

109TH CONGRESS
1ST SESSION

H. R. 612

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

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 8, 2005

Mrs. BIGGERT (for herself and Mr. BOEHLERT) introduced the following bill;
which was referred to the Committee on Science

A BILL

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

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the
5 “Energy Basic and Applied Sciences Act of 2005”.

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

Sec. 1. Short title; table of contents.

Sec. 2. Definitions.

TITLE I—SCIENCE PROGRAMS

Sec. 101. Office of Science programs.

- Sec. 102. Systems biology program.
- Sec. 103. Catalysis Research and Development Program.
- Sec. 104. Hydrogen.
- Sec. 105. Advanced scientific computing research.
- Sec. 106. Fusion Energy Sciences program.
- Sec. 107. Science and Technology Scholarship Program.
- Sec. 108. Office of Scientific and Technical Information.
- Sec. 109. Authorization of appropriations.

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

- Sec. 201. Cost sharing.
- Sec. 202. Reprogramming.
- Sec. 203. Merit-based competition.
- Sec. 204. External technical review of departmental programs.
- Sec. 205. Competitive award of management contracts.
- Sec. 206. National Laboratory designation.
- Sec. 207. Report on equal employment opportunity practices.
- Sec. 208. User facility best practices plan.
- Sec. 209. Support for science and energy infrastructure and facilities.
- Sec. 210. Coordination plan.
- Sec. 211. Availability of funds.

TITLE III—ENERGY EFFICIENCY

Subtitle A—Vehicles, Buildings, and Industries

- Sec. 301. Programs.
- Sec. 302. Vehicles.
- Sec. 303. Buildings.
- Sec. 304. Industries.
- Sec. 305. Demonstration and commercial application.
- Sec. 306. Secondary electric vehicle battery use program.
- Sec. 307. Definition of cost-effective.
- Sec. 308. Authorization of appropriations.
- Sec. 309. Limitation on use of funds.

Subtitle B—Distributed Energy and Electric Energy Systems

- Sec. 321. Distributed energy.
- Sec. 322. Electricity transmission and distribution and energy assurance.
- Sec. 323. Authorization of appropriations.

TITLE IV—RENEWABLE ENERGY

- Sec. 401. Findings.
- Sec. 402. Definitions.
- Sec. 403. Programs.
- Sec. 404. Solar.
- Sec. 405. Bioenergy programs.
- Sec. 406. Wind.
- Sec. 407. Geothermal.
- Sec. 408. Photovoltaic demonstration program.
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TITLE V—NUCLEAR ENERGY PROGRAMS

- Sec. 501. Definition.
- Sec. 502. Programs.

Subtitle A—Nuclear energy research programs

- Sec. 511. Advanced fuel recycling program.
- Sec. 512. University nuclear science and engineering support.
- Sec. 513. University-National Laboratory interactions.
- Sec. 514. Nuclear Power 2010 Program.
- Sec. 515. Generation IV Nuclear Energy Systems Initiative.
- Sec. 516. Civilian infrastructure and facilities.
- Sec. 517. Nuclear energy research and development infrastructure plan.
- Sec. 518. Idaho National Laboratory facilities plan.
- Sec. 519. Authorization of appropriations.

Subtitle B—Next Generation Nuclear Plant Program

- Sec. 531. Definitions.
- Sec. 532. Next generation nuclear power plant.
- Sec. 533. Advisory committee.
- Sec. 534. Program requirements.
- Sec. 535. Authorization of appropriations.

TITLE VI—FOSSIL ENERGY

Subtitle A—Research Programs

- Sec. 601. Enhanced fossil energy research and development programs.
- Sec. 602. Fossil research and development.
- Sec. 603. Oil and gas research and development.
- Sec. 604. Transportation fuels.
- Sec. 605. Fuel cells.
- Sec. 606. Authorization of appropriations.

Subtitle B—Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources

- Sec. 611. Program authority.
- Sec. 612. Ultra-deepwater program.
- Sec. 613. Unconventional natural gas and other petroleum resources program.
- Sec. 614. Additional requirements for awards.
- Sec. 615. Advisory committees.
- Sec. 616. Limits on participation.
- Sec. 617. Sunset.
- Sec. 618. Definitions.

1 SEC. 2. DEFINITIONS.

2 For purposes of this Act:

- 3 (1) APPLIED PROGRAMS.—The term “applied
4 programs” means the research, development, dem-
5 onstration, and commercial application programs of

1 the Department concerning energy efficiency, renew-
2 able energy, nuclear energy, fossil energy, and elec-
3 tricity transmission and distribution.

4 (2) BIOMASS.—The term “biomass” means—

5 (A) any organic material grown for the
6 purpose of being converted to energy;

7 (B) any organic byproduct of agriculture
8 (including wastes from food production and
9 processing) that can be converted into energy;

10 or

11 (C) any waste material that can be con-
12 verted to energy, is segregated from other waste
13 materials, and is derived from—

14 (i) any of the following forest-related
15 resources: mill residues, precommercial
16 thinnings, slash, brush, or otherwise non-
17 merchantable material; or

18 (ii) wood waste materials, including
19 waste pallets, crates, dunnage, manufac-
20 turing and construction wood wastes (other
21 than pressure-treated, chemically-treated,
22 or painted wood wastes), and landscape or
23 right-of-way tree trimmings, but not in-
24 cluding municipal solid waste, gas derived

1 from the biodegradation of municipal solid
2 waste, or paper that is commonly recycled.

3 (3) DEPARTMENT.—The term “Department”
4 means the Department of Energy.

5 (4) DEPARTMENTAL MISSION.—The term “de-
6 partmental mission” means any of the functions
7 vested in the Secretary of Energy by the Depart-
8 ment of Energy Organization Act (42 U.S.C. 7101
9 et seq.) or other law.

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

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

17 (A) Ames Laboratory.

18 (B) Argonne National Laboratory.

19 (C) Brookhaven National Laboratory.

20 (D) Fermi National Accelerator Labora-
21 tory.

22 (E) Idaho National Laboratory.

23 (F) Lawrence Berkeley National Labora-
24 tory.

1 (G) Lawrence Livermore National Labora-
2 tory.

3 (H) Los Alamos National Laboratory.

4 (I) National Energy Technology Labora-
5 tory.

6 (J) National Renewable Energy Labora-
7 tory.

8 (K) Oak Ridge National Laboratory.

9 (L) Pacific Northwest National Labora-
10 tory.

11 (M) Princeton Plasma Physics Laboratory.

12 (N) Sandia National Laboratories.

13 (O) Savannah River National Laboratory.

14 (P) Stanford Linear Accelerator Center.

15 (Q) Thomas Jefferson National Accel-
16 erator Facility.

17 (7) RENEWABLE ENERGY.—The term “renew-
18 able energy” means energy from wind, sunlight, the
19 flow of water, heat from the Earth, or biomass that
20 can be converted into a usable form such as process
21 heat, electricity, fuel, or space heat.

22 (8) SECRETARY.—The term “Secretary” means
23 the Secretary of Energy.

24 (9) STATE.—The term “State” means any of
25 the several States, the District of Columbia, the

1 Commonwealth of Puerto Rico, the United States
2 Virgin Islands, Guam, American Samoa, the North-
3 ern Mariana Islands, and any other commonwealth,
4 territory, or possession of the United States.

5 (10) UNIVERSITY.—The term “university” has
6 the meaning given the term “institution of higher
7 education” in section 101 of the Higher Education
8 Act of 1965 (20 U.S.C. 1001).

9 (11) USER FACILITY.—The term “user facility”
10 means a research and development facility sup-
11 ported, in whole or in part, by Departmental funds
12 that is open, at a minimum, to all qualified United
13 States researchers.

14 **TITLE I—SCIENCE PROGRAMS**

15 **SEC. 101. OFFICE OF SCIENCE PROGRAMS.**

16 (a) IN GENERAL.—The Secretary shall conduct,
17 through the Office of Science, programs of research, devel-
18 opment, demonstration, and commercial application in
19 high energy physics and nuclear physics, biological and en-
20 vironmental research, basic energy sciences, advanced sci-
21 entific and computing research, and fusion energy
22 sciences, including activities described in this title. The
23 programs shall include support for facilities and infra-
24 structure, education, outreach, information, analysis, and
25 coordination activities.

1 (b) RARE ISOTOPE ACCELERATOR.—

2 (1) ESTABLISHMENT.—The Secretary shall con-
3 struct and operate a Rare Isotope Accelerator. The
4 Secretary shall commence construction no later than
5 September 30, 2008.

6 (2) AUTHORIZATION OF APPROPRIATIONS.—
7 There are authorized to be appropriated to the Sec-
8 retary such sums as may be necessary to carry out
9 this subsection. The Secretary shall not spend more
10 than \$1,100,000,000 for all activities associated
11 with the Rare Isotope Accelerator prior to operation.

12 **SEC. 102. SYSTEMS BIOLOGY PROGRAM.**

13 (a) PROGRAM.—

14 (1) ESTABLISHMENT.—The Secretary shall es-
15 tablish a research, development, and demonstration
16 program in genetics, protein science, and computa-
17 tional biology to support the energy, national secu-
18 rity, and environmental missions of the Department.

19 (2) GRANTS.—The program shall support indi-
20 vidual researchers and multidisciplinary teams of re-
21 searchers through competitive, merit-reviewed
22 grants.

23 (3) CONSULTATION.—In carrying out the pro-
24 gram, the Secretary shall consult with other Federal
25 agencies that conduct genetic and protein research.

1 (b) GOALS.—The program shall have the goal of de-
2 veloping technologies and methods based on the biological
3 functions of genomes, microbes, and plants that—

4 (1) can facilitate the production of fuels, includ-
5 ing hydrogen;

6 (2) convert carbon dioxide to organic carbon;

7 (3) detoxify soils and water, including at De-
8 partmental facilities, contaminated with heavy met-
9 als and radiological materials; and

10 (4) address other Department missions as iden-
11 tified by the Secretary.

12 (c) PLAN.—

13 (1) DEVELOPMENT OF PLAN.—Not later than 1
14 year after the date of enactment of this Act, the
15 Secretary shall prepare and transmit to Congress a
16 research plan describing how the program author-
17 ized pursuant to this section will be undertaken to
18 accomplish the program goals established in sub-
19 section (b).

20 (2) REVIEW OF PLAN.—The Secretary shall
21 contract with the National Academy of Sciences to
22 review the research plan developed under this sub-
23 section. The Secretary shall transmit the review to
24 Congress not later than 18 months after transmittal
25 of the research plan under paragraph (1), along with

1 the Secretary's response to the recommendations
2 contained in the review.

3 (d) USER FACILITIES AND ANCILLARY EQUIP-
4 MENT.—Within the funds authorized to be appropriated
5 pursuant to this title, the amounts specified under section
6 109(b)(1), (c)(1), (d)(1), (e)(1), and (f)(1) shall be avail-
7 able for projects to develop, plan, construct, acquire, or
8 operate special equipment, instrumentation, or facilities,
9 including user facilities, for researchers conducting re-
10 search, development, demonstration, and commercial ap-
11 plication in systems biology and proteomics and associated
12 biological disciplines.

13 (e) PROHIBITION ON BIOMEDICAL AND HUMAN CELL
14 AND HUMAN SUBJECT RESEARCH.—

15 (1) NO BIOMEDICAL RESEARCH.—In carrying
16 out the program under this section, the Secretary
17 shall not conduct biomedical research.

18 (2) LIMITATIONS.—Nothing in this section shall
19 authorize the Secretary to conduct any research or
20 demonstrations—

21 (A) on human cells or human subjects; or

22 (B) designed to have direct application
23 with respect to human cells or human subjects.

1 **SEC. 103. CATALYSIS RESEARCH AND DEVELOPMENT PRO-**
2 **GRAM.**

3 (a) ESTABLISHMENT.—The Secretary shall conduct
4 a program of research and development in catalysis
5 science, including efforts to—

6 (1) enable molecular-level catalyst design by
7 coupling experimental and computational ap-
8 proaches;

9 (2) enable nanoscale, high-throughput syn-
10 thesis, assay, and characterization; and

11 (3) synthesize catalysts with specific site archi-
12 tectures.

13 (b) PROGRAM ACTIVITIES.—In carrying out the pro-
14 gram under this section, the Secretary shall—

15 (1) support both individual researchers and
16 multidisciplinary teams of researchers to pioneer
17 new approaches in catalytic design;

18 (2) develop, plan, construct, acquire, or operate
19 special equipment or facilities, including user facili-
20 ties;

21 (3) support technology transfer activities to
22 benefit industry and other users of catalysis science
23 and engineering; and

24 (4) coordinate research and development activi-
25 ties with industry and other Federal agencies.

1 **SEC. 104. HYDROGEN.**

2 The Secretary shall conduct a program of funda-
3 mental research and development in support of programs
4 authorized in title VII of this Act.

5 **SEC. 105. ADVANCED SCIENTIFIC COMPUTING RESEARCH.**

6 The Secretary shall conduct an advanced scientific
7 computing research and development program, including
8 in applied mathematics and the activities authorized by
9 the Department of Energy High-End Computing Revital-
10 ization Act of 2004 (15 U.S.C. 5541 et seq.). The Sec-
11 retary shall carry out this program with the goal of sup-
12 porting departmental missions and providing the high-per-
13 formance computational, networking, and workforce re-
14 sources that are required for world leadership in science.

15 **SEC. 106. FUSION ENERGY SCIENCES PROGRAM.**

16 (a) **DECLARATION OF POLICY.**—It shall be the policy
17 of the United States to conduct research, development,
18 demonstration, and commercial application to provide for
19 the scientific, engineering, and commercial infrastructure
20 necessary to ensure that the United States is competitive
21 with other nations in providing fusion energy for its own
22 needs and the needs of other nations, including by dem-
23 onstrating electric power or hydrogen production for the
24 United States energy grid utilizing fusion energy at the
25 earliest date possible.

26 (b) **PLANNING.**—

1 (1) IN GENERAL.—Not later than 180 days
2 after the date of enactment of this Act, the Sec-
3 retary shall transmit to Congress a plan, with pro-
4 posed cost estimates, budgets, and lists of potential
5 international partners, for the implementation of the
6 policy described in subsection (a). The plan shall en-
7 sure that—

8 (A) existing fusion research facilities are
9 more fully utilized;

10 (B) fusion science, technology, theory, ad-
11 vanced computation, modeling, and simulation
12 are strengthened;

13 (C) new magnetic and inertial fusion re-
14 search and development facilities are selected
15 based on scientific innovation, cost effective-
16 ness, and their potential to advance the goal of
17 practical fusion energy at the earliest date pos-
18 sible, and those that are selected are funded at
19 a cost-effective rate;

20 (D) communication of scientific results and
21 methods between the fusion energy science com-
22 munity and the broader scientific and tech-
23 nology communities is improved;

24 (E) inertial confinement fusion facilities
25 are utilized to the extent practicable for the

1 purpose of inertial fusion energy research and
2 development; and

3 (F) attractive alternative inertial and mag-
4 netic fusion energy approaches are more fully
5 explored.

6 (2) COSTS AND SCHEDULES.—Such plan shall
7 also address the status of and, to the degree pos-
8 sible, costs and schedules for—

9 (A) the design and implementation of
10 international or national facilities for the test-
11 ing of fusion materials; and

12 (B) the design and implementation of
13 international or national facilities for the test-
14 ing and development of key fusion technologies.

15 (c) UNITED STATES PARTICIPATION IN ITER.—

16 (1) IN GENERAL.—The United States may par-
17 ticipate in ITER only in accordance with this sub-
18 section.

19 (2) AGREEMENT.—

20 (A) IN GENERAL.—The Secretary is au-
21 thorized to negotiate an agreement for United
22 States participation in ITER.

23 (B) CONTENTS.—Any agreement for
24 United States participation in ITER shall, at a
25 minimum—

1 (i) clearly define the United States fi-
2 nancial contribution to construction and
3 operating costs, as well as any other costs
4 associated with the project;

5 (ii) ensure that the share of ITER's
6 high-technology components manufactured
7 in the United States is at least propor-
8 tionate to the United States financial con-
9 tribution to ITER;

10 (iii) ensure that the United States will
11 not be financially responsible for cost over-
12 runs in components manufactured in other
13 ITER participating countries;

14 (iv) guarantee the United States full
15 access to all data generated by ITER;

16 (v) enable United States researchers
17 to propose and carry out an equitable
18 share of the experiments at ITER;

19 (vi) provide the United States with a
20 role in all collective decisionmaking related
21 to ITER; and

22 (vii) describe the process for dis-
23 continuing or decommissioning ITER and
24 any United States role in that process.

1 (3) PLAN.—The Secretary, in consultation with
2 the Fusion Energy Sciences Advisory Committee,
3 shall develop a plan for the participation of United
4 States scientists in ITER that shall include the
5 United States research agenda for ITER, methods
6 to evaluate whether ITER is promoting progress to-
7 ward making fusion a reliable and affordable source
8 of power, and a description of how work at ITER
9 will relate to other elements of the United States fu-
10 sion program. The Secretary shall request a review
11 of the plan by the National Academy of Sciences.

12 (4) LIMITATION.—No Federal funds shall be
13 expended for the construction of ITER until the
14 Secretary has transmitted to Congress—

15 (A) the agreement negotiated pursuant to
16 paragraph (2) and 120 days have elapsed since
17 that transmission;

18 (B) a report describing the management
19 structure of ITER and providing a fixed dollar
20 estimate of the cost of United States participa-
21 tion in the construction of ITER, and 120 days
22 have elapsed since that transmission;

23 (C) a report describing how United States
24 participation in ITER will be funded without
25 reducing funding for other programs in the Of-

1 fice of Science, including other fusion programs,
2 and 60 days have elapsed since that trans-
3 mission; and

4 (D) the plan required by paragraph (3)
5 (but not the National Academy of Sciences re-
6 view of that plan), and 60 days have elapsed
7 since that transmission.

