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REPT. 109–216
Part 1

ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACT OF 2005

R E P O R T

OF THE

COMMITTEE ON SCIENCE

ON

H.R. 610

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JULY 29, 2005.—Ordered to be printed

Mr. BOEHLERT, from the Committee on Science, submitted the following

R E P O R T

together with

ADDITIONAL VIEWS

[To accompany H.R. 610]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, to whom was referred the bill (H.R. 610) to provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

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I. AMENDMENT

The amendment is as follows:
Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Energy Research, Development, Demonstration, and Commercial Application Act of 2005".

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

Sec. 1. Short title; table of contents.
Sec. 2. Definitions.

TITLE I—SCIENCE PROGRAMS

Sec. 101. Office of Science programs.
Sec. 102. Systems biology program.
Sec. 103. Catalysis Research and Development Program.
Sec. 104. Hydrogen.
Sec. 105. Advanced scientific computing research.
Sec. 106. Fusion Energy Sciences program.
Sec. 107. Science and Technology Scholarship Program.
Sec. 108. Office of Scientific and Technical Information.
Sec. 109. Science and engineering pilot program.
Sec. 110. Authorization of appropriations.

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

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

TITLE III—ENERGY EFFICIENCY

Subtitle A—Vehicles, Buildings, and Industries

Sec. 301. Programs.
Sec. 302. Vehicles.
Sec. 303. Buildings.
Sec. 304. Industries.
Sec. 305. Demonstration and commercial application.
Sec. 306. Secondary electric vehicle battery use program.
Sec. 307. Next generation lighting initiative.
Sec. 308. Definitions.
Sec. 309. Authorization of appropriations.
Sec. 310. Limitation on use of funds.

Subtitle B—Distributed Energy and Electric Energy Systems

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

TITLE IV—RENEWABLE ENERGY

Sec. 401. Findings.
Sec. 402. Definitions.
Sec. 403. Programs.
Sec. 404. Solar.
Sec. 405. Bioenergy programs.
Sec. 406. Wind.
Sec. 407. Geothermal.
Sec. 408. Photovoltaic demonstration program.
Sec. 409. Additional programs.
Sec. 410. Analysis and evaluation.
Sec. 411. Authorization of appropriations.

TITLE V—NUCLEAR ENERGY PROGRAMS

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

Subtitle A—Nuclear Energy Research Programs

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

Subtitle B—Next Generation Nuclear Plant Program

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

TITLE VI—FOSSIL ENERGY

Subtitle A—Research Programs

Sec. 601. Enhanced fossil energy research and development programs.
Sec. 602. Fossil research and development.
Sec. 603. Oil and gas research and development.
Sec. 604. Transportation fuels.
Sec. 605. Fuel cells.
Sec. 606. Carbon dioxide capture research and development.
Sec. 607. Authorization of appropriations.

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

Sec. 611. Program authority.
Sec. 612. Ultra-deepwater Program.
Sec. 613. Unconventional natural gas and other petroleum resources Program.
Sec. 614. Additional requirements for awards.
Sec. 615. Advisory committees.
Sec. 616. Limits on participation.
Sec. 617. Sunset.
Sec. 618. Definitions.
Sec. 619. Funding.

TITLE VII—HYDROGEN

Sec. 701. Definitions.
Sec. 702. Plan.
Sec. 703. Programs.
Sec. 704. Interagency task force.
Sec. 705. Advisory Committee.
Sec. 706. External review.
Sec. 707. Miscellaneous provisions.
Sec. 708. Savings clause.
Sec. 709. Authorization of appropriations.

TITLE VIII—ADVANCED VEHICLES

Subtitle A—Pilot Program

Sec. 801. Definitions.
Sec. 802. Pilot program.
Sec. 803. Reports to Congress.
Sec. 804. Authorization of appropriations.

Subtitle B—Clean School Buses

Sec. 811. Definitions.
Sec. 812. Program for replacement of certain school buses with clean school buses.
Sec. 813. Diesel retrofit program.
Sec. 814. Fuel cell school buses.

Subtitle C—Fuel Cell Transit Bus Demonstration

Sec. 821. Fuel cell transit bus demonstration.

TITLE IX—CLEAN COAL POWER INITIATIVE

Sec. 901. Authorization of appropriations.
Sec. 902. Project criteria.
Sec. 903. Report.
Sec. 904. Clean coal centers of excellence.

TITLE X—IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS

Sec. 1001. Improved coordination and management of civilian science and technology programs.

SEC. 2. DEFINITIONS.

For purposes of this Act:

(1) APPLIED PROGRAMS.—The term "applied programs" means the research, development, demonstration, and commercial application programs of the Department concerning energy efficiency, renewable energy, nuclear energy, fossil energy, and electricity transmission and distribution.

(2) BIOMASS.—The term "biomass" means—

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

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

(C) any waste material that can be converted to energy, is segregated from other waste materials, and is derived from—

(i) any of the following forest-related resources: mill residues, precommercial thinnings, slash, brush, or otherwise nonmerchantable material; or

(ii) wood waste materials, including waste pallets, crates, dunnage, manufacturing and construction wood wastes (other than pressure-treated, chemically-treated, or painted wood wastes), and landscape or right-of-way tree trimmings, but not including municipal solid waste, gas derived from the biodegradation of municipal solid waste, or paper that is commonly recycled.

(3) DEPARTMENT.—The term "Department" means the Department of Energy.

(4) DEPARTMENTAL MISSION.—The term "departmental mission" means any of the functions vested in the Secretary of Energy by the Department of Energy Organization Act (42 U.S.C. 7101 et seq.) or other law.

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

(6) NATIONAL LABORATORY.—The term "National Laboratory" means any of the following laboratories owned by the Department:

(A) Ames Laboratory.
(B) Argonne National Laboratory.
(C) Brookhaven National Laboratory.
(D) Fermi National Accelerator Laboratory.
(E) Idaho National Laboratory.
(F) Lawrence Berkeley National Laboratory.
(G) Lawrence Livermore National Laboratory.
(H) Los Alamos National Laboratory.
(I) National Energy Technology Laboratory.
(J) National Renewable Energy Laboratory.
(K) Oak Ridge National Laboratory.
(L) Pacific Northwest National Laboratory.
(M) Princeton Plasma Physics Laboratory.
(N) Sandia National Laboratories.
(O) Savannah River National Laboratory.
(P) Stanford Linear Accelerator Center.
(Q) Thomas Jefferson National Accelerator Facility.

(7) RENEWABLE ENERGY.—The term "renewable energy" means energy from wind, sunlight, the flow of water, heat from the Earth, or biomass that can be converted into a usable form such as process heat, electricity, fuel, or space heat.

(8) SECRETARY.—The term "Secretary" means the Secretary of Energy.

(9) STATE.—The term "State" means any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the United States Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, and any other commonwealth, territory, or possession of the United States.

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

(11) USER FACILITY.—The term "user facility" means a research and development facility supported, in whole or in part, by Departmental funds that is open, at a minimum, to all qualified United States researchers.

TITLE I—SCIENCE PROGRAMS

SEC. 101. OFFICE OF SCIENCE PROGRAMS.

(a) IN GENERAL.—The Secretary shall conduct, through the Office of Science, programs of research, development, demonstration, and commercial application in high energy physics, nuclear physics, biological and environmental research, basic energy sciences, advanced scientific computing research, and fusion energy sciences, including activities described in this title. The programs shall include support for facilities and infrastructure, education, outreach, information, analysis, and coordination activities.

(b) RARE ISOTOPE ACCELERATOR.—

(1) ESTABLISHMENT.—The Secretary shall construct and operate a Rare Isotope Accelerator. The Secretary shall commence construction no later than September 30, 2008.

(2) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary such sums as may be necessary to carry out this subsection. The Secretary shall not spend more than $1,100,000,000 in Federal

funds for all activities associated with the Rare Isotope Accelerator prior to operation.

SEC. 102. SYSTEMS BIOLOGY PROGRAM.

(a) PROGRAM.—

(1) ESTABLISHMENT.—The Secretary shall establish a research, development, and demonstration program in genetics, protein science, and computational biology to support the energy, national security, and environmental missions of the Department.

(2) GRANTS.—The program shall support individual researchers and multidisciplinary teams of researchers through competitive, merit-reviewed grants.

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

(b) GOALS.—The program shall have the goal of developing technologies and methods based on the biological functions of genomes, microbes, and plants that—

(1) can facilitate the production of fuels, including hydrogen;

(2) convert carbon dioxide to organic carbon;

(3) detoxify soils and water, including at Departmental facilities, contaminated with heavy metals and radiological materials; and

(4) address other Department missions as identified by the Secretary.

(c) PLAN.—

(1) DEVELOPMENT OF PLAN.—Not later than 1 year after the date of enactment of this Act, the Secretary shall prepare and transmit to Congress a research plan describing how the program authorized pursuant to this section will be undertaken to accomplish the program goals established in subsection (b).

(2) REVIEW OF PLAN.—The Secretary shall contract with the National Academy of Sciences to review the research plan developed under this subsection. The Secretary shall transmit the review to Congress not later than 18 months after transmittal of the research plan under paragraph (1), along with the Secretary's response to the recommendations contained in the review.

(d) USER FACILITIES AND ANCILLARY EQUIPMENT.—Within the funds authorized to be appropriated pursuant to this title, the amounts specified under section 110(b)(1), (c)(1), (d)(1), (e)(1), and (f)(1) shall be available for projects to develop, plan, construct, acquire, or operate special equipment, instrumentation, or facilities, including user facilities, for researchers conducting research, development, demonstration, and commercial application in systems biology and proteomics and associated biological disciplines.

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

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

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

(A) on human cells or human subjects; or

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

SEC. 103. CATALYSIS RESEARCH AND DEVELOPMENT PROGRAM.

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

(1) enable molecular-level catalyst design by coupling experimental and computational approaches;

(2) enable nanoscale, high-throughput synthesis, assay, and characterization; and

(3) synthesize catalysts with specific site architectures.

(b) PROGRAM ACTIVITIES.—In carrying out the program under this section, the Secretary shall—

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

(2) develop, plan, construct, acquire, or operate special equipment or facilities, including user facilities;

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

(4) coordinate research and development activities with industry and other Federal agencies.

SEC. 104. HYDROGEN.

The Secretary shall conduct a program of fundamental research and development in support of programs authorized in title VII of this Act.

SEC. 105. ADVANCED SCIENTIFIC COMPUTING RESEARCH.

The Secretary shall conduct an advanced scientific computing research and development program, including in applied mathematics and the activities authorized by the Department of Energy High-End Computing Revitalization Act of 2004 (15 U.S.C. 5541 et seq.). The Secretary shall carry out this program with the goal of supporting departmental missions and providing the high-performance computational, networking, and workforce resources that are required for world leadership in science.

SEC. 106. FUSION ENERGY SCIENCES PROGRAM.

(a) DECLARATION OF POLICY.—It shall be the policy of the United States to conduct research, development, demonstration, and commercial application to provide for the scientific, engineering, and commercial infrastructure necessary to ensure that the United States is competitive with other nations in providing fusion energy for its own needs and the needs of other nations, including by demonstrating electric power or hydrogen production for the United States energy grid utilizing fusion energy at the earliest date possible.

(b) PLANNING.—

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall transmit to Congress a plan, with proposed cost estimates, budgets, and lists of potential international partners, for the implementation of the policy described in subsection (a). The plan shall ensure that—

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

(B) fusion science, technology, theory, advanced computation, modeling, and simulation are strengthened;

(C) new magnetic and inertial fusion research and development facilities are selected based on scientific innovation, cost effectiveness, and their potential to advance the goal of practical fusion energy at the earliest date possible, and those that are selected are funded at a cost-effective rate;

(D) communication of scientific results and methods between the fusion energy science community and the broader scientific and technology communities is improved;

(E) inertial confinement fusion facilities are utilized to the extent practicable for the purpose of inertial fusion energy research and development; and

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

(2) COSTS AND SCHEDULES.—Such plan shall also address the status of and, to the degree possible, costs and schedules for—

(A) the design and implementation of international or national facilities for the testing of fusion materials; and

(B) the design and implementation of international or national facilities for the testing and development of key fusion technologies.

(c) UNITED STATES PARTICIPATION IN ITER.—

(1) IN GENERAL.—The United States may participate in ITER only in accordance with this subsection.

(2) AGREEMENT.—

(A) IN GENERAL.—The Secretary is authorized to negotiate an agreement for United States participation in ITER.

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

(i) clearly define the United States financial contribution to construction and operating costs, as well as any other costs associated with the project;

(ii) ensure that the share of ITER's high-technology components manufactured in the United States is at least proportionate to the United States financial contribution to ITER;

(iii) ensure that the United States will not be financially responsible for cost overruns in components manufactured in other ITER participating countries;

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

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

(vi) provide the United States with a role in all collective decision-making related to ITER; and

(vii) describe the process for discontinuing or decommissioning ITER and any United States role in that process.

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

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

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

(B) a report describing the management structure of ITER and providing a fixed dollar estimate of the cost of United States participation in the construction of ITER, and 120 days have elapsed since that transmission;

(C) a report describing how United States participation in ITER will be funded without reducing funding for other programs in the Office of Science, including other fusion programs, and 60 days have elapsed since that transmission; and

(D) the plan required by paragraph (3) (but not the National Academy of Sciences review of that plan), and 60 days have elapsed since that transmission.

(5) ALTERNATIVE TO ITER.—If at any time during the negotiations on ITER, the Secretary determines that construction and operation of ITER is unlikely or infeasible, the Secretary shall send to Congress, as part of the budget request for the following year, a plan for implementing a domestic burning plasma experiment including costs and schedules for such a plan. The Secretary shall refine such plan in full consultation with the Fusion Energy Sciences Advisory Committee and shall also transmit such plan to the National Academy of Sciences for review.

(6) DEFINITIONS.—In this subsection:

(A) CONSTRUCTION.— The term "construction" means the physical construction of the ITER facility, and the physical construction, purchase, or manufacture of equipment or components that are specifically designed for the ITER facility, but does not mean the design of the facility, equipment, or components.

(B) ITER.—The term "ITER" means the international burning plasma fusion research project in which the President announced United States participation on January 30, 2003, or any similar international project.

SEC. 107. SCIENCE AND TECHNOLOGY SCHOLARSHIP PROGRAM.

(a) ESTABLISHMENT OF PROGRAM.—

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

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

(3) SERVICE AGREEMENTS.—To carry out the Program the Secretary shall enter into contractual agreements with individuals selected under paragraph (2) under which the individuals agree to serve as full-time employees of the Department, for the period described in subsection (f)(1), in positions needed by the Department and for which the individuals are qualified, in exchange for receiving a scholarship.

(b) SCHOLARSHIP ELIGIBILITY.—In order to be eligible to participate in the Program, an individual must—

(1) be enrolled or accepted for enrollment as a full-time graduate student at an institution of higher education in an academic program or field of study described in the list made available under subsection (d);

(2) be a United States citizen; and

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

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

(d) ELIGIBLE ACADEMIC PROGRAMS.—The Secretary shall make publicly available a list of academic programs and fields of study for which scholarships under the Program may be utilized, and shall update the list as necessary.

(e) SCHOLARSHIP REQUIREMENT.—

(1) IN GENERAL.—The Secretary may provide a scholarship under the Program for an academic year if the individual applying for the scholarship has submitted to the Secretary, as part of the application required under subsection (c), a proposed academic program leading to a degree in a program or field of study on the list made available under subsection (d).

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

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

(4) AUTHORIZED USES.—A scholarship provided under this section may be expended for tuition, fees, and other authorized expenses as established by the Secretary by regulation.

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

(f) PERIOD OF OBLIGATED SERVICE.—

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

(2) SCHEDULE FOR SERVICE.—

(A) IN GENERAL.—Except as provided in subparagraph (B), obligated service under paragraph (1) shall begin not later than 60 days after the individual obtains the educational degree for which the scholarship was provided.

(B) DEFERRAL.—The Secretary may defer the obligation of an individual to provide a period of service under paragraph (1) if the Secretary determines that such a deferral is appropriate. The Secretary shall prescribe the terms and conditions under which a service obligation may be deferred through regulation.

(g) PENALTIES FOR BREACH OF SCHOLARSHIP AGREEMENT.—

(1) FAILURE TO COMPLETE ACADEMIC TRAINING.—Scholarship recipients who fail to maintain a high level of academic standing, as defined by the Secretary by regulation, who are dismissed from their educational institutions for disciplinary reasons, or who voluntarily terminate academic training before graduation from the educational program for which the scholarship was awarded, shall be in breach of their contractual agreement and, in lieu of any service obligation arising under such agreement, shall be liable to the United States for repayment not later than 1 year after the date of default of all scholarship funds paid to them and to the institution of higher education on their behalf under the agreement, except as provided in subsection (h)(2). The repayment period may be extended by the Secretary when determined to be necessary, as established by regulation.

