

1 (2) Electric energy generation (including dis-
2 tributed generation), transmission, and storage.

3 (3) Renewable energy technologies including
4 wind power, photovoltaics, solar thermal systems,
5 geothermal energy, hydrogen-fueled systems, bio-
6 mass-based systems, biofuels, and hydropower.

7 (4) Fossil energy including power generation,
8 onshore and offshore oil and gas resource recovery,
9 and transportation.

10 (5) Nuclear energy including programs for ex-
11 isting and advanced reactors and education of future
12 specialists.

13 (c) PUBLIC COMMENT.—The Secretary shall provide
14 mechanisms for input on the annually published goals
15 from industry, university, and other public sources.

16 (d) EFFECT OF GOALS.—Nothing in subsection (a)
17 or the annually published goals creates any new authority
18 for any Federal agency, or may be used by a Federal agen-
19 cy to support the establishment of regulatory standards
20 or regulatory requirements.

21 **SEC. ___ 02. DEFINITIONS.**

22 For purposes of this title and [the DOE management
23 title]:

24 (1) The term “Department” means the Depart-
25 ment of Energy.

1 (2) The term “departmental mission” means
2 any of the functions vested in the Secretary of En-
3 ergy by the Department of Energy Organization Act
4 (42 U.S.C. 7101 et seq.) or other law.

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

9 (4) The term “National Laboratory” means any
10 of the following laboratories owned by the Depart-
11 ment:

12 (A) Ames Laboratory.

13 (B) Argonne National Laboratory.

14 (C) Brookhaven National Laboratory.

15 (D) Fermi National Accelerator Labora-
16 tory.

17 (E) Idaho National Engineering and Envi-
18 ronmental Laboratory.

19 (F) Lawrence Berkeley National Labora-
20 tory.

21 (G) Lawrence Livermore National Labora-
22 tory.

23 (H) Los Alamos National Laboratory.

24 (I) National Energy Technology Labora-
25 tory.

1 (J) National Renewable Energy Labora-
2 tory.

3 (K) Oak Ridge National Laboratory.

4 (L) Pacific Northwest National Labora-
5 tory.

6 (M) Princeton Plasma Physics Laboratory.

7 (N) Sandia National Laboratories.

8 (O) Stanford Linear Accelerator Center.

9 (P) Thomas Jefferson National Accelerator
10 Facility.

11 (5) The term “nonmilitary energy laboratory”
12 means the laboratories listed in paragraph (4), ex-
13 cept for those listed in subparagraphs (G), (H), and
14 (N).

15 (6) The term “Secretary” means the Secretary
16 of Energy.

17 (7) The term “single-purpose research facility”
18 means any of the primarily single-purpose entities
19 owned by the Department or any other organization
20 of the Department designated by the Secretary.

21 **Subtitle A—Energy Efficiency**

22 **SEC. ___ 11. ENERGY EFFICIENCY.**

23 (a) IN GENERAL.—The following sums are author-
24 ized to be appropriated to the Secretary for energy effi-
25 ciency and conservation research, development, dem-

1 onstration, and commercial application activities, includ-
2 ing activities authorized under this subtitle:

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

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

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

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

7 (5) For fiscal year 2008, \$920,000,000.

8 (b) ALLOCATIONS.—From amounts authorized under
9 subsection (a), the following sums are authorized:

10 (1) For activities under section ____12—

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

12 (B) for fiscal year 2005, \$30,000,000;

13 (C) for fiscal year 2006, \$50,000,000;

14 (D) for fiscal year 2007, \$50,000,000; and

15 (E) for fiscal year 2008, \$50,000,000.

16 (2) For activities under section ____14—

17 (A) for fiscal year 2004, \$4,000,000; and

18 (B) for each of fiscal years 2005 through
19 2008, \$7,000,000.

20 (3) For activities under section ____15—

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

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

23 (C) for fiscal year 2006, \$30,000,000;

24 (D) for fiscal year 2007, \$35,000,000; and

25 (E) for fiscal year 2008, \$40,000,000.

1 (4) For activities under section ____16,
2 \$2,000,000 for each of fiscal years 2005 through
3 2008.

4 (c) EXTENDED AUTHORIZATION.—There are author-
5 ized to be appropriated to the Secretary for activities
6 under section ____12, \$50,000,000 for each of fiscal years
7 2009 through 2013.

8 (d) LIMITATION ON USE OF FUNDS.—None of the
9 funds authorized to be appropriated under this section
10 may be used for—

11 (1) the promulgation and implementation of en-
12 ergy efficiency regulations;

13 (2) the Weatherization Assistance Program
14 under part A of title IV of the Energy Conservation
15 and Production Act;

16 (3) the State Energy Program under part D of
17 title III of the Energy Policy and Conservation Act;

18 or

19 (4) the Federal Energy Management Program
20 under part 3 of title V of the National Energy Con-
21 servation Policy Act.

22 **SEC. ____12. NEXT GENERATION LIGHTING INITIATIVE.**

23 (a) IN GENERAL.—The Secretary shall carry out a
24 Next Generation Lighting Initiative in accordance with
25 this section to support research, development, demonstra-

1 tion, and commercial application activities related to ad-
2 vanced solid-state lighting technologies based on white
3 light emitting diodes.

4 (b) OBJECTIVES.—The objectives of the initiative
5 shall be to develop advanced solid-state organic and inor-
6 ganic lighting technologies based on white light emitting
7 diodes that, compared to incandescent and fluorescent
8 lighting technologies, are longer lasting; more energy-effi-
9 cient; cost-competitive and have less environmental im-
10 pact.

11 (c) INDUSTRY ALLIANCE.—The Secretary shall, with-
12 in 3 months from the date of enactment of this section,
13 competitively select an Industry Alliance to represent par-
14 ticipants that are private, for-profit firms which, as a
15 group, are broadly representative of United States solid
16 state lighting research, development, infrastructure, and
17 manufacturing expertise as a whole.

18 (d) RESEARCH.—(1) The Secretary shall carry out
19 the research activities of the Next Generation Lighting
20 Initiative through competitively awarded grants to re-
21 searchers, including Industry Alliance participants, Na-
22 tional Laboratories, and institutions of higher education.

23 (2) The Secretary shall annually solicit from the In-
24 dustry Alliance—

1 (A) comments to identify solid-state lighting
2 technology needs;

3 (B) assessment of the progress of the Initia-
4 tive's research activities; and

5 (C) assistance in annually updating solid-state
6 lighting technology roadmaps.

7 (3) The information and roadmaps under paragraph
8 (2) shall be available to the public.

9 (e) DEVELOPMENT, DEMONSTRATION, AND COMMER-
10 CIAL APPLICATION.—The Secretary shall carry out a de-
11 velopment, demonstration, and commercial application
12 program for the Next Generation Lighting Initiative
13 through competitively selected awards. The Secretary may
14 give preference to participants of the Industry Alliance se-
15 lected pursuant to subsection (c).

16 (f) COST SHARING.—The Secretary shall require cost
17 sharing according to section 3002 of the Energy Policy
18 Act of 1992 (42 U.S.C. 13542).

19 (g) INTELLECTUAL PROPERTY.—The Secretary may
20 require, in accordance with the authorities provided in sec-
21 tion 202(a)(ii) of title 35, United States Code, section 152
22 of the Atomic Energy Act of 1954 (42 U.S.C. 2182), and
23 section 9 of the Federal Nonnuclear Energy Research and
24 Development Act of 1974 (42 U.S.C. 5908), that—

1 (1) for any new invention resulting from activi-
2 ties under subsection (d)—

3 (A) the Industry Alliance members that
4 are active participants in research, development,
5 and demonstration activities related to the ad-
6 vanced solid-state lighting technologies that are
7 the subject of this section shall be granted first
8 option to negotiate with the invention owner, at
9 least in the field of solid-state lighting, non-
10 exclusive licenses and royalties on terms that
11 are reasonable under the circumstances; and

12 (B) the invention owner must offer to ne-
13 gotiate licenses with the Industry Alliance par-
14 ticipants described in subparagraph (A), in
15 good faith, for at least 1 year after United
16 States patents are issued on the invention; and

17 (2) such other terms as the Secretary deter-
18 mines are required to promote accelerated commer-
19 cialization of inventions made under the Initiative.

20 (h) NATIONAL ACADEMY REVIEW.—The Secretary
21 shall enter into an arrangement with the National Acad-
22 emy of Sciences to conduct periodic reviews of the Next
23 Generation Lighting Initiative.

24 (i) DEFINITIONS.—As used in this section:

1 (1) The term “advanced solid-state lighting”
2 means a semiconducting device package and delivery
3 system that produces white light using externally ap-
4 plied voltage.

5 (2) The term “research” includes research on
6 the technologies, materials, and manufacturing proc-
7 esses required for white light emitting diodes.

8 (3) The term “Industry Alliance” means an en-
9 tity selected by the Secretary under subsection (c).

10 (4) The term “white light emitting diode”
11 means a semiconducting package, utilizing either or-
12 ganic or inorganic materials, that produces white
13 light using externally applied voltage.

14 **SEC. ___13. NATIONAL BUILDING PERFORMANCE INITIA-**
15 **TIVE.**

16 (a) INTERAGENCY GROUP.—Not later than 90 days
17 after the date of enactment of this Act, the Director of
18 the Office of Science and Technology Policy shall establish
19 an interagency group to develop, in coordination with the
20 advisory committee established under subsection (e), a
21 National Building Performance Initiative (in this section
22 referred to as the “Initiative”). The interagency group
23 shall be co-chaired by appropriate officials of the Depart-
24 ment and the Department of Commerce, who shall jointly

1 arrange for the provision of necessary administrative sup-
2 port to the group.

3 (b) INTEGRATION OF EFFORTS.—The Initiative,
4 working with the National Institute of Building Sciences,
5 shall integrate Federal, State, and voluntary private sector
6 efforts to reduce the costs of construction, operation,
7 maintenance, and renovation of commercial, industrial, in-
8 stitutional, and residential buildings.

9 (c) PLAN.—Not later than 1 year after the date of
10 enactment of this Act, the interagency group shall submit
11 to Congress a plan for carrying out the appropriate Fed-
12 eral role in the Initiative. The plan shall include—

13 (1) research, development, demonstration, and
14 commercial application of systems and materials for
15 new construction and retrofit relating to the building
16 envelope and building system components; and

17 (2) the collection, analysis, and dissemination of
18 research results and other pertinent information on
19 enhancing building performance to industry, govern-
20 ment entities, and the public.

21 (d) DEPARTMENT OF ENERGY ROLE.—Within the
22 Federal portion of the Initiative, the Department shall be
23 the lead agency for all aspects of building performance re-
24 lated to use and conservation of energy.

1 (e) ADVISORY COMMITTEE.—The Director of the Of-
2 fice of Science and Technology Policy shall establish an
3 advisory committee to—

4 (1) analyze and provide recommendations on
5 potential private sector roles and participation in the
6 Initiative; and

7 (2) review and provide recommendations on the
8 plan described in subsection (c).

9 (f) CONSTRUCTION.—Nothing in this section provides
10 any Federal agency with new authority to regulate build-
11 ing performance.

12 **SEC. ___ 14. SECONDARY ELECTRIC VEHICLE BATTERY USE**
13 **PROGRAM.**

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

15 (1) The term ‘battery’ means an energy stor-
16 age device that previously has been used to provide
17 motive power in a vehicle powered in whole or in
18 part by electricity.

19 (2) The term ‘‘associated equipment’’ means
20 equipment located where the batteries will be used
21 that is necessary to enable the use of the energy
22 stored in the batteries.

23 (b) PROGRAM.—The Secretary shall establish and
24 conduct a research, development, demonstration, and com-

1 mercial application program for the secondary use of bat-
2 teries. Such program shall be—

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

6 (2) structured to evaluate the performance, in-
7 cluding useful service life and costs, of such bat-
8 teries in field operations, and the necessary sup-
9 porting infrastructure, including reuse and disposal
10 of batteries; and

11 (3) coordinated with ongoing secondary battery
12 use programs at the National Laboratories and in
13 industry.

14 (c) SOLICITATION.—Not later than 180 days after
15 the date of enactment of this Act, the Secretary shall so-
16 licit proposals to demonstrate the secondary use of bat-
17 teries and associated equipment and supporting infra-
18 structure in geographic locations throughout the United
19 States. The Secretary may make additional solicitations
20 for proposals if the Secretary determines that such solici-
21 tations are necessary to carry out this section.

22 (d) SELECTION OF PROPOSALS.—(1) The Secretary
23 shall, not later than 90 days after the closing date estab-
24 lished by the Secretary for receipt of proposals under sub-
25 section (c), select up to 5 proposals which may receive fi-

1 nancial assistance under this section once the Department
2 is in receipt of appropriated funds.

3 (2) In selecting proposals, the Secretary shall con-
4 sider diversity of battery type, geographic and climatic di-
5 versity, and life-cycle environmental effects of the ap-
6 proaches.

7 (3) No one project selected under this section shall
8 receive more than 25 percent of the funds authorized for
9 this Program.

10 (4) The Secretary shall consider the extent of involve-
11 ment of State or local government and other persons in
12 each demonstration project to optimize use of Federal re-
13 sources.

14 (5) The Secretary may consider such other criteria
15 as the Secretary considers appropriate.

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

17 (1) relevant information be provided to the De-
18 partment, the users of the batteries, the proposers,
19 and the battery manufacturers; and

20 (2) the proposer provide at least 50 percent of
21 the costs associated with the proposal.

22 **SEC. ___ 15. ENERGY EFFICIENCY SCIENCE INITIATIVE.**

23 (a) ESTABLISHMENT.—The Secretary shall establish
24 an Energy Efficiency Science Initiative to be managed by
25 the Assistant Secretary in the Department with responsi-

1 bility for energy conservation under section 203(a)(9) of
2 the Department of Energy Organization Act (42 U.S.C.
3 7133(a)(9)), in consultation with the Director of the Of-
4 fice of Science, for grants to be competitively awarded and
5 subject to peer review for research relating to energy effi-
6 ciency.