8 (5) ALTERNATIVE TO ITER.—If at any time
9 during the negotiations on ITER, the Secretary de-
10 termines that construction and operation of ITER is
11 unlikely or infeasible, the Secretary shall send to
12 Congress, as part of the budget request for the fol-
13 lowing year, a plan for implementing a domestic
14 burning plasma experiment including costs and
15 schedules for such a plan. The Secretary shall refine
16 such plan in full consultation with the Fusion En-
17 ergy Sciences Advisory Committee and shall also
18 transmit such plan to the National Academy of
19 Sciences for review.

20 (6) DEFINITIONS.—In this subsection:

21 (A) CONSTRUCTION.— The term “con-
22 struction” means the physical construction of
23 the ITER facility, and the physical construc-
24 tion, purchase, or manufacture of equipment or
25 components that are specifically designed for

1 the ITER facility, but does not mean the design
2 of the facility, equipment, or components.

3 (B) ITER.—The term “ITER” means the
4 international burning plasma fusion research
5 project in which the President announced
6 United States participation on January 30,
7 2003, or any similar international project.

8 **SEC. 107. SCIENCE AND TECHNOLOGY SCHOLARSHIP PRO-**
9 **GRAM.**

10 (a) ESTABLISHMENT OF PROGRAM.—

11 (1) IN GENERAL.—The Secretary is authorized
12 to establish a Science and Technology Scholarship
13 Program to award scholarships to individuals that is
14 designed to recruit and prepare students for careers
15 in the Department.

16 (2) COMPETITIVE PROCESS.—Individuals shall
17 be selected to receive scholarships under this section
18 through a competitive process primarily on the basis
19 of academic merit, with consideration given to finan-
20 cial need and the goal of promoting the participation
21 of individuals identified in section 33 or 34 of the
22 Science and Engineering Equal Opportunities Act
23 (42 U.S.C. 1885a or 1885b).

24 (3) SERVICE AGREEMENTS.—To carry out the
25 Program the Secretary shall enter into contractual

1 agreements with individuals selected under para-
2 graph (2) under which the individuals agree to serve
3 as full-time employees of the Department, for the
4 period described in subsection (f)(1), in positions
5 needed by the Department and for which the individ-
6 uals are qualified, in exchange for receiving a schol-
7 arship.

8 (b) SCHOLARSHIP ELIGIBILITY.—In order to be eligi-
9 ble to participate in the Program, an individual must—

10 (1) be enrolled or accepted for enrollment as a
11 full-time student at an institution of higher edu-
12 cation in an academic program or field of study de-
13 scribed in the list made available under subsection
14 (d);

15 (2) be a United States citizen; and

16 (3) at the time of the initial scholarship award,
17 not be a Federal employee as defined in section
18 2105 of title 5 of the United States Code.

19 (c) APPLICATION REQUIRED.—An individual seeking
20 a scholarship under this section shall submit an applica-
21 tion to the Secretary at such time, in such manner, and
22 containing such information, agreements, or assurances as
23 the Secretary may require.

24 (d) ELIGIBLE ACADEMIC PROGRAMS.—The Secretary
25 shall make publicly available a list of academic programs

1 and fields of study for which scholarships under the Pro-
2 gram may be utilized, and shall update the list as nec-
3 essary.

4 (e) SCHOLARSHIP REQUIREMENT.—

5 (1) IN GENERAL.—The Secretary may provide a
6 scholarship under the Program for an academic year
7 if the individual applying for the scholarship has
8 submitted to the Secretary, as part of the applica-
9 tion required under subsection (c), a proposed aca-
10 demic program leading to a degree in a program or
11 field of study on the list made available under sub-
12 section (d).

13 (2) DURATION OF ELIGIBILITY.—An individual
14 may not receive a scholarship under this section for
15 more than 4 academic years, unless the Secretary
16 grants a waiver.

17 (3) SCHOLARSHIP AMOUNT.—The dollar
18 amount of a scholarship under this section for an
19 academic year shall be determined under regulations
20 issued by the Secretary, but shall in no case exceed
21 the cost of attendance.

22 (4) AUTHORIZED USES.—A scholarship pro-
23 vided under this section may be expended for tuition,
24 fees, and other authorized expenses as established by
25 the Secretary by regulation.

1 (5) CONTRACTS REGARDING DIRECT PAYMENTS
2 TO INSTITUTIONS.—The Secretary may enter into a
3 contractual agreement with an institution of higher
4 education under which the amounts provided for a
5 scholarship under this section for tuition, fees, and
6 other authorized expenses are paid directly to the in-
7 stitution with respect to which the scholarship is
8 provided.

9 (f) PERIOD OF OBLIGATED SERVICE.—

10 (1) DURATION OF SERVICE.—The period of
11 service for which an individual shall be obligated to
12 serve as an employee of the Department is, except
13 as provided in subsection (h)(2), 24 months for each
14 academic year for which a scholarship under this
15 section is provided.

16 (2) SCHEDULE FOR SERVICE.—

17 (A) IN GENERAL.—Except as provided in
18 subparagraph (B), obligated service under para-
19 graph (1) shall begin not later than 60 days
20 after the individual obtains the educational de-
21 gree for which the scholarship was provided.

22 (B) DEFERRAL.—The Secretary may defer
23 the obligation of an individual to provide a pe-
24 riod of service under paragraph (1) if the Sec-
25 retary determines that such a deferral is appro-

1 priate. The Secretary shall prescribe the terms
2 and conditions under which a service obligation
3 may be deferred through regulation.

4 (g) PENALTIES FOR BREACH OF SCHOLARSHIP
5 AGREEMENT.—

6 (1) FAILURE TO COMPLETE ACADEMIC TRAIN-
7 ING.—Scholarship recipients who fail to maintain a
8 high level of academic standing, as defined by the
9 Secretary by regulation, who are dismissed from
10 their educational institutions for disciplinary rea-
11 sons, or who voluntarily terminate academic training
12 before graduation from the educational program for
13 which the scholarship was awarded, shall be in
14 breach of their contractual agreement and, in lieu of
15 any service obligation arising under such agreement,
16 shall be liable to the United States for repayment
17 not later than 1 year after the date of default of all
18 scholarship funds paid to them and to the institution
19 of higher education on their behalf under the agree-
20 ment, except as provided in subsection (h)(2). The
21 repayment period may be extended by the Secretary
22 when determined to be necessary, as established by
23 regulation.

24 (2) FAILURE TO BEGIN OR COMPLETE THE
25 SERVICE OBLIGATION OR MEET THE TERMS AND

1 CONDITIONS OF DEFERMENT.—A scholarship recipi-
2 ent who, for any reason, fails to begin or complete
3 a service obligation under this section after comple-
4 tion of academic training, or fails to comply with the
5 terms and conditions of deferment established by the
6 Secretary pursuant to subsection (f)(2)(B), shall be
7 in breach of the contractual agreement. When a re-
8 cipient breaches an agreement for the reasons stated
9 in the preceding sentence, the recipient shall be lia-
10 ble to the United States for an amount equal to—

11 (A) the total amount of scholarships re-
12 ceived by such individual under this section;
13 plus

14 (B) the interest on the amounts of such
15 awards which would be payable if at the time
16 the awards were received they were loans bear-
17 ing interest at the maximum legal prevailing
18 rate, as determined by the Treasurer of the
19 United States,
20 multiplied by 3.

21 (h) WAIVER OR SUSPENSION OF OBLIGATION.—

22 (1) DEATH OF INDIVIDUAL.—Any obligation of
23 an individual incurred under the Program (or a con-
24 tractual agreement thereunder) for service or pay-

1 ment shall be canceled upon the death of the indi-
2 vidual.

3 (2) IMPOSSIBILITY OR EXTREME HARDSHIP.—

4 The Secretary shall by regulation provide for the
5 partial or total waiver or suspension of any obliga-
6 tion of service or payment incurred by an individual
7 under the Program (or a contractual agreement
8 thereunder) whenever compliance by the individual is
9 impossible or would involve extreme hardship to the
10 individual, or if enforcement of such obligation with
11 respect to the individual would be contrary to the
12 best interests of the Government.

13 (i) DEFINITIONS.—In this section the following defi-
14 nitions apply:

15 (1) COST OF ATTENDANCE.—The term “cost of
16 attendance” has the meaning given that term in sec-
17 tion 472 of the Higher Education Act of 1965 (20
18 U.S.C. 1087*ll*).

19 (2) PROGRAM.—The term “Program” means
20 the Science and Technology Scholarship Program es-
21 tablished under this section.

22 **SEC. 108. OFFICE OF SCIENTIFIC AND TECHNICAL INFOR-**
23 **MATION.**

24 The Secretary shall maintain within the Department
25 the Office of Scientific and Technical Information.

1 **SEC. 109. AUTHORIZATION OF APPROPRIATIONS.**

2 (a) IN GENERAL.—In addition to amounts authorized
3 to be appropriated under the 21st Century
4 Nanotechnology Research and Development Act (15
5 U.S.C. 7501 et seq.) and the Department of Energy High-
6 End Computing Revitalization Act of 2004 (15 U.S.C.
7 5541 et seq.), the following sums are authorized to be ap-
8 propriated to the Secretary for the purposes of carrying
9 out this title:

10 (1) For fiscal year 2006, \$3,785,000,000.

11 (2) For fiscal year 2007, \$4,153,000,000.

12 (3) For fiscal year 2008, \$4,628,000,000.

13 (4) For fiscal year 2009, \$5,300,000,000.

14 (5) For fiscal year 2010, \$5,800,000,000.

15 (b) 2006 ALLOCATIONS.—From amounts authorized
16 under subsection (a)(1), the following sums are authorized
17 for fiscal year 2006:

18 (1) SYSTEMS BIOLOGY.—For activities under
19 section 102, \$100,000,000.

20 (2) SCIENTIFIC COMPUTING.—For activities
21 under section 105, \$252,000,000.

22 (3) FUSION ENERGY SCIENCES.—For activities
23 under section 106, excluding activities under sub-
24 section (c) of that section, \$335,000,000.

25 (4) SCHOLARSHIP.—For the scholarship pro-
26 gram described in section 107, \$800,000.

1 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
2 FORMATION.—For activities under section 108,
3 \$7,000,000.

4 (c) 2007 ALLOCATIONS.—From amounts authorized
5 under subsection (a)(2), the following sums are authorized
6 for fiscal year 2007:

7 (1) SYSTEMS BIOLOGY.—For activities under
8 section 102, such sums as may be necessary.

9 (2) SCIENTIFIC COMPUTING.—For activities
10 under section 105, \$270,000,000.

11 (3) FUSION ENERGY SCIENCES.—For activities
12 under section 106, excluding activities under sub-
13 section (c) of that section, \$349,000,000.

14 (4) SCHOLARSHIP.—For the scholarship pro-
15 gram described in section 107, \$1,600,000.

16 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
17 FORMATION.—For activities under section 108,
18 \$7,500,000.

19 (d) 2008 ALLOCATIONS.—From amounts authorized
20 under subsection (a)(3), the following sums are authorized
21 for fiscal year 2008:

22 (1) SYSTEMS BIOLOGY.—For activities under
23 section 102, such sums as may be necessary.

24 (2) SCIENTIFIC COMPUTING.—For activities
25 under section 105, \$350,000,000.

1 (3) FUSION ENERGY SCIENCES.—For activities
2 under section 106, excluding activities under sub-
3 section (c) of that section, \$362,000,000.

4 (4) SCHOLARSHIP.—For the scholarship pro-
5 gram described in section 107, \$2,000,000.

6 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
7 FORMATION.—For activities under section 108,
8 \$8,000,000.

9 (e) 2009 ALLOCATIONS.—From amounts authorized
10 under subsection (a)(4), the following sums are authorized
11 for fiscal year 2009:

12 (1) SYSTEMS BIOLOGY.—For activities under
13 section 102, such sums as may be necessary.

14 (2) SCIENTIFIC COMPUTING.—For activities
15 under section 105, \$375,000,000.

16 (3) FUSION ENERGY SCIENCES.—For activities
17 under section 106, excluding activities under sub-
18 section (c) of that section, \$377,000,000.

19 (4) SCHOLARSHIP.—For the scholarship pro-
20 gram described in section 107, \$2,000,000.

21 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
22 FORMATION.—For activities under section 108,
23 \$8,000,000.

1 (f) 2010 ALLOCATIONS.—From amounts authorized
2 under subsection (a)(5), the following sums are authorized
3 for fiscal year 2010:

4 (1) SYSTEMS BIOLOGY.—For activities under
5 section 102, such sums as may be necessary.

6 (2) SCIENTIFIC COMPUTING.—For activities
7 under section 105, \$400,000,000.

8 (3) FUSION ENERGY SCIENCES.—For activities
9 under section 106, excluding activities under sub-
10 section (c) of that section, \$393,000,000.

11 (4) SCHOLARSHIP.—For the scholarship pro-
12 gram described in section 107, \$2,000,000.

13 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
14 FORMATION.—For activities under section 108,
15 \$8,500,000.

16 (g) ITER CONSTRUCTION.—From amounts author-
17 ized under subsection (a) and in addition to amounts au-
18 thorized under subsections (b)(3), (c)(3), (d)(3), (e)(3),
19 and (f)(3), there are authorized to be appropriated to the
20 Secretary such sums as may be necessary for ITER con-
21 struction, consistent with the limitations of section 106(e).

1 **TITLE II—RESEARCH ADMINIS-**
2 **TRATION AND OPERATIONS**

3 **SEC. 201. COST SHARING.**

4 (a) RESEARCH AND DEVELOPMENT.—Except as oth-
5 erwise provided in this Act, for research and development
6 programs carried out under this Act, the Secretary shall
7 require a commitment from non-Federal sources of at
8 least 20 percent of the cost of the project. The Secretary
9 may reduce or eliminate the non-Federal requirement
10 under this subsection if the Secretary determines that the
11 research and development is of a basic or fundamental na-
12 ture.

13 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
14 TION.—Except as otherwise provided in this Act, the Sec-
15 retary shall require at least 50 percent of the costs related
16 to any demonstration or commercial application activities
17 under this Act to be provided from non-Federal sources.
18 The Secretary may reduce the non-Federal requirement
19 under this subsection if the Secretary determines that the
20 reduction is necessary and appropriate considering the
21 technological risks involved in the project and is necessary
22 to meet the objectives of this Act.

23 (c) CALCULATION OF AMOUNT.—In calculating the
24 amount of the non-Federal commitment under subsection

1 (a) or (b), the Secretary may include personnel, services,
2 equipment, and other resources.

3 (d) SIZE OF NON-FEDERAL SHARE.—The Secretary
4 may consider the amount of the non-Federal share in se-
5 lecting projects under this Act.

6 **SEC. 202. REPROGRAMMING.**

7 (a) DISTRIBUTION REPORT.—Not later than 60 days
8 after the date of enactment of an Act appropriating
9 amounts authorized under this Act, the Secretary shall
10 transmit to Congress a report explaining how such
11 amounts will be distributed among the activities author-
12 ized by this Act.

13 (b) REPROGRAMMING LETTER.—No amount author-
14 ized by this Act shall be obligated or expended for a pur-
15 pose inconsistent with the appropriations Act appro-
16 priating such amount, the report accompanying such ap-
17 propriations Act, or a distribution report transmitted
18 under subsection (a) if such obligation or expenditure
19 would change an individual amount, as represented in
20 such an Act, report, or distribution report, by more than
21 2 percent or \$2,000,000, whichever is smaller, unless the
22 Secretary has transmitted to Congress a letter of expla-
23 nation and a period of 30 days has elapsed after Congress
24 receives the letter.

1 (c) COMPUTATION.—The computation of the 30-day
2 period described in subsection (b) shall exclude any day
3 on which either House of Congress is not in session be-
4 cause of an adjournment of more than 3 days to a day
5 certain.

6 **SEC. 203. MERIT-BASED COMPETITION.**

7 (a) COMPETITIVE MERIT REVIEW.—Awardees of
8 funds authorized under this Act shall be selected through
9 open competitions. Funds shall be competitively awarded
10 only after an impartial review of the scientific and tech-
11 nical merit of the proposals for such awards has been car-
12 ried out by or for the Department on the basis of criteria
13 outlined by the Secretary in the solicitation of proposals.

14 (b) COMPETITION.—Competitive awards under this
15 Act shall involve competitions open to all qualified entities
16 within one or more of the following categories:

- 17 (1) Institutions of higher education.
- 18 (2) National Laboratories.
- 19 (3) Nonprofit and for-profit private entities.
- 20 (4) State and local governments.
- 21 (5) Consortia of entities described in para-
22 graphs (1) through (4).

23 (c) CONGRESSIONAL NOTIFICATION.—The Secretary
24 shall notify Congress within 30 days after awarding more
25 than \$500,000 through a competition described in sub-

1 section (b) that is limited to 1 of the categories described
2 in paragraphs (1) through (4) of subsection (b).

3 (d) WAIVERS.—The Secretary may waive the require-
4 ment under subsection (a) requiring competition if the
5 Secretary considers it necessary to more quickly advance
6 research, development, demonstration, or commercial ap-
7 plication activities. The Secretary shall notify Congress
8 within 30 days when a waiver is granted under this sub-
9 section. The Secretary may not delegate the waiver au-
10 thority under this subsection for awards over \$500,000.

11 **SEC. 204. EXTERNAL TECHNICAL REVIEW OF DEPART-**
12 **MENTAL PROGRAMS.**

13 (a) NATIONAL APPLIED ENERGY RESEARCH AND
14 DEVELOPMENT ADVISORY COMMITTEES.—

15 (1) IN GENERAL.—The Secretary shall establish
16 one or more advisory committees to review and ad-
17 vise the Department's applied programs in the fol-
18 lowing areas:

19 (A) Energy efficiency.