(2) FAILURE TO BEGIN OR COMPLETE THE SERVICE OBLIGATION OR MEET THE TERMS AND CONDITIONS OF DEFERMENT.—A scholarship recipient who, for any reason, fails to begin or complete a service obligation under this section after completion of academic training, or fails to comply with the terms and conditions of deferment established by the Secretary pursuant to subsection (f)(2)(B), shall be in breach of the contractual agreement. When a recipient breaches an agreement for the reasons stated in the preceding sentence, the recipient shall be liable to the United States for an amount equal to—

(A) the total amount of scholarships received by such individual under this section; plus

(B) the interest on the amounts of such awards which would be payable if at the time the awards were received they were loans bearing interest at the maximum legal prevailing rate, as determined by the Treasurer of the United States,

multiplied by 3.

(h) WAIVER OR SUSPENSION OF OBLIGATION.—

(1) DEATH OF INDIVIDUAL.—Any obligation of an individual incurred under the Program (or a contractual agreement thereunder) for service or payment shall be canceled upon the death of the individual.

(2) IMPOSSIBILITY OR EXTREME HARDSHIP.—The Secretary shall by regulation provide for the partial or total waiver or suspension of any obligation of service or payment incurred by an individual under the Program (or a contractual agreement thereunder) whenever compliance by the individual is impossible or would involve extreme hardship to the individual, or if enforcement of such obligation with respect to the individual would be contrary to the best interests of the Government.

(i) DEFINITIONS.—In this section the following definitions apply:

(1) COST OF ATTENDANCE.—The term "cost of attendance" has the meaning given that term in section 472 of the Higher Education Act of 1965 (20 U.S.C. 1087*ll*).

(2) PROGRAM.—The term "Program" means the Science and Technology Scholarship Program established under this section.

SEC. 108. OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION.

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

SEC. 109. SCIENCE AND ENGINEERING PILOT PROGRAM.

(a) ESTABLISHMENT OF CONSORTIUM.—Notwithstanding section 203, the Secretary shall award a grant to Oak Ridge Associated Universities to establish a university consortium to carry out a regional pilot program for enhancing scientific, technological, engineering, and mathematical literacy, creativity, and decisionmaking. The consortium shall include leading research universities, one or more universities that train substantial numbers of elementary and secondary school teachers, and, where appropriate, National Laboratories.

(b) PROGRAM ELEMENTS.—The program shall include—

(1) expanding strategic, formal partnerships among universities with strength in research, universities that train substantial numbers of elementary and secondary school teachers, and the private sector;

(2) combining Department expertise with one or more National Aeronautics and Space Administration Educator Resource Centers;

(3) developing programs to permit current and future teachers to participate in ongoing research projects at National Laboratories and research universities and to adapt lessons learned to the classroom;

(4) designing and implementing course work;

(5) designing and implementing a strategy for measuring and assessing progress under the program; and

(6) developing models for transferring knowledge gained under the pilot program to other institutions and areas of the country.

(c) REPORT.—Not later than 2 years after appropriations are first available for the program, the Secretary shall transmit to Congress a report outlining lessons learned and containing a plan for expanding the program nationwide. The Secretary may begin implementation of such plan for expansion of the program on October 1, 2008. The expansion of the program shall be subject to section 203.

SEC. 110. AUTHORIZATION OF APPROPRIATIONS.

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

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

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

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

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

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

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

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

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

(3) FUSION ENERGY SCIENCES.—For activities under section 106, excluding activities under subsection (c) of that section, $335,000,000.

(4) SCHOLARSHIP.—For the scholarship program described in section 107, $800,000.

(5) OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION.—For activities under section 108, $7,000,000.

(6) PILOT PROGRAM.—For activities under section 109, $4,000,000.

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

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

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

(3) FUSION ENERGY SCIENCES.—For activities under section 106, excluding activities under subsection (c) of that section, $349,000,000.

(4) SCHOLARSHIP.—For the scholarship program described in section 107, $1,600,000.

(5) OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION.—For activities under section 108, $7,500,000.

(6) PILOT PROGRAM.—For activities under section 109, $4,000,000.

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

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

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

(3) FUSION ENERGY SCIENCES.—For activities under section 106, excluding activities under subsection (c) of that section, $362,000,000.

(4) SCHOLARSHIP.—For the scholarship program described in section 107, $2,000,000.

(5) OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION.—For activities under section 108, $8,000,000.

(6) PILOT PROGRAM.—For activities under section 109, $4,000,000.

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

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

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

(3) FUSION ENERGY SCIENCES.—For activities under section 106, excluding activities under subsection (c) of that section, $377,000,000.

(4) SCHOLARSHIP.—For the scholarship program described in section 107, $2,000,000.

(5) OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION.—For activities under section 108, $8,000,000.

(6) PILOT PROGRAM.—For activities under section 109, $8,000,000.

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

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

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

(3) FUSION ENERGY SCIENCES.—For activities under section 106, excluding activities under subsection (c) of that section, $393,000,000.

(4) SCHOLARSHIP.—For the scholarship program described in section 107, $2,000,000.

(5) OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION.—For activities under section 108, $8,500,000.

(6) PILOT PROGRAM.—For activities under section 109, $8,000,000.

(g) ITER CONSTRUCTION.—From amounts authorized under subsection (a) and in addition to amounts authorized under subsections (b)(3), (c)(3), (d)(3), (e)(3), and (f)(3), there are authorized to be appropriated to the Secretary such sums as may be necessary for ITER construction, consistent with the limitations of section 106(c).

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

SEC. 201. COST SHARING.

(a) RESEARCH AND DEVELOPMENT.—Except as otherwise provided in this Act, for research and development programs carried out under this Act, the Secretary shall require a commitment from non-Federal sources of at least 20 percent of the cost of the project. The Secretary may reduce or eliminate the non-Federal requirement under this subsection if the Secretary determines that the research and development is of a basic or fundamental nature.

(b) DEMONSTRATION AND COMMERCIAL APPLICATION.—Except as otherwise provided in this Act, the Secretary shall require at least 50 percent of the costs related to any demonstration or commercial application activities under this Act to be pro-

vided from non-Federal sources. The Secretary may reduce the non-Federal requirement under this subsection if the Secretary determines that the reduction is necessary and appropriate considering the technological risks involved in the project and is necessary to meet the objectives of this Act.

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

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

SEC. 202. REPROGRAMMING.

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

(b) REPROGRAMMING LETTER.—No amount authorized by this Act shall be obligated or expended for a purpose inconsistent with the appropriations Act appropriating such amount, the report accompanying such appropriations Act, or a distribution report transmitted under subsection (a) if such obligation or expenditure would change an individual amount, as represented in such an Act, report, or distribution report, by more than 2 percent or $2,000,000, whichever is smaller, unless the Secretary has transmitted to Congress a letter of explanation and a period of 30 days has elapsed after Congress receives the letter.

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

SEC. 203. MERIT-BASED COMPETITION.

(a) COMPETITIVE MERIT REVIEW.—Awardees of funds authorized under this Act shall be selected through open competitions. Funds shall be competitively awarded only after an impartial review of the scientific and technical merit of the proposals for such awards has been carried out by or for the Department on the basis of criteria outlined by the Secretary in the solicitation of proposals.

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

(1) Institutions of higher education.
(2) National Laboratories.
(3) Nonprofit and for-profit private entities.
(4) State and local governments.
(5) Consortia of entities described in paragraphs (1) through (4).

(c) CONGRESSIONAL NOTIFICATION.—The Secretary shall notify Congress within 30 days after awarding more than $500,000 through a competition described in subsection (b) that is limited to 1 of the categories described in paragraphs (1) through (4) of subsection (b).

(d) WAIVERS.—The Secretary may waive the requirement under subsection (a) requiring competition if the Secretary considers it necessary to more quickly advance research, development, demonstration, or commercial application activities. The Secretary shall notify Congress within 30 days when a waiver is granted under this subsection. The Secretary may not delegate the waiver authority under this subsection for awards over $500,000.

SEC. 204. EXTERNAL TECHNICAL REVIEW OF DEPARTMENTAL PROGRAMS.

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

(1) IN GENERAL.—The Secretary shall establish one or more advisory committees to review and advise the Department's applied programs in the following areas:

(A) Energy efficiency.
(B) Renewable energy.
(C) Nuclear energy.
(D) Fossil energy.

(2) EXISTING ADVISORY COMMITTEES.—The Secretary may designate an existing advisory committee within the Department to fulfill the responsibilities of an advisory committee under this subsection.

(b) OFFICE OF SCIENCE ADVISORY COMMITTEES.—

(1) USE OF EXISTING COMMITTEES.—Except as otherwise provided under the Federal Advisory Committee Act, the Secretary shall continue to use the scientific program advisory committees chartered under the Federal Advisory Committee Act (5 U.S.C. App.) by the Office of Science to oversee research and development programs under that Office.

(2) REPORT.—Before the Department issues any new guidance regarding the membership for Office of Science scientific program advisory committees, the Secretary shall transmit a report to the Congress outlining the reasons for the proposed changes, and 60 days must have elapsed after transmittal of the report before the Department may implement those changes.

(3) SCIENCE ADVISORY COMMITTEE.—

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

(B) RESPONSIBILITIES.—The Science Advisory Committee shall—

(i) advise the Director of the Office of Science on science issues;

(ii) advise the Director of the Office of Science with respect to the well-being and management of the National Laboratories and Department research facilities;

(iii) advise the Director of the Office of Science with respect to education and workforce training activities required for effective short-term and long-term basic and applied research activities of the Office of Science; and

(iv) advise the Director of the Office of Science with respect to the well-being of the university research programs supported by the Office of Science.

(c) MEMBERSHIP.—Each member of an advisory committee appointed under this section shall have significant scientific, technical, or other appropriate expertise. The membership of each committee shall represent a wide range of expertise, including, to the extent practicable, members with expertise from outside the disciplines covered by the program, and a diverse set of interests.

(d) MEETINGS AND PURPOSES.—Each advisory committee under this section shall meet at least semiannually to review and advise on the progress made by the respective research, development, demonstration, and commercial application program or programs. The advisory committee shall also review the measurable cost and performance-based goals for the applied programs, and the progress on meeting such goals.

(e) REVIEW AND ASSESSMENT.—Not later than 6 months after the date of enactment of this Act, the Secretary shall enter into arrangements with the National Academy of Sciences to conduct reviews and assessments of the programs authorized by this Act, the measurable cost and performance-based goals for the applied programs, and the progress in meeting such goals. Such reviews and assessments shall be completed and reports containing the results of all such reviews and assessments transmitted to the Congress not later than 2 years after the date of enactment of this Act.

SEC. 205. COMPETITIVE AWARD OF MANAGEMENT CONTRACTS.

None of the funds authorized to be appropriated to the Secretary by this Act may be used to award a management and operating contract for a National Laboratory (excluding those named in subparagraphs (G), (H), (N), (O) of section 2(6)), unless such contract is competitively awarded, or the Secretary grants, on a case-by-case basis, a waiver. The Secretary may not delegate the authority to grant such a waiver and shall submit to the Congress a report notifying it of the waiver, and setting forth the reasons for the waiver, at least 60 days prior to the date of the award of such contract.

SEC. 206. NATIONAL LABORATORY DESIGNATION.

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

SEC. 207. REPORT ON EQUAL EMPLOYMENT OPPORTUNITY PRACTICES.

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

(1) a thorough review of each laboratory contractor's equal employment opportunity policies, including promotion to management and professional positions and pay raises;

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

(3) a description of how equal employment opportunity practices at the laboratories are treated in the contract and in calculating award fees for each contractor;

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

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

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

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

SEC. 208. USER FACILITY BEST PRACTICES PLAN.

The Secretary shall not allow any Department facility to begin functioning as a user facility after the date of enactment of this Act until the Secretary, for that facility—

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

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

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

(C) be operated in a safe and fiscally prudent manner; and

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

SEC. 209. SUPPORT FOR SCIENCE AND ENERGY INFRASTRUCTURE AND FACILITIES.

(a) STRATEGY.—The Secretary shall develop and implement a strategy for infrastructure and facilities supported primarily from the Office of Science and the applied programs at each National Laboratory and Department research facility. Such strategy shall provide cost-effective means for—

(1) maintaining existing facilities and infrastructure, as needed;

(2) closing unneeded facilities;

(3) making facility modifications; and

(4) building new facilities.

(b) REPORT.—

(1) REQUIREMENT.—The Secretary shall prepare and transmit to the Congress not later than June 1, 2007, a report summarizing the strategies developed under subsection (a).

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

(A) the current priority list of proposed facilities and infrastructure projects, including cost and schedule requirements;

(B) a current 10-year plan that demonstrates the reconfiguration of its facilities and infrastructure to meet its missions and to address its long-term operational costs and return on investment;

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

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

SEC. 210. COORDINATION PLAN.

(a) IN GENERAL.—The Secretary shall develop a coordination plan to improve coordination and collaboration in research, development, demonstration, and commercial application activities across Department organizational boundaries.

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

(1) how the Secretary will ensure that the applied programs are coordinating their activities, including a description of specific research questions that cross organizational boundaries and of how the relevant applied programs are coordinating their efforts to answer those questions, and how such cross-cutting research questions will be identified in the future;

(2) how the Secretary will ensure that research that has been supported by the Office of Science is being or will be used by the applied programs, including a description of specific Office of Science-supported research that is relevant to the applied programs and of how the applied programs have used or will use that research; and

(3) a description of how the Secretary will ensure that the research agenda of the Office of Science includes research questions of concern to the applied programs, including a description of specific research questions that the Office of Science will address to assist the applied programs.

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

(d) CONFERENCE.—Not less than 6 months after the date of enactment of this Act, the Secretary shall convene a conference of program managers from the Office of Science and the applied programs to review ideas and explore possibilities for effective cross-program collaboration. The Secretary also shall invite participation rel-

evant Federal agencies and other programs in the Federal Government conducting relevant research, and other stakeholders as appropriate.

SEC. 211. AVAILABILITY OF FUNDS.

Funds appropriated to the Secretary for activities authorized under this Act shall remain available for three years. Funds that are not obligated at the end of three years shall be returned to the Treasury.

TITLE III—ENERGY EFFICIENCY

Subtitle A—Vehicles, Buildings, and Industries

SEC. 301. PROGRAMS.

(a) IN GENERAL.—The Secretary shall conduct programs of energy efficiency research, development, demonstration, and commercial application, including activities described in this subtitle. Such programs shall be focused on the following objectives:

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

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

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

(4) Improving the Nation's energy security.

(5) Reducing the environmental impact of energy-related activities.

(b) GOALS.—

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

(2) SUBSEQUENT TRANSMITTALS.—The Secretary shall transmit to the Congress, along with the President's annual budget request for each fiscal year after 2007, a report containing—

(A) a description, including quantitative analysis, of progress in achieving performance goals transmitted under paragraph (1), as compared to the baselines transmitted under paragraph (1); and

(B) any amendments to such goals.

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

SEC. 302. VEHICLES.

The Secretary shall conduct a program of research, development, demonstration, and commercial application of advanced, cost-effective technologies to improve the energy efficiency and environmental performance of light-duty and heavy-duty vehicles, including—

(1) hybrid and electric propulsion systems, including plug-in hybrid systems;

(2) advanced engines, including combustion engines;

(3) advanced materials, including high strength, lightweight materials, such as nanostructured materials, composites, multimaterial parts, carbon fibers, and materials with high thermal conductivity;

(4) technologies for reduced drag and rolling resistance;

(5) whole-vehicle design optimization to reduce the weight of component parts and thus increase the fuel economy of the vehicle, including fiber optics to replace traditional wiring;

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

(7) advanced drivetrains.

SEC. 303. BUILDINGS.

(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application of cost-effective technologies, for new construction and retrofit, to improve the energy efficiency and environmental performance of commercial, industrial, institutional, and residential buildings. The pro-

gram shall use a whole-buildings approach, integrating work on elements including—

(1) advanced controls, including occupancy sensors, daylighting controls, wireless technologies, automated responses to changes in the internal and external environment, and real time delivery of information on building system and component performance;

(2) building envelope, including windows, roofing systems and materials, and building-integrated photovoltaics;

(3) building systems components, including—

(A) lighting;

(B) appliances, including advanced technologies, such as stand-by load technologies, for office equipment, food service equipment, and laundry equipment; and

(C) heating, ventilation, and cooling systems, including ground-source heat pumps and radiant heating; and

(4) onsite renewable energy generation.

(b) ENERGY EFFICIENT BUILDING PILOT GRANT PROGRAM.—

(1) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Secretary shall establish a pilot program to award grants to businesses and organizations for new construction of energy efficient buildings, or major renovations of buildings that will result in energy efficient buildings, to demonstrate innovative energy efficiency technologies, especially those sponsored by the Department.

