH, DEVELOPMENT, DEMONSTRATION,**  
4                   **AND COMMERCIAL APPLICATION.**

5           (a) *PROGRAM AUTHORIZED.*—*The Secretary shall de-*  
6 *velop and implement a comprehensive research, develop-*  
7 *ment, demonstration, and commercial application program*  
8 *to promote improved reliability and efficiency of electrical*  
9 *transmission systems. Such program may include—*

10           (1) *advanced energy technologies, materials, and*  
11 *systems;*

12           (2) *advanced grid reliability and efficiency tech-*  
13 *nology development;*

14           (3) *technologies contributing to significant load*  
15 *reductions;*

16           (4) *advanced metering, load management, and*  
17 *control technologies;*

18           (5) *technologies to enhance existing grid compo-*  
19 *nents;*

20           (6) *the development and use of high-temperature*  
21 *superconductors to—*

22                   (A) *enhance the reliability, operational*  
23 *flexibility, or power-carrying capability of elec-*  
24 *tric transmission or distribution systems; or*

1           (B) increase the efficiency of electric energy  
2           generation, transmission, distribution, or storage  
3           systems;

4           (7) integration of power systems, including sys-  
5           tems to deliver high-quality electric power, electric  
6           power reliability, and combined heat and power;

7           (8) any other infrastructure technologies, as ap-  
8           propriate; and

9           (9) technology transfer and education.

10          (b) *PROGRAM PLAN*.—Not later than 1 year after the  
11          date of the enactment of this Act, the Secretary, in consulta-  
12          tion with other appropriate Federal agencies, shall prepare  
13          and transmit to Congress a 5-year program plan to guide  
14          activities under this section. In preparing the program  
15          plan, the Secretary shall consult with utilities, energy serv-  
16          ices providers, manufacturers, institutions of higher edu-  
17          cation, other appropriate State and local agencies, environ-  
18          mental organizations, professional and technical societies,  
19          and any other persons the Secretary considers appropriate.

20          (c) *REPORT*.—Not later than 2 years after the trans-  
21          mittal of the plan under subsection (b), the Secretary shall  
22          transmit a report to Congress describing the progress made  
23          under this section and identifying any additional resources  
24          needed to continue the development and commercial appli-  
25          cation of transmission infrastructure technologies.

1                   **PART 4—GENERAL PROVISIONS**

2   **SEC. 116. DEFINITIONS.**

3       *For purposes of this subtitle—*

4                   (1) *the term “hybrid distributed power system”*  
5       *means a system using 2 or more distributed power*  
6       *sources, operated together with associated supporting*  
7       *equipment, including storage equipment, and software*  
8       *necessary to provide electric power onsite and to an*  
9       *electric distribution system; and*

10                  (2) *the term “distributed power source” means*  
11       *an independent electric energy source of usually 10*  
12       *megawatts or less located close to a residential, com-*  
13       *mercial, or industrial load center, including—*

14                         (A) *reciprocating engines;*

15                         (B) *turbines;*

16                         (C) *microturbines;*

17                         (D) *fuel cells;*

18                         (E) *solar electric systems;*

19                         (F) *wind energy systems;*

20                         (G) *biopower systems;*

21                         (H) *geothermal power systems; or*

22                         (I) *combined heat and power systems.*

23   **SEC. 117. VOLUNTARY CONSENSUS STANDARDS.**

24       *In a manner consistent with the National Technology*  
25       *Transfer Advancement Act, the Secretary, in consultation*  
26       *with the National Institute of Standards and Technology,*

1 *shall work with the Institute of Electrical and Electronic*  
2 *Engineers and other standards development organizations*  
3 *to take all appropriate steps toward the development, pro-*  
4 *mulgation, and implementation of voluntary consensus*  
5 *standards for distributed energy systems for use in manu-*  
6 *facturing and using equipment and systems for connection*  
7 *with electric distribution systems, for obtaining electricity*  
8 *from, or providing electricity to, such systems.*

9 ***Subtitle C—Renewable Energy***

10 ***PART 1—AUTHORIZATION OF APPROPRIATIONS***

11 ***SEC. 121. RENEWABLE ENERGY.***

12 *(a) IN GENERAL.—The following sums are authorized*  
13 *to be appropriated to the Secretary for renewable energy*  
14 *research, development, demonstration, and commercial ap-*  
15 *plication activities, including activities authorized under*  
16 *this subtitle:*

17 *(1) For fiscal year 2004, \$380,000,000.*

18 *(2) For fiscal year 2005, \$420,000,000.*

19 *(3) For fiscal year 2006, \$460,000,000.*

20 *(4) For fiscal year 2007, \$499,000,000.*

21 *(b) BIOENERGY.—From the amounts authorized under*  
22 *subsection (a), the following sums are authorized to be ap-*  
23 *propriated to carry out section 122 and section 176:*

24 *(1) For fiscal year 2004, \$135,425,000.*

25 *(2) For fiscal year 2005, \$155,600,000.*

1           (3) *For fiscal year 2006, \$167,650,000.*

2           (4) *For fiscal year 2007, \$180,000,000.*

3           (c) *PUBLIC BUILDINGS.—From the amounts author-*  
4 *ized under subsection (a), \$30,000,000 for each of the fiscal*  
5 *years 2004 through 2007 are authorized to be appropriated*  
6 *to carry out section 127.*

7           (d) *LIMITS ON USE OF FUNDS.—*

8           (1) *EXCLUSION.—None of the funds authorized*  
9 *to be appropriated under this section may be used for*  
10 *Renewable Support and Implementation.*

11           (2) *BIOENERGY.—Of the funds authorized under*  
12 *subsection (b), not less than \$5,000,000 for each fiscal*  
13 *year shall be made available for grants to Histori-*  
14 *cally Black Colleges and Universities, Tribal Colleges,*  
15 *and Hispanic-Serving Institutions.*

16           (3) *RURAL AND REMOTE LOCATIONS.—In car-*  
17 *rying out this section, the Secretary, in consultation*  
18 *with the Secretary of Agriculture, shall demonstrate*  
19 *the use of advanced wind power technology, biomass,*  
20 *geothermal energy systems, and other renewable en-*  
21 *ergy technologies to assist in delivering electricity to*  
22 *rural and remote locations.*

23           (4) *REGIONAL FIELD VERIFICATION.—Of the*  
24 *funds authorized under subsection (a), not less than*  
25 *\$4,000,000 for each fiscal year shall be made avail-*



1       (b) *STUDY.*—(1) *The Secretary shall enter into an ar-*  
2 *rangement with the National Academy of Sciences to con-*  
3 *duct a study on—*

4           (A) *the feasibility of various methods of renew-*  
5 *able generation of energy from the ocean, including*  
6 *energy from waves, tides, currents, and thermal gra-*  
7 *dients; and*

8           (B) *the research, development, demonstration,*  
9 *and commercial application activities required to*  
10 *make marine renewable energy generation competitive*  
11 *with other forms of electricity generation.*

12       (2) *Not later than 1 year after the date of the enact-*  
13 *ment of this Act, the Secretary shall transmit the study to*  
14 *the Congress along with the Secretary’s recommendations*  
15 *for implementing the results of the study.*

16 **SEC. 127. RENEWABLE ENERGY IN PUBLIC BUILDINGS.**

17       (a) *DEMONSTRATION AND TECHNOLOGY TRANSFER*  
18 *PROGRAM.*—*The Secretary shall establish a program for the*  
19 *demonstration of innovative technologies for solar and other*  
20 *renewable energy sources in buildings owned or operated*  
21 *by a State or local government, and for the dissemination*  
22 *of information resulting from such demonstration to inter-*  
23 *ested parties.*

24       (b) *LIMIT ON FEDERAL FUNDING.*—*The Secretary*  
25 *shall provide under this section no more than 40 percent*

1 *of the incremental costs of the solar or other renewable en-*  
 2 *ergy source project funded.*

3 (c) *REQUIREMENT.*—*As part of the application for*  
 4 *awards under this section, the Secretary shall require all*  
 5 *applicants—*

6 (1) *to demonstrate a continuing commitment to*  
 7 *the use of solar and other renewable energy sources in*  
 8 *buildings they own or operate; and*

9 (2) *to state how they expect any award to further*  
 10 *their transition to the significant use of renewable en-*  
 11 *ergy.*

## 12 ***Subtitle D—Nuclear Energy***

### 13 ***PART 1—AUTHORIZATION OF APPROPRIATIONS***

#### 14 ***SEC. 131. NUCLEAR ENERGY.***

15 (a) *IN GENERAL.*—*The following sums are authorized*  
 16 *to be appropriated to the Secretary for nuclear energy re-*  
 17 *search, development, demonstration, and commercial appli-*  
 18 *cation activities, including activities authorized under this*  
 19 *subtitle:*

20 (1) *For fiscal year 2004, \$388,000,000.*

21 (2) *For fiscal year 2005, \$416,000,000.*

22 (3) *For fiscal year 2006, \$445,000,000.*

23 (4) *For fiscal year 2007, \$474,000,000.*

24 (b) *ALLOCATIONS.*—*From amounts authorized under*  
 25 *subsection (a), the following sums are authorized:*

1           (1) *NUCLEAR INFRASTRUCTURE SUPPORT.*—*For*  
2           *activities under section 132(f)*—

3                   (A) *for fiscal year 2004, \$125,000,000;*

4                   (B) *for fiscal year 2005, \$130,000,000;*

5                   (C) *for fiscal year 2006, \$135,000,000; and*

6                   (D) *for fiscal year 2007, \$140,000,000.*

7           (2) *ADVANCED FUEL RECYCLING PROGRAM.*—*For*  
8           *activities under section 133*—

9                   (A) *for fiscal year 2004, \$80,000,000;*

10                  (B) *for fiscal year 2005, \$93,000,000;*

11                  (C) *for fiscal year 2006, \$106,000,000; and*

12                  (D) *for fiscal year 2007, \$120,000,000.*

13           (3) *UNIVERSITY PROGRAMS.*—*For activities*  
14           *under section 134*—

15                   (A) *for fiscal year 2004, \$35,200,000, of*  
16           *which—*

17                           (i) *\$3,000,000 shall be for activities*  
18                           *under subsection (b)(1) of that section;*

19                           (ii) *\$4,275,000 shall be for activities*  
20                           *under subsection (b)(2) of that section;*

21                           (iii) *\$8,000,000 shall be for activities*  
22                           *under subsection (b)(3) of that section;*

23                           (iv) *\$500,000 shall be for activities*  
24                           *under subsection (b)(5) of that section;*

1                   (v) \$7,000,000 shall be for activities  
2                   under subsection (c)(1) of that section;

3                   (vi) \$700,000 shall be for activities  
4                   under subsection (c)(2) of that section;

5                   (vii) \$10,000,000 shall be for activities  
6                   under subsection (c)(3) of that section;

7                   (viii) \$1,000,000 shall be for activities  
8                   under subsection (d)(1) of that section; and

9                   (ix) \$725,000 shall be for activities  
10                  under subsection (d)(2) of that section;

11                  (B) for fiscal year 2005, \$44,350,000, of  
12                  which—

13                   (i) \$3,100,000 shall be for activities  
14                   under subsection (b)(1) of that section;

15                   (ii) \$6,275,000 shall be for activities  
16                   under subsection (b)(2) of that section;

17                   (iii) \$12,000,000 shall be for activities  
18                   under subsection (b)(3) of that section;

19                   (iv) \$550,000 shall be for activities  
20                   under subsection (b)(5) of that section;

21                   (v) \$7,500,000 shall be for activities  
22                   under subsection (c)(1) of that section;

23                   (vi) \$1,100,000 shall be for activities  
24                   under subsection (c)(2) of that section;

1                   (vii) \$12,000,000 shall be for activities  
2                   under subsection (c)(3) of that section;

3                   (viii) \$1,100,000 shall be for activities  
4                   under subsection (d)(1) of that section; and

5                   (ix) \$725,000 shall be for activities  
6                   under subsection (d)(2) of that section;

7                   (C) for fiscal year 2006, \$49,200,000, of  
8                   which—

9                   (i) \$3,200,000 shall be for activities  
10                  under subsection (b)(1) of that section;

11                  (ii) \$7,150,000 shall be for activities  
12                  under subsection (b)(2) of that section;

13                  (iii) \$13,000,000 shall be for activities  
14                  under subsection (b)(3) of that section;

15                  (iv) \$600,000 shall be for activities  
16                  under subsection (b)(5) of that section;

17                  (v) \$8,000,000 shall be for activities  
18                  under subsection (c)(1) of that section;

19                  (vi) \$1,200,000 shall be for activities  
20                  under subsection (c)(2) of that section;

21                  (vii) \$14,000,000 shall be for activities  
22                  under subsection (c)(3) of that section;

23                  (viii) \$1,200,000 shall be for activities  
24                  under subsection (d)(1) of that section; and

1                   *(ix) \$850,000 shall be for activities*  
2                   *under subsection (d)(2) of that section; and*  
3                   *(D) for fiscal year 2007, \$54,950,000, of*  
4                   *which—*

5                   *(i) \$3,200,000 shall be for activities*  
6                   *under subsection (b)(1) of that section;*

7                   *(ii) \$8,150,000 shall be for activities*  
8                   *under subsection (b)(2) of that section;*

9                   *(iii) \$15,000,000 shall be for activities*  
10                   *under subsection (b)(3) of that section;*

11                   *(iv) \$650,000 shall be for activities*  
12                   *under subsection (b)(5) of that section;*

13                   *(v) \$8,500,000 shall be for activities*  
14                   *under subsection (c)(1); of that section;*

15                   *(vi) \$1,300,000 shall be for activities*  
16                   *under subsection (c)(2) of that section;*

17                   *(vii) \$16,000,000 shall be for activities*  
18                   *under subsection (c)(3) of that section;*

19                   *(viii) \$1,300,000 shall be for activities*  
20                   *under subsection (d)(1) of that section; and*

21                   *(ix) \$850,000 shall be for activities*  
22                   *under subsection (d)(2) of that section.*

23                   *(4) GEOLOGICAL ISOLATION OF SPENT FUEL.—*

24                   *For activities under section 135—*

25                   *(A) for fiscal year 2004, \$7,000,000;*

1                   (B) for fiscal year 2005, \$8,000,000;

2                   (C) for fiscal year 2006, \$9,000,000; and

3                   (D) for fiscal year 2007, \$10,000,000.

4           (c) *LIMIT ON USE OF FUNDS.*—None of the funds au-  
5 thorized under this section may be used for decommis-  
6 sioning the Fast Flux Test Facility.

7                   **PART 2—NUCLEAR ENERGY RESEARCH**

8                                   **PROGRAMS**

9           **SEC. 132. NUCLEAR ENERGY RESEARCH PROGRAMS.**

10           (a) *NUCLEAR ENERGY RESEARCH INITIATIVE.*—The  
11 Secretary shall carry out a Nuclear Energy Research Ini-  
12 tiative for research and development related to nuclear en-  
13 ergy.

14           (b) *NUCLEAR ENERGY PLANT OPTIMIZATION PRO-*  
15 *GRAM.*—The Secretary shall carry out a Nuclear Energy  
16 Plant Optimization Program to support research and devel-  
17 opment activities addressing reliability, availability, pro-  
18 ductivity, and component aging in existing nuclear power  
19 plants.

20           (c) *NUCLEAR POWER 2010 PROGRAM.*—The Secretary  
21 shall carry out a Nuclear Power 2010 Program, consistent  
22 with recommendations in the October 2001 report entitled  
23 “A Roadmap to Deploy New Nuclear Power Plants in the  
24 United States by 2010” issued by the Nuclear Energy Re-

1 *search Advisory Committee of the Department. The Pro-*  
2 *gram shall—*

3           (1) *rely on the expertise and capabilities of the*  
4 *National Laboratories in the areas of advanced nu-*  
5 *clear fuels cycles and fuels testing;*

6           (2) *pursue an approach that considers a variety*  
7 *of reactor designs;*

8           (3) *include participation of international col-*  
9 *laborators in research, development, and design efforts*  
10 *as appropriate; and*

11           (4) *encourage industry participation.*

12           (d) *GENERATION IV NUCLEAR ENERGY SYSTEMS INI-*  
13 *TIATIVE.—The Secretary shall carry out a Generation IV*  
14 *Nuclear Energy Systems Initiative to develop an overall*  
15 *technology plan and to support research and development*  
16 *necessary to make an informed technical decision about the*  
17 *most promising candidates for eventual commercial appli-*  
18 *cation. The Initiative shall examine advanced proliferation-*  
19 *resistant and passively safe reactor designs, including de-*  
20 *signs that—*

21           (1) *are economically competitive with other elec-*  
22 *tric power generation plants;*

23           (2) *have higher efficiency, lower cost, and im-*  
24 *proved safety compared to reactors in operation on*  
25 *the date of enactment of this Act;*

1           (3) use fuels that are proliferation resistant and  
2           have substantially reduced production of high-level  
3           waste per unit of output; and

4           (4) utilize improved instrumentation.

5           (e) *NUCLEAR PRODUCTION OF HYDROGEN.*—Pursuant  
6 to the *Spark M. Matsunaga Hydrogen Research, Develop-*  
7 *ment, and Demonstration Act of 1990, as amended by sub-*  
8 *title H of this Act, the Secretary shall carry out a program*  
9 *of research, development, demonstration, and commercial*  
10 *application on various approaches to nuclear production*  
11 *of hydrogen.*

12          (f) *NUCLEAR INFRASTRUCTURE SUPPORT.*—The *Sec-*  
13 *retary shall develop and implement a strategy for the facili-*  
14 *ties of the Office of Nuclear Energy, Science, and Tech-*  
15 *nology and shall transmit a report containing the strategy*  
16 *along with the President’s budget request to the Congress*  
17 *for fiscal year 2005. Such strategy shall provide a cost-effec-*  
18 *tive means for—*

19           (1) *maintaining existing facilities and infra-*  
20 *structure, as needed;*

21           (2) *closing unneeded facilities;*

22           (3) *making facility upgrades and modifications;*

23           *and*

24           (4) *building new facilities.*

1           **PART 3—ADVANCED FUEL RECYCLING**

2   **SEC. 133. ADVANCED FUEL RECYCLING PROGRAM.**

3           (a) *IN GENERAL.*—*The Secretary, through the Director*  
4 *of the Office of Nuclear Energy, Science and Technology,*  
5 *shall conduct an advanced fuel recycling technology re-*  
6 *search and development program to evaluate proliferation-*  
7 *resistant fuel recycling and transmutation technologies*  
8 *which minimize environmental or public health and safety*  
9 *impacts as an alternative to aqueous reprocessing tech-*  
10 *nologies deployed as of the date of enactment of this Act*  
11 *in support of evaluation of alternative national strategies*  
12 *for spent nuclear fuel and the Generation IV advanced reac-*  
13 *tor concepts, subject to annual review by the Secretary’s Nu-*  
14 *clear Energy Research Advisory Committee or other inde-*  
15 *pendent entity, as appropriate. Opportunities to enhance*  
16 *progress of this program through international cooperation*  
17 *should be sought.*

18           (b) *REPORTS.*—*The Secretary shall report on the ac-*  
19 *tivities of the advanced fuel recycling technology research*  
20 *and development program, as part of the Department’s an-*  
21 *nual budget submission.*

22           **PART 4—UNIVERSITY PROGRAMS**

23   **SEC. 134. UNIVERSITY NUCLEAR SCIENCE AND ENGINEER-**  
24           **ING SUPPORT.**

25           (a) *ESTABLISHMENT.*—*The Secretary shall support a*  
26 *program to invest in human resources and infrastructure*

1 *in the nuclear sciences and engineering and related fields*  
2 *(including health physics and nuclear and radiochemistry),*  
3 *consistent with departmental missions related to civilian*  
4 *nuclear research and development.*

5 (b) *DUTIES.—In carrying out the program under this*  
6 *section, the Secretary shall—*

7 (1) *establish a graduate and undergraduate fel-*  
8 *lowship program to attract new and talented stu-*  
9 *dents;*

10 (2) *establish a Junior Faculty Research Initi-*  
11 *ation Grant Program to assist institutions of higher*  
12 *education in recruiting and retaining new faculty in*  
13 *the nuclear sciences and engineering;*

14 (3) *support fundamental nuclear sciences and*  
15 *engineering research through the Nuclear Engineering*  
16 *Education Research Program;*

17 (4) *encourage collaborative nuclear research*  
18 *among industry, National Laboratories, and institu-*  
19 *tions of higher education through the Nuclear Energy*  
20 *Research Initiative; and*

21 (5) *support communication and outreach related*  
22 *to nuclear science and engineering.*

23 (c) *STRENGTHENING UNIVERSITY RESEARCH AND*  
24 *TRAINING REACTORS AND ASSOCIATED INFRASTRUC-*  
25 *TURE.—Activities under this section may include—*

1           (1) *converting research reactors currently using*  
2           *high-enrichment fuels to low-enrichment fuels, up-*  
3           *grading operational instrumentation, and sharing of*  
4           *reactors among institutions of higher education;*

5           (2) *providing technical assistance, in collabora-*  
6           *tion with the United States nuclear industry, in reli-*  
7           *censing and upgrading training reactors as part of a*  
8           *student training program; and*

9           (3) *providing funding, through the Innovations*  
10          *in Nuclear Infrastructure and Education Program,*  
11          *for reactor improvements as part of a focused effort*  
12          *that emphasizes research, training, and education.*

13          (d) *UNIVERSITY-NATIONAL LABORATORY INTER-*  
14          *ACTIONS.—The Secretary shall develop—*

15               (1) *a sabbatical fellowship program for profes-*  
16               *sors at institutions of higher education to spend ex-*  
17               *tended periods of time at National Laboratories in*  
18               *the areas of nuclear science and technology; and*

19               (2) *a visiting scientist program in which Na-*  
20               *tional Laboratory staff can spend time in academic*  
21               *nuclear science and engineering departments.*

22          *The Secretary may provide fellowships for students to spend*  
23          *time at National Laboratories in the area of nuclear science*  
24          *with a member of the Laboratory staff acting as a mentor.*



1                   **Subtitle E—Fossil Energy**

2       **PART 1—AUTHORIZATION OF APPROPRIATIONS**

3       **SEC. 141. FOSSIL ENERGY.**

4           (a) *IN GENERAL.*—*The following sums are authorized*  
5 *to be appropriated to the Secretary for fossil energy re-*  
6 *search, development, demonstration, and commercial appli-*  
7 *cation activities, other than those described in subsection*  
8 *(b), including activities authorized under this subtitle but*  
9 *not including activities authorized under title V:*

10                   (1) *For fiscal year 2004, \$530,000,000.*

11                   (2) *For fiscal year 2005, \$556,000,000.*

12                   (3) *For fiscal year 2006, \$583,000,000.*

13                   (4) *For fiscal year 2007, \$611,000,000.*

14 *No less than 60 percent of the amount appropriated for each*  
15 *fiscal year under this subsection shall be available for ac-*  
16 *tivities related to the coal research program under section*  
17 *142(a).*

18           (b) *ULTRA-DEEPWATER AND UNCONVENTIONAL RE-*  
19 *SOURCES.*—

20                   (1) *OIL AND GAS LEASE INCOME.*—*For each of*  
21 *fiscal years 2004 through 2010, from any royalties,*  
22 *rents, and bonuses derived from Federal onshore and*  
23 *offshore oil and gas leases issued under the Outer*  
24 *Continental Shelf Lands Act and the Mineral Leasing*  
25 *Act which are deposited in the Treasury, and after*

1       *distribution of any such funds as described in para-*  
2       *graph (2), an amount equal to 7.5 percent of the*  
3       *amount of royalties, rents, and bonuses derived from*  
4       *those leases deposited in the Treasury shall be depos-*  
5       *ited into the Ultra-Deepwater and Unconventional*  
6       *Natural Gas and Other Petroleum Research Fund (in*  
7       *this subsection referred to as the Fund). For purposes*  
8       *of this subsection, the term “royalties” excludes pro-*  
9       *ceeds from the sale of royalty production taken in*  
10      *kind and royalty production that is transferred under*  
11      *section 27(a)(3) of the Outer Continental Shelf Lands*  
12      *Act (43 U.S.C. 1353(a)(3)). Monies in the Fund shall*  
13      *be available to the Secretary for obligation under part*  
14      *3, without fiscal year limitation, to the extent pro-*  
15      *vided in advance in appropriations Acts.*

16                (2) *PRIOR DISTRIBUTIONS.—The distributions*  
17      *described in paragraph (1) are those required by*  
18      *law—*

19                    (A) *to States and to the Reclamation Fund*  
20                    *under the Mineral Leasing Act (30 U.S.C.*  
21                    *191(a)); and*

22                    (B) *to other funds receiving monies from*  
23                    *Federal oil and gas leasing programs, includ-*  
24                    *ing—*

1                   (i) any recipients pursuant to section  
2                   8(g) of the Outer Continental Shelf Lands  
3                   Act (43 U.S.C. 1337(g));

4                   (ii) the Land and Water Conservation  
5                   Fund, pursuant to section 2(c) of the Land  
6                   and Water Conservation Fund Act of 1965  
7                   (16 U.S.C. 4601–5(c)); and

8                   (iii) the Historic Preservation Fund,  
9                   pursuant to section 108 of the National  
10                  Historic Preservation Act (16 U.S.C. 470h).