20 (B) Renewable energy.

21 (C) Nuclear energy.

22 (D) Fossil energy.

23 (2) EXISTING ADVISORY COMMITTEES.—The
24 Secretary may designate an existing advisory com-
25 mittee within the Department to fulfill the respon-

1 sibilities of an advisory committee under this sub-
2 section.

3 (b) OFFICE OF SCIENCE ADVISORY COMMITTEES.—

4 (1) USE OF EXISTING COMMITTEES.—Except as
5 otherwise provided under the Federal Advisory Com-
6 mittee Act, the Secretary shall continue to use the
7 scientific program advisory committees chartered
8 under the Federal Advisory Committee Act (5
9 U.S.C. App.) by the Office of Science to oversee re-
10 search and development programs under that Office.

11 (2) REPORT.—Before the Department issues
12 any new guidance regarding the membership for Of-
13 fice of Science scientific program advisory commit-
14 tees, the Secretary shall transmit a report to the
15 Congress outlining the reasons for the proposed
16 changes, and 60 days must have elapsed after trans-
17 mittal of the report before the Department may im-
18 plement those changes.

19 (3) SCIENCE ADVISORY COMMITTEE.—

20 (A) ESTABLISHMENT.—There shall be a
21 Science Advisory Committee for the Office of
22 Science that includes the chairs of each of the
23 advisory committees described in paragraph (1).

24 (B) RESPONSIBILITIES.—The Science Ad-
25 visory Committee shall—

1 (i) advise the Secretary on science
2 issues;

3 (ii) advise the Secretary with respect
4 to the well-being and management of the
5 National Laboratories and Department re-
6 search facilities;

7 (iii) advise the Secretary with respect
8 to education and workforce training activi-
9 ties required for effective short-term and
10 long-term basic and applied research ac-
11 tivities of the Office of Science; and

12 (iv) advise the Secretary with respect
13 to the well-being of the university research
14 programs supported by the Office of
15 Science.

16 (c) MEMBERSHIP.—Each member of an advisory
17 committee appointed under this section shall have signifi-
18 cant scientific, technical, or other appropriate expertise.
19 The membership of each committee shall represent a wide
20 range of expertise, including at least one third with exper-
21 tise from outside the disciplines covered by the program,
22 and a diverse set of interests.

23 (d) MEETINGS AND PURPOSES.—Each advisory com-
24 mittee under this section shall meet at least semiannually
25 to review and advise on the progress made by the respec-

1 tive research, development, demonstration, and commer-
2 cial application program or programs. The advisory com-
3 mittee shall also review the measurable cost and perform-
4 ance-based goals for the applied programs, and the
5 progress on meeting such goals.

6 (e) REVIEW AND ASSESSMENT.—Not later than 6
7 months after the date of enactment of this Act, the Sec-
8 retary shall enter into arrangements with the National
9 Academy of Sciences to conduct reviews and assessments
10 of the programs authorized by this Act, the measurable
11 cost and performance-based goals for the applied pro-
12 grams, and the progress in meeting such goals. Such re-
13 views and assessments shall be completed and reports con-
14 taining the results of all such reviews and assessments
15 transmitted to the Congress not later than 2 years after
16 the date of enactment of this Act.

17 **SEC. 205. COMPETITIVE AWARD OF MANAGEMENT CON-**
18 **TRACTS.**

19 None of the funds authorized to be appropriated to
20 the Secretary by this Act may be used to award a manage-
21 ment and operating contract for a National Laboratory
22 (excluding those named in subparagraphs (G), (H), (N),
23 (O) of section 2(6)), unless such contract is competitively
24 awarded, or the Secretary grants, on a case-by-case basis,
25 a waiver. The Secretary may not delegate the authority

1 to grant such a waiver and shall submit to the Congress
2 a report notifying it of the waiver, and setting forth the
3 reasons for the waiver, at least 60 days prior to the date
4 of the award of such contract.

5 **SEC. 206. NATIONAL LABORATORY DESIGNATION.**

6 After the date of enactment of this Act the Secretary
7 shall not designate a facility that is not referred to in sec-
8 tion 2(6) as a National Laboratory.

9 **SEC. 207. REPORT ON EQUAL EMPLOYMENT OPPORTUNITY**
10 **PRACTICES.**

11 Not later than 12 months after the date of enactment
12 of this Act, and biennially thereafter, the Secretary shall
13 transmit to Congress a report on the equal employment
14 opportunity practices at National Laboratories. Such re-
15 port shall include—

16 (1) a thorough review of each laboratory con-
17 tractor's equal employment opportunity policies, in-
18 cluding promotion to management and professional
19 positions and pay raises;

20 (2) a statistical report on complaints and their
21 disposition in the laboratories;

22 (3) a description of how equal employment op-
23 portunity practices at the laboratories are treated in
24 the contract and in calculating award fees for each
25 contractor;

1 (4) a summary of disciplinary actions and their
2 disposition by either the Department or the relevant
3 contractors for each laboratory;

4 (5) a summary of outreach efforts to attract
5 women and minorities to the laboratories;

6 (6) a summary of efforts to retain women and
7 minorities in the laboratories; and

8 (7) a summary of collaboration efforts with the
9 Office of Federal Contract Compliance Programs to
10 improve equal employment opportunity practices at
11 the laboratories.

12 **SEC. 208. USER FACILITY BEST PRACTICES PLAN.**

13 The Secretary shall not designate any new or existing
14 facility as a user facility until the Secretary, for that facil-
15 ity—

16 (1) develops a plan to ensure that the facility
17 will—

18 (A) have a skilled staff to support a wide
19 range of users;

20 (B) have a fair method for allocating time
21 to users that provides for input from facility
22 management, user representatives, and outside
23 experts; and

24 (C) be operated in a safe and fiscally pru-
25 dent manner; and

1 (2) transmits such plan to Congress and 60
2 days have elapsed.

3 **SEC. 209. SUPPORT FOR SCIENCE AND ENERGY INFRA-**
4 **STRUCTURE AND FACILITIES.**

5 (a) STRATEGY.—The Secretary shall develop and im-
6 plement a strategy for infrastructure and facilities sup-
7 ported primarily from the Office of Science and the ap-
8 plied programs at each National Laboratory and Depart-
9 ment research facility. Such strategy shall provide cost-
10 effective means for—

11 (1) maintaining existing facilities and infra-
12 structure, as needed;

13 (2) closing unneeded facilities;

14 (3) making facility modifications; and

15 (4) building new facilities.

16 (b) REPORT.—

17 (1) REQUIREMENT.—The Secretary shall pre-
18 pare and transmit to the Congress not later than
19 June 1, 2007, a report summarizing the strategies
20 developed under subsection (a).

21 (2) CONTENTS.—For each National Laboratory
22 and Department research facility, for the facilities
23 primarily used for science and energy research, such
24 report shall contain—

1 (A) the current priority list of proposed fa-
2 cilities and infrastructure projects, including
3 cost and schedule requirements;

4 (B) a current 10-year plan that dem-
5 onstrates the reconfiguration of its facilities and
6 infrastructure to meet its missions and to ad-
7 dress its long-term operational costs and return
8 on investment;

9 (C) the total current budget for all facili-
10 ties and infrastructure funding; and

11 (D) the current status of each facility and
12 infrastructure project compared to the original
13 baseline cost, schedule, and scope.

14 **SEC. 210. COORDINATION PLAN.**

15 (a) IN GENERAL.—The Secretary shall develop a co-
16 ordination plan to improve coordination and collaboration
17 in research, development, demonstration, and commercial
18 application activities across Department organizational
19 boundaries.

20 (b) PLAN CONTENTS.—The plan shall describe—

21 (1) how the Secretary will ensure that the ap-
22 plied programs are coordinating their activities, in-
23 cluding a description of specific research questions
24 that cross organizational boundaries and of how the
25 relevant applied programs are coordinating their ef-

1 forts to answer those questions, and how such cross-
2 cutting research questions will be identified in the
3 future;

4 (2) how the Secretary will ensure that research
5 that has been supported by the Office of Science is
6 being or will be used by the applied programs, in-
7 cluding a description of specific Office of Science-
8 supported research that is relevant to the applied
9 programs and of how the applied programs have
10 used or will use that research; and

11 (3) a description of how the Secretary will en-
12 sure that the research agenda of the Office of
13 Science includes research questions of concern to the
14 applied programs, including a description of specific
15 research questions that the Office of Science will ad-
16 dress to assist the applied programs.

17 (c) PLAN TRANSMITTAL.—The Secretary shall trans-
18 mit the coordination plan to Congress not later than 9
19 months after the date of enactment of this Act, and every
20 2 years thereafter shall transmit a revised coordination
21 plan.

22 (d) CONFERENCE.—Not less than 6 months after the
23 date of enactment of this Act, the Secretary shall convene
24 a conference of program managers from the Office of
25 Science and the applied programs to review ideas and ex-

1 plore possibilities for effective cross-program collaboration.
2 The Secretary also shall invite participation relevant Fed-
3 eral agencies and other programs in the Federal Govern-
4 ment conducting relevant research, and other stakeholders
5 as appropriate.

6 **SEC. 211. AVAILABILITY OF FUNDS.**

7 Funds appropriated to the Secretary for activities au-
8 thorized under this Act shall remain available for three
9 years. Funds that are not obligated at the end of three
10 years shall be returned to the Treasury.

11 **TITLE III—ENERGY EFFICIENCY**
12 **Subtitle A—Vehicles, Buildings,**
13 **and Industries**

14 **SEC. 301. PROGRAMS.**

15 (a) IN GENERAL.—The Secretary shall conduct pro-
16 grams of energy efficiency research, development, dem-
17 onstration, and commercial application, including activi-
18 ties described in this subtitle. Such programs shall be fo-
19 cused on the following objectives:

20 (1) Increasing the energy efficiency of vehicles,
21 buildings, and industrial processes.

22 (2) Reducing the Nation’s demand for energy,
23 especially energy from foreign sources.

24 (3) Reducing the cost of energy and making the
25 economy more efficient and competitive.

1 (4) Improving the Nation's energy security.

2 (5) Reducing the environmental impact of en-
3 ergy-related activities.

4 (b) GOALS.—

5 (1) INITIAL GOALS.—In accordance with the
6 performance plan and report requirements in section
7 4 of the Government Performance Results Act of
8 1993, the Secretary shall transmit to the Congress,
9 along with the President's annual budget request for
10 fiscal year 2007, a report containing outcome meas-
11 ures with explicitly stated cost and performance
12 baselines. The measures shall specify energy effi-
13 ciency performance goals, with quantifiable 5-year
14 cost and energy savings target levels, for vehicles,
15 buildings, and industries, and any other such goals
16 the Secretary considers appropriate.

17 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
18 retary shall transmit to the Congress, along with the
19 President's annual budget request for each fiscal
20 year after 2007, a report containing—

21 (A) a description, including quantitative
22 analysis, of progress in achieving performance
23 goals transmitted under paragraph (1), as com-
24 pared to the baselines transmitted under para-
25 graph (1); and

1 (B) any amendments to such goals.

2 (c) PUBLIC INPUT.—The Secretary shall consider ad-
3 vice from industry, universities, and other interested par-
4 ties through seeking comments in the Federal Register
5 and other means before transmitting each report under
6 subsection (b).

7 **SEC. 302. VEHICLES.**

8 The Secretary shall conduct a program of research,
9 development, demonstration, and commercial application
10 of advanced, cost-effective technologies to improve the en-
11 ergy efficiency and environmental performance of light-
12 duty and heavy-duty vehicles, including—

13 (1) hybrid and electric propulsion systems, in-
14 cluding plug-in hybrid systems;

15 (2) advanced engines, including combustion en-
16 gines;

17 (3) advanced materials, including high strength,
18 lightweight materials, such as nanostructured mate-
19 rials, composites, multimaterial parts, carbon fibers,
20 and materials with high thermal conductivity;

21 (4) technologies for reduced drag and rolling re-
22 sistance;

23 (5) whole-vehicle design optimization to reduce
24 the weight of component parts and thus increase the

1 fuel economy of the vehicle, including fiber optics to
2 replace traditional wiring;

3 (6) thermoelectric devices that capture waste
4 heat and convert thermal energy into electricity; and

5 (7) advanced drivetrains.

6 **SEC. 303. BUILDINGS.**

7 (a) PROGRAM.—The Secretary shall conduct a pro-
8 gram of research, development, demonstration, and com-
9 mercial application of cost-effective technologies, for new
10 construction and retrofit, to improve the energy efficiency
11 and environmental performance of commercial, industrial,
12 institutional, and residential buildings. The program shall
13 use a whole-buildings approach, integrating work on ele-
14 ments including—

15 (1) advanced controls, including occupancy sen-
16 sors, daylighting controls, wireless technologies,
17 automated responses to changes in the internal and
18 external environment, and real time delivery of infor-
19 mation on building system and component perform-
20 ance;

21 (2) building envelope, including windows, roof-
22 ing systems and materials, and building-integrated
23 photovoltaics;

24 (3) building systems components, including—

1 (A) lighting, including the Next Generation
2 Lighting Initiative described in subsection (b);

3 (B) appliances, including advanced tech-
4 nologies, such as stand-by load technologies, for
5 office equipment, food service equipment, and
6 laundry equipment; and

7 (C) heating, ventilation, and cooling sys-
8 tems, including ground-source heat pumps and
9 radiant heating; and

10 (4) onsite renewable energy generation.

11 (b) NEXT GENERATION LIGHTING INITIATIVE.—The
12 program conducted under subsection (a)(3)(A) shall in-
13 clude a Next Generation Lighting Initiative to support re-
14 search, development, demonstration, and commercial ap-
15 plication activities related to advanced lighting tech-
16 nologies for both general white light illumination needs
17 and specialized applications such as exit ramp and stair-
18 way illumination. Such activities shall be focused on ad-
19 vanced lighting technologies, including solid-state organic
20 and inorganic technologies that, compared to current
21 lighting technologies, deliver superior performance, are
22 longer lasting, are more energy-efficient, are better
23 matched to customer needs, have less environmental im-
24 pact, and are cost-competitive.

1 (c) ENERGY EFFICIENT BUILDING PILOT GRANT
2 PROGRAM.—

3 (1) IN GENERAL.—Not later than 6 months
4 after the date of enactment of this Act, the Sec-
5 retary shall establish a pilot program to award
6 grants to businesses and organizations for new con-
7 struction of energy efficient buildings, or major ren-
8 ovations of buildings that will result in energy effi-
9 cient buildings, to demonstrate innovative energy ef-
10 ficiency technologies, especially those sponsored by
11 the Department.

12 (2) AWARDS.—The Secretary shall award
13 grants under this subsection competitively to those
14 applicants whose proposals—

15 (A) best demonstrate—

16 (i) likelihood to meet or exceed the de-
17 sign standards referred to in paragraph
18 (7);

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

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

23 (B) are least likely to be realized without
24 Federal assistance.

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

6 (4) GRANT PAYMENTS.—

7 (A) INITIAL PAYMENT.—The Secretary
8 shall pay 50 percent of the total amount of the
9 grant to grant recipients upon selection.

10 (B) REMAINDER OF PAYMENT.—The Sec-
11 retary shall pay the remaining 50 percent of the
12 grant only after independent certification of
13 operational buildings for compliance with the
14 standards for energy efficient buildings de-
15 scribed in paragraph (7).

16 (C) FAILURE TO COMPLY.—The Secretary
17 shall not provide the remainder of the payment
18 unless the building is certified within 6 months
19 after operation of the completed building to
20 meet the requirements described in subpara-
21 graph (B), or in the case of major renovations
22 the building is certified within 6 months of the
23 completion of the renovations.

24 (5) REPORT TO CONGRESS.—Not later than 3
25 years after awarding the first grant under this sub-

1 section, the Secretary shall transmit to Congress a
2 report containing—

3 (A) the total number and dollar amount of
4 grants awarded under this subsection; and

5 (B) an estimate of aggregate cost and en-
6 ergy savings enabled by the pilot program
7 under this subsection.

8 (6) ADMINISTRATIVE EXPENSES.—Administra-
9 tive expenses for the program under this subsection
10 shall not exceed 10 percent of appropriated funds.

11 (7) DEFINITION OF ENERGY EFFICIENT BUILD-
12 ING.—For purposes of this subsection, the term “en-
13 ergy efficient building” means a building that is
14 independently certified—

15 (A) to meet or exceed the applicable
16 United States Green Building Council’s Leader-
17 ship in Energy and Environmental Design
18 standards for a silver, gold, or platinum rating;
19 and

20 (B) to achieve a reduction in energy con-
21 sumption of—

22 (i) at least 25 percent for new con-
23 struction, compared to the energy stand-
24 ards set by the Federal Building Code (10
25 C.F.R. part 434); and

1 (ii) at least 20 percent for major ren-
2 ovations, compared to energy consumption
3 before renovations are begun.

4 **SEC. 304. INDUSTRIES.**

5 (a) PROGRAM.—The Secretary shall conduct a pro-
6 gram of research, development, demonstration, and com-
7 mercial application of advanced technologies to improve
8 the energy efficiency, environmental performance, and
9 process efficiency of energy-intensive and waste-intensive
10 industries. Such program shall be focused on industries
11 whose total annual energy consumption amounts to more
12 than 1.0 percent of the total nationwide annual energy
13 consumption, according to the most recent data available
14 to the Department. Research and development efforts
15 under this section shall give a higher priority to broad-
16 benefit efficiency technologies that have practical applica-
17 tion across industry sectors.

18 (b) ELECTRIC MOTOR CONTROL TECHNOLOGY.—
19 The program conducted under subsection (a) shall include
20 research on, and development, demonstration, and com-
21 mercial application of, advanced control devices to improve
22 the energy efficiency of electric motors, including those
23 used in industrial processes, heating, ventilation, and cool-
24 ing.