7 (b) REPORT.—The Secretary shall submit to the Con-
8 gress, along with the President’s annual budget request
9 under section 1105(a) of title 31, United States Code, a
10 report on the activities of the Energy Efficiency Science
11 Initiative, including a description of the process used to
12 award the funds and an explanation of how the research
13 relates to energy efficiency.

14 **SEC. ___16. ELECTRIC MOTOR CONTROL TECHNOLOGY.**

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

20 **SEC. ___17. ADVANCED ENERGY TECHNOLOGY TRANSFER**
21 **CENTERS.**

22 (a) GRANTS.—Not later than 18 months after the
23 date of enactment of this Act, the Secretary shall make
24 grants to nonprofit institutions, State and local govern-
25 ments, or universities (or consortia thereof), to establish

1 a geographically dispersed network of Advanced Energy
2 Technology Transfer Centers, to be located in areas the
3 Secretary determines have the greatest need of the serv-
4 ices of such Centers.

5 (b) ACTIVITIES.—(1) Each Center shall operate a
6 program to encourage demonstration and commercial ap-
7 plication of advanced energy methods and technologies
8 through education and outreach to building and industrial
9 professionals, and to other individuals and organizations
10 with an interest in efficient energy use.

11 (2) Each Center shall establish an advisory panel to
12 advise the Center on how best to accomplish the activities
13 under paragraph (1).

14 (c) APPLICATION.—A person seeking a grant under
15 this section shall submit to the Secretary an application
16 in such form and containing such information as the Sec-
17 retary may require. The Secretary may award a grant
18 under this section to an entity already in existence if the
19 entity is otherwise eligible under this section.

20 (d) SELECTION CRITERIA.—The Secretary shall
21 award grants under this section on the basis of the fol-
22 lowing criteria, at a minimum:

23 (1) The ability of the applicant to carry out the
24 activities in subsection (b).

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

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

8 (f) ADVISORY COMMITTEE.—The Secretary shall es-
9 tablish an advisory committee to advise the Secretary on
10 the establishment of Centers under this section. The advi-
11 sory committee shall be composed of individuals with ex-
12 pertise in the area of advanced energy methods and tech-
13 nologies, including at least 1 representative from—

14 (1) State or local energy offices;

15 (2) energy professionals;

16 (3) trade or professional associations;

17 (4) architects, engineers, or construction profes-
18 sionals;

19 (5) manufacturers;

20 (6) the research community; and

21 (7) nonprofit energy or environmental organiza-
22 tions.

23 (g) DEFINITIONS.—For purposes of this section—

24 (1) the term “advanced energy methods and
25 technologies” means all methods and technologies

1 that promote energy efficiency and conservation, in-
2 cluding distributed generation technologies, and life-
3 cycle analysis of energy use;

4 (2) the term “Center” means an Advanced En-
5 ergy Technology Transfer Center established pursu-
6 ant to this section; and

7 (3) the term “distributed generation” means an
8 electric power generation facility that is designed to
9 serve retail electric consumers at or near the facility
10 site.

11 **Subtitle B—Distributed Energy and** 12 **Electric Energy Systems**

13 **SEC. ____ 21. DISTRIBUTED ENERGY AND ELECTRIC ENERGY** 14 **SYSTEMS.**

15 (a) IN GENERAL.—The following sums are author-
16 ized to be appropriated to the Secretary for distributed
17 energy and electric energy systems activities, including ac-
18 tivities authorized under this subtitle:

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

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

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

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

23 (5) For fiscal year 2008, \$260,000,000.

24 (b) MICRO-COGENERATION ENERGY TECH-
25 NOLOGY.—From amounts authorized under subsection

1 (a), \$20,000,000 for each of fiscal years 2004 and 2005
2 shall be available for activities under section ____24.

3 **SEC. ____22. HYBRID DISTRIBUTED POWER SYSTEMS.**

4 Not later than 1 year after the date of enactment
5 of this Act, the Secretary shall develop and transmit to
6 the Congress a strategy for a comprehensive research, de-
7 velopment, demonstration, and commercial application
8 program to develop hybrid distributed power systems that
9 combine—

10 (1) one or more renewable electric power gen-
11 eration technologies of 10 megawatts or less located
12 near the site of electric energy use; and

13 (2) nonintermittent electric power generation
14 technologies suitable for use in a distributed power
15 system.

16 **SEC. ____23. HIGH POWER DENSITY INDUSTRY PROGRAM.**

17 The Secretary shall establish a comprehensive re-
18 search, development, demonstration, and commercial ap-
19 plication program to improve energy efficiency of high
20 power density facilities, including data centers, server
21 farms, and telecommunications facilities. Such program
22 shall consider technologies that provide significant im-
23 provement in thermal controls, metering, load manage-
24 ment, peak load reduction, or the efficient cooling of elec-
25 tronics.

1 **SEC. ____24. MICRO-COGENERATION ENERGY TECHNOLOGY.**

2 The Secretary shall make competitive, merit-based
3 grants to consortia for the development of micro-cogenera-
4 tion energy technology. The consortia shall explore the use
5 of small-scale combined heat and power in residential
6 heating appliances and, the use of excess power to operate
7 other appliances within the residence and supply excess
8 generated power to the power grid.

9 **SEC. ____25. DISTRIBUTED ENERGY TECHNOLOGY DEM-**
10 **ONSTRATION PROGRAM.**

11 The Secretary, within the sums authorized under sec-
12 tion ____21(a), may provide financial assistance to coordi-
13 nating consortia of interdisciplinary participants for dem-
14 onstrations designed to accelerate the utilization of dis-
15 tributed energy technologies, such as fuel cells, microtur-
16 bines, reciprocating engines, thermally activated tech-
17 nologies, and combined heat and power systems, in highly
18 energy intensive commercial applications.

19 **[SEC. ____26. ADVANCED POWER SYSTEM TECHNOLOGY IN-**
20 **CENTIVE PROGRAM.**

21 (a) PROGRAM.—The Secretary of Energy is author-
22 ized to establish an Advanced Power System Technology
23 Incentive Program to support the deployment of certain
24 advanced power system technologies and to improve and
25 protect certain critical governmental, industrial, and com-
26 mercial processes. Funds provided under this section shall

1 be used by the Secretary to make incentive payments to
2 eligible owners or operators of advanced power system
3 technologies to increase power generation through en-
4 hanced operational, economic, and environmental perform-
5 ance. Payments under this section may only be made upon
6 receipt by the Secretary of an incentive payment applica-
7 tion establishing an applicant as either—

8 (1) a qualifying advanced power system tech-
9 nology facility; or

10 (2) a qualifying security and assured power fa-
11 cility.

12 (b) INCENTIVES.—Subject to availability of funds, a
13 payment of 1.8 cents per kilowatt-hour shall be paid to
14 the owner or operator of a qualifying advanced power sys-
15 tem technology facility under this section for electricity
16 generated at such facility. An additional 0.7 cents per kilo-
17 watt-hour shall be paid to the owner or operator of a quali-
18 fying security and assured power facility for electricity
19 generated at such facility. Any facility qualifying under
20 this section shall be eligible for an incentive payment for
21 up to, but not more than, the first 10,000,000 kilowatt-
22 hours produced in any fiscal year.

23 (c) ELIGIBILITY.—For purposes of this section—

24 (1) the term “qualifying advanced power system
25 technology facility” means a facility using an ad-

1 vanced fuel cell, turbine, or hybrid power system or
2 power storage system to generate or store electric
3 energy; and

4 (2) the term “qualifying security and assured
5 power facility” means a qualifying advanced power
6 system technology facility determined by the Sec-
7 retary, in consultation with the Secretary of Home-
8 land Security, to be in critical need of secure, reli-
9 able, rapidly available, high-quality power for critical
10 governmental, industrial, or commercial applications.

11 (d) AUTHORIZATION.—There are authorized to be ap-
12 propriated to the Secretary for the purposes of this sec-
13 tion, \$10,000,000 for each of the fiscal years 2004
14 through 2010.】

【Sections relating to Office of Electric Transmission
and Distribution, and Electric Transmission and Dis-
tribution Programs will appear in the Electricity title.】

15 **Subtitle C—Renewable Energy**

16 **SEC. ___ 31. RENEWABLE ENERGY.**

17 (a) IN GENERAL.—The following sums are author-
18 ized to be appropriated to the Secretary for renewable en-
19 ergy research, development, demonstration, and commer-
20 cial application activities, including activities authorized
21 under this subtitle:

22 (1) For fiscal year 2004, \$480,000,000.

1 (2) For fiscal year 2005, \$550,000,000.

2 (3) For fiscal year 2006, \$610,000,000.

3 (4) For fiscal year 2007, \$659,000,000.

4 (5) For fiscal year 2008, \$710,000,000.

5 (b) BIOENERGY.—From the amounts authorized
6 under subsection (a), the following sums are authorized
7 to be appropriated to carry out section ____32:

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

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

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

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

12 (5) For fiscal year 2008, \$192,000,000.

13 (c) CONCENTRATING SOLAR POWER.—From
14 amounts authorized under subsection (a), the following
15 sums are authorized to be appropriated to carry out sec-
16 tion ____33:

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

18 (2) For fiscal year 2005, \$40,000,000.

19 (3) For each of fiscal years 2006, 2007 and
20 2008, \$50,000,000.

21 (d) LIMITS ON USE OF FUNDS.—(1) None of the
22 funds authorized to be appropriated under this section
23 may be used for Renewable Support and Implementation.

24 (2) Of the funds authorized under subsection (b), not
25 less than \$5,000,000 for each fiscal year shall be made

1 available for grants to Historically Black Colleges and
2 Universities, Tribal Colleges, and Hispanic-Serving Insti-
3 tutions.

4 (3) In carrying out this subtitle, the Secretary, in
5 consultation with the Secretary of Agriculture, shall dem-
6 onstrate the use of advanced wind power technology, bio-
7 mass, geothermal energy systems, and other renewable en-
8 ergy technologies to assist in delivering electricity to rural
9 and remote locations.

10 (4) Of the funds authorized under subsection (a), not
11 less than \$4,000,000 for each fiscal year shall be made
12 available for the Regional Field Verification Program of
13 the Department.

14 (5) Of the funds authorized under subsection (a),
15 such sums as may be necessary shall be made available
16 for demonstration projects of off-stream pumped storage
17 hydropower.

18 (e) CONSULTATION.—In carrying out this subtitle,
19 the Secretary, in consultation with the Secretary of Agri-
20 culture, shall demonstrate the use of advanced wind power
21 technology, including combined use with coal gasification;
22 biomass; geothermal energy systems; and other renewable
23 energy technologies to assist in delivering electricity to
24 rural and remote locations.

1 **SEC. ____ 32. BIOENERGY PROGRAMS.**

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

3 (1) The term “cellulosic biomass” means any
4 portion of a crop containing lignocellulose or hemi-
5 cellulose or any crop grown specifically for the pur-
6 pose of producing cellulosic feedstocks.

7 (2) The term “agricultural byproducts” in-
8 cludes rice straw, rice hulls, soybean matter, poultry
9 fat, poultry waste, sugarcane bagasse, forest
10 thinnings, grapeseed, rice bran, and barley grain.

11 (b) PROGRAM.—The Secretary shall conduct a pro-
12 gram of research, development, demonstration, and com-
13 mercial application for bioenergy, including—

14 (1) biopower energy systems;

15 (2) biofuels;

16 (3) bio-based products;

17 (4) integrated biorefineries that may produce
18 biopower, biofuels, and bio-based products;

19 (5) cross-cutting research and development in
20 feedstocks and enzymes; and

21 (6) economic analysis.

22 (c) BIOFUELS AND BIOPRODUCTS.—The goals of the
23 biofuels and bio-based products programs shall be to de-
24 velop, in partnership with industry—

25 (1) advanced biochemical and thermochemical
26 conversion technologies capable of making biofuels

1 and bio-based products from a variety of feedstocks,
2 including grains, cellulosic biomass, and other agri-
3 cultural byproducts, that are price-competitive with
4 gasoline or diesel in either internal combustion en-
5 gines or fuel cell-powered vehicles; and

6 (2) advanced biotechnology processes capable of
7 making biofuels and bio-based products with empha-
8 sis on development of biorefinery technologies using
9 enzyme-based processing systems.

10 **SEC. ___33. CONCENTRATING SOLAR POWER RESEARCH**
11 **PROGRAM.**

12 (a) IN GENERAL.—The Secretary shall conduct a
13 program of research and development to evaluate the po-
14 tential of concentrating solar power for hydrogen produc-
15 tion, including cogeneration approaches for both hydrogen
16 and electricity. Such program shall take advantage of ex-
17 isting facilities to the extent possible and shall include—

18 (1) development of optimized technologies that
19 are common to both electricity and hydrogen produc-
20 tion;

21 (2) evaluation of thermochemical cycles for hy-
22 drogen production at the temperatures attainable
23 with concentrating solar power;

24 (3) evaluation of materials issues for the
25 thermochemical cycles described in paragraph (2);

1 (4) system architectures and economics studies;
2 and
3 (5) coordination with activities in the Advanced
4 Reactor Hydrogen Cogeneration Project on high
5 temperature materials, thermochemical cycle and
6 economic issues.

7 (b) ASSESSMENT.—In carrying out the program
8 under this section, the Secretary shall assess conflicting
9 guidance on the economic potential of concentrating solar
10 power for electricity production received from the National
11 Research Council report entitled “Renewable Power Path-
12 ways: A Review of the U.S. Department of Energy’s Re-
13 newable Energy Programs” in 2000 and subsequent De-
14 partment-funded reviews of that report and provide an as-
15 sessment of the potential impact of the technology before,
16 or concurrent with, submission of the fiscal year 2006
17 budget.