11               (3) ALLOCATION.—Amounts made available  
12               under this subsection in each fiscal year shall be allo-  
13               cated as follows:

14                   (A) 67.5 percent shall be for ultra-deepwater  
15                   natural gas and other petroleum activities under  
16                   section 145;

17                   (B) 22.5 percent shall be for unconventional  
18                   natural gas and other petroleum resource activi-  
19                   ties under section 146; and

20                   (C) 10 percent shall be for research com-  
21                   plementary to research under section 144(b)(1)  
22                   through (3).

23               (c) ALLOCATIONS.—From amounts authorized under  
24               subsection (a), the following sums are authorized:

1           (1) *FUEL CELL PROTON EXCHANGE MEMBRANE*  
2           *TECHNOLOGY.—For activities under section 142(c)(2),*  
3           *\$28,000,000 for each of the fiscal years 2004 through*  
4           *2007.*

5           (2) *COAL MINING TECHNOLOGIES.—For activities*  
6           *under section 143—*

7                     (A) *for fiscal year 2004, \$12,000,000; and*

8                     (B) *for fiscal year 2005, \$15,000,000.*

9           (3) *OFFICE OF ARCTIC ENERGY.—For the Office*  
10           *of Arctic Energy under section 3197 of the Floyd D.*  
11           *Spence National Defense Authorization Act for Fiscal*  
12           *Year 2001 (Public Law 106–398), \$25,000,000 for*  
13           *each of fiscal years 2004 through 2007.*

14           (d) *EXTENDED AUTHORIZATION.—There are author-*  
15           *ized to be appropriated to the Secretary for the Office of*  
16           *Arctic Energy under section 3197 of the Floyd D. Spence*  
17           *National Defense Authorization Act for Fiscal Year 2001*  
18           *(Public Law 106–398), \$25,000,000 for each of fiscal years*  
19           *2008 through 2011.*

20           (e) *LIMITS ON USE OF FUNDS.—*

21                     (1) *EXCLUSIONS.—None of the funds authorized*  
22           *under this section may be used for—*

23                             (A) *Fossil Energy Environmental Restora-*  
24                             *tion; or*

25                             (B) *Import/Export Authorization.*

1           (2) *UNIVERSITY COAL MINING RESEARCH.*—Of  
2           the funds authorized under subsection (c)(2), not less  
3           than 20 percent of the funds appropriated for each  
4           fiscal year shall be dedicated to research and develop-  
5           ment carried out at institutions of higher education.

6                           **PART 2—RESEARCH PROGRAMS**

7   **SEC. 142. FOSSIL ENERGY RESEARCH PROGRAMS.**

8           (a) *COAL RESEARCH.*—(1) In addition to the Clean  
9           Coal Power Initiative authorized under title V, the Sec-  
10          retary shall conduct a program of research, development,  
11          demonstration, and commercial application for coal and  
12          power systems, including—

13                   (A) *central systems;*

14                   (B) *sequestration research and development;*

15                   (C) *fuels;*

16                   (D) *advanced research; and*

17                   (E) *advanced separation technologies.*

18          (2) Not later than 6 months after the date of enactment  
19          of this Act, the Secretary shall transmit to the Congress a  
20          report providing—

21                   (A) *a detailed description of how proposals will*  
22                   *be solicited and evaluated;*

23                   (B) *a list of activities and technical milestones;*

24                   and

1           (C) a description of how these activities will  
2           complement and not duplicate the Clean Coal Power  
3           Initiative authorized under title V.

4           (b) OIL AND GAS RESEARCH.—The Secretary shall  
5           conduct a program of research, development, demonstration,  
6           and commercial application on oil and gas, including—

7                 (1) exploration and production;

8                 (2) gas hydrates;

9                 (3) reservoir life and extension;

10                (4) transportation and distribution infrastruc-  
11           ture;

12                (5) ultraclean fuels;

13                (6) heavy oil and oil shale; and

14                (7) environmental research.

15           (c) FUEL CELLS.—(1) In coordination with the pro-  
16           grams described in the Spark M. Matsunaga Hydrogen Re-  
17           search, Development, and Demonstration Act of 1990, as  
18           amended by subtitle H of this Act, the Secretary shall con-  
19           duct a program of research, development, demonstration,  
20           and commercial application on fuel cells for low-cost, high-  
21           efficiency, fuel-flexible, modular power systems.

22                (2) The demonstrations shall include fuel cell proton  
23           exchange membrane technology for commercial, residential,  
24           and transportation applications, and distributed genera-

1 *tion systems, utilizing improved manufacturing production*  
2 *and processes.*

3       (d) *NATURAL GAS AND OIL DEPOSITS REPORT.*—Not  
4 *later than 2 years after the date of the enactment of this*  
5 *Act, and at 2-year intervals thereafter, the Secretary of the*  
6 *Interior, in consultation with other appropriate Federal*  
7 *agencies, shall transmit a report to the Congress of the latest*  
8 *estimates of natural gas and oil reserves, reserves growth,*  
9 *and undiscovered resources in Federal and State waters off*  
10 *the coast of Louisiana and Texas.*

11       (e) *TECHNOLOGY TRANSFER.*—*To the maximum ex-*  
12 *tent practicable, existing technology transfer mechanisms*  
13 *shall be used to implement oil and gas exploration and pro-*  
14 *duction technology transfer programs.*

15 **SEC. 143. RESEARCH AND DEVELOPMENT FOR COAL MIN-**  
16 **ING TECHNOLOGIES.**

17       (a) *ESTABLISHMENT.*—*The Secretary shall carry out*  
18 *a program of research and development on coal mining*  
19 *technologies. The Secretary shall cooperate with appro-*  
20 *priate Federal agencies, coal producers, trade associations,*  
21 *equipment manufacturers, institutions of higher education*  
22 *with mining engineering departments, and other relevant*  
23 *entities.*

24       (b) *PROGRAM.*—*The research and development activi-*  
25 *ties carried out under this section shall—*

1           (1) *be based on the mining research and develop-*  
2           *ment priorities identified by the Mining Industry of*  
3           *the Future Program and in the recommendations*  
4           *from relevant reports of the National Academy of*  
5           *Sciences on mining technologies; and*

6           (2) *expand mining research capabilities at insti-*  
7           *tutions of higher education.*

8   **PART 3—ULTRA-DEEPWATER AND UNCONVEN-**  
9           **TIONAL NATURAL GAS AND OTHER PETRO-**  
10           **LEUM RESOURCES**

11 **SEC. 144. PROGRAM AUTHORITY.**

12           (a) *IN GENERAL.*—*The Secretary shall carry out a*  
13 *program under this part of research, development, dem-*  
14 *onstration, and commercial application of technologies for*  
15 *ultra-deepwater and unconventional natural gas and other*  
16 *petroleum resource exploration and production, including*  
17 *safe operations and environmental mitigation (including*  
18 *reduction of greenhouse gas emissions and sequestration of*  
19 *carbon).*

20           (b) *PROGRAM ELEMENTS.*—*The program under this*  
21 *part shall address the following areas, including improving*  
22 *safety and minimizing environmental impacts of activities*  
23 *within each area:*

24           (1) *Ultra-deepwater technology.*

25           (2) *Ultra-deepwater architecture.*

1           (3) *Unconventional natural gas and other petro-*  
2           *leum resource exploration and production technology.*

3           (c) *LIMITATION ON LOCATION OF FIELD ACTIVITIES.—*  
4           *Field activities under the program under this part shall*  
5           *be carried out only—*

6           (1) *in—*

7           (A) *areas in the territorial waters of the*  
8           *United States not under any Outer Continental*  
9           *Shelf moratorium as of September 30, 2002;*

10          (B) *areas onshore in the United States on*  
11          *public land administered by the Secretary of the*  
12          *Interior available for oil and gas leasing, where*  
13          *consistent with applicable law and land use*  
14          *plans; and*

15          (C) *areas onshore in the United States on*  
16          *State or private land, subject to applicable law;*  
17          *and*

18          (2) *with the approval of the appropriate Federal*  
19          *or State land management agency or private land*  
20          *owner.*

21          (d) *RESEARCH AT NATIONAL ENERGY TECHNOLOGY*  
22          *LABORATORY.—The Secretary, through the National En-*  
23          *ergy Technology Laboratory, shall carry out research com-*  
24          *plementary to research under subsection (b).*

1           (e) *CONSULTATION WITH SECRETARY OF THE INTE-*  
2 *RIOR.—In carrying out this part, the Secretary shall con-*  
3 *sult regularly with the Secretary of the Interior.*

4 **SEC. 145. ULTRA-DEEPWATER PROGRAM.**

5           (a) *IN GENERAL.—The Secretary shall carry out the*  
6 *activities under paragraphs (1) and (2) of section 144(b),*  
7 *to maximize the value of the ultra-deepwater natural gas*  
8 *and other petroleum resources of the United States by in-*  
9 *creasing the supply of such resources and by reducing the*  
10 *cost and increasing the efficiency of exploration for and*  
11 *production of such resources, while improving safety and*  
12 *minimizing environmental impacts.*

13           (b) *ROLE OF THE SECRETARY.—The Secretary shall*  
14 *have ultimate responsibility for, and oversight of, all aspects*  
15 *of the program under this section.*

16           (c) *ROLE OF THE PROGRAM CONSORTIUM.—*

17                   (1) *IN GENERAL.—The Secretary shall contract*  
18 *with a consortium to—*

19                           (A) *manage awards pursuant to subsection*  
20 *(f)(4);*

21                           (B) *make recommendations to the Secretary*  
22 *for project solicitations;*

23                           (C) *disburse funds awarded under sub-*  
24 *section (f) as directed by the Secretary in accord-*

1           *ance with the annual plan under subsection (e);*  
2           *and*

3                     *(D) carry out other activities assigned to*  
4           *the program consortium by this section.*

5           *(2) LIMITATION.—The Secretary may not assign*  
6           *any activities to the program consortium except as*  
7           *specifically authorized under this section.*

8           *(3) CONFLICT OF INTEREST.—(A) The Secretary*  
9           *shall establish procedures—*

10                    *(i) to ensure that each board member, offi-*  
11            *cer, or employee of the program consortium who*  
12            *is in a decisionmaking capacity under subsection*  
13            *(f)(3) or (4) shall disclose to the Secretary any*  
14            *financial interests in, or financial relationships*  
15            *with, applicants for or recipients of awards*  
16            *under this section, including those of his or her*  
17            *spouse or minor child, unless such relationships*  
18            *or interests would be considered to be remote or*  
19            *inconsequential; and*

20                    *(ii) to require any board member, officer, or*  
21            *employee with a financial relationship or inter-*  
22            *est disclosed under clause (i) to recuse himself or*  
23            *herself from any review under subsection (f)(3)*  
24            *or oversight under subsection (f)(4) with respect*  
25            *to such applicant or recipient.*

1           (B) *The Secretary may disqualify an applica-*  
2           *tion or revoke an award under this section if a board*  
3           *member, officer, or employee has failed to comply*  
4           *with procedures required under subparagraph (A)(ii).*

5           (d) *SELECTION OF THE PROGRAM CONSORTIUM.—*

6           (1) *IN GENERAL.—The Secretary shall select the*  
7           *program consortium through an open, competitive*  
8           *process.*

9           (2) *MEMBERS.—The program consortium may*  
10           *include corporations, institutions of higher education,*  
11           *National Laboratories, or other research institutions.*  
12           *After submitting a proposal under paragraph (4), the*  
13           *program consortium may not add members without*  
14           *the consent of the Secretary.*

15           (3) *TAX STATUS.—The program consortium shall*  
16           *be an entity that is exempt from tax under section*  
17           *501(c)(3) of the Internal Revenue Code of 1986.*

18           (4) *SCHEDULE.—Not later than 90 days after*  
19           *the date of enactment of this Act, the Secretary shall*  
20           *solicit proposals for the creation of the program con-*  
21           *sortium, which must be submitted not less than 180*  
22           *days after the date of enactment of this Act. The Sec-*  
23           *retary shall select the program consortium not later*  
24           *than 240 days after such date of enactment.*

1           (5) *APPLICATION.*—*Applicants shall submit a*  
2           *proposal including such information as the Secretary*  
3           *may require. At a minimum, each proposal shall—*

4                   (A) *list all members of the consortium;*

5                   (B) *fully describe the structure of the con-*  
6                   *sortium, including any provisions relating to in-*  
7                   *tellectual property; and*

8                   (C) *describe how the applicant would carry*  
9                   *out the activities of the program consortium*  
10                  *under this section.*

11           (6) *ELIGIBILITY.*—*To be eligible to be selected as*  
12           *the program consortium, an applicant must be an en-*  
13           *tity whose members collectively have demonstrated ca-*  
14           *pabilities in planning and managing research, devel-*  
15           *opment, demonstration, and commercial application*  
16           *programs in natural gas or other petroleum explo-*  
17           *ration or production.*

18           (7) *CRITERION.*—*The Secretary may consider the*  
19           *amount of the fee an applicant proposes to receive*  
20           *under subsection (g) in selecting a consortium under*  
21           *this section.*

22           (e) *ANNUAL PLAN.*—

23                   (1) *IN GENERAL.*—*The program under this sec-*  
24                   *tion shall be carried out pursuant to an annual plan*

1       *prepared by the Secretary in accordance with para-*  
2       *graph (2).*

3               (2) *DEVELOPMENT.*—(A) *Before drafting an an-*  
4       *nuual plan under this subsection, the Secretary shall*  
5       *solicit specific written recommendations from the pro-*  
6       *gram consortium for each element to be addressed in*  
7       *the plan, including those described in paragraph (4).*  
8       *The Secretary may request that the program consor-*  
9       *tium submit its recommendations in the form of a*  
10       *draft annual plan.*

11              (B) *The Secretary shall submit the recommenda-*  
12       *tions of the program consortium under subparagraph*  
13       *(A) to the Ultra-Deepwater Advisory Committee es-*  
14       *tablished under section 148(a) for review, and such*  
15       *Advisory Committee shall provide to the Secretary*  
16       *written comments by a date determined by the Sec-*  
17       *retary. The Secretary may also solicit comments from*  
18       *any other experts.*

19              (C) *The Secretary shall consult regularly with*  
20       *the program consortium throughout the preparation*  
21       *of the annual plan.*

22              (3) *PUBLICATION.*—*The Secretary shall transmit*  
23       *to the Congress and publish in the Federal Register*  
24       *the annual plan, along with any written comments*  
25       *received under paragraph (2)(A) and (B). The annual*

1     *plan shall be transmitted and published not later*  
2     *than 60 days after the date of enactment of an Act*  
3     *making appropriations for a fiscal year for the pro-*  
4     *gram under this section.*

5             (4) *CONTENTS.*—*The annual plan shall describe*  
6     *the ongoing and prospective activities of the program*  
7     *under this section and shall include—*

8             (A) *a list of any solicitations for awards*  
9             *that the Secretary plans to issue to carry out re-*  
10            *search, development, demonstration, or commer-*  
11            *cial application activities, including the topics*  
12            *for such work, who would be eligible to apply, se-*  
13            *lection criteria, and the duration of awards; and*

14            (B) *a description of the activities expected*  
15            *of the program consortium to carry out sub-*  
16            *section (f)(4).*

17     (f) *AWARDS.*—

18             (1) *IN GENERAL.*—*The Secretary shall make*  
19     *awards to carry out research, development, dem-*  
20     *onstration, and commercial application activities*  
21     *under the program under this section. The program*  
22     *consortium shall not be eligible to receive such*  
23     *awards, but members of the program consortium may*  
24     *receive such awards.*

1           (2) *PROPOSALS.*—*The Secretary shall solicit pro-*  
2           *posals for awards under this subsection in such man-*  
3           *ner and at such time as the Secretary may prescribe,*  
4           *in consultation with the program consortium.*

5           (3) *REVIEW.*—*The Secretary shall make awards*  
6           *under this subsection through a competitive process,*  
7           *which shall include a review by individuals selected*  
8           *by the Secretary. Such individuals shall include, for*  
9           *each application, Federal officials, the program con-*  
10          *sortium, and non-Federal experts who are not board*  
11          *members, officers, or employees of the program consor-*  
12          *tium or of a member of the program consortium.*

13          (4) *OVERSIGHT.*—(A) *The program consortium*  
14          *shall oversee the implementation of awards under this*  
15          *subsection, consistent with the annual plan under*  
16          *subsection (e), including disbursing funds and moni-*  
17          *toring activities carried out under such awards for*  
18          *compliance with the terms and conditions of the*  
19          *awards.*

20          (B) *Nothing in subparagraph (A) shall limit the*  
21          *authority or responsibility of the Secretary to oversee*  
22          *awards, or limit the authority of the Secretary to re-*  
23          *view or revoke awards.*

24          (C) *The Secretary shall provide to the program*  
25          *consortium the information necessary for the program*

1       *consortium to carry out its responsibilities under this*  
2       *paragraph.*

3       *(g) FEE.—*

4             *(1) IN GENERAL.—To compensate the program*  
5       *consortium for carrying out its activities under this*  
6       *section, the Secretary shall provide to the program*  
7       *consortium a fee in an amount not to exceed 7.5 per-*  
8       *cent of the amounts awarded under subsection (f) for*  
9       *each fiscal year.*

10            *(2) ADVANCE.—The Secretary shall advance*  
11       *funds to the program consortium upon selection of the*  
12       *consortium, which shall be deducted from amounts to*  
13       *be provided under paragraph (1).*

14        *(h) AUDIT.—The Secretary shall retain an inde-*  
15       *pendent, commercial auditor to determine the extent to*  
16       *which funds provided to the program consortium, and funds*  
17       *provided under awards made under subsection (f), have*  
18       *been expended in a manner consistent with the purposes*  
19       *and requirements of this part. The auditor shall transmit*  
20       *a report annually to the Secretary, who shall transmit the*  
21       *report to Congress, along with a plan to remedy any defi-*  
22       *ciencies cited in the report.*

1 **SEC. 146. UNCONVENTIONAL NATURAL GAS AND OTHER PE-**  
2 **TROLEUM RESOURCES PROGRAM.**

3 (a) *IN GENERAL.*—*The Secretary shall carry out ac-*  
4 *tivities under section 144(b)(3), to maximize the value of*  
5 *the onshore unconventional natural gas and other petroleum*  
6 *resources of the United States by increasing the supply of*  
7 *such resources and by reducing the cost and increasing the*  
8 *efficiency of exploration for and production of such re-*  
9 *sources, while improving safety and minimizing environ-*  
10 *mental impacts.*

11 (b) *AWARDS.*—

12 (1) *IN GENERAL.*—*The Secretary shall carry out*  
13 *this section through awards made through an open,*  
14 *competitive process.*

15 (2) *CONSORTIA.*—*In carrying out paragraph (1),*  
16 *the Secretary shall give preference to making awards*  
17 *to consortia.*

18 (c) *AUDIT.*—*The Secretary shall retain an inde-*  
19 *pendent, commercial auditor to determine the extent to*  
20 *which funds provided under awards made under this sec-*  
21 *tion have been expended in a manner consistent with the*  
22 *purposes and requirements of this part. The auditor shall*  
23 *transmit a report annually to the Secretary, who shall*  
24 *transmit the report to Congress, along with a plan to rem-*  
25 *edy any deficiencies cited in the report.*

1           (d) *FOCUS AREAS.*—Awards under this section may  
2 focus on areas including advanced coal-bed methane, deep  
3 drilling, natural gas production from tight sands, natural  
4 gas production from gas shales, innovative exploration and  
5 production techniques, enhanced recovery techniques, and  
6 environmental mitigation of unconventional natural gas  
7 and other petroleum resources exploration and production.

8           (e) *ACTIVITIES BY THE UNITED STATES GEOLOGICAL*  
9 *SURVEY.*—The Secretary of the Interior, through the United  
10 States Geological Survey, shall, where appropriate, carry  
11 out programs of long-term research to complement the pro-  
12 grams under this section.

13 **SEC. 147. ADDITIONAL REQUIREMENTS FOR AWARDS.**

14           (a) *DEMONSTRATION PROJECTS.*—An application for  
15 an award under this part for a demonstration project shall  
16 describe with specificity the intended commercial use of the  
17 technology to be demonstrated.

18           (b) *FLEXIBILITY IN LOCATING DEMONSTRATION*  
19 *PROJECTS.*—Subject to the limitation in section 144(c), a  
20 demonstration project under this part relating to an ultra-  
21 deepwater technology or an ultra-deepwater architecture  
22 may be conducted in deepwater depths.