1 (c) REAUTHORIZATION OF STEEL AND ALUMINUM
2 ENERGY CONSERVATION AND TECHNOLOGY COMPETI-
3 TIVENESS ACT OF 1988.—

4 (1) AUTHORIZATION OF APPROPRIATIONS.—

5 Section 9 of the Steel and Aluminum Energy Con-
6 servation and Technology Competitiveness Act of
7 1988 (15. U.S.C. 5108) is amended to read as fol-
8 lows:

9 **“SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**

10 “There are authorized to be appropriated to the Sec-
11 retary to carry out this Act \$20,000,000 for each of fiscal
12 years 2006 through 2010.”.

13 (2) STEEL PROJECT PRIORITIES.—Section
14 4(c)(1) of the Steel and Aluminum Energy Con-
15 servation and Technology Competitiveness Act of
16 1988 (15 U.S.C. 5103(c)(1)) is amended—

17 (A) in subparagraph (H), by striking
18 “coatings for sheet steels” and inserting “sheet
19 and bar steels”; and

20 (B) by adding at the end the following new
21 subparagraph:

22 “(K) The development of technologies
23 which reduce greenhouse gas emissions.”.

1 (3) CONFORMING AMENDMENTS.—The Steel
2 and Aluminum Energy Conservation and Technology
3 Competitiveness Act of 1988 is further amended—

4 (A) by striking section 7 (15 U.S.C. 5106);

5 and

6 (B) in section 4(b)—

7 (i) in the subsection heading, by in-
8 sserting “AND REPORT” after “MANAGE-
9 MENT PLAN”;

10 (ii) by striking “Within 6 months
11 after the date of enactment of this Act”
12 and inserting “Not later than 6 months
13 after the date of enactment of the Act en-
14 acting this sentence”;

15 (iii) by striking “to expand the steel
16 research and development initiative to in-
17 clude aluminum and”; and

18 (iv) by inserting “, and shall transmit
19 such plan to Congress” after “carry out
20 the purposes of this Act”.

21 **SEC. 305. DEMONSTRATION AND COMMERCIAL APPLICA-**
22 **TION.**

23 (a) APPLIANCES AND TESTING.—The Secretary shall
24 conduct research and analysis to determine whether, given
25 Department-sponsored and other advances in energy effi-

1 ciency technologies, demonstration and commercial appli-
2 cation of innovative, cost-effective energy savings and pol-
3 lution reducing technologies could be used to improve ap-
4 pliances and test procedures used to measure appliance
5 efficiency.

6 (b) BUILDING ENERGY CODES.—The Secretary shall,
7 in coordination with government, nongovernment, and
8 commercial partners, conduct research and analyses of the
9 best cost-effective practices in the development and updat-
10 ing of building energy codes, including for manufactured
11 housing. Analyses shall focus on how to encourage energy
12 efficiency and adoption of newly developed energy produc-
13 tion and use equipment.

14 (c) ADVANCED ENERGY TECHNOLOGY TRANSFER
15 CENTERS.—

16 (1) GRANTS.—Not later than 18 months after
17 the date of enactment of this Act, the Secretary
18 shall make grants to nonprofit institutions, State
19 and local governments, or universities (or consortia
20 thereof), to establish a geographically dispersed net-
21 work of Advanced Energy Technology Transfer Cen-
22 ters, to be located in areas the Secretary determines
23 have the greatest need of the services of such Cen-
24 ters.

25 (2) ACTIVITIES.—

1 (A) IN GENERAL.—Each Center shall oper-
2 ate a program to encourage demonstration and
3 commercial application of advanced energy
4 methods and technologies through education
5 and outreach to building and industrial profes-
6 sionals, and to other individuals and organiza-
7 tions with an interest in efficient energy use.

8 (B) ADVISORY PANEL.—Each Center shall
9 establish an advisory panel to advise the Center
10 on how best to accomplish the activities under
11 subparagraph (A).

12 (3) APPLICATION.—A person seeking a grant
13 under this subsection shall submit to the Secretary
14 an application in such form and containing such in-
15 formation as the Secretary may require. The Sec-
16 retary may award a grant under this subsection to
17 an entity already in existence if the entity is other-
18 wise eligible under this subsection.

19 (4) SELECTION CRITERIA.—The Secretary shall
20 award grants under this subsection on the basis of
21 the following criteria, at a minimum:

22 (A) The ability of the applicant to carry
23 out the activities in paragraph (2).

24 (B) The extent to which the applicant will
25 coordinate the activities of the Center with

1 other entities, such as State and local govern-
2 ments, utilities, and educational and research
3 institutions.

4 (5) MATCHING FUNDS.—The Secretary shall re-
5 quire a non-Federal matching requirement of at
6 least 50 percent of the costs of establishing and op-
7 erating each Center.

8 (6) ADVISORY COMMITTEE.—The Secretary
9 shall establish an advisory committee to advise the
10 Secretary on the establishment of Centers under this
11 subsection. The advisory committee shall be com-
12 posed of individuals with expertise in the area of ad-
13 vanced energy methods and technologies, including
14 at least 1 representative from—

15 (A) State or local energy offices;

16 (B) energy professionals;

17 (C) trade or professional associations;

18 (D) architects, engineers, or construction
19 professionals;

20 (E) manufacturers;

21 (F) the research community; and

22 (G) nonprofit energy or environmental or-
23 ganizations.

24 (7) DEFINITIONS.—For purposes of this sub-
25 section:

1 (A) ADVANCED ENERGY METHODS AND
2 TECHNOLOGIES.—The term “advanced energy
3 methods and technologies” means all methods
4 and technologies that promote energy efficiency
5 and conservation, including distributed genera-
6 tion technologies, and life-cycle analysis of en-
7 ergy use.

8 (B) CENTER.—The term “Center” means
9 an Advanced Energy Technology Transfer Cen-
10 ter established pursuant to this subsection.

11 (C) DISTRIBUTED GENERATION.—The
12 term “distributed generation” means an electric
13 power generation facility that is designed to
14 serve retail electric consumers at or near the fa-
15 cility site.

16 (d) REPORT.—Not later than 2 years after the date
17 of enactment of this Act, and once every 3 years there-
18 after, the Secretary shall transmit to Congress a report
19 on the results of research and analysis under this section.
20 In calculating cost-effectiveness for purposes of such re-
21 ports, the Secretary shall include, at a minimum, the
22 avoided cost of additional energy production, savings to
23 the economy from lower peak energy prices and reduced
24 price volatility, and the public and private benefits of re-
25 duced pollution.

1 **SEC. 306. SECONDARY ELECTRIC VEHICLE BATTERY USE**
2 **PROGRAM.**

3 (a) DEFINITIONS.—For purposes of this section:

4 (1) ASSOCIATED EQUIPMENT.—The term “asso-
5 ciated equipment” means equipment located where
6 the batteries will be used that is necessary to enable
7 the use of the energy stored in the batteries.

8 (2) BATTERY.—The term “battery” means an
9 energy storage device that previously has been used
10 to provide motive power in a vehicle powered in
11 whole or in part by electricity.

12 (b) PROGRAM.—The Secretary shall establish and
13 conduct a research, development, demonstration, and com-
14 mercial application program for the secondary use of bat-
15 teries if the Secretary finds that there are sufficient num-
16 bers of such batteries to support the program. The pro-
17 gram shall be—

18 (1) designed to demonstrate the use of batteries
19 in secondary applications, including utility and com-
20 mercial power storage and power quality;

21 (2) structured to evaluate the performance, in-
22 cluding useful service life and costs, of such bat-
23 teries in field operations, and the necessary sup-
24 porting infrastructure, including reuse and disposal
25 of batteries; and

1 (3) coordinated with ongoing secondary battery
2 use programs at the National Laboratories and in
3 industry.

4 (c) SOLICITATION.—Not later than 180 days after
5 the date of enactment of this Act, if the Secretary finds
6 under subsection (b) that there are sufficient numbers of
7 batteries to support the program, the Secretary shall so-
8 licit proposals to demonstrate the secondary use of bat-
9 teries and associated equipment and supporting infra-
10 structure in geographic locations throughout the United
11 States. The Secretary may make additional solicitations
12 for proposals if the Secretary determines that such solici-
13 tations are necessary to carry out this section.

14 (d) SELECTION OF PROPOSALS.—

15 (1) IN GENERAL.—The Secretary shall, not
16 later than 90 days after the closing date established
17 by the Secretary for receipt of proposals under sub-
18 section (c), select up to 5 proposals which may re-
19 ceive financial assistance under this section, subject
20 to the availability of appropriations.

21 (2) DIVERSITY; ENVIRONMENTAL EFFECT.—In
22 selecting proposals, the Secretary shall consider di-
23 versity of battery type, geographic and climatic di-
24 versity, and life-cycle environmental effects of the
25 approaches.

1 (3) LIMITATION.—No 1 project selected under
2 this section shall receive more than 25 percent of the
3 funds authorized for the program under this section.

4 (4) OPTIMIZATION OF FEDERAL RESOURCES.—
5 The Secretary shall consider the extent of involve-
6 ment of State or local government and other persons
7 in each demonstration project to optimize use of
8 Federal resources.

9 (5) OTHER CRITERIA.—The Secretary may con-
10 sider such other criteria as the Secretary considers
11 appropriate.

12 (e) CONDITIONS.—The Secretary shall require that—

13 (1) relevant information be provided to the De-
14 partment, the users of the batteries, the proposers,
15 and the battery manufacturers;

16 (2) the proposer provide at least 50 percent of
17 the costs associated with the proposal; and

18 (3) the proposer provide to the Secretary such
19 information regarding the disposal of the batteries
20 as the Secretary may require to ensure that the pro-
21 poser disposes of the batteries in accordance with
22 applicable law.

1 **SEC. 307. DEFINITION OF COST-EFFECTIVE.**

2 For purposes of this subtitle, the term “cost-effec-
3 tive” means resulting in a simple payback of costs in 10
4 years or less.

5 **SEC. 308. AUTHORIZATION OF APPROPRIATIONS.**

6 In addition to the sums authorized in the Steel and
7 Aluminum Energy Conservation and Technology Competi-
8 tiveness Act of 1988, as amended in section 304 of this
9 Act, the following sums are authorized to be appropriated
10 to the Secretary for the purposes of carrying out this sub-
11 title:

12 (1) For fiscal year 2006, \$620,000,000, includ-
13 ing—

14 (A) \$200,000,000 for carrying out the ve-
15 hicles program under section 302;

16 (B) \$100,000,000 for carrying out the
17 buildings program under section 303, of which
18 \$10,000,000 shall be for the grant program
19 under section 303(c);

20 (C) \$100,000,000 for carrying out the in-
21 dustries program under section 304(a);

22 (D) \$2,000,000 for carrying out the elec-
23 tric motor control technology program under
24 section 304(b);

1 (E) \$10,000,000 for carrying out dem-
2 onstration and commercial applications activi-
3 ties under section 305; and

4 (F) \$4,000,000 for carrying out the sec-
5 ondary electric vehicle battery use program
6 under section 306.

7 (2) For fiscal year 2007, \$700,000,000, includ-
8 ing—

9 (A) \$240,000,000 for carrying out the ve-
10 hicles program under section 302;

11 (B) \$130,000,000 for carrying out the
12 buildings program under section 303, of which
13 \$10,000,000 shall be for the grant program
14 under section 303(c);

15 (C) \$115,000,000 for carrying out the in-
16 dustries program under section 304(a);

17 (D) \$2,000,000 for carrying out the elec-
18 tric motor control technology program under
19 section 304(b);

20 (E) \$10,000,000 for carrying out dem-
21 onstration and commercial applications activi-
22 ties under section 305; and

23 (F) \$7,000,000 for carrying out the sec-
24 ondary electric vehicle battery use program
25 under section 306.

1 (3) For fiscal year 2008, \$800,000,000, includ-
2 ing—

3 (A) \$270,000,000 for carrying out the ve-
4 hicles program under section 302;

5 (B) \$160,000,000 for carrying out the
6 buildings program under section 303, of which
7 \$10,000,000 shall be for the grant program
8 under section 303(c);

9 (C) \$140,000,000 for carrying out the in-
10 dustries program under section 304(a);

11 (D) \$2,000,000 for carrying out the elec-
12 tric motor control technology program under
13 section 304(b);

14 (E) \$10,000,000 for carrying out dem-
15 onstration and commercial applications activi-
16 ties under section 305; and

17 (F) \$7,000,000 for carrying out the sec-
18 ondary electric vehicle battery use program
19 under section 306.

20 (4) For fiscal year 2009, \$925,000,000, includ-
21 ing—

22 (A) \$310,000,000 for carrying out the ve-
23 hicles program under section 302;

24 (B) \$200,000,000 for carrying out the
25 buildings program under section 303, of which

1 \$10,000,000 shall be for the grant program
2 under section 303(c);

3 (C) \$170,000,000 for carrying out the in-
4 dustries program under section 304(a);

5 (D) \$10,000,000 for carrying out dem-
6 onstration and commercial applications activi-
7 ties under section 305; and

8 (E) \$7,000,000 for carrying out the sec-
9 ondary electric vehicle battery use program
10 under section 306.

11 (5) For fiscal year 2010, \$1,000,000,000, in-
12 cluding—

13 (A) \$340,000,000 for carrying out the ve-
14 hicles program under section 302;

15 (B) \$240,000,000 for carrying out the
16 buildings program under section 303, of which
17 \$10,000,000 shall be for the grant program
18 under section 303(c);

19 (C) \$190,000,000 for carrying out the in-
20 dustries program under section 304(a);

21 (D) \$10,000,000 for carrying out dem-
22 onstration and commercial applications activi-
23 ties under section 305; and

1 (E) \$7,000,000 for carrying out the sec-
2 ondary electric vehicle battery use program
3 under section 306.

4 **SEC. 309. LIMITATION ON USE OF FUNDS.**

5 None of the funds authorized to be appropriated
6 under this subtitle may be used for—

7 (1) the issuance and implementation of energy
8 efficiency regulations;

9 (2) the Weatherization Assistance Program
10 under part A of title IV of the Energy Conservation
11 and Production Act (42 U.S.C. 6861 et seq.);

12 (3) the State Energy Program under part D of
13 title III of the Energy Policy and Conservation Act
14 (42 U.S.C. 6321 et seq.); or

15 (4) the Federal Energy Management Program
16 under part 3 of title V of the National Energy Con-
17 servation Policy Act (42 U.S.C. 8251 et seq.).

18 **Subtitle B—Distributed Energy and**
19 **Electric Energy Systems**

20 **SEC. 321. DISTRIBUTED ENERGY.**

21 (a) IN GENERAL.—The Secretary shall conduct pro-
22 grams of distributed energy resources and systems reli-
23 ability and efficiency research, development, demonstra-
24 tion, and commercial application to improve the reliability
25 and efficiency of distributed energy resources and systems,

1 including activities described in this subtitle. The pro-
2 grams shall address advanced energy technologies and sys-
3 tems and advanced grid reliability technologies. The pro-
4 grams shall include the integration of—

5 (1) renewable energy resources;

6 (2) fuel cells;

7 (3) combined heat and power systems;

8 (4) microturbines;

9 (5) advanced natural gas turbines;

10 (6) advanced internal combustion engine gen-
11 erators;

12 (7) energy storage devices;

13 (8) interconnection standards, protocols, and
14 equipment;

15 (9) ancillary equipment for dispatch and con-
16 trol; and

17 (10) any other energy technologies, as appro-
18 priate.

19 (b) MICRO-COGENERATION ENERGY TECH-
20 NOLOGY.—The Secretary shall make competitive, merit-
21 based grants to consortia for the development of micro-
22 cogeneration energy technology. The consortia shall ex-
23 plore—

24 (1) the use of small-scale combined heat and
25 power in residential heating appliances; or

1 (2) the use of excess power to operate other ap-
2 pliances within the residence and supply excess gen-
3 erated power to the power grid.

4 (c) GOALS.—

5 (1) INITIAL GOALS.—In accordance with the
6 performance plan and report requirements in section
7 4 of the Government Performance Results Act of
8 1993, the Secretary shall transmit to the Congress,
9 along with the President’s annual budget request for
10 fiscal year 2007, a report containing outcome meas-
11 ures with explicitly stated cost and performance
12 baselines. The measures shall specify performance
13 goals, with quantifiable 5-year cost and energy sav-
14 ings target levels, for distributed energy resources
15 and systems, and any other such goals the Secretary
16 considers appropriate.

17 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
18 retary shall transmit to the Congress, along with the
19 President’s annual budget request for each fiscal
20 year after 2007, a report containing—

21 (A) a description, including quantitative
22 analysis, of progress in achieving performance
23 goals transmitted under paragraph (1), as com-
24 pared to the baselines transmitted under para-
25 graph (1); and

1 (B) any amendments to such goals.

2 **SEC. 322. ELECTRICITY TRANSMISSION AND DISTRIBUTION**
3 **AND ENERGY ASSURANCE.**

4 (a) PROGRAM.—The Secretary shall conduct a re-
5 search, development, demonstration, and commercial ap-
6 plication program on advanced control devices to improve
7 the energy efficiency and reliability of the electric trans-
8 mission and distribution systems and to protect the Na-
9 tion against severe energy supply disruptions. This pro-
10 gram shall address, at a minimum—

11 (1) advanced energy delivery and storage tech-
12 nologies, materials, and systems, including new
13 transmission technologies, such as flexible alter-
14 nating current transmission systems, composite con-
15 ductor materials, and other technologies that en-
16 hance reliability, operational flexibility, or power-car-
17 rying capability;

18 (2) advanced grid reliability and efficiency tech-
19 nology development;

20 (3) technologies contributing to significant load
21 reductions;

22 (4) advanced metering, load management, and
23 control technologies;

24 (5) technologies to enhance existing grid compo-
25 nents;

1 (6) the development and use of high-tempera-
2 ture superconductors to—

3 (A) enhance the reliability, operational
4 flexibility, or power-carrying capability of elec-
5 tric transmission or distribution systems; or

6 (B) increase the efficiency of electric en-
7 ergy generation, transmission, distribution, or
8 storage systems;

9 (7) integration of power systems, including sys-
10 tems to deliver high-quality electric power, electric
11 power reliability, and combined heat and power;

12 (8) supply of electricity to the power grid by
13 small-scale, distributed, and residential-based power
14 generators;

15 (9) the development and use of advanced grid
16 design, operation, and planning tools;

17 (10) any other infrastructure technologies, as
18 appropriate; and

19 (11) technology transfer and education.