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

(A) best demonstrate—

(i) likelihood to meet or exceed the design standards referred to in paragraph (7);

(ii) likelihood to maximize cost-effective energy efficiency opportunities; and

(iii) advanced energy efficiency technologies; and

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

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

(4) GRANT PAYMENTS.—

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

(B) REMAINDER OF PAYMENT.—The Secretary shall pay the remaining 50 percent of the grant only after independent certification of operational buildings for compliance with the standards for energy efficient buildings described in paragraph (7).

(C) FAILURE TO COMPLY.—The Secretary shall not provide the remainder of the payment unless the building is certified within 6 months after operation of the completed building to meet the requirements described in subparagraph (B), or in the case of major renovations the building is certified within 6 months of the completion of the renovations.

(5) REPORT TO CONGRESS.—Not later than 3 years after awarding the first grant under this subsection, the Secretary shall transmit to Congress a report containing—

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

(B) an estimate of aggregate cost and energy savings enabled by the pilot program under this subsection.

(6) ADMINISTRATIVE EXPENSES.—Administrative expenses for the program under this subsection shall not exceed 10 percent of appropriated funds.

(7) DEFINITION OF ENERGY EFFICIENT BUILDING.—For purposes of this subsection, the term "energy efficient building" means a building that is independently certified—

(A) to meet or exceed the applicable United States Green Building Council's Leadership in Energy and Environmental Design standards for a silver, gold, or platinum rating; and

(B) to achieve a reduction in energy consumption of—

(i) at least 25 percent for new construction, compared to the energy standards set by the Federal Building Code (10 CFR part 434); and

(ii) at least 20 percent for major renovations, compared to energy consumption before renovations are begun.

(c) STANDARDIZATION REPORT AND PROGRAM.—

(1) REPORT.—The Secretary shall enter into an arrangement with the National Institute of Building Sciences to—

(A) conduct a comprehensive assessment of how well current voluntary consensus standards related to buildings match state-of-the-art knowledge on the design, construction, operation, repair, and renovation of high-performance buildings; and

(B) recommend steps for the Secretary to take to accelerate the development and promulgation of voluntary consensus standards for high-performance buildings that would address all major high-performance building attributes, including energy efficiency, sustainability, safety and security, life-cycle cost, and productivity.

(2) PROGRAM.—After receiving the report under paragraph (1), the Secretary shall establish a program of technical assistance and grants to support standards development organizations in—

(A) the revision of existing standards, to reflect current knowledge of high-performance buildings; and

(B) the development and promulgation of new standards in areas important to high-performance buildings where there is no existing standard or where an existing standard cannot easily be modified.

SEC. 304. INDUSTRIES.

(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application of advanced technologies to improve the energy efficiency, environmental performance, and process efficiency of energy-intensive and waste-intensive industries. Such program shall be focused on industries whose total annual energy consumption amounts to more than 1.0 percent of the total nationwide annual energy consumption, according to the most recent data available to the Department. Research and development efforts under this section shall give a higher priority to broad-benefit efficiency technologies that have practical application across industry sectors.

(b) ELECTRIC MOTOR CONTROL TECHNOLOGY.—The program conducted under subsection (a) shall include research on, and development, demonstration, and commercial application of, advanced control devices to improve the energy efficiency of electric motors, including those used in industrial processes, heating, ventilation, and cooling.

SEC. 305. DEMONSTRATION AND COMMERCIAL APPLICATION.

(a) APPLIANCES AND TESTING.—The Secretary shall conduct research and analysis to determine whether, given Department-sponsored and other advances in energy efficiency technologies, demonstration and commercial application of innovative, cost-effective energy savings and pollution reducing technologies could be used to improve appliances and test procedures used to measure appliance efficiency.

(b) BUILDING ENERGY CODES.—The Secretary shall, in coordination with government, nongovernment, and commercial partners, conduct research and analyses of the best cost-effective practices in the development and updating of building energy codes, including for manufactured housing. Analyses shall focus on how to encourage energy efficiency and adoption of newly developed energy production and use equipment.

(c) ADVANCED ENERGY TECHNOLOGY TRANSFER CENTERS.—

(1) GRANTS.—Not later than 18 months after the date of enactment of this Act, the Secretary shall make grants to nonprofit institutions, State and local governments, or universities (or consortia thereof), to establish a geographically dispersed network of Advanced Energy Technology Transfer Centers, to be located in areas the Secretary determines have the greatest need of the services of such Centers.

(2) ACTIVITIES.—

(A) IN GENERAL.—Each Center shall operate a program to encourage demonstration and commercial application of advanced energy methods and technologies through education and outreach to building and industrial professionals, and to other individuals and organizations with an interest in efficient energy use.

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

(3) APPLICATION.—A person seeking a grant under this subsection shall submit to the Secretary an application in such form and containing such information as the Secretary may require. The Secretary may award a grant under this subsection to an entity already in existence if the entity is otherwise eligible under this subsection.

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

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

(B) The extent to which the applicant will coordinate the activities of the Center with other entities, such as State and local governments, utilities, and educational and research institutions.

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

(6) ADVISORY COMMITTEE.—The Secretary shall establish an advisory committee to advise the Secretary on the establishment of Centers under this subsection. The advisory committee shall be composed of individuals with expertise in the area of advanced energy methods and technologies, including at least 1 representative from—

(A) State or local energy offices;

(B) energy professionals;

(C) trade or professional associations;

(D) architects, engineers, or construction professionals;

(E) manufacturers;

(F) the research community; and

(G) nonprofit energy or environmental organizations.

(7) DEFINITIONS.—For purposes of this subsection:

(A) ADVANCED ENERGY METHODS AND TECHNOLOGIES.—The term "advanced energy methods and technologies" means all methods and technologies that promote energy efficiency and conservation, including distributed generation technologies, and life-cycle analysis of energy use.

(B) CENTER.—The term "Center" means an Advanced Energy Technology Transfer Center established pursuant to this subsection.

(C) DISTRIBUTED GENERATION.—The term "distributed generation" means an electric power generation facility that is designed to serve retail electric consumers at or near the facility site.

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

SEC. 306. SECONDARY ELECTRIC VEHICLE BATTERY USE PROGRAM.

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

(1) ASSOCIATED EQUIPMENT.—The term "associated equipment" means equipment located where the batteries will be used that is necessary to enable the use of the energy stored in the batteries.

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

(b) PROGRAM.—The Secretary shall establish and conduct a research, development, demonstration, and commercial application program for the secondary use of batteries if the Secretary finds that there are sufficient numbers of such batteries to support the program. The program shall be—

(1) designed to demonstrate the use of batteries in secondary applications, including utility and commercial power storage and power quality;

(2) structured to evaluate the performance, including useful service life and costs, of such batteries in field operations, and the necessary supporting infrastructure, including reuse and disposal of batteries; and

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

(c) SOLICITATION.—Not later than 180 days after the date of enactment of this Act, if the Secretary finds under subsection (b) that there are sufficient numbers of batteries to support the program, the Secretary shall solicit proposals to demonstrate the secondary use of batteries and associated equipment and supporting infrastructure in geographic locations throughout the United States. The Secretary may make additional solicitations for proposals if the Secretary determines that such solicitations are necessary to carry out this section.

(d) SELECTION OF PROPOSALS.—

(1) IN GENERAL.—The Secretary shall, not later than 90 days after the closing date established by the Secretary for receipt of proposals under subsection (c),

select up to 5 proposals which may receive financial assistance under this section, subject to the availability of appropriations.

(2) DIVERSITY; ENVIRONMENTAL EFFECT.—In selecting proposals, the Secretary shall consider diversity of battery type, geographic and climatic diversity, and life-cycle environmental effects of the approaches.

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

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

(5) OTHER CRITERIA.—The Secretary may consider such other criteria as the Secretary considers appropriate.

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

(1) relevant information be provided to the Department, the users of the batteries, the proposers, and the battery manufacturers;

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

(3) the proposer provide to the Secretary such information regarding the disposal of the batteries as the Secretary may require to ensure that the proposer disposes of the batteries in accordance with applicable law.

SEC. 307. NEXT GENERATION LIGHTING INITIATIVE.

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

(b) OBJECTIVES.—The objectives of the initiative shall be to develop advanced solid-state organic and inorganic lighting technologies based on white light emitting diodes that, compared to incandescent and fluorescent lighting technologies, are longer lasting; more energy-efficient; and cost-competitive, and have less environmental impact.

(c) INDUSTRY ALLIANCE.—The Secretary shall, not later than 3 months after the date of enactment of this section, competitively select an Industry Alliance to represent participants that are private, for-profit firms which, as a group, are broadly representative of United States solid state lighting research, development, infrastructure, and manufacturing expertise as a whole.

(d) RESEARCH.—

(1) IN GENERAL.—The Secretary shall carry out the research activities of the Next Generation Lighting Initiative through competitively awarded grants to researchers, including Industry Alliance participants, National Laboratories, and institutions of higher education.

(2) ASSISTANCE FROM THE INDUSTRY ALLIANCE.—The Secretary shall annually solicit from the Industry Alliance—

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

(B) assessment of the progress of the Initiative's research activities; and

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

(3) AVAILABILITY OF INFORMATION AND ROADMAPS.—The information and roadmaps under paragraph (2) shall be available to the public and public response shall be solicited by the Secretary.

(e) DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION.—The Secretary shall carry out a development, demonstration, and commercial application program for the Next Generation Lighting Initiative through competitively selected awards. The Secretary may give preference to participants of the Industry Alliance selected pursuant to subsection (c).

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

(1) for any new invention resulting from activities under subsection (d)—

(A) the Industry Alliance members that are active participants in research, development, and demonstration activities related to the advanced solid-state lighting technologies that are the subject of this section shall be granted first option to negotiate with the invention owner nonexclusive licenses and royalties for uses of the invention related to solid-state lighting on terms that are reasonable under the circumstances; and

(B)(i) for 1 year after a United States patent is issued for the invention, the patent holder shall not negotiate any license or royalty with any entity

that is not a participant in the Industry Alliance described in subparagraph (A); and

(ii) during the year described in clause (i), the invention owner shall negotiate nonexclusive licenses and royalties in good faith with any interested participant in the Industry Alliance described in subparagraph (A); and

(2) such other terms as the Secretary determines are required to promote accelerated commercialization of inventions made under the Initiative.

(g) NATIONAL ACADEMY REVIEW.—The Secretary shall enter into an arrangement with the National Academy of Sciences to conduct periodic reviews of the Next Generation Lighting Initiative. The Academy shall review the research priorities, technical milestones, and plans for technology transfer and progress towards achieving them. The Secretary shall consider the results of such reviews in evaluating the information obtained under subsection (d)(2).

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

(1) ADVANCED SOLID-STATE LIGHTING.—The term "advanced solid-state lighting" means a semiconducting device package and delivery system that produces white light using externally applied voltage.

(2) RESEARCH.—The term "research" includes research on the technologies, materials, and manufacturing processes required for white light emitting diodes.

(3) INDUSTRY ALLIANCE.—The term "Industry Alliance" means an entity selected by the Secretary under subsection (c).

(4) WHITE LIGHT EMITTING DIODE.—The term "white light emitting diode" means a semiconducting package, utilizing either organic or inorganic materials, that produces white light using externally applied voltage.

SEC. 308. DEFINITIONS.

For the purposes of this subtitle—

(1) the term "cost-effective" means resulting in a simple payback of costs in 10 years or less; and

(2) the term "whole-buildings approach" includes, on a life-cycle basis, the energy use, cost of operations, and ease of repair or upgrade of a building.

SEC. 309. AUTHORIZATION OF APPROPRIATIONS.

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

(1) For fiscal year 2006, $620,000,000, including—

(A) $200,000,000 for carrying out the vehicles program under section 302;

(B) $100,000,000 for carrying out the buildings program under section 303, of which $10,000,000 shall be for the grant program under section 303(b);

(C) $100,000,000 for carrying out the industries program under section 304(a);

(D) $2,000,000 for carrying out the electric motor control technology program under section 304(b);

(E) $10,000,000 for carrying out demonstration and commercial applications activities under section 305;

(F) $4,000,000 for carrying out the secondary electric vehicle battery use program under section 306; and

(G) $20,000,000 for carrying out the Next Generation Lighting Initiative under section 307.

(2) For fiscal year 2007, $700,000,000, including—

(A) $240,000,000 for carrying out the vehicles program under section 302;

(B) $130,000,000 for carrying out the buildings program under section 303, of which $10,000,000 shall be for the grant program under section 303(b);

(C) $115,000,000 for carrying out the industries program under section 304(a);

(D) $2,000,000 for carrying out the electric motor control technology program under section 304(b);

(E) $10,000,000 for carrying out demonstration and commercial applications activities under section 305;

(F) $7,000,000 for carrying out the secondary electric vehicle battery use program under section 306; and

(G) $30,000,000 for carrying out the Next Generation Lighting Initiative under section 307.

(3) For fiscal year 2008, $800,000,000, including—

(A) $270,000,000 for carrying out the vehicles program under section 302;

(B) $160,000,000 for carrying out the buildings program under section 303, of which $10,000,000 shall be for the grant program under section 303(b);

(C) $140,000,000 for carrying out the industries program under section 304(a);

(D) $2,000,000 for carrying out the electric motor control technology program under section 304(b);

(E) $10,000,000 for carrying out demonstration and commercial applications activities under section 305;

(F) $7,000,000 for carrying out the secondary electric vehicle battery use program under section 306; and

(G) $50,000,000 for carrying out the Next Generation Lighting Initiative under section 307.

(4) For fiscal year 2009, $925,000,000, including—

(A) $310,000,000 for carrying out the vehicles program under section 302;

(B) $200,000,000 for carrying out the buildings program under section 303, of which $10,000,000 shall be for the grant program under section 303(b);

(C) $170,000,000 for carrying out the industries program under section 304(a);

(D) $10,000,000 for carrying out demonstration and commercial applications activities under section 305;

(E) $7,000,000 for carrying out the secondary electric vehicle battery use program under section 306; and

(F) $50,000,000 for carrying out the Next Generation Lighting Initiative under section 307.

(5) For fiscal year 2010, $1,000,000,000, including—

(A) $340,000,000 for carrying out the vehicles program under section 302;

(B) $240,000,000 for carrying out the buildings program under section 303, of which $10,000,000 shall be for the grant program under section 303(b);

(C) $190,000,000 for carrying out the industries program under section 304(a);

(D) $10,000,000 for carrying out demonstration and commercial applications activities under section 305;

(E) $7,000,000 for carrying out the secondary electric vehicle battery use program under section 306; and

(F) $50,000,000 for carrying out the Next Generation Lighting Initiative under section 307.

SEC. 310. LIMITATION ON USE OF FUNDS.

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

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

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

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

(4) the Federal Energy Management Program under part 3 of title V of the National Energy Conservation Policy Act (42 U.S.C. 8251 et seq.).

Subtitle B—Distributed Energy and Electric Energy Systems

SEC. 321. DISTRIBUTED ENERGY.

(a) IN GENERAL.—The Secretary shall conduct programs of distributed energy resources and systems reliability and efficiency research, development, demonstration, and commercial application to improve the reliability and efficiency of distributed energy resources and systems, including activities described in this subtitle. The programs shall address advanced energy technologies and systems and advanced grid reliability technologies. The programs shall include the integration of—

(1) renewable energy resources;

(2) fuel cells;

(3) combined heat and power systems;

(4) microturbines;

(5) advanced natural gas turbines;

(6) advanced internal combustion engine generators;

(7) energy storage devices;
(8) interconnection standards, protocols, and equipment;
(9) ancillary equipment for dispatch and control; and
(10) any other energy technologies, as appropriate.

(b) MICRO-COGENERATION ENERGY TECHNOLOGY.—The Secretary shall make competitive, merit-based grants to consortia for the development of micro-cogeneration energy technology. The consortia shall explore—

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

(2) the use of excess power to operate other appliances within the residence and supply excess generated power to the power grid.

(c) GOALS.—

(1) INITIAL GOALS.—In accordance with the performance plan and report requirements in section 4 of the Government Performance Results Act of 1993, the Secretary shall transmit to the Congress, along with the President's annual budget request for fiscal year 2007, a report containing outcome measures with explicitly stated cost and performance baselines. The measures shall specify performance goals, with quantifiable 5-year cost and energy savings target levels, for distributed energy resources and systems, and any other such goals the Secretary considers appropriate.

(2) SUBSEQUENT TRANSMITTALS.—The Secretary shall transmit to the Congress, along with the President's annual budget request for each fiscal year after 2007, a report containing—

(A) a description, including quantitative analysis, of progress in achieving performance goals transmitted under paragraph (1), as compared to the baselines transmitted under paragraph (1); and

(B) any amendments to such goals.