18 (c) REPORT.—Not later than 5 years after the date
19 of enactment of this Act, the Secretary shall provide a re-
20 port to Congress on the economic and technical potential
21 for electricity or hydrogen production, with or without co-
22 generation, with concentrating solar power, including the
23 economic and technical feasibility of potential construction
24 of a pilot demonstration facility suitable for commercial

1 production of electricity or hydrogen from concentrating
2 solar power.

3 **SEC. ___ 34. MISCELLANEOUS PROJECTS.**

4 The Secretary shall conduct research, development,
5 demonstration, and commercial application programs
6 for—

7 (1) ocean energy, including wave energy; and

8 (2) the combined use of renewable energy tech-
9 nologies with one another and with other energy
10 technologies, including the combined use of wind
11 power and coal gasification technologies.

12 **SEC. ___ 35. BIODIESEL ENGINE TESTING PROGRAM. [TO**
13 **BE INCLUDED IN FUELS AND VEHICLES**
14 **TITLE]**

15 (a) IN GENERAL.—Not later than 180 days after the
16 date of enactment of this Act, the Secretary shall initiate
17 a partnership with diesel engine, diesel fuel injection sys-
18 tem, and diesel vehicle manufacturers and diesel and bio-
19 diesel fuel providers, to include biodiesel testing in ad-
20 vanced diesel engine and fuel system technology.

21 (b) SCOPE.—The program shall provide for testing
22 to determine the impact of biodiesel from different sources
23 on current and future emission control technologies, with
24 emphasis on—

1 (1) the impact of biodiesel on emissions war-
2 ranty, in-use liability, and antitampering provisions;

3 (2) the impact of long-term use of biodiesel on
4 engine operations;

5 (3) the options for optimizing these technologies
6 for both emissions and performance when switching
7 between biodiesel and diesel fuel; and

8 (4) the impact of using biodiesel in these fuel-
9 ing systems and engines when used as a blend with
10 2006 Environmental Protection Agency-mandated
11 diesel fuel containing a maximum of 15-parts-per-
12 million sulfur content.

13 (c) REPORT.—Not later than 2 years after the date
14 of enactment of this Act, the Secretary shall provide an
15 interim report to Congress on the findings of the program,
16 including a comprehensive analysis of impacts from bio-
17 diesel on engine operation for both existing and expected
18 future diesel technologies, and recommendations for en-
19 suring optimal emissions reductions and engine perform-
20 ance with biodiesel.

21 (d) AUTHORIZATION OF APPROPRIATIONS.—There
22 are authorized to be appropriated \$5,000,000 for each of
23 fiscal years 2004 through 2008 to carry out this section.

24 (e) DEFINITION.—For purposes of this section, the
25 term “biodiesel” means a diesel fuel substitute produced

1 from nonpetroleum renewable resources that meets the
2 registration requirements for fuels and fuel additives es-
3 tablished by the Environmental Protection Agency under
4 section 211 of the Clean Air Act (42 U.S.C. 7545) and
5 that meets the American Society for Testing and Materials
6 D6751-02a Standard Specification for Biodiesel Fuel
7 (B100) Blend Stock for Distillate Fuels.

8 **Subtitle D—Nuclear Energy**

9 **SEC. ____ 41. NUCLEAR ENERGY.**

10 (a) CORE PROGRAMS.—The following sums are au-
11 thorized to be appropriated to the Secretary for nuclear
12 energy research, development, demonstration, and com-
13 mercial application activities, including activities author-
14 ized under this subtitle, other than those described in sub-
15 section (b):

16 (1) For fiscal year 2004, \$273,000,000.

17 (2) For fiscal year 2005, \$355,000,000.

18 (3) For fiscal year 2006, \$430,000,000.

19 (4) For fiscal year 2007, \$455,000,000.

20 (5) For fiscal year 2008, \$545,000,000.

21 (b) NUCLEAR INFRASTRUCTURE SUPPORT.—The fol-
22 lowing sums are authorized to be appropriated to the Sec-
23 retary for activities under section ____ 42(f):

24 (1) For fiscal year 2004, \$125,000,000.

25 (2) For fiscal year 2005, \$130,000,000.

1 (3) For fiscal year 2006, \$135,000,000.

2 (4) For fiscal year 2007, \$140,000,000.

3 (5) For fiscal year 2008, \$145,000,000.

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

6 (1) For activities under section ____43—

7 (A) for fiscal year 2004, \$140,000,000;

8 (B) for fiscal year 2005, \$145,000,000;

9 (C) for fiscal year 2006, \$150,000,000;

10 (D) for fiscal year 2007, \$155,000,000;

11 and

12 (E) for fiscal year 2008, \$275,000,000.

13 (2) For activities under section ____44—

14 (A) for fiscal year 2004, \$33,000,000;

15 (B) for fiscal year 2005, \$37,900,000;

16 (C) for fiscal year 2006, \$43,600,000;

17 (D) for fiscal year 2007, \$50,100,000; and

18 (E) for fiscal year 2008, \$56,000,000.

19 (3) For activities under section ____46, for
20 each of fiscal years 2004 through 2008, \$6,000,000.

21 (d) LIMITATION ON USE OF FUNDS.—None of the
22 funds authorized under this section may be used for de-
23 commissioning the Fast Flux Test Facility.

1 **SEC. ____42. NUCLEAR ENERGY RESEARCH PROGRAMS.**

2 (a) NUCLEAR ENERGY RESEARCH INITIATIVE.—The
3 Secretary shall carry out a Nuclear Energy Research Ini-
4 tiative for research and development related to nuclear en-
5 ergy.

6 (b) NUCLEAR ENERGY PLANT OPTIMIZATION PRO-
7 GRAM.—The Secretary shall carry out a Nuclear Energy
8 Plant Optimization Program to support research and de-
9 velopment activities addressing reliability, availability, pro-
10 ductivity, component aging, safety, and security of existing
11 nuclear power plants.

12 (c) NUCLEAR POWER 2010 PROGRAM.—The Sec-
13 retary shall carry out a Nuclear Power 2010 Program,
14 consistent with recommendations in the October 2001 re-
15 port entitled “A Roadmap to Deploy New Nuclear Power
16 Plants in the United States by 2010” issued by the Nu-
17 clear Energy Research Advisory Committee of the Depart-
18 ment. Whatever type of reactor is chosen for the hydrogen
19 cogeneration project under [subtitle ____ of the Nuclear
20 title], that type shall not be addressed in the Program
21 under this section. The Program shall include—

22 (1) support for first-of-a-kind engineering de-
23 sign and certification expenses of advanced nuclear
24 power plant designs, which offer improved safety
25 and economics over current conventional plants and

1 the promise of near-term to medium-term commer-
2 cial deployment;

3 (2) action by the Secretary to encourage domes-
4 tic power companies to install new nuclear plant ca-
5 pacity as soon as possible;

6 (3) cost sharing with industry for projects be-
7 yond the research stage;

8 (4) utilization of the expertise and capabilities
9 of industry, universities, and National Laboratories
10 in evaluation of advanced nuclear fuel cycles and
11 fuels testing;

12 (5) consideration of reactor designs suitable for
13 both developed and developing nations;

14 (6) participation of international collaborators
15 in research, development, design, and deployment ef-
16 forts as appropriate;

17 (7) encouragement for university and industry
18 participation; and

19 (8) selection of projects such as to strengthen
20 the competitive position of the domestic nuclear
21 power industrial infrastructure.

22 (d) GENERATION IV NUCLEAR ENERGY SYSTEMS
23 INITIATIVE.—The Secretary shall carry out a Generation
24 IV Nuclear Energy Systems Initiative to develop an over-
25 all technology plan and to support research and develop-

1 ment necessary to make an informed technical decision
2 about the most promising candidates for eventual commer-
3 cial application. The Initiative shall examine advanced
4 proliferation-resistant and passively safe reactor designs,
5 including designs that—

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

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

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

14 (4) use improved instrumentation.

15 (e) REACTOR PRODUCTION OF HYDROGEN.—The
16 Secretary shall carry out research to examine designs for
17 high-temperature reactors capable of producing large-scale
18 quantities of hydrogen using thermochemical processes.

19 (f) NUCLEAR INFRASTRUCTURE SUPPORT.—The
20 Secretary shall develop and implement a strategy for the
21 facilities of the Office of Nuclear Energy, Science, and
22 Technology and shall transmit a report containing the
23 strategy along with the President's budget request to the
24 Congress for fiscal year 2006. Such strategy shall provide
25 a cost-effective means for—

- 1 (1) maintaining existing facilities and infra-
- 2 structure, as needed;
- 3 (2) closing unneeded facilities;
- 4 (3) making facility upgrades and modifications;
- 5 and
- 6 (4) building new facilities.

7 **SEC. ___43. ADVANCED FUEL CYCLE INITIATIVE.**

8 (a) IN GENERAL.—The Secretary, through the Direc-

9 tor of the Office of Nuclear Energy, Science, and Tech-

10 nology, shall conduct an advanced fuel recycling tech-

11 nology research and development program to evaluate pro-

12 liferation-resistant fuel recycling and transmutation tech-

13 nologies that minimize environmental or public health and

14 safety impacts as an alternative to aqueous reprocessing

15 technologies deployed as of the date of enactment of this

16 Act in support of evaluation of alternative national strate-

17 gies for spent nuclear fuel and the Generation IV ad-

18 vanced reactor concepts, subject to annual review by the

19 Secretary's Nuclear Energy Research Advisory Committee

20 or other independent entity, as appropriate. Opportunities

21 to enhance progress of the program through international

22 cooperation should be sought.

23 (b) REPORTS.—The Secretary shall report on the ac-

24 tivities of the advanced fuel recycling technology research

1 and development program as part of the Department's an-
2 nual budget submission.

3 **SEC. ___44. UNIVERSITY NUCLEAR SCIENCE AND ENGI-**
4 **NEERING SUPPORT.**

5 (a) **ESTABLISHMENT.**—The Secretary shall support
6 a program to invest in human resources and infrastructure
7 in the nuclear sciences and engineering and related fields
8 (including health physics and nuclear and radiochemistry),
9 consistent with departmental missions related to civilian
10 nuclear research and development.

11 (b) **DUTIES.**—In carrying out the program under this
12 section, the Secretary shall establish fellowship and faculty
13 assistance programs, as well as provide support for funda-
14 mental research and encourage collaborative research
15 among industry, National Laboratories, and universities
16 through the Nuclear Energy Research Initiative. The Sec-
17 retary is encouraged to support activities addressing the
18 entire fuel cycle through involvement of both the Office
19 of Nuclear Energy, Science, and Technology and the Of-
20 fice of Civilian Radioactive Waste Management. The Sec-
21 retary shall support communication and outreach related
22 to nuclear science, engineering, and nuclear waste man-
23 agement.

1 (c) MAINTAINING UNIVERSITY RESEARCH AND
2 TRAINING REACTORS AND ASSOCIATED INFRASTRUC-
3 TURE.—Activities under this section may include—

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

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

12 (3) providing funding for reactor improvements
13 as part of a focused effort that emphasizes research,
14 training, and education.

15 (d) UNIVERSITY NATIONAL LABORATORY INTER-
16 ACTIONS.—The Secretary shall develop sabbatical fellow-
17 ship and visiting scientist programs to encourage sharing
18 of personnel between National Laboratories and univer-
19 sities.

20 (e) OPERATING AND MAINTENANCE COSTS.—Fund-
21 ing for a research project provided under this section may
22 be used to offset a portion of the operating and mainte-
23 nance costs of a research reactor at an institution of high-
24 er education used in the research project.

1 **SEC. ___45. SECURITY OF NUCLEAR FACILITIES.**

2 The Secretary, through the Director of the Office of
3 Nuclear Energy, Science, and Technology shall conduct a
4 research and development program on cost-effective tech-
5 nologies for increasing the safety of nuclear facilities from
6 natural phenomena and the security of nuclear facilities
7 from deliberate attacks.

8 **SEC. ___46. ALTERNATIVES TO INDUSTRIAL RADIOACTIVE**
9 **SOURCES.**

10 (a) STUDY.—The Secretary shall conduct a study and
11 provide a report to the Congress not later than August
12 1, 2004. The study shall—

13 (1) survey industrial applications of large radio-
14 active sources, including well-logging sources;

15 (2) review current domestic and international
16 Department, Department of Defense, State Depart-
17 ment, and commercial programs to manage and dis-
18 pose of radioactive sources;

19 (3) discuss disposal options for currently de-
20 ployed or future sources and, if deficiencies are
21 noted in existing disposal options for either deployed
22 or future sources, recommend legislative options that
23 Congress may consider to remedy identified defi-
24 ciencies; and

25 (4) develop a program plan for research and de-
26 velopment to develop alternatives to large industrial

1 sources that reduce safety, environmental, or pro-
2 liferation risks to either workers using the sources or
3 the public.

4 (b) PROGRAM.—The Secretary shall establish a re-
5 search and development program to implement the pro-
6 gram plan developed under subsection (a)(4). The pro-
7 gram shall include miniaturized particle accelerators for
8 well-logging or other industrial applications and portable
9 accelerators for production of short-lived radioactive mate-
10 rials at an industrial site.

11 **Subtitle E—Fossil Energy**

12 **PART I—RESEARCH PROGRAMS**

13 **SEC. ____51. FOSSIL ENERGY.**

14 (a) IN GENERAL.—The following sums are author-
15 ized to be appropriated to the Secretary for fossil energy
16 research, development, demonstration, and commercial ap-
17 plication activities, including activities authorized under
18 this part:

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

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

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

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

23 (5) For fiscal year 2008, \$626,000,000.