20 (b) GOALS.—

21 (1) INITIAL GOALS.—In accordance with the
22 performance plan and report requirements in section
23 4 of the Government Performance Results Act of
24 1993, the Secretary shall transmit to the Congress,
25 along with the President’s annual budget request for

1 fiscal year 2007, a report containing outcome meas-
2 ures with explicitly stated cost and performance
3 baselines. The measures shall specify performance
4 goals, with quantifiable 5-year cost and energy sav-
5 ings target levels, for electricity transmission and
6 distribution and energy assurance, and any other
7 such goals the Secretary considers appropriate.

8 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
9 retary shall transmit to the Congress, along with the
10 President’s annual budget request for each fiscal
11 year after 2007, a report containing—

12 (A) a description, including quantitative
13 analysis, of progress in achieving performance
14 goals transmitted under paragraph (1), as com-
15 pared to the baselines transmitted under para-
16 graph (1); and

17 (B) any amendments to such goals.

18 **SEC. 323. AUTHORIZATION OF APPROPRIATIONS.**

19 (a) IN GENERAL.—The following sums are author-
20 ized to be appropriated to the Secretary for the purposes
21 of carrying out this subtitle:

22 (1) For fiscal year 2006, \$210,000,000.

23 (2) For fiscal year 2007, \$230,000,000.

24 (3) For fiscal year 2008, \$250,000,000.

25 (4) For fiscal year 2009, \$270,000,000.

1 (5) For fiscal year 2010, \$290,000,000.

2 (b) MICRO-COGENERATION ENERGY TECH-
3 NOLOGY.—From the amounts authorized under subsection
4 (a), \$20,000,000 for each of fiscal years 2006 and 2007
5 are authorized for activities under section 321(b).

6 (c) ELECTRICITY TRANSMISSION AND DISTRIBUTION
7 AND ENERGY ASSURANCE.—From the amounts author-
8 ized under subsection (a), the following sums are author-
9 ized for activities under section 322:

10 (1) For fiscal year 2006, \$120,000,000.

11 (2) For fiscal year 2007, \$130,000,000.

12 (3) For fiscal year 2008, \$155,000,000.

13 (4) For fiscal year 2009, \$165,000,000.

14 (5) For fiscal year 2010, \$175,000,000.

15 **TITLE IV—RENEWABLE ENERGY**

16 **SEC. 401. FINDINGS.**

17 Congress makes the following findings:

18 (1) Renewable energy is a growth industry
19 around the world. However, the United States has
20 not been investing as heavily as other countries, and
21 is losing market share.

22 (2) Since 1996, the United States has lost sig-
23 nificant market share in the solar industry, dropping
24 from 44 percent of the world market to 13 percent
25 in 2003.

1 (3) In 2003, Japan spent more than
2 \$200,000,000 on solar research, development, dem-
3 onstration, and commercial application and other in-
4 centives, and Germany provided more than
5 \$750,000,000 in low cost financing for solar photo-
6 voltaic projects. This compares to United States
7 Government spending of \$139,000,000 in 2003 for
8 research, development, demonstration, and commer-
9 cial application and other incentives.

10 (4) Germany and Japan each had domestic
11 photovoltaic industries that employed more than
12 10,000 people in 2003, while in the same year the
13 United States photovoltaics industry employed only
14 2,000 people.

15 (5) The United States is becoming increasingly
16 dependent on imported energy.

17 (6) The high cost of fossil fuels is hurting the
18 United States economy.

19 (7) Small reductions in peak demand can result
20 in very large reductions in price, according to energy
21 market experts.

22 (8) Although the United States has only 2 per-
23 cent of the world's oil reserves and 3 percent of the
24 world's natural gas reserves, our Nation's renewable
25 energy resources are vast and largely untapped.

1 (9) Renewable energy can reduce the demand
2 for imported energy, reducing costs and decreasing
3 the variability of energy prices.

4 (10) By using domestic renewable energy re-
5 sources, the United States can reduce the amount of
6 money sent into unstable regions of the world and
7 keep it in the United States.

8 (11) By supporting renewable energy research
9 and development, and funding demonstration and
10 commercial application programs for renewable en-
11 ergy, the United States can create an export indus-
12 try and improve the balance of trade.

13 (12) Renewable energy can significantly reduce
14 the environmental impacts of energy production.

15 **SEC. 402. DEFINITIONS.**

16 For purposes of this title:

17 (1) **BIOBASED PRODUCT.**—The term “biobased
18 product” means a product determined by the Sec-
19 retary to be a commercial or industrial product
20 (other than food or feed) that is—

21 (A) composed, in whole or in significant
22 part, of—

23 (i) biological products;

1 (ii) renewable domestic agricultural
2 materials (including plant, animal, and
3 marine materials); or

4 (iii) forestry materials; and

5 (B) produced in connection with the con-
6 version of biomass to energy or fuel.

7 (2) CELLULOSIC BIOMASS.—The term “cel-
8 lulosic biomass” means a crop containing
9 lignocellulose or hemicellulose, including barley
10 grain, grapeseed, forest thinnings, rice bran, rice
11 hulls, rice straw, soybean matter, sugarcane bagasse,
12 and any crop grown specifically for the purpose of
13 producing cellulosic feedstocks.

14 **SEC. 403. PROGRAMS.**

15 (a) IN GENERAL.—The Secretary shall conduct pro-
16 grams of renewable energy research, development, dem-
17 onstration, and commercial application, including activi-
18 ties described in this title. Such programs shall be focused
19 on the following objectives:

20 (1) Increasing the conversion efficiency of all
21 forms of renewable energy through improved tech-
22 nologies.

23 (2) Decreasing the cost of renewable energy
24 generation and delivery.

1 (3) Promoting the diversity of the energy sup-
2 ply.

3 (4) Decreasing the Nation's dependence on for-
4 eign energy supplies.

5 (5) Improving United States energy security.

6 (6) Decreasing the environmental impact of en-
7 ergy-related activities.

8 (7) Increasing the export of renewable genera-
9 tion equipment from the United States.

10 (b) GOALS.—

11 (1) INITIAL GOALS.—In accordance with the
12 performance plan and report requirements in section
13 4 of the Government Performance Results Act of
14 1993, the Secretary shall transmit to the Congress,
15 along with the President's annual budget request for
16 fiscal year 2007, a report containing outcome meas-
17 ures with explicitly stated cost and performance
18 baselines. The measures shall specify renewable en-
19 ergy performance goals, with quantifiable 5-year cost
20 and energy savings target levels, for wind power,
21 photovoltaics, solar thermal systems (including con-
22 centrating and solar hot water), geothermal energy,
23 biomass-based systems, biofuels, and hydropower,
24 and any other such goals the Secretary considers ap-
25 propriate.

1 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
2 retary shall transmit to the Congress, along with the
3 President’s annual budget request for each fiscal
4 year after 2007, a report containing—

5 (A) a description, including quantitative
6 analysis, of progress in achieving performance
7 goals transmitted under paragraph (1), as com-
8 pared to the baselines transmitted under para-
9 graph (1); and

10 (B) any amendments to such goals.

11 (c) PUBLIC INPUT.—The Secretary shall consider ad-
12 vice from industry, universities, and other interested par-
13 ties through seeking comments in the Federal Register
14 and other means before transmitting each report under
15 subsection (b).

16 **SEC. 404. SOLAR.**

17 (a) PROGRAM.—The Secretary shall conduct a pro-
18 gram of research, development, demonstration, and com-
19 mercial application for solar energy, including—

- 20 (1) photovoltaics;
21 (2) solar hot water and solar space heating; and
22 (3) concentrating solar power.

23 (b) BUILDING INTEGRATION.—For photovoltaics,
24 solar hot water, and space heating, the Secretary shall
25 conduct research, development, demonstration, and com-

1 merical application to support the development of products
2 that can be easily integrated into new and existing build-
3 ings.

4 (c) MANUFACTURE.—The Secretary shall conduct re-
5 search, development, demonstration, and commercial ap-
6 plication of manufacturing techniques that can produce
7 low-cost, high-quality solar systems.

8 **SEC. 405. BIOENERGY PROGRAMS.**

9 (a) PROGRAM.—The Secretary shall conduct a pro-
10 gram of research, development, demonstration, and com-
11 mercial application for cellulosic biomass, including—

12 (1) biomass conversion to heat and electricity;

13 (2) biomass conversion to liquid fuels;

14 (3) biobased products;

15 (4) integrated biorefineries that may produce
16 heat, electricity, liquid fuels, and biobased products;

17 (5) cross-cutting activities on feedstocks and
18 enzymes; and

19 (6) life-cycle economic analysis.

20 (b) BIOFUELS AND BIOBASED PRODUCTS.—The ob-
21 jectives of the biofuels and biobased products programs
22 under paragraphs (2), (3), and (4) of subsection (a), and
23 of the biorefinery demonstration program under sub-
24 section (c), shall be to develop, in partnership with indus-
25 try—

1 (1) advanced biochemical and thermochemical
2 conversion technologies capable of making high-value
3 biobased chemical feedstocks and products, to sub-
4 stitute for petroleum-based feedstocks and products,
5 biofuels that are price-competitive with gasoline or
6 diesel in either internal combustion engines or fuel
7 cell-powered vehicles, and biobased products from a
8 variety of feedstocks, including grains, cellulosic bio-
9 mass, and agricultural byproducts; and

10 (2) advanced biotechnology processes capable of
11 making biofuels and biobased products, with empha-
12 sis on development of biorefinery technologies, in-
13 cluding enzyme-based processing technologies.

14 (c) BIOMASS INTEGRATED REFINERY DEMONSTRA-
15 TION.—

16 (1) IN GENERAL.—The Secretary shall conduct
17 a program to demonstrate the commercial applica-
18 tion of at least 5 integrated biorefineries. The Sec-
19 retary shall ensure geographical distribution of bio-
20 refinery demonstrations under this subsection. The
21 Secretary shall not provide more than \$100,000,000
22 under this subsection for any single biorefinery dem-
23 onstration. The Secretary shall award the biorefinery
24 demonstrations so as to encourage—

1 (A) the demonstration of a wide variety of
2 cellulosic biomass feedstocks;

3 (B) the commercial application of biomass
4 technologies for a variety of uses, including—

5 (i) liquid transportation fuels;

6 (ii) high-value biobased chemicals;

7 (iii) substitutes for petroleum-based
8 feedstocks and products; and

9 (iv) energy in the form of electricity
10 or useful heat; and

11 (C) the demonstration of the collection and
12 treatment of a variety of biomass feedstocks.

13 (2) PROPOSALS.—Not later than 6 months
14 after the date of enactment of this Act, the Sec-
15 retary shall solicit proposals for demonstration of
16 advanced biorefineries. The Secretary shall select
17 only proposals that—

18 (A) demonstrate that the project will be
19 able to operate profitably without direct Federal
20 subsidy after initial construction costs are paid;
21 and

22 (B) enable the biorefinery to be easily rep-
23 licated.

24 (d) GRANTS.—Of the funds authorized to be appro-
25 priated for activities authorized under this section, not less

1 than \$5,000,000 for each fiscal year shall be made avail-
2 able for grants to Historically Black Colleges and Univer-
3 sities, Tribal Colleges, and Hispanic-Serving Institutions.

4 **SEC. 406. WIND.**

5 (a) PROGRAM.—The Secretary shall conduct a pro-
6 gram of research, development, demonstration, and com-
7 mercial application for wind energy, including—

- 8 (1) low speed wind energy;
- 9 (2) offshore wind energy;
- 10 (3) testing and verification; and
- 11 (4) distributed wind energy generation.

12 (b) FACILITY.—The Secretary shall construct and op-
13 erate a research and testing facility capable of testing the
14 largest wind turbines that are expected to be manufac-
15 tured in the next 15 years. The Secretary shall consider
16 the need for testing offshore turbine designs in siting the
17 facility. All private users of the facility shall be required
18 to pay the Department all costs associated with their use
19 of the facility, including capital costs prorated at normal
20 business amortization rates.

21 (c) REGIONAL FIELD VERIFICATION PROGRAM.—Of
22 the funds authorized to be appropriated for activities au-
23 thorized under this section, not less than \$4,000,000 for
24 each fiscal year shall be made available for the Regional
25 Field Verification Program of the Department.

1 **SEC. 407. GEOTHERMAL.**

2 The Secretary shall conduct a program of research,
3 development, demonstration, and commercial application
4 for geothermal energy. The program shall focus on devel-
5 oping improved technologies for reducing the costs of geo-
6 thermal energy installations, including technologies for—

7 (1) improving detection of geothermal re-
8 sources;

9 (2) decreasing drilling costs;

10 (3) decreasing maintenance costs through im-
11 proved materials;

12 (4) increasing the potential for other revenue
13 sources, such as mineral production; and

14 (5) increasing the understanding of reservoir
15 life cycle and management.

16 **SEC. 408. PHOTOVOLTAIC DEMONSTRATION PROGRAM.**

17 (a) IN GENERAL.—The Secretary shall establish a
18 program of grants to States to demonstrate advanced pho-
19 tovoltaic technology.

20 (b) REQUIREMENTS.—(1) To receive funding under
21 the program under this section, a State must submit a
22 proposal that demonstrates, to the satisfaction of the Sec-
23 retary, that the State will meet the requirements of sub-
24 section (f).

25 (2) If a State has received funding under this section
26 for the preceding year, the State must demonstrate, to the

1 satisfaction of the Secretary, that it complied with the re-
2 quirements of subsection (f) in carrying out the program
3 during that preceding year, and that it will do so in the
4 future.

5 (3) Except as provided in subsection (c), each State
6 submitting a qualifying proposal shall receive funding
7 under the program based on the proportion of United
8 States population in the State according to the 2000 cen-
9 sus. In each fiscal year, the portion of funds attributable
10 under this paragraph to States that have not submitted
11 qualifying proposals in the time and manner specified by
12 the Secretary shall be distributed pro rata to the States
13 that have submitted qualifying proposals in the specified
14 time and manner.

15 (c) COMPETITION.—If more than \$80,000,000 is
16 available for the program under this section for any fiscal
17 year, the Secretary shall allocate 75 percent of the funds
18 available according to subsection (b), and shall award the
19 remaining 25 percent on a competitive basis to the States
20 with the proposals the Secretary considers most likely to
21 encourage the widespread adoption of photovoltaic tech-
22 nologies.

23 (d) PROPOSALS.—Not later than 6 months after the
24 date of enactment of this Act, and in each subsequent fis-
25 cal year for the life of the program, the Secretary shall

1 solicit proposals from the States to participate in the pro-
2 gram under this section.

3 (e) COMPETITIVE CRITERIA.—In awarding funds in
4 a competitive allocation under subsection (c), the Sec-
5 retary shall consider—

6 (1) the likelihood of a proposal to encourage the
7 demonstration of, or lower the costs of, advanced
8 photovoltaic technologies; and

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

10 (A) maximize the amount of photovoltaics
11 demonstrated;

12 (B) maximize the proportion of non-Fed-
13 eral cost share; and

14 (C) limit State administrative costs.

15 (f) STATE PROGRAM.—A program operated by a
16 State with funding under this section shall provide com-
17 petitive awards for the demonstration of advanced photo-
18 voltaic technologies. Each State program shall—

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

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

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

3 (4) endeavor to fund recipients in the commer-
4 cial, industrial, institutional, governmental, and resi-
5 dential sectors;

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

8 (6) report annually to the Department on—

9 (A) the amount of funds disbursed;

10 (B) the amount of photovoltaics purchased;

11 and

12 (C) the results of the monitoring under
13 paragraph (7);

14 (7) provide for measurement and verification of
15 the output of a representative sample of the
16 photovoltaics systems demonstrated throughout the
17 average working life of the systems, or at least 20
18 years; and

19 (8) require that applicant buildings must have
20 received an independent energy efficiency audit dur-
21 ing the 6-month period preceding the filing of the
22 application.

23 (g) UNEXPENDED FUNDS.—If a State fails to expend
24 any funds received under subsection (b) or (c) within 3

1 years of receipt, such remaining funds shall be returned
2 to the Treasury.

3 (h) REPORTS.—The Secretary shall report to Con-
4 gress 5 years after funds are first distributed to the States
5 under this section—

6 (1) the amount of photovoltaics demonstrated;

7 (2) the number of projects undertaken;

8 (3) the administrative costs of the program;

9 (4) the amount of funds that each State has
10 not received because of a failure to submit a quali-
11 fying proposal, as described in subsection (b)(3);

12 (5) the results of the monitoring under sub-
13 section (f)(7); and

14 (6) the total amount of funds distributed, in-
15 cluding a breakdown by State.

16 **SEC. 409. ADDITIONAL PROGRAMS.**

17 (a) IN GENERAL.—The Secretary may conduct re-
18 search, development, demonstration, and commercial ap-
19 plication programs of—

20 (1) ocean energy, including wave energy;

21 (2) kinetic hydro turbines; and

22 (3) the combined use of renewable energy tech-
23 nologies with one another and with other energy
24 technologies.