SEC. 322. ELECTRICITY TRANSMISSION AND DISTRIBUTION AND ENERGY ASSURANCE.

(a) PROGRAM.—The Secretary shall conduct a research, development, demonstration, and commercial application program on advanced control devices to improve the energy efficiency and reliability of the electric transmission and distribution systems and to protect the Nation against severe energy supply disruptions. This program shall address, at a minimum—

(1) advanced energy delivery and storage technologies, materials, and systems, including new transmission technologies, such as flexible alternating current transmission systems, composite conductor materials, and other technologies that enhance reliability, operational flexibility, or power-carrying capability;

(2) advanced grid reliability and efficiency technology development;
(3) technologies contributing to significant load reductions;
(4) advanced metering, load management, and control technologies;
(5) technologies to enhance existing grid components;
(6) the development and use of high-temperature superconductors to—

(A) enhance the reliability, operational flexibility, or power-carrying capability of electric transmission or distribution systems; or

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

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

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

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

(10) any other infrastructure technologies, as appropriate; and
(11) technology transfer and education.

(b) GOALS.—

(1) INITIAL GOALS.—In accordance with the performance plan and report requirements in section 4 of the Government Performance Results Act of 1993, the Secretary shall transmit to the Congress, along with the President's annual budget request for fiscal year 2007, a report containing outcome measures with explicitly stated cost and performance baselines. The measures shall specify performance goals, with quantifiable 5-year cost and energy savings target levels, for electricity transmission and distribution and energy assurance, and any other such goals the Secretary considers appropriate.

(2) SUBSEQUENT TRANSMITTALS.—The Secretary shall transmit to the Congress, along with the President's annual budget request for each fiscal year after 2007, a report containing—

(A) a description, including quantitative analysis, of progress in achieving performance goals transmitted under paragraph (1), as compared to the baselines transmitted under paragraph (1); and

(B) any amendments to such goals.

(c) HIGH VOLTAGE TRANSMISSION LINES.—As part of the program described in subsection (a), the Secretary shall award a grant to a university research program to design and test, in consultation with the Tennessee Valley Authority, state-of-the-art optimization techniques for power flow through existing high voltage transmission lines.

SEC. 323. AUTHORIZATION OF APPROPRIATIONS.

(a) IN GENERAL.—The following sums are authorized to be appropriated to the Secretary for the purposes of carrying out this subtitle:

(1) For fiscal year 2006, $220,000,000.

(2) For fiscal year 2007, $240,000,000.

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

(4) For fiscal year 2009, $265,000,000.

(5) For fiscal year 2010, $275,000,000.

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

(c) ELECTRICITY TRANSMISSION AND DISTRIBUTION AND ENERGY ASSURANCE.—From the amounts authorized under subsection (a), the following sums are authorized for activities under section 322:

(1) For fiscal year 2006, $130,000,000, of which $2,000,000 shall be for the program under section 322(c).

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

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

(4) For fiscal year 2009, $160,000,000.

(5) For fiscal year 2010, $165,000,000.

TITLE IV—RENEWABLE ENERGY

SEC. 401. FINDINGS.

Congress makes the following findings:

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

(2) Since 1996, the United States has lost significant market share in the solar industry, dropping from 44 percent of the world market to 13 percent in 2003.

(3) In 2003, Japan spent more than $200,000,000 on solar research, development, demonstration, and commercial application and other incentives, and Germany provided more than $750,000,000 in low cost financing for solar photovoltaic projects. This compares to United States Government spending of $139,000,000 in 2003 for research, development, demonstration, and commercial application and other incentives.

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

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

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

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

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

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

(10) By using domestic renewable energy resources, the United States can reduce the amount of money sent into unstable regions of the world and keep it in the United States.

(11) By supporting renewable energy research and development, and funding demonstration and commercial application programs for renewable energy, the United States can create an export industry and improve the balance of trade.

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

SEC. 402. DEFINITIONS.

For purposes of this title:

(1) BIOBASED PRODUCT.—The term "biobased product" means a product determined by the Secretary to be a commercial or industrial product (other than food or feed) that is—

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

(i) biological products;

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

(iii) forestry materials; and

(B) produced in connection with the conversion of biomass to energy or fuel.

(2) CELLULOSIC BIOMASS.—The term "cellulosic biomass" means a crop containing lignocellulose or hemicellulose, including barley grain, grapeseed, forest thinnings, rice bran, rice hulls, rice straw, soybean matter, sugarcane bagasse, and any crop grown specifically for the purpose of producing cellulosic feedstocks.

SEC. 403. PROGRAMS.

(a) IN GENERAL.—The Secretary shall conduct programs of renewable energy research, development, demonstration, and commercial application, including activities described in this title. Such programs shall be focused on the following objectives:

(1) Increasing the conversion efficiency of all forms of renewable energy through improved technologies.

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

(3) Promoting the diversity of the energy supply.

(4) Decreasing the Nation's dependence on foreign energy supplies.

(5) Improving United States energy security.

(6) Decreasing the environmental impact of energy-related activities.

(7) Increasing the export of renewable generation equipment from the United States.

(b) GOALS.—

(1) INITIAL GOALS.—In accordance with the performance plan and report requirements in section 4 of the Government Performance Results Act of 1993, the Secretary shall transmit to the Congress, along with the President's annual budget request for fiscal year 2007, a report containing outcome measures with explicitly stated cost and performance baselines. The measures shall specify renewable energy performance goals, with quantifiable 5-year cost and energy savings target levels, for wind power, photovoltaics, solar thermal systems (including concentrating and solar hot water), geothermal energy, biomass-based systems, biofuels, and hydropower, and any other such goals the Secretary considers appropriate.

(2) SUBSEQUENT TRANSMITTALS.—The Secretary shall transmit to the Congress, along with the President's annual budget request for each fiscal year after 2007, a report containing—

(A) a description, including quantitative analysis, of progress in achieving performance goals transmitted under paragraph (1), as compared to the baselines transmitted under paragraph (1); and

(B) any amendments to such goals.

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

SEC. 404. SOLAR.

(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for solar energy, including—

(1) photovoltaics;

(2) solar hot water and solar space heating; and

(3) concentrating solar power.

(b) BUILDING INTEGRATION.—For photovoltaics, solar hot water, and space heating, the Secretary shall conduct research, development, demonstration, and commercial application to support the development of products that can be easily integrated into new and existing buildings.

(c) MANUFACTURE.—The Secretary shall conduct research, development, demonstration, and commercial application of manufacturing techniques that can produce low-cost, high-quality solar systems.

SEC. 405. BIOENERGY PROGRAMS.

(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for cellulosic biomass, including—

(1) biomass conversion to heat and electricity;

(2) biomass conversion to liquid fuels;

(3) biobased products;

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

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

(6) life-cycle economic analysis.

(b) BIOFUELS AND BIOBASED PRODUCTS.—The objectives of the biofuels and biobased products programs under paragraphs (2), (3), and (4) of subsection (a), and of the biorefinery demonstration program under subsection (c), shall be to develop, in partnership with industry—

(1) advanced biochemical and thermochemical conversion technologies capable of making high-value biobased chemical feedstocks and products, to substitute for petroleum-based feedstocks and products, biofuels that are price-competitive with gasoline or diesel in either internal combustion engines or fuel cell-powered vehicles, and biobased products from a variety of feedstocks, including grains, cellulosic biomass, and agricultural byproducts; and

(2) advanced biotechnology processes capable of making biofuels and biobased products, with emphasis on development of biorefinery technologies, including enzyme-based processing technologies.

(c) BIOMASS INTEGRATED REFINERY DEMONSTRATION.—

(1) IN GENERAL.—The Secretary shall conduct a program to demonstrate the commercial application of at least 5 integrated biorefineries. The Secretary shall ensure geographical distribution of biorefinery demonstrations under this subsection. The Secretary shall not provide more than $100,000,000 under this subsection for any single biorefinery demonstration. The Secretary shall award the biorefinery demonstrations so as to encourage—

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

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

(i) liquid transportation fuels;

(ii) high-value biobased chemicals;

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

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

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

(2) PROPOSALS.—Not later than 6 months after the date of enactment of this Act, the Secretary shall solicit proposals for demonstration of advanced biorefineries. The Secretary shall select only proposals that—

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

(B) enable the biorefinery to be easily replicated.

(d) GRANTS.—Of the funds authorized to be appropriated for activities authorized under this section, not less than $5,000,000 for each fiscal year shall be made available for grants to Historically Black Colleges and Universities, Tribal Colleges, and Hispanic-Serving Institutions.

SEC. 406. WIND.

(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application for wind energy, including—

(1) low speed wind energy;

(2) offshore wind energy;

(3) testing and verification; and

(4) distributed wind energy generation.

(b) FACILITY.—The Secretary shall construct and operate a research and testing facility capable of testing the largest wind turbines that are expected to be manufactured in the next 15 years. The Secretary shall consider the need for testing offshore turbine designs in siting the facility. All private users of the facility shall be required to pay the Department all costs associated with their use of the facility, including capital costs prorated at normal business amortization rates.

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

SEC. 407. GEOTHERMAL.

The Secretary shall conduct a program of research, development, demonstration, and commercial application for geothermal energy. The program shall focus on developing improved technologies for reducing the costs of geothermal energy installations, including technologies for—

(1) improving detection of geothermal resources;

(2) decreasing drilling costs;

(3) decreasing maintenance costs through improved materials;

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

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

SEC. 408. PHOTOVOLTAIC DEMONSTRATION PROGRAM.

(a) IN GENERAL.—The Secretary shall establish a program of grants to States to demonstrate advanced photovoltaic technology.

(b) REQUIREMENTS.—(1) To receive funding under the program under this section, a State must submit a proposal that demonstrates, to the satisfaction of the Secretary, that the State will meet the requirements of subsection (f).

(2) If a State has received funding under this section for the preceding year, the State must demonstrate, to the satisfaction of the Secretary, that it complied with the requirements of subsection (f) in carrying out the program during that preceding year, and that it will do so in the future.

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

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

(d) PROPOSALS.—Not later than 6 months after the date of enactment of this Act, and in each subsequent fiscal year for the life of the program, the Secretary shall solicit proposals from the States to participate in the program under this section.

(e) COMPETITIVE CRITERIA.—In awarding funds in a competitive allocation under subsection (c), the Secretary shall consider—

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

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

(A) maximize the amount of photovoltaics demonstrated;

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

(C) limit State administrative costs.

(f) STATE PROGRAM.—A program operated by a State with funding under this section shall provide competitive awards for the demonstration of advanced photovoltaic technologies. Each State program shall—

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

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

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

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

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

(6) report annually to the Department on—

(A) the amount of funds disbursed;

(B) the amount of photovoltaics purchased; and

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

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

(8) require that applicant buildings must have received an independent energy efficiency audit during the 6-month period preceding the filing of the application.

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

(h) REPORTS.—The Secretary shall report to Congress 5 years after funds are first distributed to the States under this section—

(1) the amount of photovoltaics demonstrated;

(2) the number of projects undertaken;

(3) the administrative costs of the program;

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

(5) the results of the monitoring under subsection (f)(7); and

(6) the total amount of funds distributed, including a breakdown by State.

SEC. 409. ADDITIONAL PROGRAMS.

(a) IN GENERAL.—The Secretary may conduct research, development, demonstration, and commercial application programs of—

(1) ocean energy, including wave energy;

(2) kinetic hydro turbines; and

(3) the combined use of renewable energy technologies with one another and with other energy technologies.

(b) MARINE RENEWABLE ENERGY STUDY.—

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

(A) the feasibility of various methods of renewable generation of energy from the ocean, including energy from waves, tides, currents, and thermal gradients; and

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

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

(c) RENEWABLE ENERGY IN PUBLIC BUILDINGS.—

(1) DEMONSTRATION AND TECHNOLOGY TRANSFER PROGRAM.—The Secretary shall establish a program for the demonstration of innovative technologies for solar and other renewable energy sources in buildings owned or operated by a State or local government, and for the dissemination of information resulting from such demonstration to interested parties.

(2) LIMIT ON FEDERAL FUNDING.—The Secretary shall provide under this subsection no more than 40 percent of the incremental costs of the solar or other renewable energy source project funded.

(3) REQUIREMENT.—As part of the application for awards under this subsection, the Secretary shall require all applicants—

(A) to demonstrate a continuing commitment to the use of solar and other renewable energy sources in buildings they own or operate; and

(B) to state how they expect any award to further their transition to the significant use of renewable energy.

SEC. 410. ANALYSIS AND EVALUATION.

(a) IN GENERAL.—The Secretary shall conduct analysis and evaluation in support of the renewable energy programs under this title. These activities shall be used to guide budget and program decisions, and shall include—

(1) economic and technical analysis of renewable energy potential, including resource assessment;

(2) analysis of past program performance, both in terms of technical advances and in market introduction of renewable energy; and

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

(b) FUNDING.—The Secretary may designate up to 1 percent of the funds appropriated for carrying out this title for analysis and evaluation activities under this section.

SEC. 411. AUTHORIZATION OF APPROPRIATIONS.

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

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

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

(B) $200,000,000 shall be for carrying out the bioenergy program under section 405, including $100,000,000 for the biorefinery demonstration program under section 405(c);

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

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

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

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

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

(B) $245,000,000 shall be for carrying out the bioenergy program under section 405, including $125,000,000 for the biorefinery demonstration program under section 405(c);

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

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

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

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

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

(B) $310,000,000 shall be for carrying out the bioenergy program under section 405, including $150,000,000 for the biorefinery demonstration program under section 405(c);

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

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

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

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

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

(B) $355,000,000 shall be for carrying out the bioenergy program under section 405, including $175,000,000 for the biorefinery demonstration program under section 405(c);

(C) $65,000,000 shall be for carrying out the wind program under section 406, including $5,000,000 for the facility described in section 406(b);

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

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

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

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

(B) $400,000,000 shall be for carrying out the bioenergy program under section 405, including $200,000,000 for the biorefinery demonstration program under section 405(c);

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

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

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

TITLE V—NUCLEAR ENERGY PROGRAMS

SEC. 501. DEFINITION.

In this title, the term "junior faculty" means a faculty member who was awarded a doctorate less than 10 years before receipt of an award from the grant program described in section 512(b)(2).

SEC. 502. PROGRAMS.

(a) IN GENERAL.—The Secretary shall conduct programs of civilian nuclear energy research, development, demonstration, and commercial application, including activities described in this title. Programs under this title shall be focused on—

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

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

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

(4) maintaining National Laboratory and university nuclear programs, including their infrastructure;

(5) supporting both individual researchers and multidisciplinary teams of researchers to pioneer new approaches in nuclear energy, science, and technology;

(6) developing, planning, constructing, acquiring, and operating special equipment and facilities for the use of researchers;

(7) supporting technology transfer and other appropriate activities to assist the nuclear energy industry, and other users of nuclear science and engineering, including activities addressing reliability, availability, productivity, component aging, safety, and security of nuclear power plants; and

(8) reducing the environmental impact of nuclear energy-related activities.

(b) GOALS.—

(1) INITIAL GOALS.—In accordance with the performance plan and report requirements in section 4 of the Government Performance Results Act of 1993, the Secretary shall transmit to the Congress, along with the President's annual budget request for fiscal year 2007, a report containing outcome measures with explicitly stated cost and performance baselines. The measures shall specify performance goals, with quantifiable 5-year cost improvement and reliability, availability, productivity, and component aging target levels for a wide range of nuclear energy technologies, and any other such goals the Secretary considers appropriate.

(2) SUBSEQUENT TRANSMITTALS.—The Secretary shall transmit to the Congress, along with the President's annual budget request for each fiscal year after 2007, a report containing—

(A) a description, including quantitative analysis, of progress in achieving performance goals transmitted under paragraph (1), as compared to the baselines transmitted under paragraph (1); and

(B) any amendments to such goals.

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

Subtitle A—Nuclear Energy Research Programs

SEC. 511. ADVANCED FUEL RECYCLING PROGRAM.

(a) IN GENERAL.—The Secretary shall conduct an advanced fuel recycling technology research, development, demonstration, and commercial application program to evaluate fuel recycling or transmutation technologies which are proliferation-resistant and minimize environmental and public health and safety impacts, as an alternative to aqueous reprocessing technologies deployed as of the date of enactment of this Act, in support of evaluation of alternative national strategies for spent nuclear fuel and advanced reactor concepts. The program shall be subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

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

SEC. 512. UNIVERSITY NUCLEAR SCIENCE AND ENGINEERING SUPPORT.

(a) IN GENERAL.—The Secretary shall conduct a program to invest in human resources and infrastructure in the nuclear sciences and related fields, including health physics, nuclear engineering, and radiochemistry, consistent with Departmental missions related to civilian nuclear research, development, demonstration, and commercial application.