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

1 (1) For activities under section ____52(b)(2),
2 \$28,000,000 for each of the fiscal years 2004
3 through 2008.

4 (2) For activities under section ____54—
5 (A) for fiscal year 2004, \$12,000,000;
6 (B) for fiscal year 2005, \$15,000,000; and
7 (C) for each of fiscal years 2006 through
8 2008, \$20,000,000.

9 (3) For activities under section ____55, to re-
10 main available until expended—

11 (A) for fiscal year 2004, \$259,000,000;
12 (B) for fiscal year 2005, \$272,000,000;
13 (C) for fiscal year 2006, \$285,000,000;
14 (D) for fiscal year 2007, \$298,000,000;
15 and
16 (E) for fiscal year 2008, \$308,000,000.

17 (4) For the Office of Arctic Energy under sec-
18 tion 3197 of the Floyd D. Spence National Defense
19 Authorization Act for Fiscal Year 2001 (42 U.S.C.
20 7144d), \$25,000,000 for each of fiscal years 2004
21 through 2008.

22 (5) For activities under section ____53,
23 \$4,000,000 for fiscal year 2004 and \$2,000,000 for
24 each of fiscal years 2005 through 2008.

1 (c) EXTENDED AUTHORIZATION.—There are author-
2 ized to be appropriated to the Secretary for the Office of
3 Arctic Energy under section 3197 of the Floyd D. Spence
4 National Defense Authorization Act for Fiscal Year 2001
5 (42 U.S.C. 7144d), \$25,000,000 for each of fiscal years
6 2009 through 2012.

7 (d) LIMITS ON USE OF FUNDS.—(1) None of the
8 funds authorized under this section may be used for Fossil
9 Energy Environmental Restoration or Import/Export Au-
10 thorization.

11 (2) Of the funds authorized under subsection (b)(2),
12 not less than 20 percent of the funds appropriated for
13 each fiscal year shall be dedicated to research and develop-
14 ment carried out at institutions of higher education.

15 **SEC. ___ 52. OIL AND GAS RESEARCH PROGRAMS.**

16 (a) OIL AND GAS RESEARCH.—The Secretary shall
17 conduct a program of research, development, demonstra-
18 tion, and commercial application on oil and gas,
19 including—

20 (1) exploration and production;

21 (2) gas hydrates;

22 (3) reservoir life and extension;

23 (4) transportation and distribution infrastruc-
24 ture;

25 (5) ultraclean fuels;

1 (6) heavy oil and oil shale; and

2 (7) related environmental research.

3 (b) FUEL CELLS.—(1) The Secretary shall conduct
4 a program of research, development, demonstration, and
5 commercial application on fuel cells for low-cost, high-effi-
6 ciency, fuel-flexible, modular power systems.

7 (2) The demonstrations under paragraph (1) shall in-
8 clude fuel cell proton exchange membrane technology for
9 commercial, residential, and transportation applications,
10 and distributed generation systems, utilizing improved
11 manufacturing production and processes.

12 (c) NATURAL GAS AND OIL DEPOSITS REPORT.—
13 Not later than 2 years after the date of enactment of this
14 Act, and every 2 years thereafter, the Secretary of the In-
15 terior, in consultation with other appropriate Federal
16 agencies, shall transmit a report to the Congress of the
17 latest estimates of natural gas and oil reserves, reserves
18 growth, and undiscovered resources in Federal and State
19 waters off the coast of Louisiana and Texas.

20 (d) INTEGRATED CLEAN POWER AND ENERGY RE-
21 SEARCH.—(1) The Secretary shall establish a national
22 center or consortium of excellence in clean energy and
23 power generation, utilizing the resources of the existing
24 Clean Power and Energy Research Consortium, to address

1 the Nation's critical dependence on energy and the need
2 to reduce emissions.

3 (2) The center or consortium shall conduct a program
4 of research, development, demonstration, and commercial
5 application on integrating the following six focus areas:

6 (A) Efficiency and reliability of gas turbines for
7 power generation.

8 (B) Reduction in emissions from power genera-
9 tion.

10 (C) Promotion of energy conservation issues.

11 (D) Effectively utilizing alternative fuels and
12 renewable energy.

13 (E) Development of advanced materials tech-
14 nology for oil and gas exploration and utilization in
15 harsh environments.

16 (F) Education on energy and power generation
17 issues.

18 **SEC. ___ 53. TECHNOLOGY TRANSFER.**

19 The Secretary shall establish a competitive program
20 to award a contract to a nonprofit entity for the purpose
21 of transferring technologies developed with public funds.
22 The entity selected under this section shall have experi-
23 ence in offshore oil and gas technology research manage-
24 ment, in the transfer of technologies developed with public
25 funds to the offshore and maritime industry, and in man-

1 agement of an offshore and maritime industry consortium.
2 The entity selected under section ____58 shall not be eligi-
3 ble for selection under this section. When appropriate, the
4 Secretary shall consider utilizing the entity selected under
5 this section when implementing the activities authorized
6 by section ____95.

7 **SEC. ____54. RESEARCH AND DEVELOPMENT FOR COAL**
8 **MINING TECHNOLOGIES.**

9 (a) ESTABLISHMENT.—The Secretary shall carry out
10 a program of research and development on coal mining
11 technologies. The Secretary shall cooperate with appro-
12 priate Federal agencies, coal producers, trade associations,
13 equipment manufacturers, institutions of higher education
14 with mining engineering departments, and other relevant
15 entities.

16 (b) PROGRAM.—The research and development activi-
17 ties carried out under this section shall—

18 (1) be guided by the mining research and devel-
19 opment priorities identified by the Mining Industry
20 of the Future Program and in the recommendations
21 from relevant reports of the National Academy of
22 Sciences on mining technologies;

23 (2) include activities exploring minimization of
24 contaminants in mined coal that contribute to envi-
25 ronmental concerns including development and dem-

1 onstration of electromagnetic wave imaging ahead of
2 mining operations;

3 (3) develop and demonstrate coal bed electro-
4 magnetic wave imaging and radar techniques for
5 horizontal drilling in order to increase methane re-
6 covery efficiency, prevent spoilage of domestic coal
7 reserves, and minimize water disposal associated
8 with methane extraction; and

9 (4) expand mining research capabilities at insti-
10 tutions of higher education.

11 **SEC. ___55. COAL AND RELATED TECHNOLOGIES PRO-**
12 **GRAM.**

13 (a) IN GENERAL.—In addition to the programs au-
14 thorized under **【the Coal title】**, the Secretary shall con-
15 duct a program of technology research, development, dem-
16 onstration, and commercial application for coal and power
17 systems, including programs to facilitate production and
18 generation of coal-based power through—

19 (1) innovations for existing plants;

20 (2) integrated gasification combined cycle;

21 (3) advanced combustion systems;

22 (4) turbines for synthesis gas derived from coal;

23 (5) carbon capture and sequestration research
24 and development;

- 1 (6) coal-derived transportation fuels and chemi-
- 2 cals;
- 3 (7) solid fuels and feedstocks;
- 4 (8) advanced coal-related research;
- 5 (9) advanced separation technologies; and
- 6 (10) a joint project for permeability enhance-
- 7 ment in coals for natural gas production and carbon
- 8 dioxide sequestration.

9 (b) COST AND PERFORMANCE GOALS.—In carrying
10 out programs authorized by this section, the Secretary
11 shall identify cost and performance goals for coal-based
12 technologies that would permit the continued cost-com-
13 petitive use of coal for electricity generation, as chemical
14 feedstocks, and as transportation fuel in 2007, 2015, and
15 the years after 2020. In establishing such cost and per-
16 formance goals, the Secretary shall—

17 (1) consider activities and studies undertaken
18 to date by industry in cooperation with the Depart-
19 ment in support of such assessment;

20 (2) consult with interested entities, including
21 coal producers, industries using coal, organizations
22 to promote coal and advanced coal technologies, en-
23 vironmental organizations, and organizations rep-
24 resenting workers;

1 (3) not later than 120 days after the date of
2 enactment of this Act, publish in the Federal Reg-
3 ister proposed draft cost and performance goals for
4 public comments; and

5 (4) not later than 180 days after the date of
6 enactment of this Act and every four years there-
7 after, submit to Congress a report describing final
8 cost and performance goals for such technologies
9 that includes a list of technical milestones as well as
10 an explanation of how programs authorized in this
11 section will not duplicate the activities authorized
12 under the Clean Coal Power Initiative authorized
13 under **【**subtitle A of the Coal title**】**.

14 **SEC. ____56. COMPLEX WELL TECHNOLOGY TESTING FACIL-**
15 **ITY.**

16 The Secretary, in coordination with industry leaders
17 in extended research drilling technology, shall establish a
18 Complex Well Technology Testing Facility at the Rocky
19 Mountain Oilfield Testing Center to increase the range of
20 extended drilling technologies.

21 **PART II—ULTRA-DEEPWATER AND**
22 **UNCONVENTIONAL NATURAL GAS**

23 **SEC. ____57. PROGRAM AUTHORITY.**

24 (a) **IN GENERAL.**—The Secretary shall carry out a
25 program under this part of research, development, dem-

1 onstration, and commercial application of technologies for
2 ultra-deepwater and unconventional natural gas and other
3 petroleum resource exploration and production, including
4 safe operations and environmental mitigation (including
5 reduction of greenhouse gas emissions and sequestration
6 of carbon).

7 (b) PROGRAM ELEMENTS.—The program under this
8 part shall address the following areas, including improving
9 safety and minimizing environmental impacts of activities
10 within each area:

11 (1) Ultra-deepwater technology.

12 (2) Ultra-deepwater architecture.

13 (3) Unconventional natural gas and other petro-
14 leum resource exploration and production tech-
15 nology.

16 (c) LIMITATION ON LOCATION OF FIELD ACTIVI-
17 TIES.—Field activities under the program under this part
18 shall be carried out only—

19 (1) in—

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

23 (B) areas onshore in the United States on
24 public land administered by the Secretary of the
25 Interior available for oil and gas leasing, where

1 consistent with applicable law and land use
2 plans; and

3 (C) areas onshore in the United States on
4 State or private land, subject to applicable law;
5 and

6 (2) with the approval of the appropriate Fed-
7 eral or State land management agency or private
8 land owner.

9 (d) RESEARCH AT NATIONAL ENERGY TECHNOLOGY
10 LABORATORY.—The Secretary, through the National En-
11 ergy Technology Laboratory, shall carry out research com-
12 plementary to research under subsection (b).

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

16 **SEC. ___58. ULTRA-DEEPWATER PROGRAM.**

17 (a) IN GENERAL.—The Secretary shall carry out the
18 activities under paragraphs (1) and (2) of section
19 ___57(b), to maximize the value of the ultra-deepwater
20 natural gas and other petroleum resources of the United
21 States by increasing the supply of such resources and by
22 reducing the cost and increasing the efficiency of explo-
23 ration for and production of such resources, while improv-
24 ing safety and minimizing environmental impacts.

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

4 (c) ROLE OF THE PROGRAM CONSORTIUM.—

5 (1) IN GENERAL.—The Secretary shall contract
6 with a consortium to—

7 (A) manage awards pursuant to subsection
8 (f)(4);

9 (B) make recommendations to the Sec-
10 retary for project solicitations;

11 (C) disburse funds awarded under sub-
12 section (f) as directed by the Secretary in ac-
13 cordance with the annual plan under subsection
14 (e); and

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

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

20 (3) CONFLICT OF INTEREST.—(A) The Sec-
21 retary shall establish procedures—

22 (i) to ensure that each board member, offi-
23 cer, or employee of the program consortium
24 who is in a decisionmaking capacity under sub-
25 section (f)(3) or (4) shall disclose to the Sec-

1 retary any financial interests in, or financial re-
2 lationships with, applicants for or recipients of
3 awards under this section, including those of
4 his or her spouse or minor child, unless such re-
5 lationships or interests would be considered to
6 be remote or inconsequential; and

7 (ii) to require any board member, officer,
8 or employee with a financial relationship or in-
9 terest disclosed under clause (i) to recuse him-
10 self or herself from any review under subsection
11 (f)(3) or oversight under subsection (f)(4) with
12 respect to such applicant or recipient.

13 (B) The Secretary may disqualify an applica-
14 tion or revoke an award under this section if a board
15 member, officer, or employee has failed to comply
16 with procedures required under subparagraph
17 (A)(ii).

18 (d) SELECTION OF THE PROGRAM CONSORTIUM.—

19 (1) IN GENERAL.—The Secretary shall select
20 the program consortium through an open, competi-
21 tive process.

22 (2) MEMBERS.—The program consortium may
23 include corporations, institutions of higher edu-
24 cation, National Laboratories, or other research in-
25 stitutions. After submitting a proposal under para-

1 graph (4), the program consortium may not add
2 members without the consent of the Secretary.

3 (3) TAX STATUS.—The program consortium
4 shall be an entity that is exempt from tax under sec-
5 tion 501(c)(3) of the Internal Revenue Code of
6 1986.

7 (4) SCHEDULE.—Not later than 90 days after
8 the date of enactment of this Act, the Secretary
9 shall solicit proposals for the creation of the pro-
10 gram consortium, which must be submitted not less
11 than 180 days after the date of enactment of this
12 Act. The Secretary shall select the program consor-
13 tium not later than 240 days after such date of en-
14 actment.

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

18 (A) list all members of the consortium;

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

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

1 (6) ELIGIBILITY.—To be eligible to be selected
2 as the program consortium, an applicant must be an
3 entity whose members collectively have demonstrated
4 capabilities in planning and managing research, de-
5 velopment, demonstration, and commercial applica-
6 tion programs in natural gas or other petroleum ex-
7 ploration or production.