23           (c) *INTELLECTUAL PROPERTY AGREEMENTS.*—If an  
24 award under this part is made to a consortium (other than  
25 the program consortium), the consortium shall provide to

1 *the Secretary a signed contract agreed to by all members*  
2 *of the consortium describing the rights of each member to*  
3 *intellectual property used or developed under the award.*

4 (d) *TECHNOLOGY TRANSFER.—Each recipient of an*  
5 *award under this part shall conduct technology transfer ac-*  
6 *tivities, as appropriate, and outreach activities pursuant*  
7 *to section 192.*

8 (e) *COST-SHARING REDUCTION FOR INDEPENDENT*  
9 *PRODUCERS.—In applying the cost-sharing requirements*  
10 *under section 185 to an award under this part made solely*  
11 *to an independent producer of oil or gas, the Secretary may*  
12 *reduce the applicable non-Federal requirement in such sec-*  
13 *tion to a level not less than 10 percent of the cost of the*  
14 *project.*

15 **SEC. 148. ADVISORY COMMITTEES.**

16 (a) *ULTRA-DEEPWATER ADVISORY COMMITTEE.—*

17 (1) *ESTABLISHMENT.—Not later than 270 days*  
18 *after the date of enactment of this section, the Sec-*  
19 *retary shall establish an advisory committee to be*  
20 *known as the Ultra-Deepwater Advisory Committee.*

21 (2) *MEMBERSHIP.—The advisory committee*  
22 *under this subsection shall be composed of members*  
23 *appointed by the Secretary and including—*

24 (A) *individuals with extensive research ex-*  
25 *perience or operational knowledge of offshore*

1           *natural gas and other petroleum exploration and*  
2           *production;*

3           *(B) individuals broadly representative of*  
4           *the affected interests in ultra-deepwater natural*  
5           *gas and other petroleum production, including*  
6           *interests in environmental protection and safe*  
7           *operations;*

8           *(C) no individuals who are Federal employ-*  
9           *ees; and*

10           *(D) no individuals who are board members,*  
11           *officers, or employees of the program consortium.*

12           *(3) DUTIES.—The advisory committee under this*  
13           *subsection shall—*

14           *(A) advise the Secretary on the development*  
15           *and implementation of programs under this part*  
16           *related to ultra-deepwater natural gas and other*  
17           *petroleum resources; and*

18           *(B) carry out section 145(e)(2)(B).*

19           *(4) COMPENSATION.—A member of the advisory*  
20           *committee under this subsection shall serve without*  
21           *compensation but shall receive travel expenses, includ-*  
22           *ing per diem in lieu of subsistence, in accordance*  
23           *with applicable provisions under subchapter I of*  
24           *chapter 57 of title 5, United States Code.*

1       (b) *UNCONVENTIONAL RESOURCES TECHNOLOGY AD-*  
2 *VISORY COMMITTEE.*—

3           (1) *ESTABLISHMENT.*—*Not later than 270 days*  
4 *after the date of enactment of this section, the Sec-*  
5 *retary shall establish an advisory committee to be*  
6 *known as the Unconventional Resources Technology*  
7 *Advisory Committee.*

8           (2) *MEMBERSHIP.*—*The advisory committee*  
9 *under this subsection shall be composed of members*  
10 *appointed by the Secretary and including—*

11           (A) *individuals with extensive research ex-*  
12 *perience or operational knowledge of unconven-*  
13 *tional natural gas and other petroleum resource*  
14 *exploration and production, including inde-*  
15 *pendent oil and gas producers;*

16           (B) *individuals broadly representative of*  
17 *the affected interests in unconventional natural*  
18 *gas and other petroleum resource exploration*  
19 *and production, including interests in environ-*  
20 *mental protection and safe operations; and*

21           (C) *no individuals who are Federal employ-*  
22 *ees.*

23           (3) *DUTIES.*—*The advisory committee under this*  
24 *subsection shall advise the Secretary on the develop-*  
25 *ment and implementation of activities under this*

1       *part related to unconventional natural gas and other*  
2       *petroleum resources.*

3           (4) *COMPENSATION.*—*A member of the advisory*  
4       *committee under this subsection shall serve without*  
5       *compensation but shall receive travel expenses, includ-*  
6       *ing per diem in lieu of subsistence, in accordance*  
7       *with applicable provisions under subchapter I of*  
8       *chapter 57 of title 5, United States Code.*

9           (c) *PROHIBITION.*—*No advisory committee established*  
10      *under this section shall make recommendations on funding*  
11      *awards to consortia or for specific projects.*

12      **SEC. 149. LIMITS ON PARTICIPATION.**

13           (a) *IN GENERAL.*—*An entity shall be eligible to receive*  
14      *an award under this part only if the Secretary finds—*

15           (1) *that the entity's participation in the pro-*  
16      *gram under this part would be in the economic inter-*  
17      *est of the United States; and*

18           (2) *that either—*

19           (A) *the entity is a United States-owned en-*  
20      *tity organized under the laws of the United*  
21      *States; or*

22           (B) *the entity is organized under the laws*  
23      *of the United States and has a parent entity or-*  
24      *ganized under the laws of a country which af-*  
25      *fords—*

1                   (i) to United States-owned entities op-  
2                   portunities, comparable to those afforded to  
3                   any other entity, to participate in any co-  
4                   operative research venture similar to those  
5                   authorized under this part;

6                   (ii) to United States-owned entities  
7                   local investment opportunities comparable  
8                   to those afforded to any other entity; and

9                   (iii) adequate and effective protection  
10                  for the intellectual property rights of United  
11                  States-owned entities.

12               (b) *SENSE OF CONGRESS AND REPORT.*—It is the  
13               Sense of the Congress that ultra-deepwater technology devel-  
14               oped under this part is to be developed primarily for pro-  
15               duction of ultra-deepwater natural gas and other petroleum  
16               resources of the United States, and that this priority is to  
17               be reflected in the terms of grants, contracts, and coopera-  
18               tive agreements entered under this part. As part of the an-  
19               nual Departmental budget submission, the Secretary shall  
20               report on all steps taken to implement the policy described  
21               in this subsection.

22               **SEC. 150. FUND.**

23               There is hereby established in the Treasury of the  
24               United States a separate fund to be known as the “Ultra-

1 *Deepwater and Unconventional Natural Gas and Other Pe-*  
2 *troleum Research Fund”.*

3 **SEC. 150A. TRANSFER OF ADVANCED OIL AND GAS EXPLO-**  
4 **RATION AND PRODUCTION TECHNOLOGIES.**

5 (a) *ASSESSMENT.*—*The Secretary shall review tech-*  
6 *nology programs throughout the Federal Government to as-*  
7 *sess the suitability of technologies developed thereunder for*  
8 *use in ultradeep drilling research, development, demonstra-*  
9 *tion, and commercial application.*

10 (b) *TECHNOLOGY TRANSFER.*—*Not later than 1 year*  
11 *after the date of enactment of this Act, the Secretary shall*  
12 *issue a solicitation seeking organizations knowledgeable of*  
13 *the technology needs of the ultradeep drilling industry. The*  
14 *Secretary shall select the most qualified applicant to man-*  
15 *age a program to transfer technologies the Secretary deter-*  
16 *mines suitable under subsection (a) to appropriate entities.*  
17 *The organization selected under section 145(d) shall not be*  
18 *eligible for selection under this subsection.*

19 (c) *FUNDING.*—*From the funds available under section*  
20 *141(b)(3)(C), \$1,000,000 shall be available to carry out this*  
21 *section in each of the fiscal years 2004 through 2007.*

22 **SEC. 151. SUNSET.**

23 *The authority provided by this part shall terminate*  
24 *on September 30, 2010.*

1 **SEC. 152. DEFINITIONS.**

2 *In this part:*

3 (1) *DEEPWATER.*—*The term “deepwater” means*  
4 *a water depth that is greater than 200 but less than*  
5 *1,500 meters.*

6 (2) *PROGRAM CONSORTIUM.*—*The term “pro-*  
7 *gram consortium” means the consortium selected*  
8 *under section 145(d).*

9 (3) *REMOTE OR INCONSEQUENTIAL.*—*The term*  
10 *“remote or inconsequential” has the meaning given*  
11 *that term in regulations issued by the Office of Gov-*  
12 *ernment Ethics under section 208(b)(2) of title 18,*  
13 *United States Code.*

14 (4) *ULTRA-DEEPWATER.*—*The term “ultra-deep-*  
15 *water” means a water depth that is equal to or great-*  
16 *er than 1,500 meters.*

17 (5) *ULTRA-DEEPWATER ARCHITECTURE.*—*The*  
18 *term “ultra-deepwater architecture” means the inte-*  
19 *gration of technologies for the exploration for, or pro-*  
20 *duction of, natural gas or other petroleum resources*  
21 *located at ultra-deepwater depths.*

22 (6) *ULTRA-DEEPWATER TECHNOLOGY.*—*The term*  
23 *“ultra-deepwater technology” means a discrete tech-*  
24 *nology that is specially suited to address one or more*  
25 *challenges associated with the exploration for, or pro-*

1        *duction of, natural gas or other petroleum resources*  
 2        *located at ultra-deepwater depths.*

3                (7) *UNCONVENTIONAL NATURAL GAS AND OTHER*  
 4        *PETROLEUM RESOURCE.—The term “unconventional*  
 5        *natural gas and other petroleum resource” means nat-*  
 6        *ural gas and other petroleum resource located onshore*  
 7        *in an economically inaccessible geological formation.*

## 8                ***Subtitle F—Science***

### 9        ***PART 1—AUTHORIZATION OF APPROPRIATIONS***

#### 10        ***SEC. 161. SCIENCE.***

11                (a) *IN GENERAL.—The following sums are authorized*  
 12        *to be appropriated to the Secretary for research, develop-*  
 13        *ment, demonstration, and commercial application activities*  
 14        *of the Office of Science, including activities authorized*  
 15        *under this subtitle, including the amounts authorized under*  
 16        *the amendment made by section 170(c)(2)(C), and includ-*  
 17        *ing basic energy sciences, advanced scientific and com-*  
 18        *puting research, biological and environmental research, fu-*  
 19        *sion energy sciences, high energy physics, nuclear physics,*  
 20        *and research analysis and infrastructure support:*

21                (1) *For fiscal year 2004, \$3,785,000,000.*

22                (2) *For fiscal year 2005, \$4,153,000,000.*

23                (3) *For fiscal year 2006, \$4,618,000,000.*

24                (4) *For fiscal year 2007, \$5,310,000,000.*

1           (b) *ALLOCATIONS.—From amounts authorized under*  
2 *subsection (a), the following sums are authorized:*

3           (1) *FUSION ENERGY SCIENCES.—(A) For the Fu-*  
4 *sion Energy Sciences Program, excluding activities*  
5 *under sections 161A and 162—*

6                   (i) *for fiscal year 2004, \$276,000,000;*

7                   (ii) *for fiscal year 2005, \$300,000,000;*

8                   (iii) *for fiscal year 2006, \$340,000,000; and*

9                   (iv) *for fiscal year 2007, \$350,000,000.*

10           (B) *For activities under section 161A and for the*  
11 *project described in section 162—*

12                   (i) *for fiscal year 2004, \$12,000,000;*

13                   (ii) *for fiscal year 2005, \$20,000,000;*

14                   (iii) *for fiscal year 2006, \$50,000,000; and*

15                   (iv) *for fiscal year 2007, \$75,000,000.*

16           (2) *SPALLATION NEUTRON SOURCE.—*

17           (A) *CONSTRUCTION.—For construction of*  
18 *the Spallation Neutron Source—*

19                   (i) *for fiscal year 2004, \$124,600,000;*

20                   (ii) *for fiscal year 2005, \$79,800,000;*

21                   *and*

22                   (iii) *for fiscal year 2006, \$41,100,000*

23 *for completion of construction.*

24           (B) *OTHER PROJECT FUNDING.—For other*  
25 *project costs (including research and development*

1           *necessary to complete the project, preoperations*  
2           *costs, and capital equipment related to construc-*  
3           *tion) of the Spallation Neutron Source,*  
4           *\$103,279,000 for the period encompassing fiscal*  
5           *years 2003 through 2006, to remain available*  
6           *until expended through September 30, 2006.*

7           (3) *NANOTECHNOLOGY RESEARCH AND DEVELOP-*  
8           *MENT.—For activities under section 169—*

9                     *(A) for fiscal year 2004, \$265,000,000;*

10                    *(B) for fiscal year 2005, \$292,000,000;*

11                    *(C) for fiscal year 2006, \$322,000,000; and*

12                    *(D) for fiscal year 2007, \$355,000,000.*

13           (4) *GENOMES TO LIFE.—*

14                    *(A) TOTAL AUTHORIZATION.—For activities*  
15                    *under section 170B—*

16                            *(i) \$100,000,000 for fiscal year 2004;*

17                            *and*

18                            *(ii) such sums as may be necessary for*  
19                            *fiscal years 2005 through 2007.*

20                    *(B) USER FACILITIES AND ANCILLARY*  
21                    *EQUIPMENT.—From the amounts authorized*  
22                    *under subparagraph (A), the following sums are*  
23                    *authorized to be appropriated to carry out sec-*  
24                    *tion 170B(e)—*

1                   (i) \$16,000,000 for fiscal year 2004;

2                   and

3                   (ii) such sums as may be necessary for

4                   fiscal years 2005 through 2007.

5                   (5) **SCIENCE AND TECHNOLOGY SCHOLARSHIP**

6                   **PROGRAM.**—*For activities under section 170C—*

7                   (A) for fiscal year 2004, \$800,000;

8                   (B) for fiscal year 2005, \$1,600,000;

9                   (C) for fiscal year 2006, \$2,000,000; and

10                  (D) for fiscal year 2007, \$2,000,000.

11                  (c) **LIMITS ON USE OF FUNDS.**—*Of the funds author-*

12 *ized under subsection (b)(1), no funds shall be available for*

13 *implementation of the plan described in section 162.*

14                   **PART 2—FUSION ENERGY SCIENCES**

15                   **SEC. 161A. ITER.**

16                  (a) **IN GENERAL.**—*The United States is authorized to*

17 *participate in ITER in accordance with the provisions of*

18 *this section.*

19                  (b) **AGREEMENT.**—(1) *The Secretary is authorized to*

20 *negotiate an agreement for United States participation in*

21 *ITER.*

22                  (2) *Any agreement for United States participation in*  
23 *ITER shall, at a minimum—*

24                   (A) *clearly define the United States financial*

25 *contribution to construction and operating costs;*

1           (B) ensure that the share of ITER's high-tech-  
2           nology components manufactured in the United  
3           States is at least proportionate to the United States  
4           financial contribution to ITER;

5           (C) ensure that the United States will not be fi-  
6           nancially responsible for cost overruns in components  
7           manufactured in other ITER participating countries;

8           (D) guarantee the United States full access to all  
9           data generated by ITER;

10          (E) enable United States researchers to propose  
11          and carry out an equitable share of the experiments  
12          at ITER;

13          (F) provide the United States with a role in all  
14          collective decisionmaking related to ITER; and

15          (G) describe the process for discontinuing or de-  
16          commissioning ITER and any United States role in  
17          those processes.

18          (c) *PLAN.*—The Secretary, in consultation with the  
19          Fusion Energy Sciences Advisory Committee, shall develop  
20          a plan for the participation of United States scientists in  
21          ITER that shall include the United States research agenda  
22          for ITER, methods to evaluate whether ITER is promoting  
23          progress toward making fusion a reliable and affordable  
24          source of power, and a description of how work at ITER  
25          will relate to other elements of the United States fusion pro-

1 *gram. The Secretary shall request a review of the plan by*  
2 *the National Academy of Sciences.*

3 (d) *LIMITATION.*—*No funds shall be expended for the*  
4 *construction of ITER until the Secretary has transmitted*  
5 *to the Congress—*

6 (1) *the agreement negotiated pursuant to sub-*  
7 *section (b) and 120 days have elapsed since that*  
8 *transmission;*

9 (2) *a report describing the management structure*  
10 *of ITER and providing a fixed dollar estimate of the*  
11 *cost of United States participation in the construc-*  
12 *tion of ITER, and 120 days have elapsed since that*  
13 *transmission;*

14 (3) *a report describing how United States par-*  
15 *ticipation in ITER will be funded without reducing*  
16 *funding for other programs in the Office of Science,*  
17 *including other fusion programs, and 60 days have*  
18 *elapsed since that transmission; and*

19 (4) *the plan required by subsection (c) (but not*  
20 *the National Academy of Sciences review of that*  
21 *plan), and 60 days have elapsed since that trans-*  
22 *mission.*

23 (e) *DEFINITIONS.*—*In this section—*

24 (1) *the term “construction” means the physical*  
25 *construction of the ITER facility, and the physical*

1        *construction, purchase, or manufacture of equipment*  
2        *or components that are specifically designed for the*  
3        *ITER facility, but does not mean the design of the fa-*  
4        *cility, equipment, or components; and*

5                *(2) the term “ITER” means the international*  
6        *burning plasma fusion research project in which the*  
7        *President announced United States participation on*  
8        *January 30, 2003.*

9        **SEC. 162. PLAN FOR FUSION EXPERIMENT.**

10        *(a) IN GENERAL.—If at any time during the negotia-*  
11        *tions on ITER, the Secretary determines that construction*  
12        *and operation of ITER is unlikely or infeasible, the Sec-*  
13        *retary shall send to Congress, as part of the budget request*  
14        *for the following year, a plan for implementing the domestic*  
15        *burning plasma experiment known as FIRE, including*  
16        *costs and schedules for such a plan. The Secretary shall re-*  
17        *fine such plan in full consultation with the Fusion Energy*  
18        *Sciences Advisory Committee and shall also transmit such*  
19        *plan to the National Academy of Sciences for review.*

20        *(b) DEFINITIONS.—As used in this section—*

21                *(1) the term “ITER” has the meaning given that*  
22        *term in section 161A; and*

23                *(2) the term “FIRE” means the Fusion Ignition*  
24        *Research Experiment, the fusion research experiment*  
25        *for which design work has been supported by the De-*

1        *partment as a possible alternative burning plasma ex-*  
2        *periment in the event that ITER fails to move for-*  
3        *ward.*

4        **SEC. 163. PLAN FOR FUSION ENERGY SCIENCES PROGRAM.**

5        (a) *DECLARATION OF POLICY.*—*It shall be the policy*  
6        *of the United States to conduct research, development, dem-*  
7        *onstration, and commercial application to provide for the*  
8        *scientific, engineering, and commercial infrastructure nec-*  
9        *essary to ensure that the United States is competitive with*  
10       *other nations in providing fusion energy for its own needs*  
11       *and the needs of other nations, including by demonstrating*  
12       *electric power or hydrogen production for the United States*  
13       *energy grid utilizing fusion energy at the earliest date pos-*  
14       *sible.*

15       (b) *FUSION ENERGY PLAN.*—

16            (1) *IN GENERAL.*—*Within 6 months after the*  
17        *date of enactment of this Act, the Secretary shall*  
18        *transmit to Congress a plan for carrying out the pol-*  
19        *icy set forth in subsection (a), including cost esti-*  
20        *mates, proposed budgets, potential international part-*  
21        *ners, and specific programs for implementing such*  
22        *policy.*

23            (2) *REQUIREMENTS OF PLAN.*—*Such plan shall*  
24        *also ensure that—*

1           (A) existing fusion research facilities are  
2 more fully utilized;

3           (B) fusion science, technology, theory, ad-  
4 vanced computation, modeling, and simulation  
5 are strengthened;

6           (C) new magnetic and inertial fusion re-  
7 search facilities are selected based on scientific  
8 innovation, cost effectiveness, and their potential  
9 to advance the goal of practical fusion energy at  
10 the earliest date possible;

11          (D) such facilities that are selected are  
12 funded at a cost-effective rate;

13          (E) communication of scientific results and  
14 methods between the fusion energy science com-  
15 munity and the broader scientific and technology  
16 communities is improved;

17          (F) inertial confinement fusion facilities are  
18 utilized to the extent practicable for the purpose  
19 of inertial fusion energy research and develop-  
20 ment; and

21          (G) attractive alternative inertial and mag-  
22 netic fusion energy approaches are more fully ex-  
23 plored.

24           (3) REPORT ON FUSION MATERIALS AND TECH-  
25 NOLOGY PROJECT.—In addition, the plan required by

1        *this subsection shall also address the status of, and to*  
2        *the degree possible, the costs and schedules for—*

3                    *(A) the design and implementation of inter-*  
4                    *national or national facilities for the testing of*  
5                    *fusion materials; and*

6                    *(B) the design and implementation of inter-*  
7                    *national or national facilities for the testing and*  
8                    *development of key fusion technologies.*

9                    **PART 3—SPALLATION NEUTRON SOURCE**

10        **SEC. 164. DEFINITION.**

11                    *For the purposes of this part, the term “Spallation*  
12        *Neutron Source” means Department Project 99–E–334,*  
13        *Oak Ridge National Laboratory, Oak Ridge, Tennessee.*

14        **SEC. 165. REPORT.**

15                    *The Secretary shall report on the Spallation Neutron*  
16        *Source as part of the Department’s annual budget submis-*  
17        *sion, including a description of the achievement of mile-*  
18        *stones, a comparison of actual costs to estimated costs, and*  
19        *any changes in estimated project costs or schedule.*

20        **SEC. 166. LIMITATIONS.**

21                    *The total amount obligated by the Department, includ-*  
22        *ing prior year appropriations, for the Spallation Neutron*  
23        *Source may not exceed—*

24                    *(1) \$1,192,700,000 for costs of construction;*

25                    *(2) \$219,000,000 for other project costs; and*

1           (3) \$1,411,700,000 for total project cost.

2                           **PART 4—MISCELLANEOUS**

3   **SEC. 167. FACILITY AND INFRASTRUCTURE SUPPORT FOR**  
4                           **NONMILITARY ENERGY LABORATORIES.**

5           (a) *FACILITY POLICY.*—*The Secretary shall develop*  
6 *and implement a strategy for the nonmilitary energy lab-*  
7 *oratories and facilities of the Office of Science. Such strat-*  
8 *egy shall provide a cost-effective means for—*

9                   (1) *maintaining existing facilities and infra-*  
10 *structure, as needed;*

11                   (2) *closing unneeded facilities;*

12                   (3) *making facility modifications; and*

13                   (4) *building new facilities.*

14           (b) *REPORT.*—

15                   (1) *TRANSMITTAL.*—*The Secretary shall prepare*  
16 *and transmit, along with the President’s budget re-*  
17 *quest to the Congress for fiscal year 2005, a report*  
18 *containing the strategy developed under subsection*  
19 *(a).*

20                   (2) *CONTENTS.*—*For each nonmilitary energy*  
21 *laboratory and facility, such report shall contain—*

22                           (A) *the current priority list of proposed fa-*  
23 *cilities and infrastructure projects, including*  
24 *cost and schedule requirements;*

1           (B) a current ten-year plan that dem-  
2           onstrates the reconfiguration of its facilities and  
3           infrastructure to meet its missions and to ad-  
4           dress its long-term operational costs and return  
5           on investment;

6           (C) the total current budget for all facilities  
7           and infrastructure funding; and

8           (D) the current status of each facilities and  
9           infrastructure project compared to the original  
10          baseline cost, schedule, and scope.