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

(1) conduct a graduate and undergraduate fellowship program to attract new and talented students, which may include fellowships for students to spend time at National Laboratories in the areas of nuclear science, engineering, and health physics with a member of the National Laboratory staff acting as a mentor;

(2) conduct a junior faculty research initiation grant program to assist universities in recruiting and retaining new faculty in the nuclear sciences and engineering by awarding grants to junior faculty for research on issues related to nuclear energy engineering and science;

(3) support fundamental nuclear sciences, engineering, and health physics research through a nuclear engineering education and research program;

(4) encourage collaborative nuclear research among industry, National Laboratories, and universities; and

(5) support communication and outreach related to nuclear science, engineering, and health physics.

(c) STRENGTHENING UNIVERSITY RESEARCH AND TRAINING REACTORS AND ASSOCIATED INFRASTRUCTURE.—In carrying out the program under this section, the Secretary may support—

(1) converting research reactors from high-enrichment fuels to low-enrichment fuels and upgrading operational instrumentation;

(2) consortia of universities to broaden access to university research reactors;

(3) student training programs, in collaboration with the United States nuclear industry, in relicensing and upgrading reactors, including through the provision of technical assistance; and

(4) reactor improvements as part of a focused effort that emphasizes research, training, and education, including through the Innovations in Nuclear Infrastructure and Education Program or any similar program.

(d) OPERATIONS AND MAINTENANCE.—Funding for a project provided under this section may be used for a portion of the operating and maintenance costs of a research reactor at a university used in the project.

SEC. 513. UNIVERSITY-NATIONAL LABORATORY INTERACTIONS.

The Secretary shall conduct—

(1) a fellowship program for professors at universities to spend sabbaticals at National Laboratories in the areas of nuclear science and technology; and

(2) a visiting scientist program in which National Laboratory staff can spend time in academic nuclear science and engineering departments.

SEC. 514. NUCLEAR POWER 2010 PROGRAM.

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

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

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

(3) participation of international collaborators in research, development, and design efforts as appropriate; and

(4) university and industry participation.

SEC. 515. GENERATION IV NUCLEAR ENERGY SYSTEMS INITIATIVE.

The Secretary shall carry out a Generation IV Nuclear Energy Systems Initiative to develop an overall technology plan and to support research, development, demonstration, and commercial application necessary to make an informed technical decision about the most promising candidates for the eventual commercial application of advanced fission reactor technology for the generation of electricity. The Initiative shall examine advanced proliferation-resistant and passively safe reactor designs, including designs that—

(1) are economically competitive with other electric power generation plants;

(2) have higher efficiency, lower cost, and improved safety compared to reactors in operation on the date of enactment of this Act;

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

(4) use improved instrumentation.

SEC. 516. CIVILIAN INFRASTRUCTURE AND FACILITIES.

The Secretary shall operate and maintain infrastructure and facilities to support the nuclear energy research, development, demonstration, and commercial application programs, including radiological facilities management, isotope production, and facilities management.

SEC. 517. NUCLEAR ENERGY RESEARCH AND DEVELOPMENT INFRASTRUCTURE PLAN.

In carrying out section 209, the Secretary shall—

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

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

(3) consider the available facilities and expertise at all National Laboratories and emphasize investments which complement rather than duplicate capabilities; and

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

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

SEC. 518. IDAHO NATIONAL LABORATORY FACILITIES PLAN.

(a) PLAN.—The Secretary shall develop a comprehensive plan for the facilities at the Idaho National Laboratory, especially taking into account the resources available at other National Laboratories. In developing the plan, the Secretary shall—

(1) evaluate the facilities planning processes utilized by other physical science and engineering research and development institutions, both in the United States and abroad, that are generally recognized as being among the best in the world, and consider how those processes might be adapted toward developing such facilities plan;

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

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

(4) include a plan to develop, if feasible, the Advanced Test Reactor and Test Reactor Area into a user facility that is more readily accessible to academic and industrial researchers;

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

(6) consider the establishment of new "hot cells" and the configuration of "hot cells" most likely to advance research, development, demonstration, and commercial application in nuclear science and engineering, especially in the context of the condition and availability of these facilities elsewhere in the National Laboratories; and

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

(b) TRANSMITTAL TO CONGRESS.—Not later than one year after the date of enactment of this Act, the Secretary shall transmit such plan to Congress.

SEC. 519. AUTHORIZATION OF APPROPRIATIONS.

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

(1) $407,000,000 for fiscal year 2006.
(2) $427,000,000 for fiscal year 2007.
(3) $449,000,000 for fiscal year 2008.
(4) $471,000,000 for fiscal year 2009.
(5) $495,000,000 for fiscal year 2010.

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

(1) $35,200,000 for fiscal year 2006.
(2) $44,350,000 for fiscal year 2007.
(3) $49,200,000 for fiscal year 2008.
(4) $55,000,000 for fiscal year 2009.
(5) $60,000,000 for fiscal year 2010.

Subtitle B—Next Generation Nuclear Plant Program

SEC. 531. DEFINITIONS.

For purposes of this subtitle:

(1) CONSTRUCTION.—The term "construction" means the physical construction of the demonstration plant, and the physical construction, purchase, or manufacture of equipment or components that are specifically designed for the demonstration plant, but does not mean the design of the facility, equipment, or components.

(2) DEMONSTRATION PLANT.—The term "demonstration plant" means an advanced fission reactor power plant constructed and operated in accordance with this subtitle.

(3) OPERATION.—The term "operation" means the operation of the demonstration plant, including general maintenance and provision of power, heating and cooling, and other building services that are specifically for the demonstration

plant, but does not mean operations that support other activities colocated with the demonstration plant.

SEC. 532. NEXT GENERATION NUCLEAR POWER PLANT.

(a) IN GENERAL.—The Secretary shall conduct a program of research, development, demonstration, and commercial application of advanced nuclear fission reactor technology. The objective of this program shall be to demonstrate the technical and economic feasibility of an advanced nuclear fission reactor power plant design for the commercial production of electricity.

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

(c) SUBSYSTEM DEMONSTRATIONS.—The Secretary shall support demonstration of enabling technologies and subsystems and other research, development, demonstration, and commercial application activities necessary to support the activities in this subtitle.

(d) CONSTRUCTION AND OPERATION.—The program shall culminate in the construction and operation of the demonstration plant based on a design selected by the Secretary in accordance with procedures described in the plan required by section 534(c). The demonstration plant shall be located and constructed within the United States and shall be operational, and capable of demonstrating the commercial production of electricity, by December 31, 2015.

(e) LIMITATION.—No funds shall be expended for the construction or operation of the demonstration plant until 90 days have elapsed after the transmission of the plan described in section 534(c).

SEC. 533. ADVISORY COMMITTEE.

The Secretary shall appoint a Next Generation Nuclear Power Plant Subcommittee of the Nuclear Energy Research Advisory Council to provide advice to the Secretary on technical matters and program management for the duration of the program and construction project under this subtitle.

SEC. 534. PROGRAM REQUIREMENTS.

(a) PARTNERSHIPS.—In carrying out the program under this subtitle, the Secretary shall make use of partnerships with industry for the research, development, design, construction, and operation of the demonstration plant. In establishing such partnerships, the Secretary shall give preference to companies for which the principal base of operations is located in the United States.

(b) INTERNATIONAL COLLABORATION.—(1) The Secretary shall seek international cooperation, participation, and financial contribution in this program, including assistance from specialists or facilities from member countries of the Generation IV International Forum, the Russian Federation, or other international partners where such specialists or facilities provide access to cost-effective and relevant skills or test capabilities.

(2) International activities shall be carried out in consultation with the Generation IV International Forum.

(3) The program may include demonstration of selected program objectives in a partner nation.

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

(1) describe the plan for development, selection, management, ownership, operation, and decommissioning of the demonstration plant;

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

(3) provide for development of risk-based criteria for any future commercial development of a reactor architecture based on that of the demonstration plant;

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

(5) include an explanation of any major program decisions that deviate from program advice given to the Secretary by the advisory committee established under section 533.

SEC. 535. AUTHORIZATION OF APPROPRIATIONS.

(a) RESEARCH, DEVELOPMENT, AND DESIGN PROGRAMS.—The following sums are authorized to be appropriated to the Secretary for the purposes of carrying out this subtitle except for the demonstration plant activities described in subsection (b):

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

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

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

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

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

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

TITLE VI—FOSSIL ENERGY

Subtitle A—Research Programs

SEC. 601. ENHANCED FOSSIL ENERGY RESEARCH AND DEVELOPMENT PROGRAMS.

(a) IN GENERAL.—The Secretary shall, in conjunction with industry, conduct fossil energy research, development, demonstration, and commercial applications programs, including activities under this subtitle, with the goal of improving the efficiency, effectiveness, and environmental performance of fossil energy production, upgrading, conversion, and consumption. Such programs shall be focused on—

(1) increasing the conversion efficiency of all forms of fossil energy through improved technologies;

(2) decreasing the cost of all fossil energy production, generation, and delivery;

(3) promoting diversity of energy supply;

(4) decreasing the Nation's dependence on foreign energy supplies;

(5) improving United States energy security;

(6) decreasing the environmental impact of energy-related activities; and

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

(b) GOALS.—

(1) INITIAL GOALS.—In accordance with the performance plan and report requirements in section 4 of the Government Performance Results Act of 1993, the Secretary shall transmit to the Congress, along with the President's annual budget request for fiscal year 2007, a report containing outcome measures with explicitly stated cost and performance baselines. The measures shall specify production or efficiency performance goals, with quantifiable 5-year cost and energy savings target levels, for fossil energy, and any other such goals the Secretary considers appropriate.

(2) SUBSEQUENT TRANSMITTALS.—The Secretary shall transmit to the Congress, along with the President's annual budget request for each fiscal year after 2007, a report containing—

(A) a description, including quantitative analysis, of progress in achieving performance goals transmitted under paragraph (1), as compared to the baselines transmitted under paragraph (1); and

(B) any amendments to such goals.

(c) COVERED ACTIVITIES.—The Secretary shall ensure that the goals stated in subsection (b) are illustrative of the outcomes necessary to promote acceptance of the programs' efforts in the marketplace, but at a minimum shall encompass the following areas:

(1) Coal gasifiers.

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

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

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

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

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

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

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

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

SEC. 602. FOSSIL RESEARCH AND DEVELOPMENT.

(a) OBJECTIVES.—The Secretary shall conduct a program of fossil research, development, demonstration, and commercial application, whose objective shall be to re-

duce emissions from fossil fuel use by developing technologies, including precombustion technologies, by 2015 with the capability of—

(1) dramatically increasing electricity generating efficiencies of coal and natural gas;

(2) improving combined heat and power thermal efficiencies;

(3) improving fuels utilization efficiency of production of liquid transportation fuels from coal;

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

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

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

(b) COAL-BASED PROJECTS.—The coal-based projects authorized under this section shall be consistent with the objective stated in subsection (a). The program shall emphasize carbon capture and sequestration technologies and gasification technologies, including gasification combined cycle, gasification fuel cells, gasification coproduction, hybrid gasification/combustion, or other technologies with the potential to address the capabilities described in paragraphs (4) and (5) of subsection (a).

SEC. 603. OIL AND GAS RESEARCH AND DEVELOPMENT.

The Secretary shall conduct a program of oil and gas research, development, demonstration, and commercial application, whose objective shall be to advance the science and technology available to domestic petroleum producers, particularly independent operators, to minimize the economic dislocation caused by the decline of domestic supplies of oil and natural gas resources by focusing research on—

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

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

(3) improving the ability of the domestic industry to extract hydrocarbons from known reservoirs and classes of reservoirs; and

(4) reducing the cost, and improving the efficiency and environmental performance, of oil and gas exploration and extraction activities, focusing especially on unconventional sources such as tar sands, heavy oil, and shale oil.

SEC. 604. TRANSPORTATION FUELS.

The Secretary shall conduct a program of transportation fuels research, development, demonstration, and commercial application, whose objective shall be to increase the price elasticity of oil supply and demand by focusing research on—

(1) reducing the cost of producing transportation fuels from coal and natural gas; and

(2) indirect liquefaction of coal and biomass.

SEC. 605. FUEL CELLS.

(a) PROGRAM.—The Secretary shall conduct a program of research, development, demonstration, and commercial application of fuel cells for low-cost, high-efficiency, fuel-flexible, modular power systems.

(b) DEMONSTRATION.—The program under this section shall include demonstration of fuel cell proton exchange membrane technology for commercial, residential, and transportation applications, and distributed generation systems, utilizing improved manufacturing production and processes.

SEC. 606. CARBON DIOXIDE CAPTURE RESEARCH AND DEVELOPMENT.

(a) PROGRAM.—The Secretary of Energy shall support a 10-year program of research and development aimed at developing carbon dioxide capture technologies for pulverized coal combustion units. The program shall focus on—

(1) developing add-on carbon dioxide capture technologies, such as adsorption and absorption techniques and chemical processes, to remove carbon dioxide from flue gas, producing concentrated streams of carbon dioxide potentially amenable to sequestration;

(2) combustion technologies that would directly produce concentrated streams of carbon dioxide potentially amenable to sequestration; and

(3) increasing the efficiency of the overall combustion system in order to reduce the amount of carbon dioxide emissions released from the system per megawatt generated.

(b) CARBON SEQUESTRATION.—In conjunction with the program under subsection (a), the Secretary shall continue pursuing a robust carbon sequestration program with the private sector, through regional carbon sequestration partnerships.

SEC. 607. AUTHORIZATION OF APPROPRIATIONS.

(a) IN GENERAL.—The following sums are authorized to be appropriated to the Secretary for the purposes of carrying out this subtitle:

(1) For fiscal year 2006, $583,000,000.
(2) For fiscal year 2007, $611,000,000.
(3) For fiscal year 2008, $626,000,000.
(4) For fiscal year 2009, $641,000,000.
(5) For fiscal year 2010, $657,000,000.

(b) ALLOCATION.—From amounts authorized under subsection (a), there are authorized to be appropriated for carrying out the program under section 606—

(1) $20,000,000 for fiscal year 2006;
(2) $25,000,000 for fiscal year 2007;
(3) $30,000,000 for fiscal year 2008;
(4) $35,000,000 for fiscal year 2009; and
(5) $40,000,000 for fiscal year 2010.

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

SEC. 611. PROGRAM AUTHORITY.

(a) IN GENERAL.—The Secretary shall carry out a program under this subtitle of research, development, demonstration, and commercial application of technologies for ultra-deepwater and unconventional natural gas and other petroleum resource exploration and production, including addressing the technology challenges for small producers, safe operations, and environmental mitigation (including reduction of greenhouse gas emissions and sequestration of carbon).

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

(c) PROGRAM ELEMENTS.—The program under this subtitle shall address the following areas, including improving safety and minimizing environmental impacts of activities within each area:

(1) Ultra-deepwater technology, including drilling to formations in the Outer Continental Shelf to depths greater than 15,000 feet.
(2) Ultra-deepwater architecture.
(3) Unconventional natural gas and other petroleum resource exploration and production technology, including the technology challenges of small producers.

(d) LIMITATION ON LOCATION OF FIELD ACTIVITIES.—Field activities under the program under this subtitle shall be carried out only—

(1) in—
(A) areas in the territorial waters of the United States not under any Outer Continental Shelf moratorium as of September 30, 2002;
(B) areas onshore in the United States on public land administered by the Secretary of the Interior available for oil and gas leasing, where consistent with applicable law and land use plans; and
(C) areas onshore in the United States on State or private land, subject to applicable law; and
(2) with the approval of the appropriate Federal or State land management agency or private land owner.

(e) RESEARCH AT NATIONAL ENERGY TECHNOLOGY LABORATORY.—The Secretary, through the National Energy Technology Laboratory, shall carry out research complementary to research under subsection (b).

(f) CONSULTATION WITH SECRETARY OF THE INTERIOR.—In carrying out this subtitle, the Secretary shall consult regularly with the Secretary of the Interior.

SEC. 612. ULTRA-DEEPWATER PROGRAM.

(a) IN GENERAL.—The Secretary shall carry out the activities under section 611(a), to maximize the use of the ultra-deepwater natural gas and other petroleum resources of the United States by increasing the supply of such resources, through reducing the cost and increasing the efficiency of exploration for and production of such resources, while improving safety and minimizing environmental impacts.