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

12 (e) ANNUAL PLAN.—

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

17 (2) DEVELOPMENT.—(A) Before drafting an
18 annual plan under this subsection, the Secretary
19 shall solicit specific written recommendations from
20 the program consortium for each element to be ad-
21 dressed in the plan, including those described in
22 paragraph (4). The Secretary may request that the
23 program consortium submit its recommendations in
24 the form of a draft annual plan.

1 (B) The Secretary shall submit the rec-
2 ommendations of the program consortium under
3 subparagraph (A) to the Ultra-Deepwater Advisory
4 Committee established under section ____61(a) for
5 review, and such Advisory Committee shall provide
6 to the Secretary written comments by a date deter-
7 mined by the Secretary. The Secretary may also so-
8 licit comments from any other experts.

9 (C) The Secretary shall consult regularly with
10 the program consortium throughout the preparation
11 of the annual plan.

12 (3) PUBLICATION.—The Secretary shall trans-
13 mit to the Congress and publish in the Federal Reg-
14 ister the annual plan, along with any written com-
15 ments received under paragraph (2)(A) and (B).
16 The annual plan shall be transmitted and published
17 not later than 60 days after the date of enactment
18 of an Act making appropriations for a fiscal year for
19 the program under this section.

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

23 (A) a list of any solicitations for awards
24 that the Secretary plans to issue to carry out
25 research, development, demonstration, or com-

1 merchial application activities, including the top-
2 ics for such work, who would be eligible to
3 apply, selection criteria, and the duration of
4 awards; and

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

8 (f) AWARDS.—

9 (1) IN GENERAL.—The Secretary shall make
10 awards to carry out research, development, dem-
11 onstration, and commercial application activities
12 under the program under this section. The program
13 consortium shall not be eligible to receive such
14 awards, but members of the program consortium
15 may receive such awards.

16 (2) PROPOSALS.—The Secretary shall solicit
17 proposals for awards under this subsection in such
18 manner and at such time as the Secretary may pre-
19 scribe, in consultation with the program consortium.

20 (3) REVIEW.—The Secretary shall make awards
21 under this subsection through a competitive process,
22 which shall include a review by individuals selected
23 by the Secretary. Such individuals shall include, for
24 each application, Federal officials, the program con-
25 sortium, and non-Federal experts who are not board

1 members, officers, or employees of the program con-
2 sortium or of a member of the program consortium.

3 (4) OVERSIGHT.—(A) The program consortium
4 shall oversee the implementation of awards under
5 this subsection, consistent with the annual plan
6 under subsection (e), including disbursing funds and
7 monitoring activities carried out under such awards
8 for compliance with the terms and conditions of the
9 awards.

10 (B) Nothing in subparagraph (A) shall limit the
11 authority or responsibility of the Secretary to over-
12 see awards, or limit the authority of the Secretary
13 to review or revoke awards.

14 (C) The Secretary shall provide to the program
15 consortium the information necessary for the pro-
16 gram consortium to carry out its responsibilities
17 under this paragraph.

18 (g) FEE.—

19 (1) IN GENERAL.—To compensate the program
20 consortium for carrying out its activities under this
21 section, the Secretary shall provide to the program
22 consortium a fee in an amount not to exceed 7.5
23 percent of the amounts awarded under subsection (f)
24 for each fiscal year.

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

5 (h) AUDIT.—The Secretary shall retain an inde-
6 pendent, commercial auditor to determine the extent to
7 which funds provided to the program consortium, and
8 funds provided under awards made under subsection (f),
9 have been expended in a manner consistent with the pur-
10 poses and requirements of this part. The auditor shall
11 transmit a report annually to the Secretary, who shall
12 transmit the report to Congress, along with a plan to rem-
13 edy any deficiencies cited in the report.

14 **SEC. ____59. UNCONVENTIONAL NATURAL GAS AND OTHER**
15 **PETROLEUM RESOURCES PROGRAM.**

16 (a) IN GENERAL.—The Secretary shall carry out ac-
17 tivities under section ____57(b)(3), to maximize the value
18 of the onshore unconventional natural gas and other petro-
19 leum resources of the United States by increasing the sup-
20 ply of such resources and by reducing the cost and increas-
21 ing the efficiency of exploration for and production of such
22 resources, while improving safety and minimizing environ-
23 mental impacts.

24 (b) AWARDS.—

1 (1) IN GENERAL.—The Secretary shall carry
2 out this section through awards made through an
3 open, competitive process.

4 (2) CONSORTIA.—In carrying out paragraph
5 (1), the Secretary shall give preference to making
6 awards to consortia.

7 (c) AUDIT.—The Secretary shall retain an inde-
8 pendent, commercial auditor to determine the extent to
9 which funds provided under awards made under this sec-
10 tion have been expended in a manner consistent with the
11 purposes and requirements of this part. The auditor shall
12 transmit a report annually to the Secretary, who shall
13 transmit the report to Congress, along with a plan to rem-
14 edy any deficiencies cited in the report.

15 (d) FOCUS AREAS.—Awards under this section may
16 focus on areas including advanced coal-bed methane, deep
17 drilling, natural gas production from tight sands, natural
18 gas production from gas shales, innovative exploration and
19 production techniques, enhanced recovery techniques, and
20 environmental mitigation of unconventional natural gas
21 and other petroleum resources exploration and production.

22 (e) ACTIVITIES BY THE UNITED STATES GEOLOGI-
23 CAL SURVEY.—The Secretary of the Interior, through the
24 United States Geological Survey, shall, where appropriate,

1 carry out programs of long-term research to complement
2 the programs under this section.

3 **SEC. ___ 60. ADDITIONAL REQUIREMENTS FOR AWARDS.**

4 (a) DEMONSTRATION PROJECTS.—An application for
5 an award under this part for a demonstration project shall
6 describe with specificity the intended commercial use of
7 the technology to be demonstrated.

8 (b) FLEXIBILITY IN LOCATING DEMONSTRATION
9 PROJECTS.—Subject to the limitation in section
10 ___57(c), a demonstration project under this part relat-
11 ing to an ultra-deepwater technology or an ultra-deep-
12 water architecture may be conducted in deepwater depths.

13 (c) INTELLECTUAL PROPERTY AGREEMENTS.—If an
14 award under this part is made to a consortium (other than
15 the program consortium), the consortium shall provide to
16 the Secretary a signed contract agreed to by all members
17 of the consortium describing the rights of each member
18 to intellectual property used or developed under the award.

19 (d) TECHNOLOGY TRANSFER.—Each recipient of an
20 award under this part shall conduct technology transfer
21 activities, as appropriate, and outreach activities pursuant
22 to [section ___05 of the DOE Management title].

23 (e) COST-SHARING REDUCTION FOR INDEPENDENT
24 PRODUCERS.—In applying the cost-sharing requirements
25 under section ___92 to an award under this part made

1 solely to an independent producer of oil or gas, the Sec-
2 retary may reduce the applicable non-Federal requirement
3 in such section to a level not less than 10 percent of the
4 cost of the project.

5 **SEC. ____ 61. ADVISORY COMMITTEES.**

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

7 (1) **ESTABLISHMENT.—**Not later than 270 days
8 after the date of enactment of this Act, the Sec-
9 retary shall establish an advisory committee to be
10 known as the Ultra-Deepwater Advisory Committee.

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

14 (A) individuals with extensive research ex-
15 perience or operational knowledge of offshore
16 natural gas and other petroleum exploration
17 and production;

18 (B) individuals broadly representative of
19 the affected interests in ultra-deepwater natural
20 gas and other petroleum production, including
21 interests in environmental protection and safe
22 operations;

23 (C) no individuals who are Federal em-
24 ployee; and

1 (D) no individuals who are board members,
2 officers, or employees of the program consor-
3 tium.

4 (3) DUTIES.—The advisory committee under
5 this subsection shall—

6 (A) advise the Secretary on the develop-
7 ment and implementation of programs under
8 this part related to ultra-deepwater natural gas
9 and other petroleum resources; and

10 (B) carry out section ____58(e)(2)(B).

11 (4) COMPENSATION.—A member of the advi-
12 sory committee under this subsection shall serve
13 without compensation but shall receive travel ex-
14 penses, including per diem in lieu of subsistence, in
15 accordance with applicable provisions under sub-
16 chapter I of chapter 57 of title 5, United States
17 Code.

18 (b) UNCONVENTIONAL RESOURCES TECHNOLOGY
19 ADVISORY COMMITTEE.—

20 (1) ESTABLISHMENT.—Not later than 270 days
21 after the date of enactment of this Act, the Sec-
22 retary shall establish an advisory committee to be
23 known as the Unconventional Resources Technology
24 Advisory Committee.

1 (2) MEMBERSHIP.—The advisory committee
2 under this subsection shall be composed of members
3 appointed by the Secretary, including—

4 (A) individuals with extensive research ex-
5 perience or operational knowledge of unconven-
6 tional natural gas and other petroleum resource
7 exploration and production, including inde-
8 pendent oil and gas producers;

9 (B) individuals broadly representative of
10 the affected interests in unconventional natural
11 gas and other petroleum resource exploration
12 and production, including interests in environ-
13 mental protection and safe operations; and

14 (C) no individuals who are Federal employ-
15 ees.

16 (3) DUTIES.—The advisory committee under
17 this subsection shall advise the Secretary on the de-
18 velopment and implementation of activities under
19 this part related to unconventional natural gas and
20 other petroleum resources.

21 (4) COMPENSATION.—A member of the advi-
22 sory committee under this subsection shall serve
23 without compensation but shall receive travel ex-
24 penses, including per diem in lieu of subsistence, in
25 accordance with applicable provisions under sub-

1 chapter I of chapter 57 of title 5, United States
2 Code.

3 (c) PROHIBITION.—No advisory committee estab-
4 lished under this section shall make recommendations on
5 funding awards to consortia or for specific projects.

6 **SEC. ____ 62. LIMITS ON PARTICIPATION.**

7 (a) IN GENERAL.—An entity shall be eligible to re-
8 ceive an award under this part only if the Secretary
9 finds—

10 (1) that the entity's participation in the pro-
11 gram under this part would be in the economic in-
12 terest of the United States; and

13 (2) that either—

14 (A) the entity is a United States-owned en-
15 tity organized under the laws of the United
16 States; or

17 (B) the entity is organized under the laws
18 of the United States and has a parent entity or-
19 ganized under the laws of a country that
20 affords—

21 (i) to United States-owned entities op-
22 portunities, comparable to those afforded
23 to any other entity, to participate in any
24 cooperative research venture similar to
25 those authorized under this part;

1 (ii) to United States-owned entities
2 local investment opportunities comparable
3 to those afforded to any other entity; and
4 (iii) adequate and effective protection
5 for the intellectual property rights of
6 United States-owned entities.

7 (b) SENSE OF CONGRESS AND REPORT.—It is the
8 Sense of the Congress that ultra-deepwater technology de-
9 veloped under this part is to be developed primarily for
10 production of ultra-deepwater natural gas and other petro-
11 leum resources of the United States, and that this priority
12 is to be reflected in the terms of grants, contracts, and
13 cooperative agreements entered under this part. As part
14 of the annual Departmental budget submission, the Sec-
15 retary shall report on all steps taken to implement the pol-
16 icy described in this subsection.

17 **SEC. ___63. SUNSET.**

18 The authority provided by this part shall terminate
19 on September 30, 2010.

20 **SEC. ___64. DEFINITIONS.**

21 In this part:

22 (1) DEEPWATER.—The term “deepwater”
23 means a water depth that is greater than 200 but
24 less than 1,500 meters.

1 (2) PROGRAM CONSORTIUM.—The term “pro-
2 gram consortium” means the consortium selected
3 under section ____59(d).

4 (3) REMOTE OR INCONSEQUENTIAL.—The term
5 “remote or inconsequential” has the meaning given
6 that term in regulations issued by the Office of Gov-
7 ernment Ethics under section 208(b)(2) of title 18,
8 United States Code.

9 (4) ULTRA-DEEPWATER.—The term “ultra-
10 deepwater” means a water depth that is equal to or
11 greater than 1,500 meters.

12 (5) ULTRA-DEEPWATER ARCHITECTURE.—The
13 term “ultra-deepwater architecture” means the inte-
14 gration of technologies for the exploration for, or
15 production of, natural gas or other petroleum re-
16 sources located at ultra-deepwater depths.

17 (6) ULTRA-DEEPWATER TECHNOLOGY.—The
18 term “ultra-deepwater technology” means a discrete
19 technology that is specially suited to address one or
20 more challenges associated with the exploration for,
21 or production of, natural gas or other petroleum re-
22 sources located at ultra-deepwater depths.

23 (7) UNCONVENTIONAL NATURAL GAS AND
24 OTHER PETROLEUM RESOURCE.— The term “uncon-
25 ventional natural gas and other petroleum resource”

1 means natural gas and other petroleum resource lo-
2 cated onshore in an economically inaccessible geo-
3 logical formation.

4 **SEC. ____ 65. AUTHORIZATION OF APPROPRIATIONS.**

5 There are authorized to be appropriated to the Sec-
6 retary such sums as may be necessary for fiscal years
7 2004 through 2010 to carry out the purposes of this part.

8 **Subtitle F—Science**

9 **SEC. ____ 71. SCIENCE.**

10 (a) IN GENERAL.—The following sums are author-
11 ized to be appropriated to the Secretary for research, de-
12 velopment, demonstration, and commercial application ac-
13 tivities of the Office of Science, including activities author-
14 ized under this subtitle, including the amounts authorized
15 under the amendment made by section ____77(e)(2)(C),
16 and including basic energy sciences, advanced scientific
17 and computing research, biological and environmental re-
18 search, fusion energy sciences, high energy physics, nu-
19 clear physics, and research analysis and infrastructure
20 support:

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

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

23 (3) For fiscal year 2006, \$4,586,000,000.

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

25 (5) For fiscal year 2008, \$5,400,000,000.