11 **SEC. 168. RESEARCH REGARDING PRECIOUS METAL CATAL-**  
12 **YSIS.**

13          From the amounts authorized to be appropriated to  
14          the Secretary under section 161, such sums as may be nec-  
15          essary for each of the fiscal years 2004, 2005, and 2006  
16          may be used to carry out research in the use of precious  
17          metals (excluding platinum, palladium, and rhodium) in  
18          catalysis.

19 **SEC. 169. NANOTECHNOLOGY RESEARCH AND DEVELOP-**  
20 **MENT.**

21          (a) *IN GENERAL.*—The Secretary, acting through the  
22          Office of Science, shall implement a Nanotechnology Re-  
23          search and Development Program to promote  
24          nanotechnology research, development, demonstration, edu-  
25          cation, technology transfer, and commercial application ac-

1 *tivities as necessary to ensure continued United States lead-*  
2 *ership in nanotechnology across scientific and engineering*  
3 *disciplines.*

4 (b) *PROGRAM ACTIVITIES.*—*The activities of the*  
5 *Nanotechnology Research and Development Program shall*  
6 *be designed to—*

7 (1) *provide sustained support for nanotechnology*  
8 *research and development through—*

9 (A) *grants to individual investigators and*  
10 *interdisciplinary teams of investigators; and*

11 (B) *establishment of interdisciplinary re-*  
12 *search centers and advanced technology user fa-*  
13 *cilities;*

14 (2) *ensure that solicitation and evaluation of*  
15 *proposals under the Program encourage interdiscipli-*  
16 *nary research;*

17 (3) *expand education and training of under-*  
18 *graduate and graduate students in interdisciplinary*  
19 *nanotechnology science and engineering;*

20 (4) *accelerate the commercial application of*  
21 *nanotechnology innovations in the private sector;*

22 (5) *ensure that societal and ethical concerns will*  
23 *be addressed as the technology is developed by—*

24 (A) *establishing a research program to iden-*  
25 *tify societal and ethical concerns related to*

1           *nanotechnology, and ensuring that the results of*  
2           *such research are widely disseminated; and*

3                   *(B) integrating, insofar as possible, research*  
4           *on societal and ethical concerns with*  
5           *nanotechnology research and development; and*

6           *(6) ensure that the potential of nanotechnology to*  
7           *produce or facilitate the production of clean, inexpen-*  
8           *sive energy is realized by supporting nanotechnology*  
9           *energy applications research and development.*

10          *(c) DEFINITIONS.—For the purposes of this section—*

11                   *(1) the term “nanotechnology” means science*  
12           *and engineering aimed at creating materials, devices,*  
13           *and systems at the atomic and molecular level; and*

14                   *(2) the term “advanced technology user facility”*  
15           *means a nanotechnology research and development fa-*  
16           *cility supported, in whole or in part, by Federal*  
17           *funds that is open to all United States researchers on*  
18           *a competitive, merit-reviewed basis.*

19          *(d) REPORT.—Within 2 years after the date of enact-*  
20          *ment of this Act, the Secretary shall transmit to the Con-*  
21          *gress a report describing the projects to identify societal and*  
22          *ethical concerns related to nanotechnology and the funding*  
23          *provided to support these projects.*

1 **SEC. 170. ADVANCED SCIENTIFIC COMPUTING FOR ENERGY**  
2 **MISSIONS.**

3 (a) *IN GENERAL.*—*The Secretary, acting through the*  
4 *Office of Science, shall support a program to advance the*  
5 *Nation’s computing capability across a diverse set of grand*  
6 *challenge computationally based science problems related to*  
7 *departmental missions.*

8 (b) *DUTIES OF THE OFFICE OF SCIENCE.*—*In car-*  
9 *rying out the program under this section, the Office of*  
10 *Science shall—*

11 (1) *advance basic science through computation*  
12 *by developing software to solve grand challenge*  
13 *science problems on new generations of computing*  
14 *platforms;*

15 (2) *enhance the foundations for scientific com-*  
16 *puting by developing the basic mathematical and*  
17 *computing systems software needed to take full advan-*  
18 *tage of the computing capabilities of computers with*  
19 *peak speeds of 100 teraflops or more, some of which*  
20 *may be unique to the scientific problem of interest;*

21 (3) *enhance national collaboratory and net-*  
22 *working capabilities by developing software to inte-*  
23 *grate geographically separated researchers into effec-*  
24 *tive research teams and to facilitate access to and*  
25 *movement and analysis of large (petabyte) data sets;*

1           (4) *develop and maintain a robust scientific*  
2           *computing hardware infrastructure to ensure that the*  
3           *computing resources needed to address departmental*  
4           *missions are available; and*

5           (5) *explore new computing approaches and tech-*  
6           *nologies that promise to advance scientific computing.*

7           (c) *HIGH-PERFORMANCE COMPUTING ACT OF 1991*  
8 *AMENDMENTS.—The High-Performance Computing Act of*  
9 *1991 is amended—*

10           (1) *in section 4 (15 U.S.C. 5503)—*

11           (A) *in paragraph (3)—*

12           (i) *by striking “means” and inserting*  
13           *“and ‘networking and information tech-*  
14           *nology’ mean”; and*

15           (ii) *by striking “(including vector*  
16           *supercomputers and large scale parallel sys-*  
17           *tems)”; and*

18           (B) *in paragraph (4), by striking “packet*  
19           *switched”; and*

20           (2) *in section 203 (15 U.S.C. 5523)—*

21           (A) *in subsection (a), by striking all after*  
22           *“As part of the” and inserting “Networking and*  
23           *Information Technology Research and Develop-*  
24           *ment Program, the Secretary of Energy shall*  
25           *conduct basic and applied research in net-*

1           *working and information technology, with em-*  
2           *phasis on—*

3           “(1) *supporting fundamental research in the*  
4           *physical sciences and engineering, and energy appli-*  
5           *cations;*

6           “(2) *providing supercomputer access and ad-*  
7           *vanced communication capabilities and facilities to*  
8           *scientific researchers; and*

9           “(3) *developing tools for distributed scientific*  
10          *collaboration.*”;

11           *(B) in subsection (b), by striking “Pro-*  
12          *gram” and inserting “Networking and Informa-*  
13          *tion Technology Research and Development Pro-*  
14          *gram”;* and

15           *(C) by amending subsection (e) to read as*  
16          *follows:*

17          “(e) *AUTHORIZATION OF APPROPRIATIONS.—There are*  
18          *authorized to be appropriated to the Secretary of Energy*  
19          *to carry out the Networking and Information Technology*  
20          *Research and Development Program such sums as may be*  
21          *necessary for fiscal years 2004 through 2007.*”.

22          “(d) *COORDINATION.—The Secretary shall ensure that*  
23          *the program under this section is integrated and consistent*  
24          *with—*

1           (1) *the Accelerated Strategic Computing Initia-*  
2           *tive of the National Nuclear Security Administration;*  
3           *and*

4           (2) *other national efforts related to advanced sci-*  
5           *entific computing for science and engineering.*

6           (e) *REPORT.—(1) Before undertaking any new initia-*  
7           *tive to develop new advanced architecture for high-speed*  
8           *computing, the Secretary, through the Director of the Office*  
9           *of Science, shall transmit a report to the Congress describ-*  
10          *ing—*

11           (A) *the expected duration and cost of the initia-*  
12          *tive;*

13           (B) *the technical milestones the initiative is de-*  
14          *signed to achieve;*

15           (C) *how institutions of higher education and pri-*  
16          *vate firms will participate in the initiative; and*

17           (D) *why the goals of the initiative could not be*  
18          *achieved through existing programs.*

19          (2) *No funds may be expended on any initiative de-*  
20          *scribed in paragraph (1) until 30 days after the report re-*  
21          *quired by that paragraph is transmitted to the Congress.*

22          **SEC. 170A. NITROGEN FIXATION.**

23          *The Secretary, acting through the Office of Science,*  
24          *shall support a program of research, development, dem-*  
25          *onstration, and commercial application on biological nitro-*

1 *gen fixation, including plant genomics research relevant to*  
2 *the development of commercial crop varieties with enhanced*  
3 *nitrogen fixation efficiency and ability.*

4 **PART 5—GENOMES TO LIFE**

5 **SEC. 170B. GENOMES TO LIFE.**

6 *(a) FINDINGS.—The Congress finds the following:*

7 *(1) The Department’s Genomes to Life initiative*  
8 *involves the emerging fields of systems biology and*  
9 *proteomics, which address the ability to understand*  
10 *the composition and function of the biochemical net-*  
11 *works and pathways that carry out the essential proc-*  
12 *esses of living organisms.*

13 *(2) The Genomes to Life initiative builds on the*  
14 *Department’s integral role in the Human Genome*  
15 *Project, which has led to the mapping, sequencing,*  
16 *and identification of genetic material. Genomes to*  
17 *Life will go beyond mapping to develop an under-*  
18 *standing of how genetic components interact to per-*  
19 *form cellular activities vital to life.*

20 *(3) The ability of the United States to respond*  
21 *to the national security, energy, and environmental*  
22 *challenges of the 21st century will be driven by*  
23 *science and technology. An integrated and predictive*  
24 *understanding of biological systems will enable the*  
25 *United States to develop new technologies related to*

1 *the detection of biological and chemical agents, energy*  
2 *production, carbon sequestration, bioremediation, and*  
3 *other Department statutory missions. These advances*  
4 *will also enhance the strength of United States*  
5 *science, technology, and medicine generally.*

6 (4) *The fundamental intellectual challenges in-*  
7 *herent in the Genomes to Life initiative are consider-*  
8 *able, and require public support for basic and applied*  
9 *research and development. Significant advances in*  
10 *areas such as the characterization of multiprotein*  
11 *complexes and gene regulatory networks will be re-*  
12 *quired before biologically-based solutions and tech-*  
13 *nologies will be useful in national security applica-*  
14 *tions, as well as to the energy, medical, and agricul-*  
15 *tural industries.*

16 (5) *The development of new scientific instru-*  
17 *ments will also be required to advance Genomes to*  
18 *Life research. Such instruments are likely to be large*  
19 *and costly. Specialized facilities are also likely to be*  
20 *required in order to advance the field and to realize*  
21 *its promise. Such facilities will be sufficiently expen-*  
22 *sive that they will have to be located and constructed*  
23 *on a centralized basis, similar to a number of unique*  
24 *facilities already managed by the Department.*

1           (6) *Contributions from individual researchers as*  
2 *well as multidisciplinary research teams will be re-*  
3 *quired to advance systems biology and proteomics.*

4           (7) *The Department's Office of Science is well*  
5 *suited to manage systems biology and proteomics re-*  
6 *search for the Department. Through its support of re-*  
7 *search and development pursuant to the Department's*  
8 *statutory authorities, the Office of Science is the prin-*  
9 *cipal Federal supporter of research and development*  
10 *in the physical and computational sciences. The Of-*  
11 *ice is also a significant source of Federal support for*  
12 *research in genomics and the life sciences. The Office*  
13 *supports research and development by individual in-*  
14 *vestigators and multidisciplinary teams, and man-*  
15 *ages special user facilities that serve investigators in*  
16 *both university and industry.*

17       (b) *ESTABLISHMENT OF PROGRAM.—The Secretary*  
18 *shall carry out a program of research, development, dem-*  
19 *onstration, and commercial application, to be known as the*  
20 *Genomes to Life Program, in systems biology and*  
21 *proteomics.*

22       (c) *PLANNING.—*

23           (1) *IN GENERAL.—Within one year after the date*  
24 *of enactment of this Act, the Secretary shall prepare*  
25 *and transmit to Congress a Program plan describing*

1        *how knowledge and capabilities would be developed by*  
2        *the Program and applied to Department missions re-*  
3        *lating to energy, environmental cleanup, and sta-*  
4        *bilization of atmospheric levels of carbon dioxide.*

5            (2) *CONSULTATION.—The Program plan will be*  
6        *developed in consultation with other relevant Depart-*  
7        *ment technology programs and other relevant Federal*  
8        *agencies.*

9            (3) *LONG-TERM GOALS.—The Program plan*  
10       *shall focus science and technology on long-term goals*  
11       *including—*

12            (A) *contributing to United States independ-*  
13        *ence from foreign energy sources;*

14            (B) *stabilizing atmospheric levels of carbon*  
15        *dioxide;*

16            (C) *advancing environmental cleanup; and*

17            (D) *providing the science and technology*  
18        *basis for new industries in biotechnology.*

19            (4) *SPECIFIC GOALS.—The Program plan shall*  
20        *identify appropriate research, development, dem-*  
21        *onstration, and commercial application activities to*  
22        *address the following issues within the next decade:*

23            (A) *Identifying new biological sources of*  
24        *fuels and electricity, with particular emphasis*

1           *on creating biological technologies for the pro-*  
2           *duction and utilization of hydrogen.*

3           *(B) Understanding the Earth's natural car-*  
4           *bon cycle and creating strategies to stabilize at-*  
5           *mospheric carbon dioxide.*

6           *(C) Developing a knowledge and capability*  
7           *base for exploring more cost-effective cleanup*  
8           *strategies for Department sites.*

9           *(D) Capturing key biological processes in*  
10          *engineered systems not requiring living cells.*

11          *(5) REVIEW.—The Secretary shall enter into an*  
12          *arrangement with the National Academy of Sciences*  
13          *to review the plan developed under this subsection.*  
14          *The Secretary shall transmit the review to the Con-*  
15          *gress not later than 6 months after the transmittal of*  
16          *the Program plan under paragraph (1), along with*  
17          *an explanation of any differences between the plan*  
18          *and the recommendations of the Academy.*

19          *(d) PROGRAM EXECUTION.—In carrying out the Pro-*  
20          *gram under this section, the Secretary shall—*

21                 *(1) support individual investigators and multi-*  
22                 *disciplinary teams of investigators;*

23                 *(2) subject to subsection (e), develop, plan, con-*  
24                 *struct, acquire, or operate special equipment or facili-*  
25                 *ties for the use of investigators conducting research,*

1 *development, demonstration, or commercial applica-*  
2 *tion in systems biology and proteomics;*

3 (3) *support technology transfer activities to ben-*  
4 *efit industry and other users of systems biology and*  
5 *proteomics; and*

6 (4) *coordinate activities by the Department with*  
7 *academia, industry, and other Federal agencies.*

8 (e) *USER FACILITIES AND ANCILLARY EQUIPMENT.—*

9 (1) *FACILITIES.—As part of the Genomes to Life*  
10 *Program, the Secretary is authorized to develop, plan,*  
11 *construct, acquire, or operate special equipment, in-*  
12 *strumentation, or facilities for investigators con-*  
13 *ducting research, development, demonstration, and*  
14 *commercial application projects in systems biology*  
15 *and proteomics and associated biological disciplines.*

16 (2) *PROJECTS.—Projects referred to in para-*  
17 *graph (1) may include—*

18 (A) *the identification and characterization*  
19 *of multiprotein complexes;*

20 (B) *characterization of gene regulatory net-*  
21 *works;*

22 (C) *characterization of the functional rep-*  
23 *ertoire of complex microbial communities in*  
24 *their natural environments at the molecular*  
25 *level; and*

1           (D) *development of computational methods*  
2           *and capabilities to advance understanding of*  
3           *complex biological systems and predict their be-*  
4           *havior.*

5           (3) *FACILITIES.—Facilities supported under*  
6           *paragraph (1) may include facilities for—*

7           (A) *the production and characterization of*  
8           *proteins;*

9           (B) *whole proteome analysis;*

10          (C) *characterization and imaging of molec-*  
11          *ular machines; and*

12          (D) *analysis and modeling of cellular sys-*  
13          *tems.*

14          (4) *COLLABORATION.—The Secretary shall en-*  
15          *courage collaborations among universities, labora-*  
16          *tories, and industry at facilities supported under this*  
17          *subsection. All facilities supported under this sub-*  
18          *section shall have a specific mission of technology*  
19          *transfer to other institutions.*

20          (f) *DEFINITIONS.—For purposes of this section:*

21           (1) *PROGRAM.—The term “Program” means the*  
22           *Genomes to Life Program carried out under this sec-*  
23           *tion.*

24           (2) *PROTEOMICS.—The term “proteomics”*  
25           *means the determination of the structure, function,*



1       scribed in subsection (f)(1), in positions needed by the  
2       Department and for which the individuals are quali-  
3       fied, in exchange for receiving a scholarship.

4       (b) *SCHOLARSHIP ELIGIBILITY.*—In order to be eligi-  
5 ble to participate in the Program, an individual must—

6           (1) be enrolled or accepted for enrollment as a  
7       full-time student at an institution of higher education  
8       in an academic program or field of study described  
9       in the list made available under subsection (d);

10           (2) be a United States citizen; and

11           (3) at the time of the initial scholarship award,  
12       not be a Federal employee as defined in section 2105  
13       of title 5 of the United States Code.

14       (c) *APPLICATION REQUIRED.*—An individual seeking  
15 a scholarship under this section shall submit an application  
16 to the Secretary at such time, in such manner, and con-  
17 taining such information, agreements, or assurances as the  
18 Secretary may require.

19       (d) *ELIGIBLE ACADEMIC PROGRAMS.*—The Secretary  
20 shall make publicly available a list of academic programs  
21 and fields of study for which scholarships under the Pro-  
22 gram may be utilized, and shall update the list as nec-  
23 essary.

24       (e) *SCHOLARSHIP REQUIREMENT.*—

1           (1) *IN GENERAL.*—*The Secretary may provide a*  
2 *scholarship under the Program for an academic year*  
3 *if the individual applying for the scholarship has sub-*  
4 *mitted to the Secretary, as part of the application re-*  
5 *quired under subsection (c), a proposed academic pro-*  
6 *gram leading to a degree in a program or field of*  
7 *study on the list made available under subsection (d).*

8           (2) *DURATION OF ELIGIBILITY.*—*An individual*  
9 *may not receive a scholarship under this section for*  
10 *more than 4 academic years, unless the Secretary*  
11 *grants a waiver.*

12           (3) *SCHOLARSHIP AMOUNT.*—*The dollar amount*  
13 *of a scholarship under this section for an academic*  
14 *year shall be determined under regulations issued by*  
15 *the Secretary, but shall in no case exceed the cost of*  
16 *attendance.*

17           (4) *AUTHORIZED USES.*—*A scholarship provided*  
18 *under this section may be expended for tuition, fees,*  
19 *and other authorized expenses as established by the*  
20 *Secretary by regulation.*

21           (5) *CONTRACTS REGARDING DIRECT PAYMENTS*  
22 *TO INSTITUTIONS.*—*The Secretary may enter into a*  
23 *contractual agreement with an institution of higher*  
24 *education under which the amounts provided for a*  
25 *scholarship under this section for tuition, fees, and*

1     *other authorized expenses are paid directly to the in-*  
2     *stitution with respect to which the scholarship is pro-*  
3     *vided.*

4     (f) *PERIOD OF OBLIGATED SERVICE.*—

5         (1) *DURATION OF SERVICE.*—*The period of serv-*  
6     *ice for which an individual shall be obligated to serve*  
7     *as an employee of the Department is, except as pro-*  
8     *vided in subsection (h)(2), 24 months for each aca-*  
9     *demie year for which a scholarship under this section*  
10    *is provided.*

11        (2) *SCHEDULE FOR SERVICE.*—(A) *Except as*  
12    *provided in subparagraph (B), obligated service*  
13    *under paragraph (1) shall begin not later than 60*  
14    *days after the individual obtains the educational de-*  
15    *gree for which the scholarship was provided.*

16        (B) *The Secretary may defer the obligation of an*  
17    *individual to provide a period of service under para-*  
18    *graph (1) if the Secretary determines that such a de-*  
19    *fferal is appropriate. The Secretary shall prescribe*  
20    *the terms and conditions under which a service obli-*  
21    *gation may be deferred through regulation.*

22     (g) *PENALTIES FOR BREACH OF SCHOLARSHIP*  
23    *AGREEMENT.*—

24        (1) *FAILURE TO COMPLETE ACADEMIC TRAIN-*  
25    *ING.*—*Scholarship recipients who fail to maintain a*

1 *high level of academic standing, as defined by the*  
2 *Secretary by regulation, who are dismissed from their*  
3 *educational institutions for disciplinary reasons, or*  
4 *who voluntarily terminate academic training before*  
5 *graduation from the educational program for which*  
6 *the scholarship was awarded, shall be in breach of*  
7 *their contractual agreement and, in lieu of any serv-*  
8 *ice obligation arising under such agreement, shall be*  
9 *liable to the United States for repayment within 1*  
10 *year after the date of default of all scholarship funds*  
11 *paid to them and to the institution of higher edu-*  
12 *cation on their behalf under the agreement, except as*  
13 *provided in subsection (h)(2). The repayment period*  
14 *may be extended by the Secretary when determined*  
15 *to be necessary, as established by regulation.*

16 (2) *FAILURE TO BEGIN OR COMPLETE THE SERV-*  
17 *ICE OBLIGATION OR MEET THE TERMS AND CONDI-*  
18 *TIONS OF DEFERMENT.*—*Scholarship recipients who,*  
19 *for any reason, fail to begin or complete their service*  
20 *obligation after completion of academic training, or*  
21 *fail to comply with the terms and conditions of*  
22 *deferment established by the Secretary pursuant to*  
23 *subsection (f)(2)(B), shall be in breach of their con-*  
24 *tractual agreement. When recipients breach their*  
25 *agreements for the reasons stated in the preceding*

1 sentence, the recipient shall be liable to the United  
2 States for an amount equal to—

3 (A) the total amount of scholarships re-  
4 ceived by such individual under this section;  
5 plus

6 (B) the interest on the amounts of such  
7 awards which would be payable if at the time  
8 the awards were received they were loans bearing  
9 interest at the maximum legal prevailing rate,  
10 as determined by the Treasurer of the United  
11 States,

12 multiplied by 3.

13 (h) WAIVER OR SUSPENSION OF OBLIGATION.—

14 (1) DEATH OF INDIVIDUAL.—Any obligation of  
15 an individual incurred under the Program (or a con-  
16 tractual agreement thereunder) for service or payment  
17 shall be canceled upon the death of the individual.