25 (b) MARINE RENEWABLE ENERGY STUDY.—

1 (1) STUDY.—The Secretary shall enter into an
2 arrangement with the National Academy of Sciences
3 to conduct a study on—

4 (A) the feasibility of various methods of re-
5 newable generation of energy from the ocean,
6 including energy from waves, tides, currents,
7 and thermal gradients; and

8 (B) the research, development, demonstra-
9 tion, and commercial application activities re-
10 quired to make marine renewable energy gen-
11 eration competitive with other forms of elec-
12 tricity generation.

13 (2) TRANSMITTAL.—Not later than 1 year after
14 the date of enactment of this Act, the Secretary
15 shall transmit the study to Congress along with the
16 Secretary’s recommendations for implementing the
17 results of the study.

18 **SEC. 410. ANALYSIS AND EVALUATION.**

19 (a) IN GENERAL.—The Secretary shall conduct anal-
20 ysis and evaluation in support of the renewable energy
21 programs under this title. These activities shall be used
22 to guide budget and program decisions, and shall in-
23 clude—

24 (1) economic and technical analysis of renew-
25 able energy potential, including resource assessment;

1 (2) analysis of past program performance, both
2 in terms of technical advances and in market intro-
3 duction of renewable energy; and

4 (3) any other analysis or evaluation that the
5 Secretary considers appropriate.

6 (b) FUNDING.—The Secretary may designate up to
7 1 percent of the funds appropriated for carrying out this
8 title for analysis and evaluation activities under this sec-
9 tion.

10 **SEC. 411. AUTHORIZATION OF APPROPRIATIONS.**

11 The following sums are authorized to be appropriated
12 to the Secretary for the purposes of carrying out this title:

13 (1) For fiscal year 2006, \$465,000,000, of
14 which—

15 (A) \$100,000,000 shall be for carrying out
16 the solar program under section 404;

17 (B) \$200,000,000 shall be for carrying out
18 the bioenergy program under section 405, in-
19 cluding \$100,000,000 for the biorefinery dem-
20 onstration program under section 405(c);

21 (C) \$55,000,000 shall be for carrying out
22 the wind program under section 406, including
23 \$10,000,000 for the facility described in section
24 406(b);

1 (D) \$30,000,000 shall be for carrying out
2 the geothermal program under section 407; and

3 (E) \$50,000,000 shall be for carrying out
4 the photovoltaic demonstration program under
5 section 408.

6 (2) For fiscal year 2007, \$605,000,000, of
7 which—

8 (A) \$140,000,000 shall be for carrying out
9 the solar program under section 404;

10 (B) \$245,000,000 shall be for carrying out
11 the bioenergy program under section 405, in-
12 cluding \$125,000,000 for the biorefinery dem-
13 onstration program under section 405(c);

14 (C) \$60,000,000 shall be for carrying out
15 the wind program under section 406, including
16 \$15,000,000 for the facility described in section
17 406(b);

18 (D) \$30,000,000 shall be for carrying out
19 the geothermal program under section 407; and

20 (E) \$100,000,000 shall be for carrying out
21 the photovoltaic demonstration program under
22 section 408.

23 (3) For fiscal year 2008, \$775,000,000, of
24 which—

1 (A) \$200,000,000 shall be for carrying out
2 the solar program under section 404;

3 (B) \$310,000,000 shall be for carrying out
4 the bioenergy program under section 405, in-
5 cluding \$150,000,000 for the biorefinery dem-
6 onstration program under section 405(c);

7 (C) \$65,000,000 shall be for carrying out
8 the wind program under section 406, including
9 \$10,000,000 for the facility described in section
10 406(b);

11 (D) \$30,000,000 shall be for carrying out
12 the geothermal program under section 407; and

13 (E) \$150,000,000 shall be for carrying out
14 the photovoltaic demonstration program under
15 section 408.

16 (4) For fiscal year 2009, \$940,000,000, of
17 which—

18 (A) \$250,000,000 shall be for carrying out
19 the solar program under section 404;

20 (B) \$355,000,000 shall be for carrying out
21 the bioenergy program under section 405, in-
22 cluding \$175,000,000 for the biorefinery dem-
23 onstration program under section 405(c);

24 (C) \$65,000,000 shall be for carrying out
25 the wind program under section 406, including

1 \$5,000,000 for the facility described in section
2 406(b);

3 (D) \$30,000,000 shall be for carrying out
4 the geothermal program under section 407; and

5 (E) \$200,000,000 shall be for carrying out
6 the photovoltaic demonstration program under
7 section 408.

8 (5) For fiscal year 2010, \$1,125,000,000, of
9 which—

10 (A) \$300,000,000 shall be for carrying out
11 the solar program under section 404;

12 (B) \$400,000,000 shall be for carrying out
13 the bioenergy program under section 405, in-
14 cluding \$200,000,000 for the biorefinery dem-
15 onstration program under section 405(c);

16 (C) \$65,000,000 shall be for carrying out
17 the wind program under section 406, including
18 \$1,000,000 for the facility described in section
19 406(b);

20 (D) \$30,000,000 shall be for carrying out
21 the geothermal program under section 407; and

22 (E) \$300,000,000 shall be for carrying out
23 the photovoltaic demonstration program under
24 section 408.

1 **TITLE V—NUCLEAR ENERGY**
2 **PROGRAMS**

3 **SEC. 501. DEFINITION.**

4 In this title, the term “junior faculty” means a fac-
5 ulty member who was awarded a doctorate less than 10
6 years before receipt of an award from the grant program
7 described in section 512(b)(2).

8 **SEC. 502. PROGRAMS.**

9 (a) **IN GENERAL.**—The Secretary shall conduct pro-
10 grams of civilian nuclear energy research, development,
11 demonstration, and commercial application, including ac-
12 tivities described in this title. Programs under this title
13 shall be focused on—

14 (1) enhancing nuclear power’s viability as part
15 of the United States energy portfolio;

16 (2) providing the technical means to reduce the
17 likelihood of nuclear proliferation;

18 (3) maintaining a cadre of nuclear scientists
19 and engineers;

20 (4) maintaining National Laboratory and uni-
21 versity nuclear programs, including their infrastruc-
22 ture;

23 (5) supporting both individual researchers and
24 multidisciplinary teams of researchers to pioneer

1 new approaches in nuclear energy, science, and tech-
2 nology;

3 (6) developing, planning, constructing, acquir-
4 ing, and operating special equipment and facilities
5 for the use of researchers;

6 (7) supporting technology transfer and other
7 appropriate activities to assist the nuclear energy in-
8 dustry, and other users of nuclear science and engi-
9 neering, including activities addressing reliability,
10 availability, productivity, component aging, safety,
11 and security of nuclear power plants; and

12 (8) reducing the environmental impact of nu-
13 clear energy-related activities.

14 (b) GOALS.—

15 (1) INITIAL GOALS.—In accordance with the
16 performance plan and report requirements in section
17 4 of the Government Performance Results Act of
18 1993, the Secretary shall transmit to the Congress,
19 along with the President's annual budget request for
20 fiscal year 2007, a report containing outcome meas-
21 ures with explicitly stated cost and performance
22 baselines. The measures shall specify performance
23 goals, with quantifiable 5-year cost improvement and
24 reliability, availability, productivity, and component
25 aging target levels for a wide range of nuclear en-

1 energy technologies, and any other such goals the Sec-
2 retary considers appropriate.

3 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
4 retary shall transmit to the Congress, along with the
5 President’s annual budget request for each fiscal
6 year after 2007, a report containing—

7 (A) a description, including quantitative
8 analysis, of progress in achieving performance
9 goals transmitted under paragraph (1), as com-
10 pared to the baselines transmitted under para-
11 graph (1); and

12 (B) any amendments to such goals.

13 (c) PUBLIC INPUT.—The Secretary shall consider ad-
14 vice from industry, universities, and other interested par-
15 ties through seeking comments in the Federal Register
16 and other means before transmitting each report under
17 subsection (b).

18 **Subtitle A—Nuclear Energy**
19 **Research Programs**

20 **SEC. 511. ADVANCED FUEL RECYCLING PROGRAM.**

21 (a) IN GENERAL.—The Secretary shall conduct an
22 advanced fuel recycling technology research, development,
23 demonstration, and commercial application program to
24 evaluate fuel recycling or transmutation technologies
25 which are proliferation-resistant and minimize environ-

1 mental and public health and safety impacts, as an alter-
2 native to aqueous reprocessing technologies deployed as of
3 the date of enactment of this Act, in support of evaluation
4 of alternative national strategies for spent nuclear fuel and
5 advanced reactor concepts. The program shall be subject
6 to annual review by the Secretary's Nuclear Energy Re-
7 search Advisory Committee or other independent entity,
8 as appropriate.

9 (b) INTERNATIONAL COOPERATION.—The Secretary
10 shall seek opportunities to engage international partners
11 with expertise in advanced fuel recycling technologies
12 where such partnerships may help achieve program goals.

13 **SEC. 512. UNIVERSITY NUCLEAR SCIENCE AND ENGINEER-**
14 **ING SUPPORT.**

15 (a) IN GENERAL.—The Secretary shall conduct a
16 program to invest in human resources and infrastructure
17 in the nuclear sciences and related fields, including health
18 physics, nuclear engineering, and radiochemistry, con-
19 sistent with Departmental missions related to civilian nu-
20 clear research, development, demonstration, and commer-
21 cial application.

22 (b) REQUIREMENTS.—In carrying out the program
23 under this section, the Secretary shall—

24 (1) conduct a graduate and undergraduate fel-
25 lowship program to attract new and talented stu-

1 dents, which may include fellowships for students to
2 spend time at National Laboratories in the areas of
3 nuclear science, engineering, and health physics with
4 a member of the National Laboratory staff acting as
5 a mentor;

6 (2) conduct a junior faculty research initiation
7 grant program to assist universities in recruiting
8 and retaining new faculty in the nuclear sciences
9 and engineering by awarding grants to junior faculty
10 for research on issues related to nuclear energy engi-
11 neering and science;

12 (3) support fundamental nuclear sciences, engi-
13 neering, and health physics research through a nu-
14 clear engineering education and research program;

15 (4) encourage collaborative nuclear research
16 among industry, National Laboratories, and univer-
17 sities; and

18 (5) support communication and outreach re-
19 lated to nuclear science, engineering, and health
20 physics.

21 (c) **STRENGTHENING UNIVERSITY RESEARCH AND**
22 **TRAINING REACTORS AND ASSOCIATED INFRASTRUC-**
23 **TURE.**—In carrying out the program under this section,
24 the Secretary may support—

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

4 **SEC. 514. NUCLEAR POWER 2010 PROGRAM.**

5 The Secretary shall carry out a Nuclear Power 2010
6 Program, consistent with recommendations in the October
7 2001 report entitled “A Roadmap to Deploy New Nuclear
8 Power Plants in the United States by 2010” issued by
9 the Nuclear Energy Research Advisory Committee of the
10 Department. The Program shall include—

11 (1) the expertise and capabilities of industry,
12 universities, and National Laboratories in evaluation
13 of advanced nuclear fuel cycles and fuels testing;

14 (2) a variety of reactor designs suitable for both
15 developed and developing nations;

16 (3) participation of international collaborators
17 in research, development, and design efforts as ap-
18 propriate; and

19 (4) university and industry participation.

20 **SEC. 515. GENERATION IV NUCLEAR ENERGY SYSTEMS INI-**
21 **TIATIVE.**

22 The Secretary shall carry out a Generation IV Nu-
23 clear Energy Systems Initiative to develop an overall tech-
24 nology plan and to support research, development, dem-
25 onstration, and commercial application necessary to make

1 an informed technical decision about the most promising
2 candidates for the eventual commercial application of ad-
3 vanced fission reactor technology for the generation of
4 electricity. The Initiative shall examine advanced prolifera-
5 tion-resistant and passively safe reactor designs, including
6 designs that—

7 (1) are economically competitive with other elec-
8 tric power generation plants;

9 (2) have higher efficiency, lower cost, and im-
10 proved safety compared to reactors in operation on
11 the date of enactment of this Act;

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

15 (4) use improved instrumentation.

16 **SEC. 516. CIVILIAN INFRASTRUCTURE AND FACILITIES.**

17 The Secretary shall operate and maintain infrastruc-
18 ture and facilities to support the nuclear energy research,
19 development, demonstration, and commercial application
20 programs, including radiological facilities management,
21 isotope production, and facilities management.

22 **SEC. 517. NUCLEAR ENERGY RESEARCH AND DEVELOP-**
23 **MENT INFRASTRUCTURE PLAN.**

24 In carrying out section 209, the Secretary shall—

1 (1) develop an inventory of nuclear science and
2 engineering facilities, equipment, expertise, and
3 other assets at all of the National Laboratories;

4 (2) develop a prioritized list of nuclear science
5 and engineering plant and equipment improvements
6 needed at each of the National Laboratories;

7 (3) consider the available facilities and expertise
8 at all National Laboratories and emphasize invest-
9 ments which complement rather than duplicate capa-
10 bilities; and

11 (4) develop a timeline and a proposed budget
12 for the completion of deferred maintenance on plant
13 and equipment,

14 with the goal of ensuring that Department programs
15 under this title will be generally recognized to be among
16 the best in the world.

17 **SEC. 518. IDAHO NATIONAL LABORATORY FACILITIES**

18 **PLAN.**

19 (a) **PLAN.**—The Secretary shall develop a comprehen-
20 sive plan for the facilities at the Idaho National Labora-
21 tory, especially taking into account the resources available
22 at other National Laboratories. In developing the plan, the
23 Secretary shall—

24 (1) evaluate the facilities planning processes
25 utilized by other physical science and engineering re-

1 search and development institutions, both in the
2 United States and abroad, that are generally recog-
3 nized as being among the best in the world, and con-
4 sider how those processes might be adapted toward
5 developing such facilities plan;

6 (2) avoid duplicating, moving, or transferring
7 nuclear science and engineering facilities, equipment,
8 expertise, and other assets that currently exist at
9 other National Laboratories;

10 (3) consider the establishment of a national
11 transuranic analytic chemistry laboratory as a user
12 facility at the Idaho National Laboratory;

13 (4) include a plan to develop, if feasible, the
14 Advanced Test Reactor and Test Reactor Area into
15 a user facility that is more readily accessible to aca-
16 demic and industrial researchers;

17 (5) consider the establishment of a fast neutron
18 source as a user facility;

19 (6) consider the establishment of new “hot
20 cells” and the configuration of “hot cells” most like-
21 ly to advance research, development, demonstration,
22 and commercial application in nuclear science and
23 engineering, especially in the context of the condition
24 and availability of these facilities elsewhere in the
25 National Laboratories; and

1 (7) include a timeline and a proposed budget
2 for the completion of deferred maintenance on plant
3 and equipment.

4 (b) TRANSMITTAL TO CONGRESS.—Not later than
5 one year after the date of enactment of this Act, the Sec-
6 retary shall transmit such plan to Congress.

7 **SEC. 519. AUTHORIZATION OF APPROPRIATIONS.**

8 (a) PROGRAM AUTHORIZATION.—The following sums
9 are authorized to be appropriated to the Secretary for the
10 purposes of carrying out this subtitle:

11 (1) \$407,000,000 for fiscal year 2006.

12 (2) \$427,000,000 for fiscal year 2007.

13 (3) \$449,000,000 for fiscal year 2008.

14 (4) \$471,000,000 for fiscal year 2009.

15 (5) \$495,000,000 for fiscal year 2010.

16 (b) UNIVERSITY SUPPORT.—Of the funds authorized
17 under subsection (a), the following sums are authorized
18 to be appropriated to carry out section 512:

19 (1) \$35,200,000 for fiscal year 2006.

20 (2) \$44,350,000 for fiscal year 2007.

21 (3) \$49,200,000 for fiscal year 2008.

22 (4) \$55,000,000 for fiscal year 2009.

23 (5) \$60,000,000 for fiscal year 2010.

1 **Subtitle B—Next Generation**
2 **Nuclear Plant Program**

3 **SEC. 531. DEFINITIONS.**

4 For purposes of this subtitle:

5 (1) **CONSTRUCTION.**—The term “construction”
6 means the physical construction of the demonstra-
7 tion plant, and the physical construction, purchase,
8 or manufacture of equipment or components that
9 are specifically designed for the demonstration plant,
10 but does not mean the design of the facility, equip-
11 ment, or components.

12 (2) **DEMONSTRATION PLANT.**—The term “dem-
13 onstration plant” means an advanced fission reactor
14 power plant constructed and operated in accordance
15 with this subtitle.

16 (3) **OPERATION.**—The term “operation” means
17 the operation of the demonstration plant, including
18 general maintenance and provision of power, heating
19 and cooling, and other building services that are spe-
20 cifically for the demonstration plant, but does not
21 mean operations that support other activities co-
22 located with the demonstration plant.

23 **SEC. 532. NEXT GENERATION NUCLEAR POWER PLANT.**

24 (a) **IN GENERAL.**—The Secretary shall conduct a
25 program of research, development, demonstration, and

1 commercial application of advanced nuclear fission reactor
2 technology. The objective of this program shall be to dem-
3 onstrate the technical and economic feasibility of an ad-
4 vanced nuclear fission reactor power plant design for the
5 commercial production of electricity.

6 (b) RESEARCH AND DEVELOPMENT.—The program
7 shall include research, development, design, planning, and
8 all other necessary activities to support the construction
9 and operation of the demonstration plant.

10 (c) SUBSYSTEM DEMONSTRATIONS.—The Secretary
11 shall support demonstration of enabling technologies and
12 subsystems and other research, development, demonstra-
13 tion, and commercial application activities necessary to
14 support the activities in this subtitle.

15 (d) CONSTRUCTION AND OPERATION.—The program
16 shall culminate in the construction and operation of the
17 demonstration plant based on a design selected by the Sec-
18 retary in accordance with procedures described in the plan
19 required by section 534(c). The demonstration plant shall
20 be located and constructed within the United States and
21 shall be operational, and capable of demonstrating the
22 commercial production of electricity, by December 31,
23 2015.