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

3 (1) For activities of the Fusion Energy Sciences
4 Program, including activities under section
5 _____72—

6 (A) for fiscal year 2004, \$335,000,000;

7 (B) for fiscal year 2005, \$349,000,000;

8 (C) for fiscal year 2006, \$362,000,000;

9 (D) for fiscal year 2007, \$377,000,000;

10 and

11 (E) for fiscal year 2008, \$393,000,000.

12 (2) For the Spallation Neutron Source—

13 (A) for construction in fiscal year 2004,
14 \$124,600,000;

15 (B) for construction in fiscal year 2005,
16 \$79,800,000;

17 (C) for completion of construction in fiscal
18 year 2006, \$41,100,000; and

19 (D) for other project costs (including re-
20 search and development necessary to complete
21 the project, preoperations costs, and capital
22 equipment related to construction),
23 \$103,279,000 for the period encompassing fis-
24 cal years 2003 through 2006, to remain avail-

1 able until expended through September 30,
2 2006.

3 (3) For Catalysis Research activities under sec-
4 tion ____75—

5 (A) for fiscal year 2004, \$33,000,000;

6 (B) for fiscal year 2005, \$35,000,000;

7 (C) for fiscal year 2006, \$36,500,000;

8 (D) for fiscal year 2007, \$38,200,000; and

9 (E) for fiscal year 2008, \$40,100,000.

10 (4) For Nanoscale Science and Engineering Re-
11 search activities under section ____76—

12 (A) for fiscal year 2004, \$270,000,000;

13 (B) for fiscal year 2005, \$290,000,000;

14 (C) for fiscal year 2006, \$310,000,000;

15 (D) for fiscal year 2007, \$330,000,000;

16 and

17 (E) for fiscal year 2008, \$375,000,000.

18 (5) For activities under section ____76(c), from
19 the amounts authorized under paragraph (4) of this
20 subsection—

21 (A) for fiscal year 2004, \$135,000,000;

22 (B) for fiscal year 2005, \$150,000,000;

23 (C) for fiscal year 2006, \$120,000,000;

24 (D) for fiscal year 2007, \$100,000,000;

25 and

1 (E) for fiscal year 2008, \$125,000,000.

2 (6) For activities in the Genomes to Life Pro-
3 gram under section ____78—

4 (A) for fiscal year 2004, \$100,000,000;
5 and

6 (B) for fiscal years 2005 through 2008,
7 such sums as may be necessary.

8 (7) For activities in the Energy-Water Supply
9 Program under section ____80, \$30,000,000 for
10 each of fiscal years 2004 through 2008.

11 (c) In addition to the funds authorized under sub-
12 section (b)(1), the following sums are authorized for con-
13 struction costs associated with the ITER project under
14 section ____72:

15 (1) For fiscal year 2006, \$55,000,000.

16 (2) For fiscal year 2007, \$95,000,000.

17 (3) For fiscal year 2008, \$115,000,000.

18 **SEC. ____72. UNITED STATES PARTICIPATION IN ITER.**

19 (a) PARTICIPATION.—(1) The Secretary is authorized
20 to undertake full scientific and technological cooperation
21 in the International Thermonuclear Experimental Reactor
22 project (referred to in this title as “ITER”).

23 (2) In the event that ITER fails to go forward within
24 a reasonable period of time, the Secretary shall send to
25 Congress a plan, including costs and schedules, for imple-

1 menting the domestic burning plasma experiment known
2 as the Fusion Ignition Research Experiment. Such a plan
3 shall be developed with full consultation with the Fusion
4 Energy Sciences Advisory Committee and be reviewed by
5 the National Research Council.

6 (3) It is the intent of Congress that activities under
7 this section shall consist largely of work performed in the
8 United States and that such work should contribute the
9 maximum amount possible to the United States scientific
10 and technological base.

11 (b) PLANNING.—(1) Not later than 180 days after
12 the date of enactment of this Act, the Secretary shall
13 present to Congress a plan, with proposed cost estimates,
14 budgets, and potential international partners, for the im-
15 plementation of the goals of this section. The plan shall
16 ensure that—

17 (A) existing fusion research facilities are more
18 fully utilized;

19 (B) fusion science, technology, theory, advanced
20 computation, modeling, and simulation are strength-
21 ened;

22 (C) new magnetic and inertial fusion research
23 facilities are selected based on scientific innovation,
24 cost effectiveness, and their potential to advance the
25 goal of practical fusion energy at the earliest date

1 possible, and those that are selected are funded at
2 a cost-effective rate;

3 (D) communication of scientific results and
4 methods between the fusion energy science commu-
5 nity and the broader scientific and technology com-
6 munities is improved;

7 (E) inertial confinement fusion facilities are uti-
8 lized to the extent practicable for the purpose of in-
9 ertial fusion energy research and development; and

10 (F) attractive alternative inertial and magnetic
11 fusion energy approaches are more fully explored.

12 (2) Such plan shall also address the status of and,
13 to the degree possible, costs and schedules for—

14 (A) in coordination with the program in section
15 ____79, the design and implementation of inter-
16 national or national facilities for the testing of fu-
17 sion materials; and

18 (B) the design and implementation of inter-
19 national or national facilities for the testing and de-
20 velopment of key fusion technologies.

21 **SEC. ____73. SPALLATION NEUTRON SOURCE.**

22 (a) DEFINITION.—For the purposes of this section,
23 the term “Spallation Neutron Source” means Department
24 Project 99–E–334, Oak Ridge National Laboratory, Oak
25 Ridge, Tennessee.

1 (b) REPORT.—The Secretary shall report on the
2 Spallation Neutron Source as part of the Department’s
3 annual budget submission, including a description of the
4 achievement of milestones, a comparison of actual costs
5 to estimated costs, and any changes in estimated project
6 costs or schedule.

7 (c) LIMITATIONS.—The total amount obligated by the
8 Department, including prior year appropriations, for the
9 Spallation Neutron Source may not exceed—

10 (1) \$1,192,700,000 for costs of construction;

11 (2) \$219,000,000 for other project costs; and

12 (3) \$1,411,700,000 for total project cost.

13 **SEC. ____74. SUPPORT FOR SCIENCE AND ENERGY FACILI-**
14 **TIES AND INFRASTRUCTURE.**

15 (a) FACILITY AND INFRASTRUCTURE POLICY.—The
16 Secretary shall develop and implement a strategy for fa-
17 cilities and infrastructure supported primarily from the
18 Office of Science, the Office of Energy Efficiency and Re-
19 newable Energy, the Office of Fossil Energy, or the Office
20 of Nuclear Energy, Science, and Technology Programs at
21 all National Laboratories and single-purpose research fa-
22 cilities. Such strategy shall provide cost-effective means
23 for—

24 (1) maintaining existing facilities and infra-
25 structure, as needed;

- 1 (2) closing unneeded facilities;
- 2 (3) making facility modifications; and
- 3 (4) building new facilities.

4 (b) REPORT.—(1) The Secretary shall prepare and
5 transmit, along with the President's budget request to the
6 Congress for fiscal year 2006, a report containing the
7 strategy developed under subsection (a).

8 (2) For each National Laboratory and single-purpose
9 research facility, for the facilities primarily used for
10 science and energy research, such report shall contain—

11 (A) the current priority list of proposed facili-
12 ties and infrastructure projects, including cost and
13 schedule requirements;

14 (B) a current ten-year plan that demonstrates
15 the reconfiguration of its facilities and infrastructure
16 to meet its missions and to address its long-term
17 operational costs and return on investment;

18 (C) the total current budget for all facilities
19 and infrastructure funding; and

20 (D) the current status of each facility and in-
21 frastructure project compared to the original base-
22 line cost, schedule, and scope.

23 **SEC. ___ 75. CATALYSIS RESEARCH PROGRAM.**

24 (a) ESTABLISHMENT.—The Secretary, through the
25 Office of Science, shall support a program of research and

1 development in catalysis science consistent with the De-
2 partment's statutory authorities related to research and
3 development. The program shall include efforts to—

4 (1) enable catalyst design using combinations of
5 experimental and mechanistic methodologies coupled
6 with computational modeling of catalytic reactions at
7 the molecular level;

8 (2) develop techniques for high throughput syn-
9 thesis, assay, and characterization at nanometer and
10 subnanometer scales in situ under actual operating
11 conditions,

12 (3) synthesize catalysts with specific site archi-
13 tectures;

14 (4) conduct research on the use of precious
15 metals for catalysis; and

16 (5) translate molecular understanding to the
17 design of catalytic compounds.

18 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
19 rying out the program under this section, the Director of
20 the Office of Science shall—

21 (1) support both individual investigators and
22 multidisciplinary teams of investigators to pioneer
23 new approaches in catalytic design;

24 (2) develop, plan, construct, acquire, share, or
25 operate special equipment or facilities for the use of

1 investigators in collaboration with national user fa-
2 cilities such as nanoscience and engineering centers;

3 (3) support technology transfer activities to
4 benefit industry and other users of catalysis science
5 and engineering; and

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

8 (c) TRIENNIAL ASSESSMENT.—The National Acad-
9 emy of Sciences shall review the catalysis program every
10 three years to report on gains made in the fundamental
11 science of catalysis and its progress towards developing
12 new fuels for energy production and material fabrication
13 processes.

14 **SEC. ___76. NANOSCALE SCIENCE AND ENGINEERING RE-**
15 **SEARCH.**

16 (a) ESTABLISHMENT.—The Secretary, acting
17 through the Office of Science, shall support a program of
18 research, development, demonstration, and commercial ap-
19 plication in nanoscience and nanoengineering. The pro-
20 gram shall include efforts to further the understanding of
21 the chemistry, physics, materials science, and engineering
22 of phenomena on the scale of nanometers and to apply
23 that knowledge to the Department's mission areas.

1 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
2 rying out the program under this section, the Office of
3 Science shall—

4 (1) support both individual investigators and
5 teams of investigators, including multidisciplinary
6 teams;

7 (2) carry out activities under subsection (c);

8 (3) support technology transfer activities to
9 benefit industry and other users of nanoscience and
10 nanoengineering; and

11 (4) coordinate research and development activi-
12 ties with other Department programs, industry, and
13 other Federal agencies.

14 (c) NANOSCIENCE AND NANOENGINEERING RE-
15 SEARCH CENTERS AND MAJOR INSTRUMENTATION.—(1)
16 The Secretary shall carry out projects to develop, plan,
17 construct, acquire, operate, or support special equipment,
18 instrumentation, or facilities for investigators conducting
19 research and development in nanoscience and
20 nanoengineering.

21 (2) Projects under paragraph (1) may include the
22 measurement of properties at the scale of nanometers, ma-
23 nipulation at such scales, and the integration of tech-
24 nologies based on nanoscience or nanoengineering into
25 bulk materials or other technologies.

1 (3) Facilities under paragraph (1) may include elec-
2 tron microcharacterization facilities, microlithography fa-
3 cilities, scanning probe facilities, and related instrumenta-
4 tion.

5 (4) The Secretary shall encourage collaborations
6 among Department programs, institutions of higher edu-
7 cation, laboratories, and industry at facilities under this
8 subsection.

9 **SEC. ___ 77. ADVANCED SCIENTIFIC COMPUTING FOR EN-**
10 **ERGY MISSIONS.**

11 (a) IN GENERAL.—The Secretary, acting through the
12 Office of Science, shall support a program to advance the
13 Nation’s computing capability across a diverse set of
14 grand challenge, computationally based, science problems
15 related to departmental missions.

16 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
17 rying out the program under this section, the Office of
18 Science shall—

19 (1) advance basic science through computation
20 by developing software to solve grand challenge
21 science problems on new generations of computing
22 platforms in collaboration with other Department
23 program offices;

24 (2) enhance the foundations for scientific com-
25 puting by developing the basic mathematical and

1 computing systems software needed to take full ad-
2 vantage of the computing capabilities of computers
3 with peak speeds of 100 teraflops or more, some of
4 which may be unique to the scientific problem of in-
5 terest;

6 (3) enhance national collaboratory and net-
7 working capabilities by developing software to inte-
8 grate geographically separated researchers into ef-
9 fective research teams and to facilitate access to and
10 movement and analysis of large (petabyte) data sets;

11 (4) maintain a robust scientific computing
12 hardware infrastructure to ensure that the com-
13 puting resources needed to address departmental
14 missions are available; and

15 (5) explore new computing approaches and
16 technologies that promise to advance scientific com-
17 puting, including developments in quantum com-
18 puting.

19 (c) HIGH-PERFORMANCE COMPUTING ACT OF 1991
20 AMENDMENTS.—The High-Performance Computing Act
21 of 1991 is amended—

22 (1) in section 4 (15 U.S.C. 5503)—

23 (A) in paragraph (3) by striking “means”
24 and inserting “and networking and information
25 technology mean”, and by striking “(including

1 vector supercomputers and large scale parallel
2 systems)”; and

3 (B) in paragraph (4), by striking “packet
4 switched”; and
5 (2) in section 203 (15 U.S.C. 5523)—

6 (A) in subsection (a), by striking all after
7 “As part of the” and inserting “Networking
8 and Information Technology Research and De-
9 velopment Program, the Secretary of Energy
10 shall conduct basic and applied research in net-
11 working and information technology, with em-
12 phasis on supporting fundamental research in
13 the physical sciences and engineering, and en-
14 ergy applications; providing supercomputer ac-
15 cess and advanced communication capabilities
16 and facilities to scientific researchers; and de-
17 veloping tools for distributed scientific collabo-
18 ration.”;

19 (B) in subsection (b), by striking “Pro-
20 gram” and inserting “Networking and Informa-
21 tion Technology Research and Development
22 Program”; and

23 (C) by amending subsection (e) to read as
24 follows:

1 “(e) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary of En-
3 ergy to carry out the Networking and Information Tech-
4 nology Research and Development Program such sums as
5 may be necessary for fiscal years 2004 through 2008.”.