18 (2) IMPOSSIBILITY OR EXTREME HARDSHIP.—

19 The Secretary shall by regulation provide for the par-  
20 tial or total waiver or suspension of any obligation  
21 of service or payment incurred by an individual  
22 under the Program (or a contractual agreement there-  
23 under) whenever compliance by the individual is im-  
24 possible or would involve extreme hardship to the in-  
25 dividual, or if enforcement of such obligation with re-

1        *spect to the individual would be contrary to the best*  
2        *interests of the Government.*

3        *(i) DEFINITIONS.—In this section the following defini-*  
4        *tions apply:*

5            *(1) COST OF ATTENDANCE.—The term “cost of*  
6            *attendance” has the meaning given that term in sec-*  
7            *tion 472 of the Higher Education Act of 1965 (20*  
8            *U.S.C. 1087l).*

9            *(2) INSTITUTION OF HIGHER EDUCATION.—The*  
10          *term “institution of higher education” has the mean-*  
11          *ing given that term in section 101(a) of the Higher*  
12          *Education Act of 1965 (20 U.S.C. 1001(a)).*

13          *(3) PROGRAM.—The term “Program” means the*  
14          *Department of Energy Science and Technology Schol-*  
15          *arship Program established under this section.*

16                    ***Subtitle G—Energy and***  
17                    ***Environment***

18        ***SEC. 171. AUTHORIZATION OF APPROPRIATIONS.***

19          *(a) UNITED STATES-MEXICO ENERGY TECHNOLOGY*  
20          *COOPERATION.—The following sums are authorized to be*  
21          *appropriated to the Secretary to carry out activities under*  
22          *section 172:*

23            *(1) For fiscal year 2004, \$5,000,000.*

24            *(2) For fiscal year 2005, \$6,000,000.*

25            *(3) For fiscal year 2006, \$6,000,000.*

1           (4) *For fiscal year 2007, \$6,000,000.*

2           (b) *WASTE REDUCTION AND USE OF ALTER-*  
3 *NATIVES.—There are authorized to be appropriated to the*  
4 *Secretary to carry out activities under section 173,*  
5 *\$500,000 for fiscal year 2004.*

6 **SEC. 172. UNITED STATES-MEXICO ENERGY TECHNOLOGY**  
7 **COOPERATION.**

8           (a) *PROGRAM.—The Secretary shall establish a re-*  
9 *search, development, demonstration, and commercial appli-*  
10 *cation program to be carried out in collaboration with enti-*  
11 *ties in Mexico and the United States to promote energy effi-*  
12 *cient, environmentally sound economic development along*  
13 *the United States-Mexico border.*

14           (b) *PROGRAM MANAGEMENT.—The program under*  
15 *subsection (a) shall be managed by the Department of En-*  
16 *ergy Carlsbad Environmental Management Field Office.*

17           (c) *TECHNOLOGY TRANSFER.—In carrying out*  
18 *projects and activities under this section, the Secretary shall*  
19 *assess the applicability of technology developed under the*  
20 *Environmental Management Science Program of the De-*  
21 *partment.*

22           (d) *INTELLECTUAL PROPERTY.—In carrying out this*  
23 *section, the Secretary shall comply with the requirements*  
24 *of any agreement entered into between the United States*  
25 *and Mexico regarding intellectual property protection.*

1 **SEC. 173. WASTE REDUCTION AND USE OF ALTERNATIVES.**

2 (a) *GRANT AUTHORITY.*—*The Secretary is authorized*  
3 *to make a single grant to a qualified institution to examine*  
4 *and develop the feasibility of burning post-consumer carpet*  
5 *in cement kilns as an alternative energy source. The pur-*  
6 *poses of the grant shall include determining—*

7 (1) *how post-consumer carpet can be burned*  
8 *without disrupting kiln operations;*

9 (2) *the extent to which overall kiln emissions*  
10 *may be reduced;*

11 (3) *the emissions of air pollutants and other rel-*  
12 *evant environmental impacts; and*

13 (4) *how this process provides benefits to both ce-*  
14 *ment kiln operations and carpet suppliers.*

15 (b) *QUALIFIED INSTITUTION.*—*For the purposes of*  
16 *subsection (a), a qualified institution is a research-intensive*  
17 *institution of higher education with demonstrated expertise*  
18 *in the fields of fiber recycling and logistical modeling of*  
19 *carpet waste collection and preparation.*

20 **SEC. 174. COAL GASIFICATION.**

21 *The Secretary is authorized to provide loan guarantees*  
22 *for a project to produce energy from a plant using inte-*  
23 *grated gasification combined cycle technology of at least 400*  
24 *megawatts in capacity that produces power at competitive*  
25 *rates in deregulated energy generation markets and that*

1 *does not receive any subsidy (direct or indirect) from rate-*  
2 *payers.*

3 **SEC. 175. PETROLEUM COKE GASIFICATION.**

4 *The Secretary is authorized to provide loan guarantees*  
5 *for at least one petroleum coke gasification polygeneration*  
6 *project.*

7 **SEC. 176. OTHER BIOPOWER AND BIOENERGY.**

8 *The Secretary shall conduct a program to assist in the*  
9 *planning, design, and implementation of projects to convert*  
10 *rice straw, rice hulls, sugarcane bagasse, forest thinnings,*  
11 *and barley grain into biopower and biofuels.*

12 **SEC. 177. COAL TECHNOLOGY LOAN.**

13 *There are authorized to be appropriated to the Sec-*  
14 *retary \$125,000,000 to provide a loan to the owner of the*  
15 *experimental plant constructed under United States De-*  
16 *partment of Energy cooperative agreement number DE-*  
17 *FC22-91PC99544 on such terms and conditions as the Sec-*  
18 *retary determines, including interest rates and upfront*  
19 *payments.*

20 **SEC. 178. FUEL CELL TEST CENTER.**

21 *(a) STUDY.—Not later than 1 year after the date of*  
22 *enactment of this Act, the Secretary shall transmit to the*  
23 *Congress a report on the results of a study of the establish-*  
24 *ment of a test center for next-generation fuel cells at an*  
25 *institution of higher education that has available a contin-*

1 uous source of hydrogen and access to the electric trans-  
 2 mission grid. Such report shall include a conceptual design  
 3 for such test center and a projection of the costs of estab-  
 4 lishing the test center.

5 (b) *AUTHORIZATION OF APPROPRIATIONS.*—There are  
 6 authorized to be appropriated to the Secretary for carrying  
 7 out this section \$500,000.

## 8 ***Subtitle H—Hydrogen***

### 9 ***SEC. 181. SHORT TITLE.***

10 *This subtitle may be cited as the “George E. Brown,*  
 11 *Jr. and Robert S. Walker Hydrogen Future Act of 2003”.*

### 12 ***SEC. 182. MATSUNAGA ACT AMENDMENT.***

13 *The Spark M. Matsunaga Hydrogen Research, Devel-*  
 14 *opment, and Demonstration Act of 1990 (42 U.S.C. 12401*  
 15 *et seq.) is amended by striking sections 102 through 109*  
 16 *and inserting the following:*

### 17 ***“SEC. 102. FINDINGS AND DEFINITIONS.***

18 *“(a) FINDINGS.—Congress finds that—*

19 *“(1) the United States is currently dependent on*  
 20 *foreign sources for a majority of its petroleum supply;*

21 *“(2) the Nation’s dependence on foreign petro-*  
 22 *leum is expected to increase in the decades ahead;*

23 *“(3) it is in the national interest to reduce de-*  
 24 *pendence on imported petroleum by accelerating Fed-*

1 *eral efforts to partner with the private sector in devel-*  
2 *oping hydrogen and fuel cell technologies;*

3 *“(4) it is in the national interest to support in-*  
4 *dustry’s efforts to develop a light duty vehicle fleet*  
5 *that is free or near free of pollutant emissions and*  
6 *greenhouse gas emissions, and that helps to reduce the*  
7 *Nation’s dependence on petroleum in a manner that*  
8 *maintains the freedom of consumers to purchase the*  
9 *kinds of vehicles they wish to drive and the freedom*  
10 *to refuel those vehicles safely and affordably;*

11 *“(5) the development of hydrogen fuel cell vehi-*  
12 *cles and supporting infrastructure will benefit from*  
13 *and accelerate the parallel advancement of fuel cells*  
14 *for stationary power that will enhance the resiliency,*  
15 *reliability, and environmental performance of the Na-*  
16 *tion’s electricity infrastructure;*

17 *“(6) fuel cell technology for consumer electronics*  
18 *and portable power will benefit from, and advance the*  
19 *development of, hydrogen fuel cell vehicles and sup-*  
20 *porting infrastructure;*

21 *“(7) there is a need for deployment of bridging*  
22 *technologies that can contribute to reducing petroleum*  
23 *demand and decreasing air emissions, including—*

24 *“(A) gasoline-electric and diesel-electric hy-*  
25 *brid drive systems;*

1           “(B) advanced combustion engines (includ-  
2           ing clean diesel), electric battery, and power elec-  
3           tronics; and

4           “(C) alternative fuels and other tech-  
5           nologies;

6           “(8) low-cost hydrogen production, storage, and  
7           delivery facilities are essential to the success of the  
8           FreedomCAR program; and

9           “(9) vehicle technology development work should  
10          be performed in a manner that is cognizant of con-  
11          sumer acceptance and marketplace success.

12          “(b) DEFINITIONS.—In this Act:

13                 “(1) The term ‘Advisory Committee’ means the  
14                 Hydrogen Technical and Fuel Cell Advisory Com-  
15                 mittee established under section 108 of this Act.

16                 “(2) The term ‘Department’ means the Depart-  
17                 ment of Energy.

18                 “(3) The term ‘fuel cell’ means a device that di-  
19                 rectly converts the chemical energy of a fuel and an  
20                 oxidant into electricity by an electrochemical process  
21                 taking place at separate electrodes in the device.

22                 “(4) The term ‘FreedomCAR’ is the acronym for  
23                 a Department initiative in automotive research and  
24                 development entitled ‘Freedom Cooperative Auto-  
25                 motive Research’.

1           “(5) *The term ‘infrastructure’ means the equip-*  
2           *ment, systems, or facilities used to produce, distribute,*  
3           *deliver, or store hydrogen and other advanced clean*  
4           *fuels.*

5           “(6) *The term ‘light duty vehicle’ means a car*  
6           *or truck classified by the Department of Transpor-*  
7           *tation as a Class I or IIA vehicle.*

8           “(7) *The term ‘Secretary’ means the Secretary of*  
9           *Energy.*

10 **“SEC. 103. PROGRAM.**

11           “(a) *IN GENERAL.—The Secretary shall conduct a re-*  
12           *search, development, demonstration, and commercial appli-*  
13           *cation program designed to accelerate the use of hydrogen*  
14           *and related technologies in stationary and transportation*  
15           *applications. The goals of the program shall include—*

16           “(1) *to enable a decision by automakers not later*  
17           *than 2015 to offer affordable and technically viable*  
18           *hydrogen fuel cell vehicles in the mass consumer mar-*  
19           *ket;*

20           “(2) *to enable production and delivery to con-*  
21           *sumers of model year 2020 hydrogen fuel cell vehicles*  
22           *that will have—*

23           “(A) *a range of at least three hundred*  
24           *miles;*

1           “(B) safety and performance comparable to  
2           vehicle technologies in the market;

3           “(C) when compared to light duty vehicles  
4           in model year 2003—

5                 “(i) a fuel economy that is two and  
6                 one half times the equivalent fuel economy  
7                 of comparable light duty vehicles in model  
8                 year 2003; and

9                 “(ii) zero or near zero emissions of pol-  
10                 lutants; and

11           “(D) vehicle fuel system crash integrity and  
12           occupant protection; and

13           “(3) to enable by 2020 the safe and convenient  
14           commercial production and delivery of hydrogen that  
15           will have—

16                 “(A) the capacity to meet the demand for  
17                 stationary and mobile hydrogen fuel cells;

18                 “(B) safety and performance characteristics  
19                 comparable to other fuels; and

20                 “(C) improved overall efficiency and zero or  
21                 near zero emissions when compared to fuels used  
22                 in 2003.

23           “(b) ACTIVITIES.—The program authorized under this  
24           section shall address—

1           “(1) production of hydrogen from diverse energy  
2 sources, including—

3           “(A) fossil fuels, in conjunction with carbon  
4 capture and sequestration;

5           “(B) hydrogen-carrier fuels (including eth-  
6 anol and methanol);

7           “(C) renewable energy resources; and

8           “(D) nuclear energy;

9           “(2) delivery of hydrogen or hydrogen-carrier  
10 fuels, including—

11           “(A) transmission by pipeline and other  
12 distribution methods; and

13           “(B) safe, convenient, and economic refuel-  
14 ing of vehicles either at central refueling stations  
15 or through distributed on-site generation;

16           “(3) storage of hydrogen or hydrogen-carrier  
17 fuels, including development of materials for safe and  
18 economic storage in gaseous, liquid, or solid form at  
19 refueling facilities and onboard vehicles;

20           “(4) development of safe, durable, affordable, and  
21 efficient fuel cells, including research and development  
22 on fuel-flexible fuel cell power systems, improved  
23 manufacturing processes, high-temperature mem-  
24 branes, cost-effective fuel processing for natural gas,

1 *fuel cell stack and system reliability, low temperature*  
2 *operation, and cold start capability; and*

3 *“(5) development, in conjunction with the Na-*  
4 *tional Institute of Standards and Technology, of nec-*  
5 *essary codes and standards (including international*  
6 *codes and standards) and safety practices for the pro-*  
7 *duction, distribution, storage, and use of hydrogen,*  
8 *hydrogen-carrier fuels and related products.*

9 *“(c) DEMONSTRATION.—In carrying out the dem-*  
10 *onstration program under this section, the Secretary shall*  
11 *fund a limited number of projects and shall, to the extent*  
12 *practicable—*

13 *“(1) select only projects that—*

14 *“(A) involve using hydrogen and related*  
15 *products at facilities or installations that would*  
16 *exist without the demonstration program, such*  
17 *as existing office buildings, military bases, vehi-*  
18 *cle fleet centers, transit bus authorities, or parks;*  
19 *and*

20 *“(B) depend on reliable power from hydro-*  
21 *gen to carry out essential activities; and*

22 *“(2) favor projects that—*

23 *“(A) lead to the replication of hydrogen*  
24 *technologies and draw such technologies into the*  
25 *marketplace;*

1           “(B) integrate in a single project both mo-  
2           bile and stationary applications of hydrogen fuel  
3           cells;

4           “(C) address the interdependency of demand  
5           for hydrogen fuel cell applications and hydrogen  
6           fuel infrastructure; or

7           “(D) raise awareness of hydrogen technology  
8           among the public.

9           “(d) *MERIT REVIEW.*—The Secretary shall carry out  
10          the program under this section using a competitive, merit-  
11          review process and consistent with the generally applicable  
12          Federal laws and regulations governing awards of financial  
13          assistance, contracts, or other agreements.

14          “(e) *COST SHARING.*—(1) For projects carried out  
15          through grants, cooperative agreements, or contracts under  
16          this section, the Secretary shall require a commitment from  
17          non-Federal sources of at least—

18                 “(A) 20 percent of the cost of a research and de-  
19                 velopment project; and

20                 “(B) 50 percent of the cost of a demonstration  
21                 project.

22          “(2) The Secretary may reduce the cost-sharing re-  
23          quirement under paragraph (1)—

24                 “(A) if the Secretary determines that the project  
25                 involves research of a basic or fundamental nature;

1           “(B) if the Secretary determines that a dem-  
2           onstration or commercial application project involves  
3           unusual technological risks; or

4           “(C) for technical analyses or other activities  
5           that the Secretary does not expect to result in a mar-  
6           ketable product.

7           “(3) The Secretary may consider the size of the non-  
8           Federal share in selecting projects.

9           **“SEC. 104. FREEDOM CAR.**

10          “(a) *IN GENERAL.*—In coordination with the program  
11          under section 103, the Secretary shall carry out a research,  
12          development, demonstration, and commercial application  
13          program on advanced vehicle technologies, to be known as  
14          the FreedomCAR program.

15          “(b) *ACTIVITIES.*—The FreedomCAR program shall  
16          address—

17                 “(1) engine and emission control systems;

18                 “(2) energy storage, electric propulsion, and hy-  
19                 brid systems;

20                 “(3) automotive materials;

21                 “(4) clean fuels in addition to hydrogen; and

22                 “(5) other advanced vehicle technologies.

23          “(c) *DEMONSTRATION.*—Demonstrations involving hy-  
24          drogen shall be conducted as part of the program under sec-  
25          tion 103.

1           “(d) *MERIT REVIEW AND COST SHARING.*—The Sec-  
2   retary shall carry out the FreedomCAR program in compli-  
3   ance with sections 103(d) and (e).

4   **“SEC. 105. PLAN.**

5           “Not later than six months after the date of enactment  
6   of the *George E. Brown, Jr. and Robert S. Walker Hydro-*  
7   *gen Future Act of 2003*, the Secretary shall transmit to the  
8   Congress a coordinated plan for the programs described in  
9   sections 103 and 104 and any other programs of the De-  
10   partment that are directly related to fuel cells or hydrogen.  
11   The plan shall be consistent with the *National Hydrogen*  
12   *Energy Roadmap* published by the Department in October  
13   of 2002 and shall describe, at a minimum—

14           “(1) the agenda for the programs for the next  
15   five years, including what research, development,  
16   demonstration, and commercial application will be  
17   conducted to carry out each activity enumerated in  
18   sections 103(b) and 104(b);

19           “(2) the role national laboratories, institutions of  
20   higher education, small businesses, and other private  
21   sector firms are expected to play in the programs;

22           “(3) the technical milestones that will be used to  
23   evaluate the programs for the next five years;

24           “(4) the most significant technical hurdles that  
25   stand in the way of achieving the goals described in

1        *section 103(a), and how the programs will address*  
2        *those hurdles; and*

3                *“(5) the policy assumptions that are driving the*  
4        *research agenda, including any assumptions that*  
5        *would affect the sources of hydrogen or the market-*  
6        *ability of hydrogen-related products.*

7        **“SEC. 106. EDUCATION, OUTREACH, AND TECHNOLOGY**  
8                **TRANSFER.**

9                *“(a) IN GENERAL.—The Secretary may carry out pro-*  
10        *grams and activities for interagency, intergovernmental,*  
11        *and international education, information exchange, and co-*  
12        *operation related to hydrogen and hydrogen-related prod-*  
13        *ucts.*

14                *“(b) TECHNOLOGY TRANSFER.—(1) The Secretary*  
15        *may conduct a program to transfer technology to the pri-*  
16        *vate sector under this Act. The purpose of the technology*  
17        *transfer program is to foster the exchange of generic, non-*  
18        *proprietary information and technology, developed under*  
19        *this Act, among industry, academia, and the Federal Gov-*  
20        *ernment, to help the United States economy attain the eco-*  
21        *nomie benefits of this information and technology, among*  
22        *other purposes.*

23                *“(2) The Secretary shall direct the program authorized*  
24        *by this subsection with the advice and assistance of the Ad-*  
25        *visory Committee.*

1 **“SEC. 107. INTERAGENCY TASK FORCE.**

2       “(a) *ESTABLISHMENT.*—Not later than 120 days after  
3 the date of enactment of the George E. Brown, Jr. and Rob-  
4 ert S. Walker Hydrogen Future Act of 2003, the President  
5 shall establish an interagency task force, chaired by the Di-  
6 rector of the Office of Science and Technology Policy or his  
7 designee, with representatives from each of the following:

8               “(1) *The Department of Energy.*

9               “(2) *The Department of Transportation.*

10              “(3) *The Department of State.*

11              “(4) *The Department of Defense.*

12              “(5) *The Department of Commerce (including*  
13 *the National Institute of Standards and Technology).*

14              “(6) *The Environmental Protection Agency.*

15              “(7) *The National Aeronautics and Space Ad-*  
16 *ministration.*

17              “(8) *Other Federal agencies as the Director de-*  
18 *termines appropriate.*

19       “(b) *DUTIES.*—

20              “(1) *IMPLEMENTATION.*—*The interagency task*  
21 *force shall work toward development of—*

22                      “(A) *a safe, economical, and environ-*  
23 *mentally sound hydrogen infrastructure;*

24                      “(B) *uniform hydrogen codes, standards,*  
25 *and safety protocols;*

1           “(C) fuel cells in government applications,  
2           including portable, stationary, and transpor-  
3           tation applications; and

4           “(D) vehicle hydrogen fuel system integrity  
5           safety performance.

6           “(2) ACTIVITIES.—The interagency task force  
7           may organize workshops and conferences, may issue  
8           publications, and may create databases to carry out  
9           its duties. The interagency task force shall—

10           “(A) foster the exchange of generic, non-  
11           proprietary information and technology among  
12           industry, academia, and government;

13           “(B) develop and maintain an inventory  
14           and assessment of hydrogen, fuel cells, and other  
15           advanced technologies, including the commercial  
16           capability of each technology for the economic  
17           and environmentally safe production, distribu-  
18           tion, delivery, storage, and use of hydrogen;

19           “(C) integrate technical and other informa-  
20           tion made available as a result of the programs  
21           and activities under this Act;

22           “(D) promote the marketplace introduction  
23           of infrastructure for hydrogen-powered fuel cell  
24           vehicles; and

1           “(E) conduct an education program to pro-  
2           vide hydrogen and fuel cell information to poten-  
3           tial end-users in coordination with the program  
4           under section 106.

5           “(c) AGENCY COOPERATION.—The heads of all agen-  
6           cies, including those whose agencies are not represented on  
7           the interagency task force, shall cooperate with and furnish  
8           information to the interagency task force and the Depart-  
9           ment.

10       **“SEC. 108. ADVISORY COMMITTEE.**

11           “(a) ESTABLISHMENT.—The Hydrogen Technical and  
12           Fuel Cell Advisory Committee shall be established to advise  
13           the Secretary on the programs and activities under this Act.

14           “(b) MEMBERSHIP.—

15           “(1) MEMBERS.—The Secretary shall appoint  
16           not fewer than 12 nor more than 25 members. The  
17           Secretary shall appoint members to represent domes-  
18           tic industry, academia, professional societies, govern-  
19           ment agencies, and financial, environmental, and  
20           other appropriate organizations based on the Sec-  
21           retary’s assessment of the technical and other quali-  
22           fications of committee members and the needs of the  
23           Advisory Committee.

24           “(2) TERMS.—The term of a member of the Ad-  
25           visory Committee shall be not more than three years.