24 (e) LIMITATION.—No funds shall be expended for the
25 construction or operation of the demonstration plant until

1 90 days have elapsed after the transmission of the plan
2 described in section 534(c).

3 **SEC. 533. ADVISORY COMMITTEE.**

4 The Secretary shall appoint a Next Generation Nu-
5 clear Power Plant Subcommittee of the Nuclear Energy
6 Research Advisory Council to provide advice to the Sec-
7 retary on technical matters and program management for
8 the duration of the program and construction project
9 under this subtitle.

10 **SEC. 534. PROGRAM REQUIREMENTS.**

11 (a) PARTNERSHIPS.—In carrying out the program
12 under this subtitle, the Secretary shall make use of part-
13 nerships with industry for the research, development, de-
14 sign, construction, and operation of the demonstration
15 plant. In establishing such partnerships, the Secretary
16 shall give preference to companies for which the principal
17 base of operations is located in the United States.

18 (b) INTERNATIONAL COLLABORATION.—(1) The Sec-
19 retary shall seek international cooperation, participation,
20 and financial contribution in this program, including as-
21 sistance from specialists or facilities from member coun-
22 tries of the Generation IV International Forum, the Rus-
23 sian Federation, or other international partners where
24 such specialists or facilities provide access to cost-effective
25 and relevant skills or test capabilities.

1 (2) International activities shall be carried out in con-
2 sultation with the Generation IV International Forum.

3 (3) The program may include demonstration of se-
4 lected program objectives in a partner nation.

5 (c) PROGRAM PLAN.—Not later than one year after
6 the date of enactment of this Act, the Secretary shall
7 transmit to Congress a comprehensive program plan. The
8 program plan shall—

9 (1) describe the plan for development, selection,
10 management, ownership, operation, and decommis-
11 sioning of the demonstration plant;

12 (2) identify program milestones and a timeline
13 for achieving these milestones;

14 (3) provide for development of risk-based cri-
15 teria for any future commercial development of a re-
16 actor architecture based on that of the demonstra-
17 tion plant;

18 (4) include a projected budget required to meet
19 the milestones; and

20 (5) include an explanation of any major pro-
21 gram decisions that deviate from program advice
22 given to the Secretary by the advisory committee es-
23 tablished under section 533.

1 **SEC. 535. AUTHORIZATION OF APPROPRIATIONS.**

2 (a) RESEARCH, DEVELOPMENT, AND DESIGN PRO-
 3 GRAMS.—The following sums are authorized to be appro-
 4 priated to the Secretary for the purposes of carrying out
 5 this subtitle except for the demonstration plant activities
 6 described in subsection (b):

7 (1) For fiscal year 2006, \$150,000,000.

8 (2) For fiscal year 2007, \$150,000,000.

9 (3) For fiscal year 2008, \$150,000,000.

10 (4) For fiscal year 2009, \$150,000,000.

11 (5) For fiscal year 2010, \$150,000,000.

12 (b) REACTOR CONSTRUCTION.—There are authorized
 13 to be appropriated to the Secretary such sums as may be
 14 necessary for operation and construction of the dem-
 15 onstration plant under this subtitle. The Secretary shall
 16 not spend more than \$500,000,000 for demonstration
 17 plant reactor construction activities under this subtitle.

18 **TITLE VI—FOSSIL ENERGY**
 19 **Subtitle A—Research Programs**

20 **SEC. 601. ENHANCED FOSSIL ENERGY RESEARCH AND DE-**
 21 **VELOPMENT PROGRAMS.**

22 (a) IN GENERAL.—The Secretary shall, in conjunc-
 23 tion with industry, conduct fossil energy research, develop-
 24 ment, demonstration, and commercial applications pro-
 25 grams, including activities under this subtitle, with the
 26 goal of improving the efficiency, effectiveness, and envi-

1 ronmental performance of fossil energy production, up-
2 grading, conversion, and consumption. Such programs
3 shall be focused on—

4 (1) increasing the conversion efficiency of all
5 forms of fossil energy through improved tech-
6 nologies;

7 (2) decreasing the cost of all fossil energy pro-
8 duction, generation, and delivery;

9 (3) promoting diversity of energy supply;

10 (4) decreasing the Nation's dependence on for-
11 eign energy supplies;

12 (5) improving United States energy security;

13 (6) decreasing the environmental impact of en-
14 ergy-related activities; and

15 (7) increasing the export of fossil energy-related
16 equipment, technology, and services from the United
17 States.

18 (b) GOALS.—

19 (1) INITIAL GOALS.—In accordance with the
20 performance plan and report requirements in section
21 4 of the Government Performance Results Act of
22 1993, the Secretary shall transmit to the Congress,
23 along with the President's annual budget request for
24 fiscal year 2007, a report containing outcome meas-
25 ures with explicitly stated cost and performance

1 baselines. The measures shall specify production or
2 efficiency performance goals, with quantifiable 5-
3 year cost and energy savings target levels, for fossil
4 energy, and any other such goals the Secretary con-
5 siders appropriate.

6 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
7 retary shall transmit to the Congress, along with the
8 President’s annual budget request for each fiscal
9 year after 2007, a report containing—

10 (A) a description, including quantitative
11 analysis, of progress in achieving performance
12 goals transmitted under paragraph (1), as com-
13 pared to the baselines transmitted under para-
14 graph (1); and

15 (B) any amendments to such goals.

16 (c) COVERED ACTIVITIES.—The Secretary shall en-
17 sure that the goals stated in subsection (b) are illustrative
18 of the outcomes necessary to promote acceptance of the
19 programs’ efforts in the marketplace, but at a minimum
20 shall encompass the following areas:

21 (1) Coal gasifiers.

22 (2) Turbine generators, including both natural
23 gas and syngas fueled.

1 (3) Oxygen separation devices, hydrogen separation devices, and carbon dioxide separation technologies.

4 (4) Coal gas and post-combustion emission cleanup and disposal equipment, including carbon dioxide capture and disposal equipment.

7 (5) Average per-foot drilling costs for oil and gas, segregated by appropriate drilling regimes, including onshore versus offshore and depth categories.

11 (6) Production of liquid fuels from nontraditional feedstocks, including syngas, biomass, methane, and combinations thereof.

14 (7) Environmental discharge per barrel of oil or oil-equivalent production, including reinjected waste.

16 (8) Surface disturbance on both a per-well and per-barrel of oil or oil-equivalent production basis.

18 (d) PUBLIC INPUT.—The Secretary shall consider advice from industry, universities, and other interested parties through seeking comments in the Federal Register and other means before transmitting each report under subsection (b).

23 **SEC. 602. FOSSIL RESEARCH AND DEVELOPMENT.**

24 (a) OBJECTIVES.—The Secretary shall conduct a program of fossil research, development, demonstration, and

1 commercial application, whose objective shall be to reduce
2 emissions from fossil fuel use by developing technologies,
3 including precombustion technologies, by 2015 with the
4 capability of—

5 (1) dramatically increasing electricity gener-
6 ating efficiencies of coal and natural gas;

7 (2) improving combined heat and power ther-
8 mal efficiencies;

9 (3) improving fuels utilization efficiency of pro-
10 duction of liquid transportation fuels from coal;

11 (4) achieving near-zero emissions of mercury
12 and of emissions that form fine particles, smog, and
13 acid rain;

14 (5) reducing carbon dioxide emissions by at
15 least 40 percent through efficiency improvements
16 and by 100 percent with sequestration; and

17 (6) improved reliability, efficiency, reductions of
18 air pollutant emissions, and reductions in solid waste
19 disposal requirements.

20 (b) COAL-BASED PROJECTS.—The coal-based
21 projects authorized under this section shall be consistent
22 with the objective stated in subsection (a). The program
23 shall emphasize carbon capture and sequestration tech-
24 nologies and gasification technologies, including gasifi-
25 cation combined cycle, gasification fuel cells, gasification

1 coproduction, hybrid gasification/combustion, or other
2 technologies with the potential to address the capabilities
3 described in paragraphs (4) and (5) of subsection (a).

4 **SEC. 603. OIL AND GAS RESEARCH AND DEVELOPMENT.**

5 The Secretary shall conduct a program of oil and gas
6 research, development, demonstration, and commercial ap-
7 plication, whose objective shall be to advance the science
8 and technology available to domestic petroleum producers,
9 particularly independent operators, to minimize the eco-
10 nomic dislocation caused by the decline of domestic sup-
11 plies of oil and natural gas resources by focusing research
12 on—

13 (1) assisting small domestic producers of oil
14 and gas to develop new and improved technologies to
15 discover and extract additional supplies;

16 (2) developing technologies to extract methane
17 hydrates in an environmentally sound manner;

18 (3) improving the ability of the domestic indus-
19 try to extract hydrocarbons from known reservoirs
20 and classes of reservoirs; and

21 (4) reducing the cost, and improving the effi-
22 ciency and environmental performance, of oil and
23 gas exploration and extraction activities, focusing es-
24 pecially on unconventional sources such as tar sands,
25 heavy oil, and shale oil.

1 **SEC. 604. TRANSPORTATION FUELS.**

2 The Secretary shall conduct a program of transpor-
3 tation fuels research, development, demonstration, and
4 commercial application, whose objective shall be to in-
5 crease the price elasticity of oil supply and demand by fo-
6 cusing research on—

7 (1) reducing the cost of producing transpor-
8 tation fuels from coal and natural gas; and

9 (2) indirect liquefaction of coal and biomass.

10 **SEC. 605. FUEL CELLS.**

11 (a) PROGRAM.—The Secretary shall conduct a pro-
12 gram of research, development, demonstration, and com-
13 mercial application of fuel cells for low-cost, high-effi-
14 ciency, fuel-flexible, modular power systems.

15 (b) DEMONSTRATION.—The program under this sec-
16 tion shall include demonstration of fuel cell proton ex-
17 change membrane technology for commercial, residential,
18 and transportation applications, and distributed genera-
19 tion systems, utilizing improved manufacturing production
20 and processes.

21 **SEC. 606. AUTHORIZATION OF APPROPRIATIONS.**

22 The following sums are authorized to be appropriated
23 to the Secretary for the purposes of carrying out this sub-
24 title:

25 (1) For fiscal year 2006, \$583,000,000.

26 (2) For fiscal year 2007, \$611,000,000.

1 (3) For fiscal year 2008, \$626,000,000.

2 (4) For fiscal year 2009, \$641,000,000.

3 (5) For fiscal year 2010, \$657,000,000.

4 **Subtitle B—Ultra-Deepwater and**
5 **Unconventional Natural Gas**
6 **and Other Petroleum Resources**

7 **SEC. 611. PROGRAM AUTHORITY.**

8 (a) IN GENERAL.—The Secretary shall carry out a
9 program under this subtitle of research, development,
10 demonstration, and commercial application of technologies
11 for ultra-deepwater and unconventional natural gas and
12 other petroleum resource exploration and production, in-
13 cluding addressing the technology challenges for small
14 producers, safe operations, and environmental mitigation
15 (including reduction of greenhouse gas emissions and se-
16 questration of carbon).

17 (b) METHANE HYDRATE REPORT.—Within 6 months
18 of enactment, the Secretary shall report to Congress on
19 whether the activities described in the Methane Hydrates
20 Act of 2000 (114 Stat. 234 or 30 U.S.C. 1902 note)
21 should be carried out under this subtitle.

22 (c) PROGRAM ELEMENTS.—The program under this
23 subtitle shall address the following areas, including im-
24 proving safety and minimizing environmental impacts of
25 activities within each area:

1 (1) Ultra-deepwater technology, including drill-
2 ing to formations in the Outer Continental Shelf to
3 depths greater than 15,000 feet.

4 (2) Ultra-deepwater architecture.

5 (3) Unconventional natural gas and other petro-
6 leum resource exploration and production tech-
7 nology, including the technology challenges of small
8 producers.

9 (d) LIMITATION ON LOCATION OF FIELD ACTIVI-
10 TIES.—Field activities under the program under this sub-
11 title shall be carried out only—

12 (1) in—

13 (A) areas in the territorial waters of the
14 United States not under any Outer Continental
15 Shelf moratorium as of September 30, 2002;

16 (B) areas onshore in the United States on
17 public land administered by the Secretary of the
18 Interior available for oil and gas leasing, where
19 consistent with applicable law and land use
20 plans; and

21 (C) areas onshore in the United States on
22 State or private land, subject to applicable law;
23 and

1 (2) with the approval of the appropriate Fed-
2 eral or State land management agency or private
3 land owner.

4 (e) RESEARCH AT NATIONAL ENERGY TECHNOLOGY
5 LABORATORY.—The Secretary, through the National En-
6 ergy Technology Laboratory, shall carry out research com-
7 plementary to research under subsection (b).

8 (f) CONSULTATION WITH SECRETARY OF THE INTE-
9 RIOR.—In carrying out this subtitle, the Secretary shall
10 consult regularly with the Secretary of the Interior.

11 **SEC. 612. ULTRA-DEEPWATER PROGRAM.**

12 (a) IN GENERAL.—The Secretary shall carry out the
13 activities under section 611(a), to maximize the use of the
14 ultra-deepwater natural gas and other petroleum resources
15 of the United States by increasing the supply of such re-
16 sources, through reducing the cost and increasing the effi-
17 ciency of exploration for and production of such resources,
18 while improving safety and minimizing environmental im-
19 pacts.

20 (b) ROLE OF THE SECRETARY.—The Secretary shall
21 have ultimate responsibility for, and oversight of, all as-
22 pects of the program under this section.

23 (c) ROLE OF THE PROGRAM CONSORTIUM.—

24 (1) IN GENERAL.—The Secretary may contract
25 with a consortium to—

1 (A) manage awards pursuant to subsection
2 (f)(4);

3 (B) make recommendations to the Sec-
4 retary for project solicitations;

5 (C) disburse funds awarded under sub-
6 section (f) as directed by the Secretary in ac-
7 cordance with the annual plan under subsection
8 (e); and

9 (D) carry out other activities assigned to
10 the program consortium by this section.

11 (2) LIMITATION.—The Secretary may not as-
12 sign any activities to the program consortium except
13 as specifically authorized under this section.

14 (3) CONFLICT OF INTEREST.—

15 (A) PROCEDURES.—The Secretary shall
16 establish procedures—

17 (i) to ensure that each board member,
18 officer, or employee of the program consor-
19 tium who is in a decision-making capacity
20 under subsection (f)(3) or (4) shall disclose
21 to the Secretary any financial interests in,
22 or financial relationships with, applicants
23 for or recipients of awards under this sec-
24 tion, including those of his or her spouse
25 or minor child, unless such relationships or

1 interests would be considered to be remote
2 or inconsequential; and

3 (ii) to require any board member, offi-
4 cer, or employee with a financial relation-
5 ship or interest disclosed under clause (i)
6 to recuse himself or herself from any re-
7 view under subsection (f)(3) or oversight
8 under subsection (f)(4) with respect to
9 such applicant or recipient.

10 (B) FAILURE TO COMPLY.—The Secretary
11 may disqualify an application or revoke an
12 award under this section if a board member, of-
13 ficer, or employee has failed to comply with pro-
14 cedures required under subparagraph (A)(ii).

15 (d) SELECTION OF THE PROGRAM CONSORTIUM.—

16 (1) IN GENERAL.—The Secretary shall select
17 the program consortium through an open, competi-
18 tive process.

19 (2) MEMBERS.—The program consortium may
20 include corporations, trade associations, institutions
21 of higher education, National Laboratories, or other
22 research institutions. After submitting a proposal
23 under paragraph (4), the program consortium may
24 not add members without the consent of the Sec-
25 retary.

1 (3) TAX STATUS.—The program consortium
2 shall be an entity that is exempt from tax under sec-
3 tion 501(c)(3) of the Internal Revenue Code of
4 1986.

5 (4) SCHEDULE.—Not later than 180 days after
6 the date of enactment of this Act, the Secretary
7 shall solicit proposals from eligible consortia to per-
8 form the duties in subsection (c)(1), which shall be
9 submitted not later than 360 days after the date of
10 enactment of this Act. The Secretary shall select the
11 program consortium not later than 18 months after
12 such date of enactment.

13 (5) APPLICATION.—Applicants shall submit a
14 proposal including such information as the Secretary
15 may require. At a minimum, each proposal shall—

16 (A) list all members of the consortium;

17 (B) fully describe the structure of the con-
18 sortium, including any provisions relating to in-
19 tellectual property; and

20 (C) describe how the applicant would carry
21 out the activities of the program consortium
22 under this section.

23 (6) ELIGIBILITY.—To be eligible to be selected
24 as the program consortium, an applicant must be an
25 entity whose members collectively have demonstrated

1 capabilities in planning and managing research, de-
2 velopment, demonstration, and commercial applica-
3 tion programs in natural gas or other petroleum ex-
4 ploration or production.

5 (7) CRITERION.—The Secretary shall consider
6 the amount of the fee an applicant proposes to re-
7 ceive under subsection (g) in selecting a consortium
8 under this section.

9 (e) ANNUAL PLAN.—

10 (1) IN GENERAL.—The program under this sec-
11 tion shall be carried out pursuant to an annual plan
12 prepared by the Secretary in accordance with para-
13 graph (2).

14 (2) DEVELOPMENT.—

15 (A) SOLICITATION OF RECOMMENDA-
16 TIONS.—Before drafting an annual plan under
17 this subsection, the Secretary shall solicit spe-
18 cific written recommendations from the pro-
19 gram consortium for each element to be ad-
20 dressed in the plan, including those described in
21 paragraph (4). The Secretary may request that
22 the program consortium submit its rec-
23 ommendations in the form of a draft annual
24 plan.