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

(c) ROLE OF THE PROGRAM CONSORTIUM.—

(1) IN GENERAL.—The Secretary may contract with a consortium to—
(A) manage awards pursuant to subsection (f)(4);

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

(C) disburse funds awarded under subsection (f) as directed by the Secretary in accordance with the annual plan under subsection (e); and

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

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

(3) CONFLICT OF INTEREST.—

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

(i) to ensure that each board member, officer, or employee of the program consortium who is in a decision-making capacity under subsection (f)(3) or (4) shall disclose to the Secretary any financial interests in, or financial relationships with, applicants for or recipients of awards under this section, including those of his or her spouse or minor child, unless such relationships or interests would be considered to be remote or inconsequential; and

(ii) to require any board member, officer, or employee with a financial relationship or interest disclosed under clause (i) to recuse himself or herself from any review under subsection (f)(3) or oversight under subsection (f)(4) with respect to such applicant or recipient.

(B) FAILURE TO COMPLY.—The Secretary may disqualify an application or revoke an award under this section if a board member, officer, or employee has failed to comply with procedures required under subparagraph (A)(ii).

(d) SELECTION OF THE PROGRAM CONSORTIUM.—

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

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

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

(4) SCHEDULE.—Not later than 180 days after the date of enactment of this Act, the Secretary shall solicit proposals from eligible consortia to perform the duties in subsection (c)(1), which shall be submitted not later than 360 days after the date of enactment of this Act. The Secretary shall select the program consortium not later than 18 months after such date of enactment.

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

(A) list all members of the consortium;

(B) fully describe the structure of the consortium, including any provisions relating to intellectual property; and

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

(6) ELIGIBILITY.—To be eligible to be selected as the program consortium, an applicant must be an entity whose members collectively have demonstrated capabilities in planning and managing research, development, demonstration, and commercial application programs in natural gas or other petroleum exploration or production.

(7) CRITERION.—The Secretary shall consider the amount of the fee an applicant proposes to receive under subsection (g) in selecting a consortium under this section.

(e) ANNUAL PLAN.—

(1) IN GENERAL.—The program under this section shall be carried out pursuant to an annual plan prepared by the Secretary in accordance with paragraph (2).

(2) DEVELOPMENT.—

(A) SOLICITATION OF RECOMMENDATIONS.—Before drafting an annual plan under this subsection, the Secretary shall solicit specific written recommendations from the program consortium for each element to be addressed in the plan, including those described in paragraph (4). The Secretary may request that the program consortium submit its recommendations in the form of a draft annual plan.

(B) SUBMISSION OF RECOMMENDATIONS; OTHER COMMENT.—The Secretary shall submit the recommendations of the program consortium under subparagraph (A) to the Ultra-Deepwater Advisory Committee established under section 615(a) for review, and such Advisory Committee shall provide to the Secretary written comments by a date determined by the Secretary. The Secretary may also solicit comments from any other experts.

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

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

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

(A) a list of any solicitations for awards that the Secretary plans to issue to carry out research, development, demonstration, or commercial application activities, including the topics for such work, who would be eligible to apply, selection criteria, and the duration of awards; and

(B) a description of the activities expected of the program consortium to carry out subsection (f)(4).

(5) ESTIMATES OF INCREASED ROYALTY RECEIPTS.—The Secretary, in consultation with the Secretary of the Interior, shall provide an annual report to Congress with the President's budget on the estimated cumulative increase in Federal royalty receipts (if any) resulting from the implementation of this subtitle. The initial report under this paragraph shall be submitted in the first President's budget following the completion of the first annual plan required under this subsection.

(f) AWARDS.—

(1) IN GENERAL.—The Secretary shall make awards to carry out research, development, demonstration, and commercial application activities under the program under this section. The program consortium shall not be eligible to receive such awards, but members of the program consortium may receive such awards.

(2) PROPOSALS.—The Secretary shall solicit proposals for awards under this subsection in such manner and at such time as the Secretary may prescribe, in consultation with the program consortium.

(3) REVIEW.—The Secretary shall make awards under this subsection through a competitive process, which shall include a review by individuals selected by the Secretary. Such individuals shall include, for each application, Federal officials, the program consortium, and non-Federal experts who are not board members, officers, or employees of the program consortium or of a member of the program consortium.

(4) OVERSIGHT.—

(A) IN GENERAL.—The program consortium shall oversee the implementation of awards under this subsection, consistent with the annual plan under subsection (e), including disbursing funds and monitoring activities carried out under such awards for compliance with the terms and conditions of the awards.

(B) EFFECT.—Nothing in subparagraph (A) shall limit the authority or responsibility of the Secretary to oversee awards, or limit the authority of the Secretary to review or revoke awards.

(C) PROVISION OF INFORMATION.—The Secretary shall provide to the program consortium the information necessary for the program consortium to carry out its responsibilities under this paragraph.

(g) ADMINISTRATIVE COSTS.—

(1) IN GENERAL.—To compensate the program consortium for carrying out its activities under this section, the Secretary shall provide to the program consortium funds sufficient to administer the program. This compensation may include a management fee consistent with Department of Energy contracting practices and procedures.

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

(h) AUDIT.—The Secretary shall retain an independent, commercial auditor to determine the extent to which funds provided to the program consortium, and funds provided under awards made under subsection (f), have been expended in a manner consistent with the purposes and requirements of this subtitle. The auditor shall transmit a report annually to the Secretary, who shall transmit the report to Congress, along with a plan to remedy any deficiencies cited in the report.

SEC. 613. UNCONVENTIONAL NATURAL GAS AND OTHER PETROLEUM RESOURCES PROGRAM.

(a) IN GENERAL.—The Secretary shall carry out activities under section 611(b)(3), to maximize the use of the onshore unconventional natural gas and other petroleum resources of the United States, by increasing the supply of such resources, through reducing the cost and increasing the efficiency of exploration for and production of such resources, while improving safety and minimizing environmental impacts.

(b) AWARDS.—

(1) IN GENERAL.—The Secretary shall carry out this section through awards to research consortia made through an open, competitive process. As a condition of award of funds, qualified research consortia shall—

(A) demonstrate capability and experience in unconventional onshore natural gas or other petroleum research and development;

(B) provide a research plan that demonstrates how additional natural gas or oil production will be achieved; and

(C) at the request of the Secretary, provide technical advice to the Secretary for the purposes of developing the annual plan required under subsection (e).

(2) PRODUCTION POTENTIAL.—The Secretary shall seek to ensure that the number and types of awards made under this subsection have reasonable potential to lead to additional oil and natural gas production on Federal lands.

(3) SCHEDULE.—To carry out this subsection, not later than 180 days after the date of enactment of this Act, the Secretary shall solicit proposals from research consortia, which shall be submitted not later than 360 days after the date of enactment of this Act. The Secretary shall select the first group of research consortia to receive awards under this subsection not later than 18 months after such date of enactment.

(c) AUDIT.—The Secretary shall retain an independent, commercial auditor to determine the extent to which funds provided under awards made under this section have been expended in a manner consistent with the purposes and requirements of this subtitle. The auditor shall transmit a report annually to the Secretary, who shall transmit the report to Congress, along with a plan to remedy any deficiencies cited in the report.

(d) FOCUS AREAS FOR AWARDS.—

(1) UNCONVENTIONAL RESOURCES.—Awards from allocations under section 619(d)(2) shall focus on areas including advanced coalbed methane, deep drilling, natural gas production from tight sands, natural gas production from gas shales, stranded gas, innovative exploration and production techniques, enhanced recovery techniques, and environmental mitigation of unconventional natural gas and other petroleum resources exploration and production.

(2) SMALL PRODUCERS.—Awards from allocations under section 619(d)(3) shall be made to consortia consisting of small producers or organized primarily for the benefit of small producers, and shall focus on areas including complex geology involving rapid changes in the type and quality of the oil and gas reservoirs across the reservoir; low reservoir pressure; unconventional natural gas reservoirs in coalbeds, deep reservoirs, tight sands, or shales; and unconventional oil reservoirs in tar sands and oil shales.

(e) ANNUAL PLAN.—

(1) IN GENERAL.—The program under this section shall be carried out pursuant to an annual plan prepared by the Secretary in accordance with paragraph (2).

(2) DEVELOPMENT.—

(A) WRITTEN RECOMMENDATIONS.—Before drafting an annual plan under this subsection, the Secretary shall solicit specific written recommendations from the research consortia receiving awards under subsection (b) and the Unconventional Resources Technology Advisory Committee for each element to be addressed in the plan, including those described in subparagraph (D).

(B) CONSULTATION.—The Secretary shall consult regularly with the research consortia throughout the preparation of the annual plan.

(C) PUBLICATION.—The Secretary shall transmit to Congress and publish in the Federal Register the annual plan, along with any written comments received under subparagraph (A).

(D) CONTENTS.—The annual plan shall describe the ongoing and prospective activities under this section and shall include a list of any solicitations for awards that the Secretary plans to issue to carry out research, development, demonstration, or commercial application activities, including the topics for such work, who would be eligible to apply, selection criteria, and the duration of awards.

(3) ESTIMATES OF INCREASED ROYALTY RECEIPTS.—The Secretary, in consultation with the Secretary of the Interior, shall provide an annual report to Congress with the President's budget on the estimated cumulative increase in Federal royalty receipts (if any) resulting from the implementation of this subtitle. The initial report under this paragraph shall be submitted in the first President's budget following the completion of the first annual plan required under this subsection.

(f) ACTIVITIES BY THE UNITED STATES GEOLOGICAL SURVEY.—The Secretary of the Interior, through the United States Geological Survey, shall, where appropriate, carry out programs of long-term research to complement the programs under this section.

SEC. 614. ADDITIONAL REQUIREMENTS FOR AWARDS.

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

(b) FLEXIBILITY IN LOCATING DEMONSTRATION PROJECTS.—Subject to the limitation in section 611(c), a demonstration project under this subtitle relating to an ultra-deepwater technology or an ultra-deepwater architecture may be conducted in deepwater depths.

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

(d) TECHNOLOGY TRANSFER.—2.5 percent of the amount of each award made under this subtitle shall be designated for technology transfer and outreach activities under this subtitle.

(e) COST SHARING REDUCTION FOR INDEPENDENT PRODUCERS.—In applying the cost sharing requirements under [section ____] to an award under this subtitle the Secretary may reduce or eliminate the non-Federal requirement if the Secretary determines that the reduction is necessary and appropriate considering the technological risks involved in the project.

SEC. 615. ADVISORY COMMITTEES.

(a) ULTRA-DEEPWATER ADVISORY COMMITTEE.—

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

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

(A) individuals with extensive research experience or operational knowledge of offshore natural gas and other petroleum exploration and production;

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

(C) no individuals who are Federal employees; and

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

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

(A) advise the Secretary on the development and implementation of programs under this subtitle related to ultra-deepwater natural gas and other petroleum resources; and

(B) carry out section 612(e)(2)(B).

(4) COMPENSATION.—A member of the advisory committee under this subsection shall serve without compensation but shall receive travel expenses in accordance with applicable provisions under subchapter I of chapter 57 of title 5, United States Code.

(b) UNCONVENTIONAL RESOURCES TECHNOLOGY ADVISORY COMMITTEE.—

(1) ESTABLISHMENT.—Not later than 270 days after the date of enactment of this Act, the Secretary shall establish an advisory committee to be known as the Unconventional Resources Technology Advisory Committee.

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

(A) a majority of members who are employees or representatives of independent producers of natural gas and other petroleum, including small producers;

(B) individuals with extensive research experience or operational knowledge of unconventional natural gas and other petroleum resource exploration and production;

(C) individuals broadly representative of the affected interests in unconventional natural gas and other petroleum resource exploration and production, including interests in environmental protection and safe operations; and

(D) no individuals who are Federal employees.

(3) DUTIES.—The advisory committee under this subsection shall advise the Secretary on the development and implementation of activities under this subtitle related to unconventional natural gas and other petroleum resources.

(4) COMPENSATION.—A member of the advisory committee under this subsection shall serve without compensation but shall receive travel expenses in accordance with applicable provisions under subchapter I of chapter 57 of title 5, United States Code.

(c) PROHIBITION.—No advisory committee established under this section shall make recommendations on funding awards to particular consortia or other entities, or for specific projects.

SEC. 616. LIMITS ON PARTICIPATION.

An entity shall be eligible to receive an award under this subtitle only if the Secretary finds—

(1) that the entity's participation in the program under this subtitle would be in the economic interest of the United States; and

(2) that either—

(A) the entity is a United States-owned entity organized under the laws of the United States; or

(B) the entity is organized under the laws of the United States and has a parent entity organized under the laws of a country that affords—

(i) to United States-owned entities opportunities, comparable to those afforded to any other entity, to participate in any cooperative research venture similar to those authorized under this subtitle;

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

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

SEC. 617. SUNSET.

The authority provided by this subtitle shall terminate on September 30, 2015.

SEC. 618. DEFINITIONS.

In this subtitle:

(1) DEEPWATER.—The term "deepwater" means a water depth that is greater than 200 but less than 1,500 meters.

(2) INDEPENDENT PRODUCER OF OIL OR GAS.—

(A) IN GENERAL.—The term "independent producer of oil or gas" means any person that produces oil or gas other than a person to whom subsection (c) of section 613A of the Internal Revenue Code of 1986 does not apply by reason of paragraph (2) (relating to certain retailers) or paragraph (4) (relating to certain refiners) of section 613A(d) of such Code.

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

(3) PROGRAM CONSORTIUM.—The term "program consortium" means the consortium selected under section 612(d).

(4) REMOTE OR INCONSEQUENTIAL.—The term "remote or inconsequential" has the meaning given that term in regulations issued by the Office of Government Ethics under section 208(b)(2) of title 18, United States Code.

(5) SMALL PRODUCER.—The term "small producer" means an entity organized under the laws of the United States with production levels of less than 1,000 barrels per day of oil equivalent.

(6) ULTRA-DEEPWATER.—The term "ultra-deepwater" means a water depth that is equal to or greater than 1,500 meters.

(7) ULTRA-DEEPWATER ARCHITECTURE.—The term "ultra-deepwater architecture" means the integration of technologies for the exploration for, or production of, natural gas or other petroleum resources located at ultra-deepwater depths.

(8) ULTRA-DEEPWATER TECHNOLOGY.—The term "ultra-deepwater technology" means a discrete technology that is specially suited to address 1 or more challenges associated with the exploration for, or production of, natural gas or other petroleum resources located at ultra-deepwater depths.

(9) UNCONVENTIONAL NATURAL GAS AND OTHER PETROLEUM RESOURCE.—The term "unconventional natural gas and other petroleum resource" means natural gas and other petroleum resource located onshore in an economically inaccessible geological formation, including resources of small producers.

SEC. 619. FUNDING.

(a) IN GENERAL.—

(1) OIL AND GAS LEASE INCOME.—For each of fiscal years 2006 through 2015, from any Federal royalties, rents, and bonuses derived from Federal onshore and offshore oil and gas leases issued under the Outer Continental Shelf Lands Act and the Mineral Leasing Act which are deposited in the Treasury, and after distribution of any such funds as described in subsection (c), $150,000,000 shall be deposited into the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Fund (in this section referred to as the Fund). For purposes of this section, the term "royalties" excludes proceeds from the sale of royalty production taken in kind and royalty production that is transferred under section 27(a)(3) of the Outer Continental Shelf Lands Act (43 U.S.C. 1353(a)(3)).

(2) AUTHORIZATION OF APPROPRIATIONS.—In addition to amounts described in paragraph (1), there are authorized to be appropriated to the Secretary, to be deposited in the Fund, $50,000,000 for each of the fiscal years 2006 through 2015, to remain available until expended.

(b) OBLIGATIONAL AUTHORITY.—Monies in the Fund shall be available to the Secretary for obligation under this subtitle without fiscal year limitation, to remain available until expended.

(c) PRIOR DISTRIBUTIONS.—The distributions described in subsection (a) are those required by law—

(1) to States and to the Reclamation Fund under the Mineral Leasing Act (30 U.S.C. 191(a)); and

(2) to other funds receiving monies from Federal oil and gas leasing programs, including—

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

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

(C) the Historic Preservation Fund, pursuant to section 108 of the National Historic Preservation Act (16 U.S.C. 470h); and

(D) the Secure Energy Reinvestment Fund.

(d) ALLOCATION.—Amounts obligated from the Fund under this section in each fiscal year shall be allocated as follows:

(1) 50 percent shall be for activities under section 612.

(2) 35 percent shall be for activities under section 613(d)(1).

(3) 10 percent shall be for activities under section 613(d)(2).

(4) 5 percent shall be for research under section 611(d).

(e) FUND.—There is hereby established in the Treasury of the United States a separate fund to be known as the "Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Fund".

TITLE VII—HYDROGEN

SEC. 701. DEFINITIONS.

In this title:

(1) ADVISORY COMMITTEE.—The term "Advisory Committee" means the Hydrogen Technical and Fuel Cell Advisory Committee established under section 705.

(2) FUEL CELL.—The term "fuel cell" means a device that directly converts the chemical energy of a fuel and an oxidant into electricity by an electrochemical process taking place at separate electrodes in the device.