1       *The Secretary may appoint members of the Advisory*  
2       *Committee in a manner that allows the terms of the*  
3       *members serving at any time to expire at spaced in-*  
4       *tervals so as to ensure continuity in the functioning*  
5       *of the Advisory Committee. A member of the Advisory*  
6       *Committee whose term is expiring may be re-*  
7       *appointed.*

8               “(3) *CHAIRPERSON.—The Chair of the Advisory*  
9       *Committee shall be a member of the Advisory Com-*  
10       *mittee, elected by the members from among their*  
11       *number.*

12              “(c) *REVIEW.—(1) The Advisory Committee shall re-*  
13       *view and make recommendations to the Secretary in a bien-*  
14       *ennial report on—*

15                   “(A) *the implementation of programs and activi-*  
16       *ties under this Act; and*

17                   “(B) *the safety, economical, environmental, and*  
18       *other consequences of technologies for the production,*  
19       *distribution, delivery, storage, or use of hydrogen and*  
20       *fuel cells.*

21              “(2) *The Secretary shall transmit the report under this*  
22       *subsection to the Congress along with a description of how*  
23       *the Secretary has implemented or plans to implement the*  
24       *recommendations, or an explanation of the reasons that a*

1 *recommendation will not be implemented. The report shall*  
2 *be transmitted along with the President’s budget proposal.*

3       “(d) *ADVISORY COMMITTEE SUPPORT.*—*The Secretary*  
4 *shall provide resources necessary in the judgment of the Sec-*  
5 *retary for the Advisory Committee to carry out its respon-*  
6 *sibilities under this Act.*

7       “**SEC. 109. EXTERNAL REVIEW.**

8       “(a) *PLAN.*—*The Secretary shall enter into an ar-*  
9 *rangement with a competitively selected nongovernmental*  
10 *entity, such as the National Academy of Sciences, to review*  
11 *the plan prepared under section 105. The Secretary shall*  
12 *transmit the review to the Congress along with a plan to*  
13 *implement the review’s recommendations or an explanation*  
14 *of the reasons that a recommendation will not be imple-*  
15 *mented.*

16       “(b) *BIENNIAL REVIEW.*—*The Secretary shall enter*  
17 *into an arrangement with a competitively selected non-*  
18 *governmental entity, such as the National Academy of*  
19 *Sciences, under which the entity will review the program*  
20 *under sections 103 and 104 every other year, beginning two*  
21 *years after the date of enactment of the George E. Brown,*  
22 *Jr. and Robert S. Walker Hydrogen Future Act of 2003.*  
23 *The entity shall review the research priorities, technical*  
24 *milestones, and plans for technology transfer and evaluate*  
25 *the progress toward achieving them. The Secretary shall*

1 *transmit each review to the Congress along with a plan to*  
2 *implement the review’s recommendations or an explanation*  
3 *for the reasons that a recommendation will not be imple-*  
4 *mented.*

5 **“SEC. 110. MISCELLANEOUS PROVISIONS.**

6       “(a) *DUPLICATION.*—*The Secretary shall carry out the*  
7 *activities of this Act in a manner that avoids unnecessary*  
8 *duplication or displacement of, or competition with private*  
9 *sector activities.*

10       “(b) *OTHER GOVERNMENTS.*—*In carrying out this*  
11 *Act, the Secretary may enter into cost-sharing agreements*  
12 *with Federal, State, or local governments to demonstrate*  
13 *applications using hydrogen and fuel cells.*

14       “(c) *REPRESENTATION.*—*The Department may rep-*  
15 *resent the United States interests with respect to activities*  
16 *and programs under this Act, in coordination with the De-*  
17 *partment of Transportation, the National Institute of*  
18 *Standards and Technology, and other relevant Federal*  
19 *agencies, before governments and nongovernmental organi-*  
20 *zations including—*

21               “(1) *other Federal, State, regional, and local*  
22 *governments and their representatives;*

23               “(2) *industry and its representatives, including*  
24 *members of the energy and transportation industries;*  
25 *and*

1           “(3) *in consultation with the Department of*  
 2           *State, foreign governments and their representatives*  
 3           *including international organizations.*

4           “(d) *REGULATORY AUTHORITY.—Nothing in this Act*  
 5           *shall be construed to alter the regulatory authority of the*  
 6           *Department.*

7           **“SEC. 111. AUTHORIZATION OF APPROPRIATIONS.**

8           *“There are authorized to be appropriated to carry out*  
 9           *this Act, in addition to any amounts made available for*  
 10           *these purposes under other Acts—*

11                   “(1) *\$273,500,000 for fiscal year 2004;*

12                   “(2) *\$325,000,000 for fiscal year 2005;*

13                   “(3) *\$375,000,000 for fiscal year 2006;*

14                   “(4) *\$400,000,000 for fiscal year 2007; and*

15                   “(5) *\$425,000,000 for fiscal year 2008.”.*

16           **SEC. 183. REPEAL OF HYDROGEN FUTURE ACT OF 1996.**

17           *The Hydrogen Future Act of 1996 is repealed.*

18                   ***Subtitle I—Management***

19           **SEC. 184. AVAILABILITY OF FUNDS.**

20           *Funds authorized to be appropriated to the Depart-*  
 21           *ment under this title shall remain available until expended.*

22           **SEC. 185. COST SHARING.**

23           “(a) *RESEARCH AND DEVELOPMENT.—Except as other-*  
 24           *wise provided in this title, for research and development*  
 25           *programs carried out under this title, the Secretary shall*

1 *require a commitment from non-Federal sources of at least*  
2 *20 percent of the cost of the project. The Secretary may re-*  
3 *duce or eliminate the non-Federal requirement under this*  
4 *subsection if the Secretary determines that the research and*  
5 *development is of a basic or fundamental nature.*

6       **(b) DEMONSTRATION AND COMMERCIAL APPLICA-**  
7 *TION.—Except as otherwise provided in this title, the Sec-*  
8 *retary shall require at least 50 percent of the costs directly*  
9 *and specifically related to any demonstration or commer-*  
10 *cial application project under this title to be provided from*  
11 *non-Federal sources. The Secretary may reduce the non-*  
12 *Federal requirement under this subsection if the Secretary*  
13 *determines that the reduction is necessary and appropriate*  
14 *considering the technological risks involved in the project*  
15 *and is necessary to meet the objectives of this title.*

16       **(c) CALCULATION OF AMOUNT.—***In calculating the*  
17 *amount of the non-Federal commitment under subsection*  
18 *(a) or (b), the Secretary may include personnel, services,*  
19 *equipment, and other resources.*

20 **SEC. 186. MERIT REVIEW OF PROPOSALS.**

21       *Awards of funds authorized under this title shall be*  
22 *made only after an impartial review of the scientific and*  
23 *technical merit of the proposals for such awards has been*  
24 *carried out by or for the Department.*

1 **SEC. 187. EXTERNAL TECHNICAL REVIEW OF DEPART-**  
2 **MENTAL PROGRAMS.**

3 (a) *NATIONAL ENERGY RESEARCH AND DEVELOPMENT*  
4 *ADVISORY BOARDS.*—(1) *The Secretary shall establish one*  
5 *or more advisory boards to review Department research, de-*  
6 *velopment, demonstration, and commercial application*  
7 *programs in the following areas:*

8 (A) *Energy efficiency.*

9 (B) *Renewable energy.*

10 (C) *Nuclear energy.*

11 (D) *Fossil energy.*

12 (2) *The Secretary may designate an existing advisory*  
13 *board within the Department to fulfill the responsibilities*  
14 *of an advisory board under this subsection, and may enter*  
15 *into appropriate arrangements with the National Academy*  
16 *of Sciences to establish such an advisory board.*

17 (b) *OFFICE OF SCIENCE ADVISORY COMMITTEES.*—

18 (1) *UTILIZATION OF EXISTING COMMITTEES.*—

19 *The Secretary shall continue to use the scientific pro-*  
20 *gram advisory committees chartered under the Fed-*  
21 *eral Advisory Committee Act by the Office of Science*  
22 *to oversee research and development programs under*  
23 *that Office.*

24 (2) *SCIENCE ADVISORY COMMITTEE.*—

25 (A) *ESTABLISHMENT.*—*There shall be in the*  
26 *Office of Science a Science Advisory Committee*

1           *that includes the chairs of each of the advisory*  
2           *committees described in paragraph (1).*

3                   *(B) RESPONSIBILITIES.—The Science Advi-*  
4           *sory Committee shall—*

5                           *(i) serve as the science advisor to the*  
6                           *Assistant Secretary for Science created*  
7                           *under section 209 of the Department of En-*  
8                           *ergy Organization Act, as added by section*  
9                           *201 of this Act;*

10                           *(ii) advise the Assistant Secretary with*  
11                           *respect to the well-being and management of*  
12                           *the National Laboratories and single-pur-*  
13                           *pose research facilities;*

14                           *(iii) advise the Assistant Secretary*  
15                           *with respect to education and workforce*  
16                           *training activities required for effective*  
17                           *short-term and long-term basic and applied*  
18                           *research activities of the Office of Science;*  
19                           *and*

20                           *(iv) advise the Assistant Secretary*  
21                           *with respect to the well being of the univer-*  
22                           *sity research programs supported by the Of-*  
23                           *fice of Science.*

1           (c) *MEMBERSHIP.*—*Each advisory board under this*  
2 *section shall consist of persons with appropriate expertise*  
3 *representing a diverse range of interests.*

4           (d) *MEETINGS AND PURPOSES.*—*Each advisory board*  
5 *under this section shall meet at least semi-annually to re-*  
6 *view and advise on the progress made by the respective re-*  
7 *search, development, demonstration, and commercial appli-*  
8 *cation program or programs. The advisory board shall also*  
9 *review the measurable cost and performance-based goals for*  
10 *such programs as established under section 3, and the*  
11 *progress on meeting such goals.*

12          (e) *PERIODIC REVIEWS AND ASSESSMENTS.*—*The Sec-*  
13 *retary shall enter into appropriate arrangements with the*  
14 *National Academy of Sciences to conduct periodic reviews*  
15 *and assessments of the programs authorized by this title,*  
16 *the measurable cost and performance-based goals for such*  
17 *programs as established under section 3, if any, and the*  
18 *progress on meeting such goals. Such reviews and assess-*  
19 *ments shall be conducted every 5 years, or more often as*  
20 *the Secretary considers necessary, and the Secretary shall*  
21 *transmit to the Congress reports containing the results of*  
22 *all such reviews and assessments.*

1 **SEC. 188. IMPROVED COORDINATION OF TECHNOLOGY**  
2 **TRANSFER ACTIVITIES.**

3 (a) *TECHNOLOGY TRANSFER COORDINATOR.*—The  
4 Secretary shall designate a Technology Transfer Coordi-  
5 nator to perform oversight of and policy development for  
6 technology transfer activities at the Department. The Tech-  
7 nology Transfer Coordinator shall coordinate the activities  
8 of the Technology Transfer Working Group, and shall over-  
9 see the expenditure of funds allocated to the Technology  
10 Transfer Working Group, and shall coordinate with each  
11 technology partnership ombudsman appointed under sec-  
12 tion 11 of the Technology Transfer Commercialization Act  
13 of 2000 (42 U.S.C. 7261c).

14 (b) *TECHNOLOGY TRANSFER WORKING GROUP.*—The  
15 Secretary shall establish a Technology Transfer Working  
16 Group, which shall consist of representatives of the National  
17 Laboratories and single-purpose research facilities, to—

18 (1) *coordinate technology transfer activities oc-*  
19 *ccurring at National Laboratories and single-purpose*  
20 *research facilities;*

21 (2) *exchange information about technology trans-*  
22 *fer practices, including alternative approaches to res-*  
23 *olution of disputes involving intellectual property*  
24 *rights and other technology transfer matters; and*

25 (3) *develop and disseminate to the public and*  
26 *prospective technology partners information about op-*

1        *portunities and procedures for technology transfer*  
2        *with the Department, including those related to alter-*  
3        *native approaches to resolution of disputes involving*  
4        *intellectual property rights and other technology*  
5        *transfer matters.*

6        *(c) TECHNOLOGY TRANSFER RESPONSIBILITY.—Noth-*  
7        *ing in this section shall affect the technology transfer re-*  
8        *sponsibilities of Federal employees under the Stevenson-*  
9        *Wydler Technology Innovation Act of 1980.*

10    **SEC. 189. SMALL BUSINESS ADVOCACY AND ASSISTANCE.**

11        *(a) SMALL BUSINESS ADVOCATE.—The Secretary shall*  
12        *require the Director of each National Laboratory, and may*  
13        *require the Director of a single-purpose research facility,*  
14        *to designate a small business advocate to—*

15                *(1) increase the participation of small business*  
16                *concerns, including socially and economically dis-*  
17                *advantaged small business concerns, in procurement,*  
18                *collaborative research, technology licensing, and tech-*  
19                *nology transfer activities conducted by the National*  
20                *Laboratory or single-purpose research facility;*

21                *(2) report to the Director of the National Lab-*  
22                *oratory or single-purpose research facility on the ac-*  
23                *tual participation of small business concerns in pro-*  
24                *urement and collaborative research along with rec-*

1        *ommendations, if appropriate, on how to improve*  
2        *participation;*

3            *(3) make available to small business concerns*  
4        *training, mentoring, and clear, up-to-date informa-*  
5        *tion on how to participate in the procurement and*  
6        *collaborative research, including how to submit effec-*  
7        *tive proposals, and information related to alternative*  
8        *approaches to resolution of disputes involving intellec-*  
9        *tual property rights and other technology transfer*  
10       *matters;*

11           *(4) increase the awareness inside the National*  
12       *Laboratory or single-purpose research facility of the*  
13       *capabilities and opportunities presented by small*  
14       *business concerns; and*

15           *(5) establish guidelines for the program under*  
16       *subsection (b) and report on the effectiveness of such*  
17       *program to the Director of the National Laboratory*  
18       *or single-purpose research facility.*

19        *(b) ESTABLISHMENT OF SMALL BUSINESS ASSIST-*  
20       *ANCE PROGRAM.—The Secretary shall require the Director*  
21       *of each National Laboratory, and may require the Director*  
22       *of a single-purpose research facility, to establish a program*  
23       *to provide small business concerns—*

24           *(1) assistance directed at making them more ef-*  
25       *fective and efficient subcontractors or suppliers to the*

1 *National Laboratory or single-purpose research facil-*  
2 *ity; or*

3 (2) *general technical assistance, the cost of which*  
4 *shall not exceed \$10,000 per instance of assistance, to*  
5 *improve the small business concern's products or serv-*  
6 *ices.*

7 (c) *USE OF FUNDS.—None of the funds expended*  
8 *under subsection (b) may be used for direct grants to the*  
9 *small business concerns.*

10 (d) *DEFINITIONS.—In this section:*

11 (1) *SMALL BUSINESS CONCERN.—The term*  
12 *“small business concern” has the meaning given such*  
13 *term in section 3 of the Small Business Act (15*  
14 *U.S.C. 632).*

15 (2) *SOCIALLY AND ECONOMICALLY DISADVAN-*  
16 *TAGED SMALL BUSINESS CONCERNS.—The term “so-*  
17 *cially and economically disadvantaged small business*  
18 *concerns” has the meaning given such term in section*  
19 *8(a)(4) of the Small Business Act (15 U.S.C.*  
20 *637(a)(4)).*

21 **SEC. 190. MOBILITY OF SCIENTIFIC AND TECHNICAL PER-**  
22 **SONNEL.**

23 *Not later than 2 years after the date of enactment of*  
24 *this section, the Secretary shall transmit a report to the*  
25 *Congress identifying any policies or procedures of a con-*

1 tractor operating a National Laboratory or single-purpose  
2 research facility that create disincentives to the temporary  
3 transfer of scientific and technical personnel among the con-  
4 tractor-operated National Laboratories or contractor-oper-  
5 ated single-purpose research facilities.

6 **SEC. 191. NATIONAL ACADEMY OF SCIENCES REPORT.**

7       *Within 90 days after the date of enactment of this Act,*  
8 *the Secretary shall enter into an arrangement with the Na-*  
9 *tional Academy of Sciences for the Academy to—*

10           (1) *conduct studies on—*

11                   (A) *the obstacles to accelerating the commer-*  
12                   *cial application of energy technology; and*

13                   (B) *the adequacy of Department policies*  
14                   *and procedures for, and oversight of, technology*  
15                   *transfer-related disputes between contractors of*  
16                   *the Department and the private sector; and*

17           (2) *report to the Congress on recommendations*  
18           *developed as a result of the studies.*

19 **SEC. 192. OUTREACH.**

20       *The Secretary shall ensure that each program author-*  
21 *ized by this title includes an outreach component to provide*  
22 *information, as appropriate, to manufacturers, consumers,*  
23 *engineers, architects, builders, energy service companies, in-*  
24 *stitutions of higher education, facility planners and man-*  
25 *agers, State and local governments, and other entities.*

1 **SEC. 193. LIMITS ON USE OF FUNDS.**

2       (a) *COMPETITIVE PROCEDURE REQUIREMENT.*—None  
3 of the funds authorized to be appropriated to the Secretary  
4 by this title may be used to award a management and oper-  
5 ating contract for a nonmilitary energy laboratory of the  
6 Department unless such contract is competitively awarded  
7 or the Secretary grants, on a case-by-case basis, a waiver  
8 to allow for such a deviation. The Secretary may not dele-  
9 gate the authority to grant such a waiver.

10       (b) *CONGRESSIONAL NOTICE.*—At least 2 months be-  
11 fore a contract award for which the Secretary intends to  
12 grant such a waiver, the Secretary shall submit to the Con-  
13 gress a report notifying the Congress of the waiver and set-  
14 ting forth the reasons for the waiver.

15 **SEC. 194. REPROGRAMMING.**

16       (a) *DISTRIBUTION REPORT.*—Not later than 60 days  
17 after the date of the enactment of an Act appropriating  
18 amounts authorized under this title, the Secretary shall  
19 transmit to the appropriate authorizing committees of the  
20 Congress a report explaining how such amounts will be dis-  
21 tributed among the authorizations contained in this title.

22       (b) *PROHIBITION.*—(1) No amount identified under  
23 subsection (a) shall be reprogrammed if such reprogram-  
24 ming would result in an obligation which changes an indi-  
25 vidual distribution required to be reported under subsection  
26 (a) by more than 5 percent unless the Secretary has trans-

1 mitted to the appropriate authorizing committees of the  
2 Congress a report described in subsection (c) and a period  
3 of 30 days has elapsed after such committees receive the re-  
4 port.

5 (2) In the computation of the 30-day period described  
6 in paragraph (1), there shall be excluded any day on which  
7 either House of Congress is not in session because of an  
8 adjournment of more than 3 days to a day certain.

9 (c) *REPROGRAMMING REPORT*.—A report referred to  
10 in subsection (b)(1) shall contain a full and complete state-  
11 ment of the action proposed to be taken and the facts and  
12 circumstances relied on in support of the proposed action.

13 **SEC. 195. CONSTRUCTION WITH OTHER LAWS.**

14 Except as otherwise provided in this title, the Sec-  
15 retary shall carry out the research, development, demonstra-  
16 tion, and commercial application programs, projects, and  
17 activities authorized by this title in accordance with the ap-  
18 plicable provisions of the Atomic Energy Act of 1954 (42  
19 U.S.C. et seq.), the Federal Nonnuclear Research and Devel-  
20 opment Act of 1974 (42 U.S.C. 5901 et seq.), the Energy  
21 Policy Act of 1992 (42 U.S.C. 13201 et seq.), the Stevenson-  
22 Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701  
23 et seq.), chapter 18 of title 35, United States Code (com-  
24 monly referred to as the Bayh-Dole Act), and any other Act

1 *under which the Secretary is authorized to carry out such*  
2 *activities.*

3 **SEC. 196. UNIVERSITY COLLABORATION.**

4 *Not later than 2 years after the date of enactment of*  
5 *this Act, the Secretary shall transmit to the Congress a re-*  
6 *port that examines the feasibility of promoting collabora-*  
7 *tions between large institutions of higher education and*  
8 *small institutions of higher education through grants, con-*  
9 *tracts, and cooperative agreements made by the Secretary*  
10 *for energy projects. The Secretary shall also consider pro-*  
11 *viding incentives for the inclusion of small institutions of*  
12 *higher education, including minority-serving institutions,*  
13 *in energy research grants, contracts, and cooperative agree-*  
14 *ments.*

15 **SEC. 197. FEDERAL LABORATORY EDUCATIONAL PARTNERS.**

16 *(a) DISTRIBUTION OF ROYALTIES RECEIVED BY FED-*  
17 *ERAL AGENCIES.—Section 14(a)(1)(B)(v) of the Stevenson-*  
18 *Wylder Technology Innovation Act of 1980 (15 U.S.C.*  
19 *3710c(a)(1)(B)(v)), is amended to read as follows:*

20 *“(v) for scientific research and development*  
21 *and for educational assistance and other pur-*  
22 *poses consistent with the missions and objectives*  
23 *of the Department of Energy and the labora-*  
24 *tory.”.*

1           (b) *COOPERATIVE RESEARCH AND DEVELOPMENT*  
2 *AGREEMENTS.*—Section 12(b)(5)(C) of the Stevenson-  
3 Wydler Technology Innovation Act of 1980 (15 U.S.C.  
4 3710a(b)(5)(C)) is amended to read as follows:

5           “(C) for scientific research and development and  
6           for educational assistance consistent with the missions  
7           and objectives of the Department of Energy and the  
8           laboratory.”.