6 (d) COORDINATION.—The Secretary shall ensure that
7 the program under this section is integrated and con-
8 sistent with—

9 (1) the Accelerated Strategic Computing Initia-
10 tive of the National Nuclear Security Administra-
11 tion; and

12 (2) other national efforts related to advanced
13 scientific computing for science and engineering.

14 **SEC. ___ 78. GENOMES TO LIFE PROGRAM.**

15 (a) PROGRAM.—

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

21 (2) GRANTS.—The program shall support indi-
22 vidual investigators and multidisciplinary teams of
23 investigators through competitive, merit-reviewed
24 grants.

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

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

7 (1) can facilitate the production of fuels, includ-
8 ing hydrogen;

9 (2) convert carbon dioxide to organic carbon;

10 (3) improve national security and combat ter-
11 rorism;

12 (4) detoxify soils and water at Department fa-
13 cilities contaminated with heavy metals and radio-
14 logical materials; and

15 (5) address other Department missions as iden-
16 tified by the Secretary, consistent with the statutory
17 authority of the Department.

18 (c) PLAN.—

19 (1) DEVELOPMENT OF PLAN.—Not later than 1
20 year after the date of enactment of this Act, the
21 Secretary shall prepare and transmit to the Con-
22 gress a research plan describing how the program
23 authorized pursuant to this section will be under-
24 taken to accomplish the Program goals established
25 in subsection (b).

1 program on material science issues presented by advanced
2 fission reactors and the Department's fusion energy pro-
3 gram. The program shall develop a catalog of material
4 properties required for these applications, develop theo-
5 retical models for materials possessing the required prop-
6 erties, benchmark models against existing data, and de-
7 velop a roadmap to guide further research and develop-
8 ment in this area.

9 **SEC. ___ 80. ENERGY-WATER SUPPLY PROGRAM.**

10 (a) ESTABLISHMENT.—There is established within
11 the Department the Energy-Water Supply Program, to
12 study energy-related and certain other issues associated
13 with the supply of drinking water and operation of com-
14 munity water systems and to study water supply issues
15 related to energy.

16 (b) DEFINITIONS.—For the purposes of this section:

17 (1) The term “Foundation” means the Amer-
18 ican Water Works Association Research Foundation.

19 (2) The term “Indian tribe” has the meaning
20 given the term in section 4 of the Indian Self-Deter-
21 mination and Education Assistance Act (25 U.S.C.
22 450b).

23 (3) The term “Program” means the Energy-
24 Water Supply Program established by this section.

1 (4) The term “Administrator” means the Ad-
2 ministrator of the Environmental Protection Agency.

3 (5) The term “Agency” means the Environ-
4 mental Protection Agency.

5 (c) PROGRAM AREAS.—The Program shall develop
6 methods, means, procedures, equipment, and improved
7 technologies relating to—

8 (1) arsenic removal under subsection (d);

9 (2) the desalination program under subsection
10 (e); and

11 (3) the water and energy sustainability program
12 under subsection (f).

13 (d) ARSENIC REMOVAL PROGRAM.—(1) As soon as
14 practicable after the date of enactment of this Act, the
15 Secretary, in coordination with the Administrator, shall
16 enter into a contract with the Foundation to utilize the
17 facilities, institutions, and relationships established in the
18 Consolidated Appropriations Resolution, 2003 as de-
19 scribed in Senate Report 107–220 that will carry out a
20 research program to provide innovative methods and
21 means for removal of arsenic.

22 (2) In carrying out the program under this sub-
23 section, the Foundation shall, to the maximum extent
24 practicable, evaluate the means of—

1 (A) reducing energy costs incurred in using ar-
2 senic removal technologies;

3 (B) minimizing materials, operating, and main-
4 tenance costs; and

5 (C) minimizing any quantities of waste (espe-
6 cially hazardous waste) that result from use of ar-
7 senic removal technologies.

8 (3) Where applicable and reasonably available,
9 projects undertaken by the Foundation under this sub-
10 section shall be peer-reviewed.

11 (4) In carrying out the program under this sub-
12 section, the Secretary, in coordination with the Adminis-
13 trator, shall—

14 (A) select projects involving a geographically
15 and hydrologically diverse group of community water
16 systems (as defined in section 1003 of the Public
17 Health Service Act (42 U.S.C. 300)) and water
18 chemistries, that have experienced technical or eco-
19 nomic difficulties in providing drinking water with
20 levels of arsenic at 10 parts-per-billion or lower,
21 which projects shall be designed to develop innova-
22 tive methods and means to deliver drinking water
23 that contains less than 10 parts per billion of ar-
24 senic; and

1 (B) provide not less than 40 percent of all
2 funds spent pursuant to this subsection to address
3 the needs of, and in collaboration with, rural com-
4 munities or Indian tribes.

5 (5) The Foundation shall create methods for deter-
6 mining cost effectiveness of arsenic removal technologies
7 used in the program.

8 (6) The Foundation shall include education, training,
9 and technology transfer as part of the program.

10 (7) The Secretary shall consult with the Adminis-
11 trator to ensure that all activities conducted under the
12 program are coordinated with the Agency and do not du-
13 plicate other programs in the Agency and other Federal
14 agencies, State programs, and academia.

15 (8) Not later than 1 year after the date of commence-
16 ment of the program under this subsection, and once every
17 year thereafter, the Secretary shall submit to the Com-
18 mittee on Energy and Commerce of the House of Rep-
19 resentatives and the Committee on Environment and Pub-
20 lic Works and the Committee on Energy and Natural Re-
21 sources of the Senate a report on the results of the pro-
22 gram under this subsection.

23 (e) DESALINATION PROGRAM.—(1) The Secretary, in
24 cooperation with the Commissioner of Reclamation of the
25 Department of the Interior, shall carry out a program to

1 conduct research and develop methods and means for de-
2 salination in accordance with the desalination technology
3 progress plan developed under title II of the Energy and
4 Water Development Appropriations Act, 2002 (115 Stat.
5 498), and described in Senate Report 107–39 under the
6 heading “WATER AND RELATED RESOURCES” in
7 the “BUREAU OF RECLAMATION” section.

8 (2) The desalination program shall—

9 (A) use the resources of the Department and
10 the Department of the Interior that were involved in
11 the development of the 2003 National Desalination
12 and Water Purification Technology Roadmap for
13 next-generation desalination technology;

14 (B) focus on technologies that are appropriate
15 for use in desalinating brackish groundwater, drink-
16 ing water, wastewater and other saline water sup-
17 plies, or disposal of residual brine or salt; and

18 (C) consider the use of renewable energy
19 sources.

20 (3) Funds made available to carry out this subsection
21 may be used for construction projects, including comple-
22 tion of the National Desalination Research Center for
23 brackish groundwater and ongoing operational costs of
24 this facility.

1 (4) The Secretary and the Commissioner of Reclama-
2 tion of the Department of the Interior shall jointly estab-
3 lish a steering committee for activities conducted under
4 this subsection. The steering committee shall be jointly
5 chaired by 1 representative from the Program and 1 rep-
6 resentative from the Bureau of Reclamation.

7 (f) WATER AND ENERGY SUSTAINABILITY PRO-
8 GRAM.—(1) The Secretary shall develop a program to
9 identify methods and means necessary to assist in ensur-
10 ing that sufficient quantities of water are available to meet
11 the public's present and future water needs.

12 (2) As part of the program under this subsection, the
13 Secretary shall work in collaboration with the Secretary
14 of the Interior, Army Corps of Engineers, the Adminis-
15 trator, the Secretary of Commerce, the Secretary of De-
16 fense, relevant State agencies, nongovernmental organiza-
17 tions, and academia, to assess the current state of knowl-
18 edge and program activities concerning—

19 (A) future water resources needed to support
20 energy production within the United States includ-
21 ing the water needs for hydropower, and production
22 of, or electricity generation by, hydrogen, biomass,
23 fossil fuels, and nuclear fuel;

24 (B) future energy resources needed to support
25 development of water purification and wastewater

1 treatment, including desalination and long-distance
2 water conveyance;

3 (C) use of impaired and nontraditional water
4 supplies for energy production other than oil and gas
5 extraction;

6 (D) technology and programs for improving
7 water use efficiency; and

8 (E) technologies to reduce water use in energy
9 development and production.

10 (3) The Secretary shall—

11 (A) develop a plan to identify scientific and
12 technical requirements and activities that are re-
13 quired to support long-term water needs and plan-
14 ning for energy sustainability under current and po-
15 tential future conditions of water availability, use of
16 impaired water for energy production and other
17 uses, and reduction of water use in energy develop-
18 ment and production;

19 (B) include in the activities identified under
20 subparagraph (A) development of tools, including
21 numerical models, decision analysis tools, economic
22 analysis tools, databases, and planning methodolo-
23 gies and strategies;

24 (C) implement at least three 3 planning
25 projects that use the tools described in subparagraph

1 (B) and assess the viability of those tools at the
2 scale of river basins with at least one demonstration
3 involving an international border; and

4 (D) transfer those tools to other Federal agen-
5 cies, State agencies, nonprofit organizations, indus-
6 try, and academia for use in their energy and water
7 sustainability efforts.

8 (4) Not later than 1 year after the date of enactment
9 of this Act, the Secretary shall submit to the Congress
10 a report on the water and energy sustainability program
11 that describes the results of the assessment under para-
12 graph (2), identifies policy, legal, and institutional issues
13 related to water and energy sustainability, and makes rec-
14 ommendations for a management structure that optimizes
15 use of Federal resources and programs.

16 **Subtitle G—Energy and**
17 **Environment**

18 **SEC. ___81. UNITED STATES-MEXICO ENERGY TECH-**
19 **NOLOGY COOPERATION.**

20 (a) PROGRAM.—The Secretary shall establish a re-
21 search, development, demonstration, and commercial ap-
22 plication program to be carried out in collaboration with
23 entities in Mexico and the United States to promote en-
24 ergy efficient, environmentally sound economic develop-
25 ment along the United States-Mexico border that mini-

1 mizes public health risks from industrial activities in the
2 border region.

3 (b) PROGRAM MANAGEMENT.—The program under
4 subsection (a) shall be managed by the Department of En-
5 ergy Carlsbad Environmental Management Field Office.

6 (c) TECHNOLOGY TRANSFER.—In carrying out
7 projects and activities under this section, the Secretary
8 shall assess the applicability of technology developed under
9 the Environmental Management Science Program of the
10 Department.

11 (d) INTELLECTUAL PROPERTY.—In carrying out this
12 section, the Secretary shall comply with the requirements
13 of any agreement entered into between the United States
14 and Mexico regarding intellectual property protection.

15 (e) AUTHORIZATION OF APPROPRIATIONS.—The fol-
16 lowing sums are authorized to be appropriated to the Sec-
17 retary to carry out activities under this section:

18 (1) For each of fiscal years 2004 and 2005,
19 \$5,000,000.

20 (2) For each of fiscal years 2006, 2007, and
21 2008, \$6,000,000.

1 **SEC. ____82. WESTERN HEMISPHERE ENERGY COOPERA-**
2 **TION.**

3 (a) PROGRAM.—The Secretary shall carry out a pro-
4 gram to promote cooperation on energy issues with West-
5 ern Hemisphere countries.

6 (b) ACTIVITIES.—Under the program, the Secretary
7 shall fund activities to work with Western Hemisphere
8 countries to—

9 (1) assist the countries in formulating and
10 adopting changes in economic policies and other poli-
11 cies to—

12 (A) increase the production of energy sup-
13 plies; and

14 (B) improve energy efficiency; and

15 (2) assist in the development and transfer of
16 energy supply and efficiency technologies that would
17 have a beneficial impact on world energy markets.

18 (c) UNIVERSITY PARTICIPATION.—To the extent
19 practicable, the Secretary shall carry out the program
20 under this section with the participation of universities so
21 as to take advantage of the acceptance of universities by
22 Western Hemisphere countries as sources of unbiased
23 technical and policy expertise when assisting the Secretary
24 in—

25 (1) evaluating new technologies;

26 (2) resolving technical issues;

1 (3) working with those countries in the develop-
2 ment of new policies; and

3 (4) training policymakers, particularly in the
4 case of universities that involve the participation of
5 minority students, such as Hispanic-serving institu-
6 tions and Historically Black Colleges and Univer-
7 sities.

8 (d) AUTHORIZATION OF APPROPRIATIONS.—There
9 are authorized to be appropriated to carry out this
10 section—

11 (1) \$8,000,000 for fiscal year 2004;

12 (2) \$10,000,000 for fiscal year 2005;

13 (3) \$13,000,000 for fiscal year 2006;

14 (4) \$16,000,000 for fiscal year 2007; and

15 (5) \$19,000,000 for fiscal year 2008.

16 **[SEC. ____83. WASTE REDUCTION AND USE OF ALTER-**
17 **NATIVES.**

18 (a) GRANT AUTHORITY.—The Secretary is author-
19 ized to make a single grant to a qualified institution to
20 examine and develop the feasibility of burning post-con-
21 sumer carpet in cement kilns as an alternative energy
22 source. The purposes of the grant shall include
23 determining—

24 (1) how post-consumer carpet can be burned
25 without disrupting kiln operations;

1 (2) the extent to which overall kiln emissions
2 may be reduced;

3 (3) the emissions of air pollutants and other
4 relevant environmental impacts; and

5 (4) how this process provides benefits to both
6 cement kiln operations and carpet suppliers.