1 (B) SUBMISSION OF RECOMMENDATIONS;
2 OTHER COMMENT.—The Secretary shall submit
3 the recommendations of the program consor-
4 tium under subparagraph (A) to the Ultra-
5 Deepwater Advisory Committee established
6 under section 615(a) for review, and such Advi-
7 sory Committee shall provide to the Secretary
8 written comments by a date determined by the
9 Secretary. The Secretary may also solicit com-
10 ments from any other experts.

11 (C) CONSULTATION.—The Secretary shall
12 consult regularly with the program consortium
13 throughout the preparation of the annual plan.

14 (3) PUBLICATION.—The Secretary shall trans-
15 mit to Congress and publish in the Federal Register
16 the annual plan, along with any written comments
17 received under paragraph (2)(A) and (B).

18 (4) CONTENTS.—The annual plan shall describe
19 the ongoing and prospective activities of the pro-
20 gram under this section and shall include—

21 (A) a list of any solicitations for awards
22 that the Secretary plans to issue to carry out
23 research, development, demonstration, or com-
24 mercial application activities, including the top-
25 ics for such work, who would be eligible to

1 apply, selection criteria, and the duration of
2 awards; and

3 (B) a description of the activities expected
4 of the program consortium to carry out sub-
5 section (f)(4).

6 (5) ESTIMATES OF INCREASED ROYALTY RE-
7 CEIPTS.—The Secretary, in consultation with the
8 Secretary of the Interior, shall provide an annual re-
9 port to Congress with the President’s budget on the
10 estimated cumulative increase in Federal royalty re-
11 ceipts (if any) resulting from the implementation of
12 this subtitle. The initial report under this paragraph
13 shall be submitted in the first President’s budget fol-
14 lowing the completion of the first annual plan re-
15 quired under this subsection.

16 (f) AWARDS.—

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

24 (2) PROPOSALS.—The Secretary shall solicit
25 proposals for awards under this subsection in such

1 manner and at such time as the Secretary may pre-
2 scribe, in consultation with the program consortium.

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

11 (4) OVERSIGHT.—

12 (A) IN GENERAL.—The program consor-
13 tium shall oversee the implementation of
14 awards under this subsection, consistent with
15 the annual plan under subsection (e), including
16 disbursing funds and monitoring activities car-
17 ried out under such awards for compliance with
18 the terms and conditions of the awards.

19 (B) EFFECT.—Nothing in subparagraph
20 (A) shall limit the authority or responsibility of
21 the Secretary to oversee awards, or limit the
22 authority of the Secretary to review or revoke
23 awards.

24 (C) PROVISION OF INFORMATION.—The
25 Secretary shall provide to the program consor-

1 tium the information necessary for the program
2 consortium to carry out its responsibilities
3 under this paragraph.

4 (g) ADMINISTRATIVE COSTS.—

5 (1) IN GENERAL.—To compensate the program
6 consortium for carrying out its activities under this
7 section, the Secretary shall provide to the program
8 consortium funds sufficient to administer the pro-
9 gram. This compensation may include a manage-
10 ment fee consistent with Department of Energy con-
11 tracting practices and procedures.

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

16 (h) AUDIT.—The Secretary shall retain an inde-
17 pendent, commercial auditor to determine the extent to
18 which funds provided to the program consortium, and
19 funds provided under awards made under subsection (f),
20 have been expended in a manner consistent with the pur-
21 poses and requirements of this subtitle. The auditor shall
22 transmit a report annually to the Secretary, who shall
23 transmit the report to Congress, along with a plan to rem-
24 edy any deficiencies cited in the report.

1 **SEC. 613. UNCONVENTIONAL NATURAL GAS AND OTHER PE-**
2 **TROLEUM RESOURCES PROGRAM.**

3 (a) IN GENERAL.—The Secretary shall carry out ac-
4 tivities under section 611(b)(3), to maximize the use of
5 the onshore unconventional natural gas and other petro-
6 leum resources of the United States, by increasing the
7 supply of such resources, through reducing the cost and
8 increasing the efficiency of exploration for and production
9 of such resources, while improving safety and minimizing
10 environmental impacts.

11 (b) AWARDS.—

12 (1) IN GENERAL.—The Secretary shall carry
13 out this section through awards to research con-
14 sortia made through an open, competitive process.
15 As a condition of award of funds, qualified research
16 consortia shall—

17 (A) demonstrate capability and experience
18 in unconventional onshore natural gas or other
19 petroleum research and development;

20 (B) provide a research plan that dem-
21 onstrates how additional natural gas or oil pro-
22 duction will be achieved; and

23 (C) at the request of the Secretary, provide
24 technical advice to the Secretary for the pur-
25 poses of developing the annual plan required
26 under subsection (e).

1 (2) PRODUCTION POTENTIAL.—The Secretary
2 shall seek to ensure that the number and types of
3 awards made under this subsection have reasonable
4 potential to lead to additional oil and natural gas
5 production on Federal lands.

6 (3) SCHEDULE.—To carry out this subsection,
7 not later than 180 days after the date of enactment
8 of this Act, the Secretary shall solicit proposals from
9 research consortia, which shall be submitted not
10 later than 360 days after the date of enactment of
11 this Act. The Secretary shall select the first group
12 of research consortia to receive awards under this
13 subsection not later than 18 months after such date
14 of enactment.

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

23 (d) FOCUS AREAS FOR AWARDS.—

24 (1) UNCONVENTIONAL RESOURCES.—Awards
25 from allocations under section 619(d)(2) shall focus

1 on areas including advanced coalbed methane, deep
2 drilling, natural gas production from tight sands,
3 natural gas production from gas shales, stranded
4 gas, innovative exploration and production tech-
5 niques, enhanced recovery techniques, and environ-
6 mental mitigation of unconventional natural gas and
7 other petroleum resources exploration and produc-
8 tion.

9 (2) SMALL PRODUCERS.—Awards from alloca-
10 tions under section 619(d)(3) shall be made to con-
11 sortia consisting of small producers or organized pri-
12 marily for the benefit of small producers, and shall
13 focus on areas including complex geology involving
14 rapid changes in the type and quality of the oil and
15 gas reservoirs across the reservoir; low reservoir
16 pressure; unconventional natural gas reservoirs in
17 coalbeds, deep reservoirs, tight sands, or shales; and
18 unconventional oil reservoirs in tar sands and oil
19 shales.

20 (e) ANNUAL PLAN.—

21 (1) IN GENERAL.—The program under this sec-
22 tion shall be carried out pursuant to an annual plan
23 prepared by the Secretary in accordance with para-
24 graph (2).

25 (2) DEVELOPMENT.—

1 (A) WRITTEN RECOMMENDATIONS.—Be-
2 fore drafting an annual plan under this sub-
3 section, the Secretary shall solicit specific writ-
4 ten recommendations from the research con-
5 sortia receiving awards under subsection (b)
6 and the Unconventional Resources Technology
7 Advisory Committee for each element to be ad-
8 dressed in the plan, including those described in
9 subparagraph (D).

10 (B) CONSULTATION.—The Secretary shall
11 consult regularly with the research consortia
12 throughout the preparation of the annual plan.

13 (C) PUBLICATION.—The Secretary shall
14 transmit to Congress and publish in the Fed-
15 eral Register the annual plan, along with any
16 written comments received under subparagraph
17 (A).

18 (D) CONTENTS.—The annual plan shall
19 describe the ongoing and prospective activities
20 under this section and shall include a list of any
21 solicitations for awards that the Secretary plans
22 to issue to carry out research, development,
23 demonstration, or commercial application activi-
24 ties, including the topics for such work, who

1 would be eligible to apply, selection criteria, and
2 the duration of awards.

3 (3) ESTIMATES OF INCREASED ROYALTY RE-
4 CEIPTS.—The Secretary, in consultation with the
5 Secretary of the Interior, shall provide an annual re-
6 port to Congress with the President’s budget on the
7 estimated cumulative increase in Federal royalty re-
8 ceipts (if any) resulting from the implementation of
9 this subtitle. The initial report under this paragraph
10 shall be submitted in the first President’s budget fol-
11 lowing the completion of the first annual plan re-
12 quired under this subsection.

13 (f) ACTIVITIES BY THE UNITED STATES GEOLOGI-
14 CAL SURVEY.—The Secretary of the Interior, through the
15 United States Geological Survey, shall, where appropriate,
16 carry out programs of long-term research to complement
17 the programs under this section.

18 **SEC. 614. ADDITIONAL REQUIREMENTS FOR AWARDS.**

19 (a) DEMONSTRATION PROJECTS.—An application for
20 an award under this subtitle for a demonstration project
21 shall describe with specificity the intended commercial use
22 of the technology to be demonstrated.

23 (b) FLEXIBILITY IN LOCATING DEMONSTRATION
24 PROJECTS.—Subject to the limitation in section 611(c),
25 a demonstration project under this subtitle relating to an

1 ultra-deepwater technology or an ultra-deepwater architec-
2 ture may be conducted in deepwater depths.

3 (c) INTELLECTUAL PROPERTY AGREEMENTS.—If an
4 award under this subtitle is made to a consortium (other
5 than the program consortium), the consortium shall pro-
6 vide to the Secretary a signed contract agreed to by all
7 members of the consortium describing the rights of each
8 member to intellectual property used or developed under
9 the award.

10 (d) TECHNOLOGY TRANSFER.—2.5 percent of the
11 amount of each award made under this subtitle shall be
12 designated for technology transfer and outreach activities
13 under this subtitle.

14 (e) COST SHARING REDUCTION FOR INDEPENDENT
15 PRODUCERS.—In applying the cost sharing requirements
16 under [section ____] to an award under this subtitle the
17 Secretary may reduce or eliminate the non-Federal re-
18 quirement if the Secretary determines that the reduction
19 is necessary and appropriate considering the technological
20 risks involved in the project.

21 **SEC. 615. ADVISORY COMMITTEES.**

22 (a) ULTRA-DEEPWATER ADVISORY COMMITTEE.—

23 (1) ESTABLISHMENT.—Not later than 270 days
24 after the date of enactment of this Act, the Sec-

1 retary shall establish an advisory committee to be
2 known as the Ultra-Deepwater Advisory Committee.

3 (2) MEMBERSHIP.—The advisory committee
4 under this subsection shall be composed of members
5 appointed by the Secretary including—

6 (A) individuals with extensive research ex-
7 perience or operational knowledge of offshore
8 natural gas and other petroleum exploration
9 and production;

10 (B) individuals broadly representative of
11 the affected interests in ultra-deepwater natural
12 gas and other petroleum production, including
13 interests in environmental protection and safe
14 operations;

15 (C) no individuals who are Federal employ-
16 ees; and

17 (D) no individuals who are board members,
18 officers, or employees of the program consor-
19 tium.

20 (3) DUTIES.—The advisory committee under
21 this subsection shall—

22 (A) advise the Secretary on the develop-
23 ment and implementation of programs under
24 this subtitle related to ultra-deepwater natural
25 gas and other petroleum resources; and

1 (B) carry out section 612(e)(2)(B).

2 (4) COMPENSATION.—A member of the advisory committee under this subsection shall serve
3 without compensation but shall receive travel ex-
4 penses in accordance with applicable provisions
5 under subchapter I of chapter 57 of title 5, United
6 States Code.
7

8 (b) UNCONVENTIONAL RESOURCES TECHNOLOGY
9 ADVISORY COMMITTEE.—

10 (1) ESTABLISHMENT.—Not later than 270 days
11 after the date of enactment of this Act, the Sec-
12 retary shall establish an advisory committee to be
13 known as the Unconventional Resources Technology
14 Advisory Committee.

15 (2) MEMBERSHIP.—The advisory committee
16 under this subsection shall be composed of members
17 appointed by the Secretary including—

18 (A) a majority of members who are em-
19 ployees or representatives of independent pro-
20 ducers of natural gas and other petroleum, in-
21 cluding small producers;

22 (B) individuals with extensive research ex-
23 perience or operational knowledge of unconven-
24 tional natural gas and other petroleum resource
25 exploration and production;

1 (C) individuals broadly representative of
2 the affected interests in unconventional natural
3 gas and other petroleum resource exploration
4 and production, including interests in environ-
5 mental protection and safe operations; and

6 (D) no individuals who are Federal em-
7 ployees.

8 (3) DUTIES.—The advisory committee under
9 this subsection shall advise the Secretary on the de-
10 velopment and implementation of activities under
11 this subtitle related to unconventional natural gas
12 and other petroleum resources.

13 (4) COMPENSATION.—A member of the advi-
14 sory committee under this subsection shall serve
15 without compensation but shall receive travel ex-
16 penses in accordance with applicable provisions
17 under subchapter I of chapter 57 of title 5, United
18 States Code.

19 (c) PROHIBITION.—No advisory committee estab-
20 lished under this section shall make recommendations on
21 funding awards to particular consortia or other entities,
22 or for specific projects.

23 **SEC. 616. LIMITS ON PARTICIPATION.**

24 An entity shall be eligible to receive an award under
25 this subtitle only if the Secretary finds—

1 (1) that the entity's participation in the pro-
2 gram under this subtitle would be in the economic
3 interest of the United States; and

4 (2) that either—

5 (A) the entity is a United States-owned en-
6 tity organized under the laws of the United
7 States; or

8 (B) the entity is organized under the laws
9 of the United States and has a parent entity or-
10 ganized under the laws of a country that af-
11 fords—

12 (i) to United States-owned entities op-
13 portunities, comparable to those afforded
14 to any other entity, to participate in any
15 cooperative research venture similar to
16 those authorized under this subtitle;

17 (ii) to United States-owned entities
18 local investment opportunities comparable
19 to those afforded to any other entity; and

20 (iii) adequate and effective protection
21 for the intellectual property rights of
22 United States-owned entities.

23 **SEC. 617. SUNSET.**

24 The authority provided by this subtitle shall termi-
25 nate on September 30, 2015.

1 **SEC. 618. DEFINITIONS.**

2 In this subtitle:

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

6 (2) INDEPENDENT PRODUCER OF OIL OR
7 GAS.—

8 (A) IN GENERAL.—The term “independent
9 producer of oil or gas” means any person that
10 produces oil or gas other than a person to
11 whom subsection (c) of section 613A of the In-
12 ternal Revenue Code of 1986 does not apply by
13 reason of paragraph (2) (relating to certain re-
14 tailers) or paragraph (4) (relating to certain re-
15 finers) of section 613A(d) of such Code.

16 (B) RULES FOR APPLYING PARAGRAPHS (2)
17 AND (4) OF SECTION 613A(d).—For purposes of
18 subparagraph (A), paragraphs (2) and (4) of
19 section 613A(d) of the Internal Revenue Code
20 of 1986 shall be applied by substituting “cal-
21 endar year” for “taxable year” each place it ap-
22 pears in such paragraphs.

23 (3) PROGRAM CONSORTIUM.—The term “pro-
24 gram consortium” means the consortium selected
25 under section 612(d).

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

6 (5) SMALL PRODUCER.—The term “small pro-
7 ducer” means an entity organized under the laws of
8 the United States with production levels of less than
9 1,000 barrels per day of oil equivalent.

10 (6) ULTRA-DEEPWATER.—The term “ultra-
11 deepwater” means a water depth that is equal to or
12 greater than 1,500 meters.

13 (7) ULTRA-DEEPWATER ARCHITECTURE.—The
14 term “ultra-deepwater architecture” means the inte-
15 gration of technologies for the exploration for, or
16 production of, natural gas or other petroleum re-
17 sources located at ultra-deepwater depths.

18 (8) ULTRA-DEEPWATER TECHNOLOGY.—The
19 term “ultra-deepwater technology” means a discrete
20 technology that is specially suited to address 1 or
21 more challenges associated with the exploration for,
22 or production of, natural gas or other petroleum re-
23 sources located at ultra-deepwater depths.

24 (9) UNCONVENTIONAL NATURAL GAS AND
25 OTHER PETROLEUM RESOURCE.—The term “uncon-

1 ventional natural gas and other petroleum resource”
2 means natural gas and other petroleum resource lo-
3 cated onshore in an economically inaccessible geo-
4 logical formation, including resources of small pro-
5 ducers.

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1 there are authorized to be appropriated to the Sec-
2 retary, to be deposited in the Fund, \$50,000,000 for
3 each of the fiscal years 2006 through 2015, to re-
4 main available until expended.

5 (b) OBLIGATIONAL AUTHORITY.—Monies in the
6 Fund shall be available to the Secretary for obligation
7 under this subtitle without fiscal year limitation, to remain
8 available until expended.

9 (c) PRIOR DISTRIBUTIONS.—The distributions de-
10 scribed in subsection (a) are those required by law—

11 (1) to States and to the Reclamation Fund
12 under the Mineral Leasing Act (30 U.S.C. 191(a));
13 and

14 (2) to other funds receiving monies from Fed-
15 eral oil and gas leasing programs, including—

16 (A) any recipients pursuant to section 8(g)
17 of the Outer Continental Shelf Lands Act (43
18 U.S.C. 1337(g));

19 (B) the Land and Water Conservation
20 Fund, pursuant to section 2(c) of the Land and
21 Water Conservation Fund Act of 1965 (16
22 U.S.C. 4601–5(c));

23 (C) the Historic Preservation Fund, pursu-
24 ant to section 108 of the National Historic
25 Preservation Act (16 U.S.C. 470h); and

1 (D) the Secure Energy Reinvestment
2 Fund.

3 (d) ALLOCATION.—Amounts obligated from the Fund
4 under this section in each fiscal year shall be allocated
5 as follows:

6 (1) 50 percent shall be for activities under sec-
7 tion 612.

8 (2) 35 percent shall be for activities under sec-
9 tion 613(d)(1).

10 (3) 10 percent shall be for activities under sec-
11 tion 613(d)(2).

12 (4) 5 percent shall be for research under section
13 611(d).

14 (e) FUND.—There is hereby established in the Treas-
15 ury of the United States a separate fund to be known as
16 the “Ultra-Deepwater and Unconventional Natural Gas
17 and Other Petroleum Research Fund”.

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