9 **SEC. 198. INTERAGENCY COOPERATION.**

10           *The Secretary shall enter into discussions with the Ad-*  
11 *ministrators of the National Aeronautics and Space Admin-*  
12 *istration with the goal of reaching an interagency working*  
13 *agreement between the 2 agencies that would make the Na-*  
14 *tional Aeronautics and Space Administration’s expertise in*  
15 *energy, gained from its existing and planned programs,*  
16 *more readily available to the relevant research, develop-*  
17 *ment, demonstration, and commercial applications pro-*  
18 *grams of the Department. Technologies to be discussed*  
19 *should include the National Aeronautics and Space Admin-*  
20 *istration’s modeling, research, development, testing, and*  
21 *evaluation of new energy technologies, including solar,*  
22 *wind, fuel cells, and hydrogen storage and distribution.*

1           **TITLE II—DEPARTMENT OF**  
2           **ENERGY MANAGEMENT**

3   **SEC. 201. IMPROVED COORDINATION AND MANAGEMENT OF**  
4                   **CIVILIAN SCIENCE AND TECHNOLOGY PRO-**  
5                   **GRAMS.**

6           (a) *RECONFIGURATION OF POSITION OF DIRECTOR OF*  
7   *THE OFFICE OF SCIENCE.*—Section 209 of the Department  
8   of Energy Organization Act (41 U.S.C. 7139) is amended  
9   to read as follows:

10                                   “OFFICE OF SCIENCE

11           “SEC. 209. (a) *There shall be within the Department*  
12   *an Office of Science, to be headed by an Assistant Secretary*  
13   *of Science, who shall be appointed by the President, by and*  
14   *with the advice and consent of the Senate, and who shall*  
15   *be compensated at the rate provided for level IV of the Exec-*  
16   *utive Schedule under section 5315 of title 5, United States*  
17   *Code.*

18           “(b) *The Assistant Secretary of Science shall be in ad-*  
19   *dition to the Assistant Secretaries provided for under sec-*  
20   *tion 203 of this Act.*

21           “(c) *It shall be the duty and responsibility of the As-*  
22   *stant Secretary of Science to carry out the fundamental*  
23   *science and engineering research functions of the Depart-*  
24   *ment, including the responsibility for policy and manage-*  
25   *ment of such research, as well as other functions vested in*

1 *the Secretary which he may assign to the Assistant Sec-*  
2 *retary.”.*

3       **(b) ADDITIONAL ASSISTANT SECRETARY POSITION TO**  
4 **ENABLE IMPROVED MANAGEMENT OF NUCLEAR ENERGY**  
5 **ISSUES.—(1) Section 203(a) of the Department of Energy**  
6 **Organization Act (42 U.S.C. 7133(a)) is amended by strik-**  
7 **ing “There shall be in the Department six Assistant Secre-**  
8 **taries” and inserting “Except as provided in section 209,**  
9 **there shall be in the Department seven Assistant Secre-**  
10 **taries”.**

11       **(2) It is the sense of the Congress that the leadership**  
12 **for departmental missions in nuclear energy should be at**  
13 **the Assistant Secretary level.**

14       **(c) TECHNICAL AND CONFORMING AMENDMENTS.—(1)**  
15 **Section 5315 of title 5, United States Code, is amended**  
16 **by—**

17               **(A) striking “Director, Office of Science, Depart-**  
18 **ment of Energy.”; and**

19               **(B) striking “Assistant Secretaries of Energy**  
20 **(6)” and inserting “Assistant Secretaries of Energy**  
21 **(8)”.**

22       **(2) The table of contents for the Department of Energy**  
23 **Organization Act (42 U.S.C. 7101 note) is amended—**

24               **(A) by striking “Section 209” and inserting**  
25 **“Sec. 209”;**

1           (B) by striking “213.” and inserting “Sec. 213.”;

2           (C) by striking “214.” and inserting “Sec. 214.”;

3           (D) by striking “215.” and inserting “Sec.  
4           215.”; and

5           (E) by striking “216.” and inserting “Sec. 216.”.

6 **SEC. 202. REPORT ON EQUAL EMPLOYMENT OPPORTUNITY**

7                           **PRACTICES.**

8           *The Secretary shall transmit to the Congress a bien-*  
9 *ennial report on the equal employment opportunity practices*  
10 *at the nonmilitary energy laboratories. Such report shall*  
11 *include—*

12                   (1) *a thorough review of each nonmilitary energy*  
13 *laboratory contractor’s equal employment opportunity*  
14 *policies;*

15                   (2) *a statistical report on complaints and their*  
16 *disposition in the laboratories;*

17                   (3) *the role equal employment opportunity prac-*  
18 *tices play in selecting the contractor for each labora-*  
19 *tory, and in establishing the fee that is paid to the*  
20 *contractor for each laboratory;*

21                   (4) *a summary of disciplinary actions by either*  
22 *the Department or the relevant contractors for each*  
23 *laboratory; and*



1           (2) *LICENSED ENTITIES.*—*For the purposes of*  
2 *carrying out at nonmilitary energy laboratories*  
3 *owned or operated by the Department regulatory and*  
4 *enforcement responsibilities described in paragraph*  
5 *(1), the Nuclear Regulatory Commission may regu-*  
6 *late, through licensing, certification, or other appro-*  
7 *priate means, the Department’s contractors.*

8           (3) *DECOMMISSIONING.*—*A contractor operating*  
9 *a nonmilitary energy laboratory owned by the De-*  
10 *partment shall not be responsible for the costs of de-*  
11 *commissioning that facility. No enforcement action*  
12 *may be taken against such contractor for any viola-*  
13 *tion of Nuclear Regulatory Commission decommis-*  
14 *sioning requirements, if such violation is the result of*  
15 *a failure of the Department to authorize or fund de-*  
16 *commissioning activities. The Nuclear Regulatory*  
17 *Commission and the Department shall, not later than*  
18 *1 year after the date of enactment of this Act, enter*  
19 *into a memorandum of understanding establishing*  
20 *decommissioning procedures and requirements for*  
21 *nonmilitary energy laboratories owned or operated by*  
22 *the Department.*

23           (4) *ACCELERATORS.*—*Notwithstanding the provi-*  
24 *sions of the Atomic Energy Act of 1954 (42 U.S.C.*  
25 *2011 et. seq.), effective 2 years after the date of enact-*

1        *ment of this Act, the Nuclear Regulatory Commission*  
2        *shall have exclusive regulatory authority over accel-*  
3        *erators, other electronic sources of radiation not as-*  
4        *signed to the Commission as of the date of enactment*  
5        *of this Act, accelerator-produced radioisotopes, and*  
6        *naturally occurring radioactive materials at non-*  
7        *military energy laboratories, consistent with the au-*  
8        *thorities granted the Nuclear Regulatory Commission*  
9        *in the Atomic Energy Act of 1954. Until such time*  
10       *as the Commission has completed a rulemaking for*  
11       *the foregoing equipment and radioisotopes, non-*  
12       *military energy laboratories shall be required to meet*  
13       *the requirements stipulated in a license for the facil-*  
14       *ity.*

15            (5) *ADMINISTRATION.*—*The responsibilities as-*  
16        *sumed by the Nuclear Regulatory Commission under*  
17        *this subsection shall be administered by the Nuclear*  
18        *Regulatory Commission, not by States.*

19            (6) *JUDICIAL REVIEW.*—*Section 189 b. of the*  
20        *Atomic Energy Act of 1954 (42 U.S.C. 2239(b)) is*  
21        *amended by adding the following paragraph after*  
22        *paragraph (4):*

23            *“(5) Any final order or regulation of the Com-*  
24        *mission establishing standards to govern nonmilitary*  
25        *energy laboratories owned or operated by the Depart-*

1 *ment of Energy that is issued to implement the Com-*  
2 *mission's responsibilities under section 202 of the En-*  
3 *ergy Research, Development, Demonstration, and*  
4 *Commercial Application Act of 2003, and any final*  
5 *determination of the Commission relating to whether*  
6 *a nonmilitary energy laboratory owned or operated*  
7 *by the Department is in compliance with such stand-*  
8 *ards and all applicable Commission regulations or or-*  
9 *ders."*

10 (7) *EMPLOYEE PROTECTION.*—*Any Department*  
11 *contractor operating a nonmilitary energy laboratory*  
12 *that is regulated by the Nuclear Regulatory Commis-*  
13 *sion under this section shall be subject to section 211*  
14 *of the Energy Reorganization Act of 1974 (42 U.S.C.*  
15 *5851) to the same extent as any other employer sub-*  
16 *ject to such section 211.*

17 (8) *CONFLICT OF INTEREST.*—*Section 170A of*  
18 *the Atomic Energy Act of 1954 (42 U.S.C. 2210a) ap-*  
19 *plies to contracts, agreements, or other arrangements*  
20 *of the Nuclear Regulatory Commission proposed or*  
21 *entered into pursuant to its responsibilities assumed*  
22 *under this subsection.*

23 (c) *OCCUPATIONAL SAFETY AND HEALTH.*—

24 (1) *OSHA JURISDICTION.*—*Notwithstanding sec-*  
25 *tion 4(b)(1) of the Occupational Safety and Health*

1 *Act of 1970 (29 U.S.C. 653(b)(1)), effective 2 years*  
2 *after the date of enactment of this Act, the Occupa-*  
3 *tional Safety and Health Administration shall as-*  
4 *sume the exclusive regulatory and enforcement respon-*  
5 *sibilities of the Department relating to matters cov-*  
6 *ered by the Occupational Safety and Health Act of*  
7 *1970 with regard to all nonmilitary energy labora-*  
8 *tories owned or operated by the Department, except as*  
9 *provided in paragraph (2). The responsibilities as-*  
10 *sumed by the Occupational Safety and Health Ad-*  
11 *ministration under this subsection shall be adminis-*  
12 *tered by the Occupational Safety and Health Admin-*  
13 *istration, not by States. Any Department contractor*  
14 *operating such a laboratory shall, with respect to*  
15 *matters relating to occupational safety and health, be*  
16 *considered to be an employer for purposes of the Oc-*  
17 *cupational Safety and Health Act of 1970.*

18 (2) *REGULATION OF HAZARDS CONTAINING RADI-*  
19 *OLOGICAL AND NON-RADIOLOGICAL COMPONENT.—If a*  
20 *hazard at a nonmilitary energy laboratory owned or*  
21 *operated by the Department presents a risk of occupa-*  
22 *tional exposure and contains both a radiological and*  
23 *non-radiological component, the Occupational Safety*  
24 *and Health Administration and the Nuclear Regu-*  
25 *latory Commission shall, effective 2 years after the*

1       *date of enactment of this Act, share regulatory and*  
2       *enforcement responsibilities with respect to the hazard*  
3       *in accordance with the memorandum of under-*  
4       *standing entered into pursuant to subsection (d).*

5       *(d) MEMORANDUM OF UNDERSTANDING.—The Nuclear*  
6       *Regulatory Commission and the Occupational Safety and*  
7       *Health Administration shall, not later than 1 year after*  
8       *the date of enactment of this Act, enter into and transmit*  
9       *to the Congress a memorandum of understanding to govern*  
10       *the exercise of their respective authorities over nuclear safe-*  
11       *ty and occupational safety and health at nonmilitary en-*  
12       *ergy laboratories owned or operated by the Department.*

13       *(e) CIVIL PENALTIES.—The Department’s contractor*  
14       *operating a nonmilitary energy laboratory owned or oper-*  
15       *ated by the Department shall not be liable for civil penalties*  
16       *under the Atomic Energy Act of 1954 or the Occupational*  
17       *Safety and Health Act of 1970 for any actions taken before*  
18       *the date of transfer of regulatory authority under this sec-*  
19       *tion, pursuant to the instructions of a Federal agency in*  
20       *preparation for the transfer of regulatory and enforcement*  
21       *responsibilities required by this section.*

22       *(f) INDEMNIFICATION.—The Secretary shall continue*  
23       *to indemnify nonmilitary energy laboratories owned or op-*  
24       *erated by the Department in accordance with the provisions*  
25       *of section 170 d. of the Atomic Energy Act of 1954.*

1           (g) *DEPARTMENT OF ENERGY REPORTING REQUIRE-*  
2 *MENT.*—*Not later than 18 months after the date of enact-*  
3 *ment of this Act, the Secretary shall transmit to the Con-*  
4 *gress a plan for the termination of the Department’s regu-*  
5 *latory and enforcement responsibilities for nonmilitary en-*  
6 *ergy laboratories owned or operated by the Department re-*  
7 *quired by this section. The report shall include—*

8                   (1) *a detailed transition plan, drafted in coordi-*  
9 *nation with the Nuclear Regulatory Commission and*  
10 *the Occupational Safety and Health Administration,*  
11 *giving the schedule for termination of self-regulation*  
12 *authority as outlined in subsection (a), including the*  
13 *activities to be coordinated with the Nuclear Regu-*  
14 *latory Commission and the Occupational Safety and*  
15 *Health Administration;*

16                   (2) *a description of any issues remaining to be*  
17 *resolved with the Nuclear Regulatory Commission, the*  
18 *Occupational Safety and Health Administration, or*  
19 *other external regulators, and a timetable for resolv-*  
20 *ing such issues by the authority transfer date estab-*  
21 *lished under this section; and*

22                   (3) *an estimate of—*

23                           (A) *the annual cost of administering and*  
24 *implementing self-regulation of the nuclear safe-*  
25 *ty and occupational safety and health respon-*

1           *sibilities described in subsections (b) and (c) at*  
2           *nonmilitary energy laboratories owned or oper-*  
3           *ated by the Department;*

4                     *(B) the number of Federal and contractor*  
5           *employees administering and implementing such*  
6           *self-regulation; and*

7                     *(C) the extent and schedule by which the*  
8           *Department and the staffs at its nonmilitary en-*  
9           *ergy laboratories will be reduced as a result of*  
10           *implementation of this section.*

11           *(h) GENERAL ACCOUNTING OFFICE REPORTING RE-*  
12           *QUIREMENT.—The Comptroller General of the United*  
13           *States shall periodically report to the Congress on the*  
14           *progress made in implementing this section. The Comp-*  
15           *troller General shall provide a report not later than 20*  
16           *months after the date of enactment of this Act on the De-*  
17           *partment's transition plan, and not later than 26 months*  
18           *after the date of enactment of this Act on the implementa-*  
19           *tion of Nuclear Regulatory Commission and Occupational*  
20           *Safety and Health Administration regulations in the non-*  
21           *military energy laboratories.*

1           **TITLE III—CLEAN SCHOOL**  
2                           **BUSES**

3   **SEC. 301. ESTABLISHMENT OF PILOT PROGRAM.**

4           (a) *ESTABLISHMENT.*—*The Secretary of Energy, in*  
5 *consultation with the Administrator of the Environmental*  
6 *Protection Agency, shall establish a pilot program for*  
7 *awarding grants on a competitive basis to eligible entities*  
8 *for the demonstration and commercial application of alter-*  
9 *native fuel school buses and ultra-low sulfur diesel school*  
10 *buses.*

11          (b) *REQUIREMENTS.*—*Not later than 3 months after*  
12 *the date of the enactment of this Act, the Secretary shall*  
13 *establish and publish in the Federal register grant require-*  
14 *ments on eligibility for assistance, and on implementation*  
15 *of the program established under subsection (a), including*  
16 *certification requirements to ensure compliance with this*  
17 *title.*

18          (c) *SOLICITATION.*—*Not later than 6 months after the*  
19 *date of the enactment of this Act, the Secretary shall solicit*  
20 *proposals for grants under this section.*

21          (d) *ELIGIBLE RECIPIENTS.*—*A grant shall be awarded*  
22 *under this section only—*

23                 (1) *to a local or State governmental entity re-*  
24 *sponsible for providing school bus service to one or*

1        *more public school systems or responsible for the pur-*  
2        *chase of school buses; or*

3                *(2) to a contracting entity that provides school*  
4        *bus service to one or more public school systems, if the*  
5        *grant application is submitted jointly with the school*  
6        *system or systems which the buses will serve.*

7        *(e) TYPES OF GRANTS.—*

8                *(1) IN GENERAL.—Grants under this section*  
9        *shall be for the demonstration and commercial appli-*  
10       *cation of technologies to facilitate the use of alter-*  
11       *native fuel school buses and ultra-low sulfur diesel*  
12       *school buses in lieu of buses manufactured before*  
13       *model year 1977 and diesel-powered buses manufac-*  
14       *tured before model year 1991.*

15               *(2) NO ECONOMIC BENEFIT.—Other than the re-*  
16       *ceipt of the grant, a recipient of a grant under this*  
17       *section may not receive any economic benefit in con-*  
18       *nection with the receipt of the grant.*

19               *(3) PRIORITY OF GRANT APPLICATIONS.—The*  
20       *Secretary shall give priority to awarding grants to*  
21       *applicants who can demonstrate the use of alternative*  
22       *fuel buses and ultra-low sulfur diesel school buses in*  
23       *lieu of buses manufactured before model year 1977.*

24        *(f) CONDITIONS OF GRANT.—A grant provided under*  
25       *this section shall include the following conditions:*

1           (1) *All buses acquired with funds provided under*  
2 *the grant shall be operated as part of the school bus*  
3 *fleet for which the grant was made for a minimum*  
4 *of 5 years.*

5           (2) *Funds provided under the grant may only be*  
6 *used—*

7                   (A) *to pay the cost, except as provided in*  
8 *paragraph (3), of new alternative fuel school*  
9 *buses or ultra-low sulfur diesel school buses, in-*  
10 *cluding State taxes and contract fees; and*

11                   (B) *to provide—*

12                           (i) *up to 10 percent of the price of the*  
13 *alternative fuel buses acquired, for necessary*  
14 *alternative fuel infrastructure if the infra-*  
15 *structure will only be available to the grant*  
16 *recipient; and*

17                           (ii) *up to 15 percent of the price of the*  
18 *alternative fuel buses acquired, for necessary*  
19 *alternative fuel infrastructure if the infra-*  
20 *structure will be available to the grant re-*  
21 *ipient and to other bus fleets.*

22           (3) *The grant recipient shall be required to pro-*  
23 *vide at least the lesser of 15 percent of the total cost*  
24 *of each bus received or \$15,000 per bus.*

1           (4) *In the case of a grant recipient receiving a*  
2 *grant to demonstrate ultra-low sulfur diesel school*  
3 *buses, the grant recipient shall be required to provide*  
4 *documentation to the satisfaction of the Secretary*  
5 *that diesel fuel containing sulfur at not more than 15*  
6 *parts per million is available for carrying out the*  
7 *purposes of the grant, and a commitment by the ap-*  
8 *plicant to use such fuel in carrying out the purposes*  
9 *of the grant.*

10       (g) *BUSES.—Funding under a grant made under this*  
11 *section may be used to demonstrate the use only of new al-*  
12 *ternative fuel school buses or ultra-low sulfur diesel school*  
13 *buses—*

14           (1) *with a gross vehicle weight of greater than*  
15 *14,000 pounds;*

16           (2) *that are powered by a heavy duty engine;*

17           (3) *that, in the case of alternative fuel school*  
18 *buses manufactured in model years 2003 through*  
19 *2006, emit not more than 1.8 grams per brake horse-*  
20 *power-hour of nonmethane hydrocarbons and oxides of*  
21 *nitrogen and .01 grams per brake horsepower-hour of*  
22 *particulate matter; and*

23           (4) *that, in the case of ultra-low sulfur diesel*  
24 *school buses, emit not more than—*

1           (A) for buses manufactured in model year  
2           2003, 3.0 grams per brake horsepower-hour of ox-  
3           ides of nitrogen and .01 grams per brake horse-  
4           power-hour of particulate matter; and

5           (B) for buses manufactured in model years  
6           2004 through 2006, 2.5 grams per brake horse-  
7           power-hour of nonmethane hydrocarbons and ox-  
8           ides of nitrogen and .01 grams per brake horse-  
9           power-hour of particulate matter,

10          except that under no circumstances shall buses be ac-  
11          quired under this section that emit nonmethane hy-  
12          drocarbons, oxides of nitrogen, or particulate matter  
13          at a rate greater than the best performing technology  
14          of the same class of ultra-low sulfur diesel school buses  
15          commercially available at the time the grant is made.

16          (h) *DEPLOYMENT AND DISTRIBUTION.*—The Secretary  
17          shall seek to the maximum extent practicable to achieve na-  
18          tionwide deployment of alternative fuel school buses and  
19          ultra-low sulfur diesel school buses through the program  
20          under this section, and shall ensure a broad geographic dis-  
21          tribution of grant awards, with a goal of no State receiving  
22          more than 10 percent of the grant funding made available  
23          under this section for a fiscal year.

24          (i) *LIMIT ON FUNDING.*—The Secretary shall provide  
25          not less than 20 percent and not more than 25 percent of

1 *the grant funding made available under this section for any*  
2 *fiscal year for the acquisition of ultra-low sulfur diesel*  
3 *school buses.*

4       (j) *ANNUAL REPORT.*—*Not later than January 31 of*  
5 *each year, the Secretary of Energy shall provide a report*  
6 *evaluating implementation of the program under this title*  
7 *to the Congress. Such report shall include the total number*  
8 *of grant applications received, the number and types of al-*  
9 *ternative fuel buses and ultra-low sulfur diesel school buses*  
10 *requested in grant applications, a list of grants awarded*  
11 *and the criteria used to select the grant recipients, certified*  
12 *engine emission levels of all buses purchased under the pro-*  
13 *gram, and any other information the Secretary considers*  
14 *appropriate.*

15       (k) *DEFINITIONS.*—*For purposes of this section—*

16           (1) *the term “alternative fuel school bus” means*  
17 *a bus powered substantially by electricity (including*  
18 *electricity supplied by a fuel cell), or by liquefied nat-*  
19 *ural gas, compressed natural gas, liquefied petroleum*  
20 *gas, hydrogen, propane, or methanol or ethanol at no*  
21 *less than 85 percent by volume; and*

22           (2) *the term “ultra-low sulfur diesel school bus”*  
23 *means a school bus powered by diesel fuel which con-*  
24 *tains sulfur at not more than 15 parts per million.*

1 **SEC. 302. FUEL CELL BUS DEVELOPMENT AND DEMONSTRATION PROGRAM.**  
2

3 (a) *ESTABLISHMENT OF PROGRAM.*—The Secretary  
4 shall establish a program for entering into cooperative  
5 agreements with private sector fuel cell bus developers for  
6 the development of fuel cell-powered school buses, and subse-  
7 quently with not less than 2 units of local government using  
8 natural gas-powered school buses and such private sector  
9 fuel cell bus developers to demonstrate the use of fuel cell-  
10 powered school buses.

11 (b) *COST SHARING.*—The non-Federal contribution for  
12 activities funded under this section shall be not less than—

13 (1) 20 percent for fuel infrastructure develop-  
14 ment activities; and

15 (2) 50 percent for demonstration activities and  
16 for development activities not described in paragraph  
17 (1).

18 (c) *FUNDING.*—No more than \$25,000,000 of the  
19 amounts authorized under section 304 may be used for car-  
20 rying out this section for the period encompassing fiscal  
21 years 2004 through 2006.