7 (b) QUALIFIED INSTITUTION.—For the purposes of
8 subsection (a), a qualified institution is a research-inten-
9 sive institution of higher education with demonstrated ex-
10 pertise in the fields of fiber recycling and logistical mod-
11 eling of carpet waste collection and preparation. **]**

12 **Subtitle H—Management**

13 **SEC. ___91. AVAILABILITY OF FUNDS.**

14 Funds authorized to be appropriated to the Depart-
15 ment under this title shall remain available until expended.

16 **SEC. ___92. COST SHARING.**

17 (a) RESEARCH AND DEVELOPMENT.—Except as oth-
18 erwise provided in this title, for research and development
19 programs carried out under this title the Secretary shall
20 require a commitment from non-Federal sources of at
21 least 20 percent of the cost of the project. Cost sharing
22 is not required for research and development of a basic
23 or fundamental nature.

24 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
25 TION.—Except as otherwise provided in this title, the Sec-

1 retary shall require at least 50 percent of the costs directly
2 and specifically related to any demonstration or commer-
3 cial application project under this title to be provided from
4 non-Federal sources. The Secretary may reduce the non-
5 Federal requirement under this subsection if the Secretary
6 determines that the reduction is necessary and appropriate
7 considering the technological risks involved in the project
8 and is necessary to meet the objectives of this title.

9 (c) **CALCULATION OF AMOUNT.**—In calculating the
10 amount of the non-Federal commitment under subsection
11 (a) or (b), the Secretary may include personnel, services,
12 equipment, and other resources.

13 **SEC. ___93. MERIT REVIEW OF PROPOSALS.**

14 Awards of funds authorized under this title shall be
15 made only after an impartial review of the scientific and
16 technical merit of the proposals for such awards has been
17 carried out by or for the Department.

18 **SEC. ___94. EXTERNAL TECHNICAL REVIEW OF DEPART-**
19 **MENTAL PROGRAMS.**

20 (a) **NATIONAL ENERGY RESEARCH AND DEVELOP-**
21 **MENT ADVISORY BOARDS.**—(1) The Secretary shall estab-
22 lish one or more advisory boards to review Department
23 research, development, demonstration, and commercial ap-
24 plication programs in energy efficiency, renewable energy,
25 nuclear energy, and fossil energy.

1 (2) The Secretary may designate an existing advisory
2 board within the Department to fulfill the responsibilities
3 of an advisory board under this subsection, and may enter
4 into appropriate arrangements with the National Academy
5 of Sciences to establish such an advisory board.

6 (b) UTILIZATION OF EXISTING COMMITTEES.—The
7 Secretary shall continue to use the scientific program advi-
8 sory committees chartered under the Federal Advisory
9 Committee Act (5 U.S.C. App.) by the Office of Science
10 to oversee research and development programs under that
11 Office.

12 (c) MEMBERSHIP.— Each advisory board under this
13 section shall consist of persons with appropriate expertise
14 representing a diverse range of interests.

15 (d) MEETINGS AND PURPOSES.—Each advisory
16 board under this section shall meet at least semiannually
17 to review and advise on the progress made by the respec-
18 tive research, development, demonstration, and commer-
19 cial application program or programs. The advisory board
20 shall also review the measurable cost and performance-
21 based goals for such programs as established under sec-
22 tion ____01(b), and the progress on meeting such goals.

23 (e) PERIODIC REVIEWS AND ASSESSMENTS.—The
24 Secretary shall enter into appropriate arrangements with
25 the National Academy of Sciences to conduct periodic re-

1 views and assessments of the programs authorized by this
2 title, the measurable cost and performance-based goals for
3 such programs as established under section ____01(b), if
4 any, and the progress on meeting such goals. Such reviews
5 and assessments shall be conducted every 5 years, or more
6 often as the Secretary considers necessary, and the Sec-
7 retary shall transmit to the Congress reports containing
8 the results of all such reviews and assessments.

9 **SEC. ____95. IMPROVED COORDINATION OF TECHNOLOGY**

10 **TRANSFER ACTIVITIES.**

11 (a) **TECHNOLOGY TRANSFER COORDINATOR.**—The
12 Secretary shall designate a Technology Transfer Coordi-
13 nator to perform oversight of and policy development for
14 technology transfer activities at the Department. The
15 Technology Transfer Coordinator shall coordinate the ac-
16 tivities of the Technology Transfer Working Group, shall
17 oversee the expenditure of funds allocated to the Tech-
18 nology Transfer Working Group, and shall coordinate with
19 each technology partnership ombudsman appointed under
20 section 11 of the Technology Transfer Commercialization
21 Act of 2000 (42 U.S.C. 7261e).

22 (b) **TECHNOLOGY TRANSFER WORKING GROUP.**—
23 The Secretary shall establish a Technology Transfer
24 Working Group, which shall consist of representatives of

1 the National Laboratories and single-purpose research fa-
2 cilities, to—

3 (1) coordinate technology transfer activities oc-
4 ccurring at National Laboratories and single-purpose
5 research facilities;

6 (2) exchange information about technology
7 transfer practices, including alternative approaches
8 to resolution of disputes involving intellectual prop-
9 erty rights and other technology transfer matters;
10 and

11 (3) develop and disseminate to the public and
12 prospective technology partners information about
13 opportunities and procedures for technology transfer
14 with the Department, including those related to al-
15 ternative approaches to resolution of disputes involv-
16 ing intellectual property rights and other technology
17 transfer matters.

18 (c) TECHNOLOGY TRANSFER RESPONSIBILITY.—

19 Nothing in this section shall affect the technology transfer
20 responsibilities of Federal employees under the Stevenson-
21 Wydler Technology Innovation Act of 1980 (15 U.S.C.
22 3701 et seq.).

1 **SEC. ___96. TECHNOLOGY INFRASTRUCTURE PROGRAM.**

2 (a) ESTABLISHMENT.—The Secretary shall establish
3 a Technology Infrastructure Program in accordance with
4 this section.

5 (b) PURPOSE.—The purpose of the Technology Infra-
6 structure Program shall be to improve the ability of Na-
7 tional Laboratories and single-purpose research facilities
8 to support departmental missions by—

9 (1) stimulating the development of technology
10 clusters that can support departmental missions at
11 the National Laboratories or single-purpose research
12 facilities;

13 (2) improving the ability of National Labora-
14 tories and single-purpose research facilities to lever-
15 age and benefit from commercial research, tech-
16 nology, products, processes, and services; and

17 (3) encouraging the exchange of scientific and
18 technological expertise between National Labora-
19 tories or single-purpose research facilities and enti-
20 ties that can support departmental missions at the
21 National Laboratories or single-purpose research fa-
22 cilities, such as institutions of higher education;
23 technology-related business concerns; nonprofit insti-
24 tutions; and agencies of State, tribal, or local gov-
25 ernments.

1 (c) PROJECTS.—The Secretary shall authorize the
2 Director of each National Laboratory or single-purpose re-
3 search facility to implement the Technology Infrastructure
4 Program at such National Laboratory or facility through
5 projects that meet the requirements of subsections (d) and
6 (e).

7 (d) PROGRAM REQUIREMENTS.—Each project funded
8 under this section shall meet the following requirements:

9 (1) Each project shall include at least one of
10 each of the following entities: a business; an institu-
11 tion of higher education; a nonprofit institution; and
12 an agency of a State, local, or tribal government.

13 (2) Not less than 50 percent of the costs of
14 each project funded under this section shall be pro-
15 vided from non-Federal sources. The calculation of
16 costs paid by the non-Federal sources to a project
17 shall include cash, personnel, services, equipment,
18 and other resources expended on the project after
19 start of the project. Independent research and devel-
20 opment expenses of Government contractors that
21 qualify for reimbursement under section 3109205
22 0918(e) of the Federal Acquisition Regulations
23 issued pursuant to section 25(c)(1) of the Office of
24 Federal Procurement Policy Act (41 U.S.C.
25 421(c)(1)) may be credited toward costs paid by

1 non-Federal sources to a project, if the expenses
2 meet the other requirements of this section.

3 (3) All projects under this section shall be com-
4 petitively selected using procedures determined by
5 the Secretary.

6 (4) Any participant that receives funds under
7 this section may use generally accepted accounting
8 principles for maintaining accounts, books, and
9 records relating to the project.

10 (5) No Federal funds shall be made available
11 under this section for construction or any project for
12 more than 5 years.

13 (e) SELECTION CRITERIA.—(1) The Secretary shall
14 allocate funds under this section only if the Director of
15 the National Laboratory or single-purpose research facil-
16 ity managing the project determines that the project is
17 likely to improve the ability of the National Laboratory
18 or single-purpose research facility to achieve technical suc-
19 cess in meeting departmental missions.

20 (2) The Secretary shall consider the following criteria
21 in selecting a project to receive Federal funds:

22 (A) The potential of the project to promote the
23 development of a commercially sustainable tech-
24 nology cluster following the period of Department in-
25 vestment, which will derive most of the demand for

1 its products or services from the private sector, and
2 which will support departmental missions at the par-
3 ticipating National Laboratory or single-purpose re-
4 search facility.

5 (B) The potential of the project to promote the
6 use of commercial research, technology, products,
7 processes, and services by the participating National
8 Laboratory or single-purpose research facility to
9 achieve its mission or the commercial development of
10 technological innovations made at the participating
11 National Laboratory or single-purpose research facil-
12 ity.

13 (C) The extent to which the project involves a
14 wide variety and number of institutions of higher
15 education, nonprofit institutions, and technology-re-
16 lated business concerns that can support the mis-
17 sions of the participating National Laboratory or
18 single-purpose research facility and that will make
19 substantive contributions to achieving the goals of
20 the project.

21 (D) The extent to which the project focuses on
22 promoting the development of technology-related
23 business concerns that are small businesses or in-
24 volves such small businesses substantively in the
25 project.

1 (E) Such other criteria as the Secretary deter-
2 mines to be appropriate.

3 (f) ALLOCATION.—In allocating funds for projects
4 approved under this section, the Secretary shall provide—

5 (1) the Federal share of the project costs; and

6 (2) additional funds to the National Laboratory
7 or single-purpose research facility managing the
8 project to permit the National Laboratory or single-
9 purpose research facility to carry out activities relat-
10 ing to the project, and to coordinate such activities
11 with the project.

12 (g) REPORT TO CONGRESS.—Not later than July 1,
13 2006, the Secretary shall report to Congress on whether
14 the Technology Infrastructure Program should be contin-
15 ued and, if so, how the program should be managed.

16 (h) DEFINITIONS.—In this section:

17 (1) The term “technology cluster” means a con-
18 centration of technology-related business concerns,
19 institutions of higher education, or nonprofit institu-
20 tions that reinforce each other’s performance in the
21 areas of technology development through formal or
22 informal relationships.

23 (2) The term “technology-related business con-
24 cern” means a for-profit corporation, company, asso-
25 ciation, firm, partnership, or small business concern

1 that conducts scientific or engineering research; de-
2 velops new technologies; manufactures products
3 based on new technologies; or performs technological
4 services.

5 (i) AUTHORIZATION OF APPROPRIATIONS.—There
6 are authorized to be appropriated to the Secretary for ac-
7 tivities under this section \$10,000,000 for each of fiscal
8 years 2004, 2005, and 2006.

9 **SEC. ___ 97. REPROGRAMMING.**

10 (a) DISTRIBUTION REPORT.—Not later than 60 days
11 after the date of the enactment of an Act appropriating
12 amounts authorized under this title, the Secretary shall
13 transmit to the appropriate authorizing committees of the
14 Congress a report explaining how such amounts will be
15 distributed among the authorizations contained in this
16 title.

17 (b) PROHIBITION.—(1) No amount identified under
18 subsection (a) shall be reprogrammed if such reprogram-
19 ming would result in an obligation which changes an indi-
20 vidual distribution required to be reported under sub-
21 section (a) by more than 5 percent unless the Secretary
22 has transmitted to the appropriate authorizing committees
23 of the Congress a report described in subsection (c) and
24 a period of 30 days has elapsed after such committees re-
25 ceive the report.

1 (2) In the computation of the 30-day period described
2 in paragraph (1), there shall be excluded any day on which
3 either House of Congress is not in session because of an
4 adjournment of more than 3 days to a day certain.

5 (c) REPROGRAMMING REPORT.—A report referred to
6 in subsection (b)(1) shall contain a full and complete
7 statement of the action proposed to be taken and the facts
8 and circumstances relied on in support of the proposed
9 action.

10 **SEC. ____98. CONSTRUCTION WITH OTHER LAWS.**

11 Except as otherwise provided in this title, the Sec-
12 retary shall carry out the research, development, dem-
13 onstration, and commercial application programs,
14 projects, and activities authorized by this title in accord-
15 ance with the applicable provisions of the Atomic Energy
16 Act of 1954 (42 U.S.C. 2011 et seq.), the Federal Non-
17 nuclear Research and Development Act of 1974 (42
18 U.S.C. 5901 et seq.), the Energy Policy Act of 1992 (42
19 U.S.C. 13201 et seq.), the Stevenson-Wydler Technology
20 Innovation Act of 1980 (15 U.S.C. 3701 et seq.), chapter
21 18 of title 35, United States Code (commonly referred to
22 as the Bayh-Dole Act), and any other Act under which
23 the Secretary is authorized to carry out such activities.

1 **SEC. ___99. REPORT ON RESEARCH AND DEVELOPMENT**
2 **PROGRAM EVALUATION METHODOLOGIES.**

3 Not later than 180 days after the date of enactment
4 of this Act, the Secretary shall enter into appropriate ar-
5 rangements with the National Academy of Sciences to in-
6 vestigate and report on the scientific and technical merits
7 of any evaluation methodology currently in use or pro-
8 posed for use in relation to the scientific and technical pro-
9 grams of the Department by the Secretary or other Fed-
10 eral official. Not later than 6 months after receiving the
11 report of the National Academy, the Secretary shall sub-
12 mit such report to Congress, along with any other views
13 or plans of the Secretary with respect to the future use
14 of such evaluation methodology.