(3) INFRASTRUCTURE.—The term "infrastructure" means the equipment, systems, or facilities used to produce, distribute, deliver, or store hydrogen.

(4) LIGHT DUTY VEHICLE.—The term "light duty vehicle" means a car or truck classified by the Department of Transportation as a Class I or IIA vehicle.

SEC. 702. PLAN.

Not later than 6 months after the date of enactment of this Act, the Secretary shall transmit to Congress a coordinated plan for the programs described in this title and any other programs of the Department that are directly related to fuel cells or hydrogen. The plan shall describe, at a minimum—

(1) the agenda for the next 5 years for the programs authorized under this title, including the agenda for each activity enumerated in section 703(a);

(2) the types of entities that will carry out the activities under this title and what role each entity is expected to play;

(3) the milestones that will be used to evaluate the programs for the next 5 years;

(4) the most significant technical and nontechnical hurdles that stand in the way of achieving the goals described in section 703(b), and how the programs will address those hurdles; and

(5) the policy assumptions that are implicit in the plan, including any assumptions that would affect the sources of hydrogen or the marketability of hydrogen-related products.

SEC. 703. PROGRAMS.

(a) ACTIVITIES.—The Secretary, in partnership with the private sector, shall conduct programs to address—

(1) production of hydrogen from diverse energy sources, including—

(A) fossil fuels, which may include carbon capture and sequestration;

(B) hydrogen-carrier fuels (including ethanol and methanol);

(C) renewable energy resources, including biomass; and

(D) nuclear energy;

(2) use of hydrogen for commercial, industrial, and residential electric power generation;

(3) safe delivery of hydrogen or hydrogen-carrier fuels, including—

(A) transmission by pipeline and other distribution methods; and

(B) convenient and economic refueling of vehicles either at central refueling stations or through distributed on-site generation;

(4) advanced vehicle technologies, including—

(A) engine and emission control systems;

(B) energy storage, electric propulsion, and hybrid systems;

(C) automotive materials; and

(D) other advanced vehicle technologies;

(5) storage of hydrogen or hydrogen-carrier fuels, including development of materials for safe and economic storage in gaseous, liquid, or solid form at refueling facilities and onboard vehicles;

(6) development of safe, durable, affordable, and efficient fuel cells, including fuel-flexible fuel cell power systems, improved manufacturing processes, high-temperature membranes, cost-effective fuel processing for natural gas, fuel cell stack and system reliability, low temperature operation, and cold start capability;

(7) development, after consultation with the private sector, of necessary codes and standards (including international codes and standards and voluntary consensus standards adopted in accordance with OMB Circular A–119) and safety practices for the production, distribution, storage, and use of hydrogen, hydrogen-carrier fuels, and related products; and

(8) a public education program to develop improved knowledge and acceptability of hydrogen-based systems.

(b) PROGRAM GOALS.—

(1) VEHICLES.—For vehicles, the goals of the program are—

(A) to enable a commitment by automakers no later than year 2015 to offer safe, affordable, and technically viable hydrogen fuel cell vehicles in the mass consumer market; and

(B) to enable production, delivery, and acceptance by consumers of model year 2020 hydrogen fuel cell and other hydrogen-powered vehicles that will have—

(i) a range of at least 300 miles;

(ii) improved performance and ease of driving;

(iii) safety and performance comparable to vehicle technologies in the market; and

(iv) when compared to light duty vehicles in model year 2003—

(I) fuel economy that is substantially higher;

(II) substantially lower emissions of air pollutants; and

(III) equivalent or improved vehicle fuel system crash integrity and occupant protection.

(2) HYDROGEN ENERGY AND ENERGY INFRASTRUCTURE.—For hydrogen energy and energy infrastructure, the goals of the program are to enable a commitment not later than 2015 that will lead to infrastructure by 2020 that will provide—

(A) safe and convenient refueling;

(B) improved overall efficiency;

(C) widespread availability of hydrogen from domestic energy sources through—

(i) production, with consideration of emissions levels;

(ii) delivery, including transmission by pipeline and other distribution methods for hydrogen; and

(iii) storage, including storage in surface transportation vehicles;

(D) hydrogen for fuel cells, internal combustion engines, and other energy conversion devices for portable, stationary, and transportation applications; and

(E) other technologies consistent with the Department's plan.

(3) FUEL CELLS.—The goals for fuel cells and their portable, stationary, and transportation applications are to enable—

(A) safe, economical, and environmentally sound hydrogen fuel cells;

(B) fuel cells for light duty and other vehicles; and

(C) other technologies consistent with the Department's plan.

(c) DEMONSTRATION.—In carrying out the programs under this section, the Secretary shall fund a limited number of demonstration projects, consistent with a determination of the maturity, cost-effectiveness, and environmental impacts of technologies supporting each project. In selecting projects under this subsection, the Secretary shall, to the extent practicable and in the public interest, select projects that—

(1) involve using hydrogen and related products at existing facilities or installations, such as existing office buildings, military bases, vehicle fleet centers, transit bus authorities, or units of the National Park System;

(2) depend on reliable power from hydrogen to carry out essential activities;

(3) lead to the replication of hydrogen technologies and draw such technologies into the marketplace;

(4) include vehicle, portable, and stationary demonstrations of fuel cell and hydrogen-based energy technologies;

(5) address the interdependency of demand for hydrogen fuel cell applications and hydrogen fuel infrastructure;

(6) raise awareness of hydrogen technology among the public;

(7) facilitate identification of an optimum technology among competing alternatives;

(8) address distributed generation using renewable sources; and

(9) address applications specific to rural or remote locations, including isolated villages and islands, the National Park System, and tribal entities.

The Secretary shall give preference to projects which address multiple elements contained in paragraphs (1) through (9).

(d) DEPLOYMENT.—In carrying out the programs under this section, the Secretary shall, in partnership with the private sector, conduct activities to facilitate the deployment of hydrogen energy and energy infrastructure, fuel cells, and advanced vehicle technologies.

(e) FUNDING.—

(1) IN GENERAL.—The Secretary shall carry out the programs under this section using a competitive, merit-based review process and consistent with the generally applicable Federal laws and regulations governing awards of financial assistance, contracts, or other agreements.

(2) RESEARCH CENTERS.—Activities under this section may be carried out by funding nationally recognized university-based or Federal laboratory research centers.

(f) DISCLOSURE.—Section 623 of the Energy Policy Act of 1992 (42 U.S.C. 13293) relating to the protection of information shall apply to projects carried out through grants, cooperative agreements, or contracts under this title.

SEC. 704. INTERAGENCY TASK FORCE.

(a) ESTABLISHMENT.—Not later than 120 days after the date of enactment of this Act, the President shall establish an interagency task force chaired by the Secretary with representatives from each of the following:

(1) The Office of Science and Technology Policy within the Executive Office of the President.

(2) The Department of Transportation.

(3) The Department of Defense.

(4) The Department of Commerce (including the National Institute of Standards and Technology).

(5) The Department of State.

(6) The Environmental Protection Agency.

(7) The National Aeronautics and Space Administration.

(8) Other Federal agencies as the Secretary determines appropriate.

(b) DUTIES.—

(1) PLANNING.—The interagency task force shall work toward—

(A) a safe, economical, and environmentally sound fuel infrastructure for hydrogen and hydrogen-carrier fuels, including an infrastructure that supports buses and other fleet transportation;

(B) fuel cells in government and other applications, including portable, stationary, and transportation applications;

(C) distributed power generation, including the generation of combined heat, power, and clean fuels including hydrogen;

(D) uniform hydrogen codes, standards, and safety protocols; and

(E) vehicle hydrogen fuel system integrity safety performance.

(2) ACTIVITIES.—The interagency task force may organize workshops and conferences, may issue publications, and may create databases to carry out its duties. The interagency task force shall—

(A) foster the exchange of generic, nonproprietary information and technology among industry, academia, and government;

(B) develop and maintain an inventory and assessment of hydrogen, fuel cells, and other advanced technologies, including the commercial capability of each technology for the economic and environmentally safe production, distribution, delivery, storage, and use of hydrogen;

(C) integrate technical and other information made available as a result of the programs and activities under this title;

(D) promote the marketplace introduction of infrastructure for hydrogen fuel vehicles; and

(E) conduct an education program to provide hydrogen and fuel cell information to potential end-users.

(c) AGENCY COOPERATION.—The heads of all agencies, including those whose agencies are not represented on the interagency task force, shall cooperate with and furnish information to the interagency task force, the Advisory Committee, and the Department.

SEC. 705. ADVISORY COMMITTEE.

(a) ESTABLISHMENT.—The Hydrogen Technical and Fuel Cell Advisory Committee is established to advise the Secretary on the programs and activities under this title.

(b) MEMBERSHIP.—

(1) MEMBERS.—The Advisory Committee shall be comprised of not fewer than 12 nor more than 25 members. The members shall be appointed by the Secretary to represent domestic industry, academia, professional societies, government agencies, Federal laboratories, previous advisory panels, and financial, environmental, and other appropriate organizations based on the Department's assessment of the technical and other qualifications of committee members and the needs of the Advisory Committee.

(2) TERMS.—The term of a member of the Advisory Committee shall not be more than 3 years. The Secretary may appoint members of the Advisory Committee in a manner that allows the terms of the members serving at any time to expire at spaced intervals so as to ensure continuity in the functioning of the Advisory Committee. A member of the Advisory Committee whose term is expiring may be reappointed.

(3) CHAIRPERSON.—The Advisory Committee shall have a chairperson, who is elected by the members from among their number.

(c) REVIEW.—The Advisory Committee shall review and make recommendations to the Secretary on—

(1) the implementation of programs and activities under this title;

(2) the safety, economical, and environmental consequences of technologies for the production, distribution, delivery, storage, or use of hydrogen energy and fuel cells; and

(3) the plan under section 702.

(d) RESPONSE.—

(1) CONSIDERATION OF RECOMMENDATIONS.—The Secretary shall consider, but need not adopt, any recommendations of the Advisory Committee under subsection (c).

(2) BIENNIAL REPORT.—The Secretary shall transmit a biennial report to Congress describing any recommendations made by the Advisory Committee since the previous report. The report shall include a description of how the Secretary has implemented or plans to implement the recommendations, or an explanation of the reasons that a recommendation will not be implemented. The report shall be transmitted along with the President's budget proposal.

(e) SUPPORT.—The Secretary shall provide resources necessary in the judgment of the Secretary for the Advisory Committee to carry out its responsibilities under this title.

SEC. 706. EXTERNAL REVIEW.

(a) PLAN.—The Secretary shall enter into an arrangement with the National Academy of Sciences to review the plan prepared under section 702, which shall be

completed not later than 6 months after the Academy receives the plan. Not later than 45 days after receiving the review, the Secretary shall transmit the review to Congress along with a plan to implement the review's recommendations or an explanation of the reasons that a recommendation will not be implemented.

(b) ADDITIONAL REVIEW.—The Secretary shall enter into an arrangement with the National Academy of Sciences under which the Academy will review the programs under section 703 during the fourth year following the date of enactment of this Act. The Academy's review shall include the research priorities and technical milestones, and evaluate the progress toward achieving them. The review shall be completed not later than 5 years after the date of enactment of this Act. Not later than 45 days after receiving the review, the Secretary shall transmit the review to Congress along with a plan to implement the review's recommendations or an explanation for the reasons that a recommendation will not be implemented.

SEC. 707. MISCELLANEOUS PROVISIONS.

(a) REPRESENTATION.—The Secretary may represent the United States interests with respect to activities and programs under this title, in coordination with the Department of Transportation, the National Institute of Standards and Technology, and other relevant Federal agencies, before governments and nongovernmental organizations including—

(1) other Federal, State, regional, and local governments and their representatives;

(2) industry and its representatives, including members of the energy and transportation industries; and

(3) in consultation with the Department of State, foreign governments and their representatives including international organizations.

(b) REGULATORY AUTHORITY.—Nothing in this title shall be construed to alter the regulatory authority of the Department.

SEC. 708. SAVINGS CLAUSE.

Nothing in this title shall be construed to affect the authority of the Secretary of Transportation that may exist prior to the date of enactment of this Act with respect to—

(1) research into, and regulation of, hydrogen-powered vehicles fuel systems integrity, standards, and safety under subtitle VI of title 49, United States Code;

(2) regulation of hazardous materials transportation under chapter 51 of title 49, United States Code;

(3) regulation of pipeline safety under chapter 601 of title 49, United States Code;

(4) encouragement and promotion of research, development, and deployment activities relating to advanced vehicle technologies under section 5506 of title 49, United States Code;

(5) regulation of motor vehicle safety under chapter 301 of title 49, United States Code;

(6) automobile fuel economy under chapter 329 of title 49, United States Code; or

(7) representation of the interests of the United States with respect to the activities and programs under the authority of title 49, United States Code.

SEC. 709. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary to carry out this title, in addition to any amounts made available for these purposes under other Acts—

(1) $273,500,000 for fiscal year 2006;

(2) $375,000,000 for fiscal year 2007;

(3) $450,000,000 for fiscal year 2008;

(4) $500,000,000 for fiscal year 2009; and

(5) $550,000,000 for fiscal year 2010.

TITLE VIII—ADVANCED VEHICLES

Subtitle A—Pilot Program

SEC. 801. DEFINITIONS.

In this subtitle:

(1) ALTERNATIVE FUELED VEHICLE.—

(A) IN GENERAL.—The term "alternative fueled vehicle" means a vehicle propelled solely on an alternative fuel (as defined in section 301 of the Energy Policy Act of 1992 (42 U.S.C. 13211)).

(B) EXCLUSION.—The term "alternative fueled vehicle" does not include a vehicle that the Secretary determines, by regulation, does not yield substantial environmental benefits over a vehicle operating solely on gasoline or diesel derived from fossil fuels.

(2) FUEL CELL VEHICLE.—The term "fuel cell vehicle" means a vehicle propelled by an electric motor powered by a fuel cell system that converts chemical energy into electricity by combining oxygen (from air) with hydrogen fuel that is stored on the vehicle or is produced onboard by reformation of a hydrocarbon fuel. Such fuel cell system may or may not include the use of auxiliary energy storage systems to enhance vehicle performance.

(3) HYBRID VEHICLE.—The term "hybrid vehicle" means a medium or heavy duty vehicle propelled by an internal combustion engine or heat engine using any combustible fuel and an onboard rechargeable energy storage device.

(4) NEIGHBORHOOD ELECTRIC VEHICLE.—The term "neighborhood electric vehicle" means a motor vehicle that—

(A) meets the definition of a low-speed vehicle (as defined in part 571 of title 49, Code of Federal Regulations);

(B) meets the definition of a zero-emission vehicle (as defined in section 86.1702–99 of title 40, Code of Federal Regulations);

(C) meets the requirements of Federal Motor Vehicle Safety Standard No. 500; and

(D) has a maximum speed of not greater than 25 miles per hour.

(5) PILOT PROGRAM.—The term "pilot program" means the competitive grant program established under section 802.

(6) ULTRA-LOW SULFUR DIESEL VEHICLE.—The term "ultra-low sulfur diesel vehicle" means a vehicle manufactured in model year 2005 or 2006 powered by a heavy-duty diesel engine that—

(A) is fueled by diesel fuel that contains sulfur at not more than 15 parts per million; and

(B) emits not more than the lesser of—

(i) 2.5 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter; or

(ii) the quantity of emissions of nonmethane hydrocarbons, oxides of nitrogen, and particulate matter of the best-performing technology of ultra-low sulfur diesel vehicles of the same class and application that are commercially available.

SEC. 802. PILOT PROGRAM.

(a) ESTABLISHMENT.—The Secretary, in consultation with the Secretary of Transportation, shall establish a competitive grant pilot program, to be administered through the Clean Cities Program of the Department of Energy, to provide not more than 15 geographically dispersed project grants to State governments, local governments, or metropolitan transportation authorities to carry out a project or projects for the purposes described in subsection (b).

(b) GRANT PURPOSES.—A grant under this section may be used for the following purposes:

(1) The acquisition of alternative fueled vehicles or fuel cell vehicles, including—

(A) passenger vehicles (including neighborhood electric vehicles); and

(B) motorized 2–wheel bicycles, scooters, or other vehicles for use by law enforcement personnel or other State or local government or metropolitan transportation authority employees.

(2) The acquisition of alternative fueled vehicles, hybrid vehicles, or fuel cell vehicles, including—

(A) buses used for public transportation or transportation to and from schools;

(B) delivery vehicles for goods or services; and

(C) ground support vehicles at public airports (including vehicles to carry baggage or push or pull airplanes toward or away from terminal gates).

(3) The acquisition of ultra-low sulfur diesel vehicles.

(4) Installation or acquisition of infrastructure necessary to directly support an alternative fueled vehicle, fuel cell vehicle, or hybrid vehicle project funded by the grant, including fueling and other support equipment.