22 (d) *REPORTS TO CONGRESS.*—Not later than 3 years  
23 after the date of the enactment of this Act, and not later  
24 than October 1, 2006, the Secretary shall transmit to the  
25 Congress a report that—

1           (1) *evaluates the process of converting natural*  
2           *gas infrastructure to accommodate fuel cell-powered*  
3           *school buses; and*

4           (2) *assesses the results of the development and*  
5           *demonstration program under this section.*

6 **SEC. 303. DIESEL RETROFIT PROGRAM.**

7           (a) *ESTABLISHMENT.*—*The Administrator of the En-*  
8           *vironmental Protection Agency and the Secretary shall es-*  
9           *tablish a pilot program for awarding grants on a competi-*  
10           *tive basis to eligible recipients for the demonstration and*  
11           *commercial application of retrofit technologies for diesel*  
12           *school buses.*

13           (b) *ELIGIBLE RECIPIENTS.*—*A grant shall be awarded*  
14           *under this section only—*

15           (1) *to a local or State governmental entity re-*  
16           *sponsible for providing school bus service to one or*  
17           *more public school systems; or*

18           (2) *to a contracting entity that provides school*  
19           *bus service to one or more public school systems, if the*  
20           *grant application is submitted jointly with the school*  
21           *system or systems which the buses will serve.*

22           (c) *CONDITIONS OF GRANT.*—*A grant provided under*  
23           *this section may be used only to demonstrate the use of ret-*  
24           *rofit emissions-control technology on diesel buses that—*

25           (1) *operate on ultra-low sulfur diesel fuel; and*

1           (2) *were manufactured in model year 1991 or*  
2           *later.*

3           (d) *VERIFICATION.*—*Not later than 3 months after the*  
4           *date of enactment of this Act, the Administrator shall pub-*  
5           *lish in the Federal Register procedures to verify—*

6           (1) *the retrofit emissions-control technology to be*  
7           *demonstrated; and*

8           (2) *that buses on which retrofit emissions-control*  
9           *technology are to be demonstrated will operate on die-*  
10          *sel fuel containing not more than 15 parts per mil-*  
11          *lion of sulfur.*

12 **SEC. 304. AUTHORIZATION OF APPROPRIATIONS.**

13          (a) *SCHOOL BUS GRANTS.*—*There are authorized to*  
14          *be appropriated to the Secretary for carrying out this title,*  
15          *to remain available until expended—*

16               (1) *\$90,000,000 for fiscal year 2004;*

17               (2) *\$100,000,000 for fiscal year 2005; and*

18               (3) *\$110,000,000 for fiscal year 2006.*

19          (b) *RETROFIT GRANTS.*—*There are authorized to be*  
20          *appropriated to the Administrator of the Environmental*  
21          *Protection Agency and the Secretary such sums as may be*  
22          *necessary for carrying out section 303.*

1 **TITLE** **IV—ALTERNATIVE**  
2 **FUELED AND ADVANCED VE-**  
3 **HICLES**

4 **SEC. 401. DEFINITIONS.**

5 *For the purposes of this title, the following definitions*  
6 *apply:*

7 (1) *ALTERNATIVE FUELED VEHICLE.*—*The term*  
8 *“alternative fueled vehicle” means a vehicle propelled*  
9 *solely on an alternative fuel as defined in section 301*  
10 *of the Energy Policy Act (42 U.S.C. 13211), except*  
11 *the term does not include any vehicle that the Sec-*  
12 *retary determines, by rule, does not yield substantial*  
13 *environmental benefits over a vehicle operating solely*  
14 *on gasoline or diesel derived from fossil fuels.*

15 (2) *FUEL CELL VEHICLE.*—*The term “fuel cell*  
16 *vehicle” means a vehicle propelled by an electric*  
17 *motor powered by a fuel cell system that converts*  
18 *chemical energy into electricity by combining oxygen*  
19 *(from air) with hydrogen fuel that is stored on the ve-*  
20 *hicle or is produced onboard by reformation of a hy-*  
21 *drocarbon fuel. Such fuel cell system may or may not*  
22 *include the use of auxiliary energy storage systems to*  
23 *enhance vehicle performance.*

24 (3) *HYBRID VEHICLE.*—*The term “hybrid vehi-*  
25 *cle” means a medium or heavy duty vehicle that is*

1 *more efficient than its non-hybrid counterpart and*  
2 *that draws propulsion energy from both an internal*  
3 *combustion engine using any combustible fuel and an*  
4 *onboard energy storage device.*

5 (4) *NEIGHBORHOOD ELECTRIC VEHICLE.—The*  
6 *term “neighborhood electric vehicle” means a motor*  
7 *vehicle capable of traveling at speeds of 25 miles per*  
8 *hour that is—*

9 (A) *a low-speed vehicle, as such term is de-*  
10 *defined in section 571.3(b) of title 49, Code of Fed-*  
11 *eral Regulations;*

12 (B) *a zero-emission vehicle, as such term is*  
13 *defined in section 86.1702–99 of title 40, Code of*  
14 *Federal Regulations; and*

15 (C) *otherwise lawful to use on local streets.*

16 (5) *PILOT PROGRAM.—The term “pilot program”*  
17 *means the competitive grant program established*  
18 *under section 402.*

19 (6) *ULTRA-LOW SULFUR DIESEL VEHICLE.—The*  
20 *term “ultra-low sulfur diesel vehicle” means a vehicle*  
21 *manufactured in model years 2003 through 2006*  
22 *powered by a heavy-duty diesel engine that—*

23 (A) *is fueled by diesel fuel which contains*  
24 *sulfur at not more than 15 parts per million;*  
25 *and*

1 (B) emits not more than the lesser of—

2 (i) for vehicles manufactured in—

3 (I) model year 2003, 3.0 grams  
4 per brake horsepower-hour of oxides of  
5 nitrogen and .01 grams per brake  
6 horsepower-hour of particulate matter;  
7 and

8 (II) model years 2004 through  
9 2006, 2.5 grams per brake horsepower-  
10 hour of nonmethane hydrocarbons and  
11 oxides of nitrogen and .01 grams per  
12 brake horsepower-hour of particulate  
13 matter; or

14 (ii) the emissions of nonmethane hy-  
15 drocarbons, oxides of nitrogen, and particu-  
16 late matter of the best performing tech-  
17 nology of ultra-low sulfur diesel vehicles of  
18 the same class and application that are  
19 commercially available.

20 **SEC. 402. PILOT PROGRAM.**

21 (a) *ESTABLISHMENT.*—The Secretary shall establish a  
22 competitive grant pilot program, to be administered  
23 through the Clean Cities Program of the Department of En-  
24 ergy, to provide not more than 15 geographically dispersed  
25 project grants to State governments, local governments, or

1 *metropolitan transportation authorities to carry out a*  
2 *project or projects for the purposes described in subsection*  
3 *(b).*

4 *(b) GRANT PURPOSES.—Grants under this section*  
5 *may be used for the following purposes:*

6 *(1) The acquisition of alternative fueled vehicles*  
7 *or fuel cell vehicles, including—*

8 *(A) passenger vehicles including neighbor-*  
9 *hood electric vehicles; and*

10 *(B) motorized two-wheel bicycles, scooters,*  
11 *or other vehicles for use by law enforcement per-*  
12 *sonnel or other State or local government or met-*  
13 *ropolitan transportation authority employees.*

14 *(2) The acquisition of alternative fueled vehicles,*  
15 *hybrid vehicles, or fuel cell vehicles, including—*

16 *(A) buses used for public transportation or*  
17 *transportation to and from schools;*

18 *(B) delivery vehicles for goods or services;*  
19 *and*

20 *(C) ground support vehicles at public air-*  
21 *ports, including vehicles to carry baggage or*  
22 *push airplanes away from terminal gates.*

23 *(3) The acquisition of ultra-low sulfur diesel ve-*  
24 *hicles.*

1           (4) *Infrastructure necessary to directly support*  
2           *an alternative fueled vehicle or fuel cell vehicle project*  
3           *funded by the grant, including fueling and other sup-*  
4           *port equipment.*

5           (5) *Operation and maintenance of vehicles, in-*  
6           *frastructure, and equipment acquired as part of a*  
7           *project funded by the grant.*

8           (c) *APPLICATIONS.—*

9           (1) *REQUIREMENTS.—The Secretary shall issue*  
10          *requirements for applying for grants under the pilot*  
11          *program. At a minimum, the Secretary shall require*  
12          *that applications be submitted by the head of a State*  
13          *or local government or a metropolitan transportation*  
14          *authority, or any combination thereof, and a reg-*  
15          *istered participant in the Clean Cities Program of the*  
16          *Department of Energy, and shall include—*

17                (A) *at least one project to enable passengers*  
18                *or goods to be transferred directly from vehicles*  
19                *acquired under this section to a local, regional,*  
20                *or national transportation system;*

21                (B) *a description of the projects proposed in*  
22                *the application, including how they meet the re-*  
23                *quirements of this title;*

24                (C) *an estimate of the ridership or degree of*  
25                *use of the projects proposed in the application;*

1           (D) an estimate of the air pollution emis-  
2           sions reduced and fossil fuel displaced as a result  
3           of the projects proposed in the application, and  
4           a plan to collect and disseminate environmental  
5           data, related to the projects to be funded under  
6           the grant, over the life of the projects;

7           (E) a description of how the projects pro-  
8           posed in the application will be sustainable  
9           without Federal assistance after the completion  
10          of the term of the grant;

11          (F) a complete description of the costs of  
12          each project proposed in the application, includ-  
13          ing acquisition, construction, operation, and  
14          maintenance costs over the expected life of the  
15          project;

16          (G) a description of which costs of the  
17          projects proposed in the application will be sup-  
18          ported by Federal assistance under this title; and

19          (H) documentation to the satisfaction of the  
20          Secretary that diesel fuel containing sulfur at  
21          not more than 15 parts per million is available  
22          for carrying out the projects, and a commitment  
23          by the applicant to use such fuel in carrying out  
24          the projects.

1           (2) *PARTNERS.*—An applicant under paragraph  
2           (1) may carry out projects under the pilot program  
3           in partnership with public and private entities.

4           (d) *SELECTION CRITERIA.*—In evaluating applica-  
5           tions under the pilot program, the Secretary shall consider  
6           each applicant’s previous experience with similar projects  
7           and shall give priority consideration to applications that—

8                 (1) are most likely to maximize protection of the  
9                 environment;

10                (2) demonstrate the greatest commitment on the  
11                part of the applicant to ensure funding for the pro-  
12                posed projects and the greatest likelihood that each  
13                project proposed in the application will be main-  
14                tained or expanded after Federal assistance under  
15                this title is completed; and

16                (3) exceed the minimum requirements of sub-  
17                section (c)(1)(A).

18           (e) *PILOT PROJECT REQUIREMENTS.*—

19                (1) *MAXIMUM AMOUNT.*—The Secretary shall not  
20                provide more than \$20,000,000 in Federal assistance  
21                under the pilot program to any applicant.

22                (2) *COST SHARING.*—The Secretary shall not  
23                provide more than 50 percent of the cost, incurred  
24                during the period of the grant, of any project under  
25                the pilot program.

1           (3) *MAXIMUM PERIOD OF GRANTS.*—*The Sec-*  
2           *retary shall not fund any applicant under the pilot*  
3           *program for more than 5 years.*

4           (4) *DEPLOYMENT AND DISTRIBUTION.*—*The Sec-*  
5           *retary shall seek to the maximum extent practicable*  
6           *to ensure a broad geographic distribution of project*  
7           *sites.*

8           (5) *TRANSFER OF INFORMATION AND KNOWL-*  
9           *EDGE.*—*The Secretary shall establish mechanisms to*  
10          *ensure that the information and knowledge gained by*  
11          *participants in the pilot program are transferred*  
12          *among the pilot program participants and to other*  
13          *interested parties, including other applicants that*  
14          *submitted applications.*

15          (f) *SCHEDULE.*—

16               (1) *PUBLICATION.*—*Not later than 3 months*  
17               *after the date of the enactment of this Act, the Sec-*  
18               *retary shall publish in the Federal Register, Com-*  
19               *merce Business Daily, and elsewhere as appropriate,*  
20               *a request for applications to undertake projects under*  
21               *the pilot program. Applications shall be due within 6*  
22               *months of the publication of the notice.*

23               (2) *SELECTION.*—*Not later than 6 months after*  
24               *the date by which applications for grants are due, the*  
25               *Secretary shall select by competitive, peer review all*

1        *applications for projects to be awarded a grant under*  
2        *the pilot program.*

3        *(g) LIMIT ON FUNDING.—The Secretary shall provide*  
4        *not less than 20 percent and not more than 25 percent of*  
5        *the grant funding made available under this section for the*  
6        *acquisition of ultra-low sulfur diesel vehicles.*

7        **SEC. 403. REPORTS TO CONGRESS.**

8        *(a) INITIAL REPORT.—Not later than 2 months after*  
9        *the date grants are awarded under the pilot program, the*  
10       *Secretary shall transmit to the Congress a report con-*  
11       *taining—*

12                *(1) an identification of the grant recipients and*  
13                *a description of the projects to be funded;*

14                *(2) an identification of other applicants that*  
15                *submitted applications for the pilot program; and*

16                *(3) a description of the mechanisms used by the*  
17                *Secretary to ensure that the information and knowl-*  
18                *edge gained by participants in the pilot program are*  
19                *transferred among the pilot program participants*  
20                *and to other interested parties, including other appli-*  
21                *cants that submitted applications.*

22        *(b) EVALUATION.—Not later than 3 years after the*  
23        *date of the enactment of this Act, and annually thereafter*  
24        *until the pilot program ends, the Secretary shall transmit*  
25        *to the Congress a report containing an evaluation of the*

1 *effectiveness of the pilot program, including an assessment*  
2 *of the benefits to the environment derived from the projects*  
3 *included in the pilot program as well as an estimate of the*  
4 *potential benefits to the environment to be derived from*  
5 *widespread application of alternative fueled vehicles and*  
6 *ultra-low sulfur diesel vehicles.*

7 **SEC. 404. FUEL CELL TRANSIT BUS DEMONSTRATION.**

8 *The Secretary shall establish a transit bus demonstra-*  
9 *tion program to make competitive, merit-based awards for*  
10 *five-year projects to demonstrate not more than 12 fuel cell*  
11 *transit buses (and necessary infrastructure) in three geo-*  
12 *graphically dispersed localities. In selecting projects under*  
13 *this section, the Secretary shall give preference to projects*  
14 *that are most likely to mitigate congestion and improve air*  
15 *quality.*

16 **SEC. 405. AUTHORIZATION OF APPROPRIATIONS.**

17 *There are authorized to be appropriated to the Sec-*  
18 *retary \$200,000,000 to carry out this title, to remain avail-*  
19 *able until expended.*

20 **TITLE V—CLEAN COAL**

21 **SEC. 501. AUTHORIZATION OF APPROPRIATIONS.**

22 *(a) CLEAN COAL POWER INITIATIVE.—Except as pro-*  
23 *vided in subsection (b), there are authorized to be appro-*  
24 *priated to the Secretary to carry out the activities author-*

1 ized by this title \$200,000,000 for each of the fiscal years  
2 2003 through 2011, to remain available until expended.

3 (b) *LIMIT ON USE OF FUNDS.*—Notwithstanding sub-  
4 section (a), no funds may be used to carry out the activities  
5 authorized by this title after September 30, 2005, unless the  
6 Secretary has transmitted to the Committee on Energy and  
7 Commerce and the Committee on Science of the House of  
8 Representatives, and to the Senate, the report required by  
9 this subsection and one month has elapsed since that trans-  
10 mission. The report shall include, with respect to subsection  
11 (a), a 10-year plan containing—

12 (1) a detailed assessment of whether the aggre-  
13 gate funding levels provided under subsection (a) are  
14 the appropriate funding levels for that program;

15 (2) a detailed description of how proposals will  
16 be solicited and evaluated, including a list of all ac-  
17 tivities expected to be undertaken;

18 (3) a detailed list of technical milestones for each  
19 coal and related technology that will be pursued; and

20 (4) a detailed description of how the program  
21 will avoid problems enumerated in General Account-  
22 ing Office reports on the Clean Coal Technology Pro-  
23 gram, including problems that have resulted in  
24 unspent funds and projects that failed either finan-  
25 cially or scientifically.

1       (c) *APPLICABILITY.*—Subsection (b) shall not apply to  
2 any project begun before September 30, 2005.

3 **SEC. 502. PROJECT CRITERIA.**

4       (a) *IN GENERAL.*—The Secretary shall not provide  
5 funding under this title for any project that does not ad-  
6 vance efficiency, environmental performance, and cost com-  
7 petitiveness well beyond the level of technologies that are  
8 in commercial service or have been demonstrated on a scale  
9 that the Secretary determines is sufficient to demonstrate  
10 that commercial service is viable as of the date of the enact-  
11 ment of this Act.

12       (b) *TECHNICAL CRITERIA FOR CLEAN COAL POWER*  
13 *INITIATIVE.*—

14               (1) *GASIFICATION.*—(A) In allocating the funds  
15 made available under section 501(a), the Secretary  
16 shall ensure that at least 80 percent of the funds are  
17 used only for projects on coal-based gasification tech-  
18 nologies, including gasification combined cycle, gasifi-  
19 cation fuel cells, gasification coproduction, and hy-  
20 brid gasification/combustion.

21               (B) The Secretary shall set technical milestones  
22 specifying emissions levels that coal gasification  
23 projects must be designed to and reasonably expected  
24 to achieve. The milestones shall get more restrictive  
25 through the life of the program. The milestones shall

1 *be designed to achieve by 2020 coal gasification*  
2 *projects able—*

3 *(i) to remove 99 percent of sulfur dioxide;*

4 *(ii) to emit no more than .05 lbs of NOx per*  
5 *million BTU;*

6 *(iii) to achieve substantial reductions in*  
7 *mercury emissions; and*

8 *(iv) to achieve a thermal efficiency of—*

9 *(I) 60 percent for coal of more than*  
10 *9,000 Btu;*

11 *(II) 59 percent for coal of 7,000 to*  
12 *9,000 Btu; and*

13 *(III) 50 percent for coal of less than*  
14 *7,000 Btu.*

15 *(C) Beginning in fiscal year 2009, the Secretary*  
16 *may use funds under this paragraph for a project*  
17 *that does not meet the criteria described in subpara-*  
18 *graph (A), but only if—*

19 *(i) the Secretary finds that the project is*  
20 *likely to result in greater emissions reductions*  
21 *than would a project funded pursuant to sub-*  
22 *paragraph (A);*

23 *(ii) the Secretary finds that the project*  
24 *would permit (but not necessarily include) the*  
25 *activities described in paragraph (5); and*

1           (iii) the Secretary notifies the Congress of  
2           the project at the time when it is approved.

3           (2) OTHER PROJECTS.—For projects not de-  
4           scribed in paragraph (1), the Secretary shall set tech-  
5           nical milestones specifying emissions levels that the  
6           projects must be designed to and reasonably expected  
7           to achieve. The milestones shall get more restrictive  
8           through the life of the program. The milestones shall  
9           be designed to achieve by 2010 projects able—

10                   (A) to remove 97 percent of sulfur dioxide;

11                   (B) to emit no more than .08 lbs of NO<sub>x</sub> per  
12           million BTU;

13                   (C) to achieve substantial reductions in  
14           mercury emissions; and

15                   (D) to achieve a thermal efficiency of—

16                           (i) 45 percent for coal of more than  
17                           9,000 Btu;

18                           (ii) 44 percent for coal of 7,000 to  
19                           9,000 Btu; and

20                           (iii) 40 percent for coal of less than  
21                           7,000 Btu.

22           (3) CONSULTATION.—Before setting the technical  
23           milestones under paragraphs (1)(B) and (2), the Sec-  
24           retary shall consult with the Administrator of the En-  
25           vironmental Protection Agency and interested enti-

1 *ties, including coal producers, industries using coal,*  
2 *organizations to promote coal or advanced coal tech-*  
3 *nologies, environmental organizations, and organiza-*  
4 *tions representing workers.*

5 (4) *EXISTING UNITS.*—*In the case of projects at*  
6 *existing units, in lieu of the thermal efficiency re-*  
7 *quirements set forth in paragraph (1)(B)(iv) and*  
8 *(2)(D), the projects shall be designed to achieve an*  
9 *overall thermal design efficiency improvement com-*  
10 *pared to the efficiency of the unit as operated, of not*  
11 *less than—*

12 (A) *7 percent for coal of more than 9,000*

13 *Btu;*

14 (B) *6 percent for coal of 7,000 to 9,000 Btu;*

15 *or*

16 (C) *4 percent for coal of less than 7,000*

17 *Btu.*

18 (5) *PERMITTED USES.*—*In allocating funds*  
19 *made available under section 501, the Secretary may*  
20 *fund projects that include, as part of the project, the*  
21 *separation and capture of carbon dioxide.*

22 (c) *FINANCIAL CRITERIA.*—*The Secretary shall not*  
23 *provide a funding award under this title unless the recipi-*  
24 *ent has documented to the satisfaction of the Secretary*  
25 *that—*

1           (1) *the award recipient is financially viable*  
2           *without the receipt of additional Federal funding;*

3           (2) *the recipient will provide sufficient informa-*  
4           *tion to the Secretary for the Secretary to ensure that*  
5           *the award funds are spent efficiently and effectively;*  
6           *and*

7           (3) *a market exists for the technology being dem-*  
8           *onstrated or applied, as evidenced by statements of*  
9           *interest in writing from potential purchasers of the*  
10          *technology.*

11          (d) *FINANCIAL ASSISTANCE.—The Secretary shall pro-*  
12          *vide financial assistance to projects that meet the require-*  
13          *ments of subsections (a), (b), and (c) and are likely to—*

14               (1) *achieve overall cost reductions in the utiliza-*  
15               *tion of coal to generate useful forms of energy;*

16               (2) *improve the competitiveness of coal among*  
17               *various forms of energy in order to maintain a diver-*  
18               *sity of fuel choices in the United States to meet elec-*  
19               *tricity generation requirements; and*

20               (3) *demonstrate methods and equipment that are*  
21               *applicable to 25 percent of the electricity generating*  
22               *facilities that use coal as the primary feedstock as of*  
23               *the date of the enactment of this Act.*

1       (e) *FEDERAL SHARE.*—*The Federal share of the cost*  
2 *of a coal or related technology project funded by the Sec-*  
3 *retary shall not exceed 50 percent.*

4       (f) *APPLICABILITY.*—*No technology, or level of emis-*  
5 *sion reduction, shall be treated as adequately demonstrated*  
6 *for purposes of section 111 of the Clean Air Act, achievable*  
7 *for purposes of section 169 of that Act, or achievable in*  
8 *practice for purposes of section 171 of that Act solely by*  
9 *reason of the use of such technology, or the achievement of*  
10 *such emission reduction, by one or more facilities receiving*  
11 *assistance under this title.*

12 **SEC. 503. REPORT.**

13       *Not later than 1 year after the date of the enactment*  
14 *of this Act, and once every 2 years thereafter through 2011,*  
15 *the Secretary, in consultation with other appropriate Fed-*  
16 *eral agencies, shall transmit to the Committee on Energy*  
17 *and Commerce and the Committee on Science of the House*  
18 *of Representatives, and to the Senate, a report describing—*

19           (1) *the technical milestones set forth in section*  
20 *502 and how those milestones ensure progress toward*  
21 *meeting the requirements of subsections (b)(1)(B) and*  
22 *(b)(2) of section 502; and*

23           (2) *the status of projects funded under this title.*

1 **SEC. 504. CLEAN COAL CENTERS OF EXCELLENCE.**

2       *As part of the program authorized in section 501, the*  
3 *Secretary shall award competitive, merit-based grants to*  
4 *universities for the establishment of Centers of Excellence*  
5 *for Energy Systems of the Future. The Secretary shall pro-*  
6 *vide grants to universities that can show the greatest poten-*  
7 *tial for advancing new clean coal technologies.*



**Union Calendar No. 94**

108TH CONGRESS  
1ST SESSION

**H. R. 238**

**[Report No. 108-128, Part I]**

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**A BILL**

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

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JUNE 27, 2003

Committee on Resources discharged; committed to the Committee of the Whole House on the State of the Union and ordered to be printed