(5) Operation and maintenance of vehicles, infrastructure, and equipment acquired as part of a project funded by the grant.

(c) APPLICATIONS.—

(1) REQUIREMENTS.—

(A) IN GENERAL.—The Secretary shall issue requirements for applying for grants under the pilot program.

(B) MINIMUM REQUIREMENTS.—At a minimum, the Secretary shall require that an application for a grant—

(i) be submitted by the head of a State or local government or a metropolitan transportation authority, or any combination thereof, and a registered participant in the Clean Cities Program of the Department of Energy; and

(ii) include—

(I) a description of the project proposed in the application, including how the project meets the requirements of this subtitle;

(II) an estimate of the ridership or degree of use of the project;

(III) an estimate of the air pollution emissions reduced and fossil fuel displaced as a result of the project, and a plan to collect and disseminate environmental data, related to the project to be funded under the grant, over the life of the project;

(IV) a description of how the project will be sustainable without Federal assistance after the completion of the term of the grant;

(V) a complete description of the costs of the project, including acquisition, construction, operation, and maintenance costs over the expected life of the project;

(VI) a description of which costs of the project will be supported by Federal assistance under this subtitle; and

(VII) documentation to the satisfaction of the Secretary that diesel fuel containing sulfur at not more than 15 parts per million is available for carrying out the project, and a commitment by the applicant to use such fuel in carrying out the project.

(2) PARTNERS.—An applicant under paragraph (1) may carry out a project under the pilot program in partnership with public and private entities.

(d) SELECTION CRITERIA.—In evaluating applications under the pilot program, the Secretary shall—

(1) consider each applicant's previous experience with similar projects; and

(2) give priority consideration to applications that—

(A) are most likely to maximize protection of the environment;

(B) demonstrate the greatest commitment on the part of the applicant to ensure funding for the proposed project and the greatest likelihood that the project will be maintained or expanded after Federal assistance under this subtitle is completed; and

(C) exceed the minimum requirements of subsection (c)(1)(B)(ii).

(e) PILOT PROJECT REQUIREMENTS.—

(1) MAXIMUM AMOUNT.—The Secretary shall not provide more than $20,000,000 in Federal assistance under the pilot program to any applicant.

(2) COST SHARING.—The Secretary shall not provide more than 50 percent of the cost, incurred during the period of the grant, of any project under the pilot program.

(3) MAXIMUM PERIOD OF GRANTS.—The Secretary shall not fund any applicant under the pilot program for more than 5 years.

(4) DEPLOYMENT AND DISTRIBUTION.—The Secretary shall seek to the maximum extent practicable to ensure a broad geographic distribution of project sites.

(5) TRANSFER OF INFORMATION AND KNOWLEDGE.—The Secretary shall establish mechanisms to ensure that the information and knowledge gained by participants in the pilot program are transferred among the pilot program participants and to other interested parties, including other applicants that submitted applications.

(f) SCHEDULE.—

(1) PUBLICATION.—Not later than 90 days after the date of enactment of this Act, the Secretary shall publish in the Federal Register, Commerce Business Daily, and elsewhere as appropriate, a request for applications to undertake projects under the pilot program. Applications shall be due not later than 180 days after the date of publication of the notice.

(2) SELECTION.—Not later than 180 days after the date by which applications for grants are due, the Secretary shall select by competitive, peer reviewed proposal, all applications for projects to be awarded a grant under the pilot program.

(g) LIMIT ON FUNDING.—The Secretary shall provide not less than 20 nor more than 25 percent of the grant funding made available under this section for the acquisition of ultra-low sulfur diesel vehicles.

SEC. 803. REPORTS TO CONGRESS.

(a) INITIAL REPORT.—Not later than 60 days after the date on which grants are awarded under this subtitle, the Secretary shall submit to Congress a report containing—

(1) an identification of the grant recipients and a description of the projects to be funded;

(2) an identification of other applicants that submitted applications for the pilot program; and

(3) a description of the mechanisms used by the Secretary to ensure that the information and knowledge gained by participants in the pilot program are transferred among the pilot program participants and to other interested parties, including other applicants that submitted applications.

(b) EVALUATION.—Not later than 3 years after the date of enactment of this Act, and annually thereafter until the pilot program ends, the Secretary shall submit to Congress a report containing an evaluation of the effectiveness of the pilot program, including—

(1) an assessment of the benefits to the environment derived from the projects included in the pilot program; and

(2) an estimate of the potential benefits to the environment to be derived from widespread application of alternative fueled vehicles and ultra-low sulfur diesel vehicles.

SEC. 804. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary to carry out this subtitle $200,000,000, to remain available until expended.

Subtitle B—Clean School Buses

SEC. 811. DEFINITIONS.

In this subtitle:

(1) ADMINISTRATOR.—The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) ALTERNATIVE FUEL.—The term "alternative fuel" means liquefied natural gas, compressed natural gas, liquefied petroleum gas, hydrogen, propane, or methanol or ethanol at no less than 85 percent by volume.

(3) ALTERNATIVE FUEL SCHOOL BUS.—The term "alternative fuel school bus" means a school bus that meets all of the requirements of this subtitle and is operated solely on an alternative fuel.

(4) EMISSIONS CONTROL RETROFIT TECHNOLOGY.—The term "emissions control retrofit technology" means a particulate filter or other emissions control equipment that is verified or certified by the Administrator or the California Air Resources Board as an effective emission reduction technology when installed on an existing school bus.

(5) IDLING.—The term "idling" means operating an engine while remaining stationary for more than approximately 15 minutes, except that the term does not apply to routine stoppages associated with traffic movement or congestion.

(6) ULTRA-LOW SULFUR DIESEL FUEL.—The term "ultra-low sulfur diesel fuel" means diesel fuel that contains sulfur at not more than 15 parts per million.

(7) ULTRA-LOW SULFUR DIESEL FUEL SCHOOL BUS.—The term "ultra-low sulfur diesel fuel school bus" means a school bus that meets all of the requirements of this subtitle and is operated solely on ultra-low sulfur diesel fuel.

SEC. 812. PROGRAM FOR REPLACEMENT OF CERTAIN SCHOOL BUSES WITH CLEAN SCHOOL BUSES.

(a) ESTABLISHMENT.—The Administrator, in consultation with the Secretary and other appropriate Federal departments and agencies, shall establish a program for awarding grants on a competitive basis to eligible entities for the replacement of existing school buses manufactured before model year 1991 with alternative fuel school buses and ultra-low sulfur diesel fuel school buses.

(b) REQUIREMENTS.—

(1) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Administrator shall establish and publish in the Federal Register grant requirements on eligibility for assistance, and on implementation of the program established under subsection (a), including instructions for the submission

of grant applications and certification requirements to ensure compliance with this subtitle.

(2) APPLICATION DEADLINES.—The requirements established under paragraph (1) shall require submission of grant applications not later than—

(A) in the case of the first year of program implementation, the date that is 180 days after the publication of the requirements in the Federal Register; and

(B) in the case of each subsequent year, June 1 of the year.

(c) ELIGIBLE RECIPIENTS.—A grant shall be awarded under this section only—

(1) to 1 or more local or State governmental entities responsible for providing school bus service to 1 or more public school systems or responsible for the purchase of school buses;

(2) to 1 or more contracting entities that provide school bus service to 1 or more public school systems, if the grant application is submitted jointly with the 1 or more school systems to be served by the buses, except that the application may provide that buses purchased using funds awarded shall be owned, operated, and maintained exclusively by the 1 or more contracting entities; or

(3) to a nonprofit school transportation association representing private contracting entities, if the association has notified and received approval from the 1 or more school systems to be served by the buses.

(d) AWARD DEADLINES.—

(1) IN GENERAL.—Subject to paragraph (2), the Administrator shall award a grant made to a qualified applicant for a fiscal year—

(A) in the case of the first fiscal year of program implementation, not later than the date that is 90 days after the application deadline established under subsection (b)(2); and

(B) in the case of each subsequent fiscal year, not later than August 1 of the fiscal year.

(2) INSUFFICIENT NUMBER OF QUALIFIED GRANT APPLICATIONS.—If the Administrator does not receive a sufficient number of qualified grant applications to meet the requirements of subsection (i)(1) for a fiscal year, the Administrator shall award a grant made to a qualified applicant under subsection (i)(2) not later than September 30 of the fiscal year.

(e) TYPES OF GRANTS.—

(1) IN GENERAL.—A grant under this section shall be used for the replacement of school buses manufactured before model year 1991 with alternative fuel school buses and ultra-low sulfur diesel fuel school buses.

(2) NO ECONOMIC BENEFIT.—Other than the receipt of the grant, a recipient of a grant under this section may not receive any economic benefit in connection with the receipt of the grant.

(3) PRIORITY OF GRANT APPLICATIONS.—The Administrator shall give priority to applicants that propose to replace school buses manufactured before model year 1977.

(f) CONDITIONS OF GRANT.—A grant provided under this section shall include the following conditions:

(1) SCHOOL BUS FLEET.—All buses acquired with funds provided under the grant shall be operated as part of the school bus fleet for which the grant was made for a minimum of 5 years.

(2) USE OF FUNDS.—Funds provided under the grant may only be used—

(A) to pay the cost, except as provided in paragraph (3), of new alternative fuel school buses or ultra-low sulfur diesel fuel school buses, including State taxes and contract fees associated with the acquisition of such buses; and

(B) to provide—

(i) up to 20 percent of the price of the alternative fuel school buses acquired, for necessary alternative fuel infrastructure if the infrastructure will only be available to the grant recipient; and

(ii) up to 25 percent of the price of the alternative fuel school buses acquired, for necessary alternative fuel infrastructure if the infrastructure will be available to the grant recipient and to other bus fleets.

(3) GRANT RECIPIENT FUNDS.—The grant recipient shall be required to provide at least—

(A) in the case of a grant recipient described in paragraph (1) or (3) of subsection (c), the lesser of—

(i) an amount equal to 15 percent of the total cost of each bus received; or

(ii) $15,000 per bus; and

(B) in the case of a grant recipient described in subsection (c)(2), the lesser of—

(i) an amount equal to 20 percent of the total cost of each bus received; or

(ii) $20,000 per bus.

(4) ULTRA-LOW SULFUR DIESEL FUEL.—In the case of a grant recipient receiving a grant for ultra-low sulfur diesel fuel school buses, the grant recipient shall be required to provide documentation to the satisfaction of the Administrator that diesel fuel containing sulfur at not more than 15 parts per million is available for carrying out the purposes of the grant, and a commitment by the applicant to use such fuel in carrying out the purposes of the grant.

(5) TIMING.—All alternative fuel school buses, ultra-low sulfur diesel fuel school buses, or alternative fuel infrastructure acquired under a grant awarded under this section shall be purchased and placed in service as soon as practicable.

(g) BUSES.—

(1) IN GENERAL.—Except as provided in paragraph (2), funding under a grant made under this section for the acquisition of new alternative fuel school buses or ultra-low sulfur diesel fuel school buses shall only be used to acquire school buses—

(A) with a gross vehicle weight of greater than 14,000 pounds;

(B) that are powered by a heavy duty engine;

(C) in the case of alternative fuel school buses manufactured in model years 2005 and 2006, that emit not more than 1.8 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter; and

(D) in the case of ultra-low sulfur diesel fuel school buses manufactured in model years 2005 and 2006, that emit not more than 2.5 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter.

(2) LIMITATIONS.—A bus shall not be acquired under this section that emits nonmethane hydrocarbons, oxides of nitrogen, or particulate matter at a rate greater than the best performing technology of the same class of ultra-low sulfur diesel fuel school buses commercially available at the time the grant is made.

(h) DEPLOYMENT AND DISTRIBUTION.—The Administrator shall—

(1) seek, to the maximum extent practicable, to achieve nationwide deployment of alternative fuel school buses and ultra-low sulfur diesel fuel school buses through the program under this section; and

(2) ensure a broad geographic distribution of grant awards, with a goal of no State receiving more than 10 percent of the grant funding made available under this section for a fiscal year.

(i) ALLOCATION OF FUNDS.—

(1) IN GENERAL.—Subject to paragraph (2), of the amount of grant funding made available to carry out this section for any fiscal year, the Administrator shall use—

(A) 70 percent for the acquisition of alternative fuel school buses or supporting infrastructure; and

(B) 30 percent for the acquisition of ultra-low sulfur diesel fuel school buses.

(2) INSUFFICIENT NUMBER OF QUALIFIED GRANT APPLICATIONS.—After the first fiscal year in which this program is in effect, if the Administrator does not receive a sufficient number of qualified grant applications to meet the requirements of subparagraph (A) or (B) of paragraph (1) for a fiscal year, effective beginning on August 1 of the fiscal year, the Administrator shall make the remaining funds available to other qualified grant applicants under this section.

(j) REDUCTION OF SCHOOL BUS IDLING.—Each local educational agency (as defined in section 9101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801)) that receives Federal funds under the Elementary and Secondary Education Act of 1965 (20 U.S.C. 6301 et seq.) is encouraged to develop a policy, consistent with the health, safety, and welfare of students and the proper operation and maintenance of school buses, to reduce the incidence of unnecessary school bus idling at schools when picking up and unloading students.

(k) ANNUAL REPORT.—

(1) IN GENERAL.—Not later than January 31 of each year, the Administrator shall transmit to Congress a report evaluating implementation of the programs under this section and section 813.

(2) COMPONENTS.—The reports shall include a description of—

(A) the total number of grant applications received;

(B) the number and types of alternative fuel school buses, ultra-low sulfur diesel fuel school buses, and retrofitted buses requested in grant applications;

(C) grants awarded and the criteria used to select the grant recipients;

(D) certified engine emission levels of all buses purchased or retrofitted under the programs under this section and section 813;

(E) an evaluation of the in-use emission level of buses purchased or retrofitted under the programs under this section and section 813; and

(F) any other information the Administrator considers appropriate.

(l) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section—

(1) $45,000,000 for fiscal year 2006; and

(2) $65,000,000 for fiscal year 2007.

SEC. 813. DIESEL RETROFIT PROGRAM.

(a) ESTABLISHMENT.—The Administrator, in consultation with the Secretary, shall establish a program for awarding grants on a competitive basis to entities for the installation of retrofit technologies for diesel school buses.

(b) ELIGIBLE RECIPIENTS.—A grant shall be awarded under this section only—

(1) to a local or State governmental entity responsible for providing school bus service to 1 or more public school systems;

(2) to 1 or more contracting entities that provide school bus service to 1 or more public school systems, if the grant application is submitted jointly with the 1 or more school systems that the buses will serve, except that the application may provide that buses purchased using funds awarded shall be owned, operated, and maintained exclusively by the 1 or more contracting entities; or

(3) to a nonprofit school transportation association representing private contracting entities, if the association has notified and received approval from the 1 or more school systems to be served by the buses.

(c) AWARDS.—

(1) IN GENERAL.—The Administrator shall seek, to the maximum extent practicable, to ensure a broad geographic distribution of grants under this section.

(2) PREFERENCES.—In making awards of grants under this section, the Administrator shall give preference to proposals that—

(A) will achieve the greatest reductions in emissions of nonmethane hydrocarbons, oxides of nitrogen, or particulate matter per proposal or per bus; or

(B) involve the use of emissions control retrofit technology on diesel school buses that operate solely on ultra-low sulfur diesel fuel.

(d) CONDITIONS OF GRANT.—A grant shall be provided under this section on the conditions that—

(1) buses on which retrofit emissions-control technology are to be demonstrated—

(A) will operate on ultra-low sulfur diesel fuel where such fuel is reasonably available or required for sale by State or local law or regulation;

(B) were manufactured in model year 1991 or later; and

(C) will be used for the transportation of school children to and from school for a minimum of 5 years;

(2) grant funds will be used for the purchase of emission control retrofit technology, including State taxes and contract fees; and

(3) grant recipients will provide at least 15 percent of the total cost of the retrofit, including the purchase of emission control retrofit technology and all necessary labor for installation of the retrofit.

(e) VERIFICATION.—Not later than 90 days after the date of enactment of this Act, the Administrator shall publish in the Federal Register procedures to verify—

(1) the retrofit emissions-control technology to be demonstrated;

(2) that buses powered by ultra-low sulfur diesel fuel on which retrofit emissions-control technology are to be demonstrated will operate on diesel fuel containing not more than 15 parts per million of sulfur; and

(3) that grants are administered in accordance with this section.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Administrator to carry out this section—

(1) $20,000,000 for fiscal year 2006; and

(2) $35,000,000 for fiscal year 2007.

SEC. 814. FUEL CELL SCHOOL BUSES.

(a) ESTABLISHMENT.—The Secretary shall establish a program for entering into cooperative agreements—

(1) with private sector fuel cell bus developers for the development of fuel cell-powered school buses; and

(2) subsequently, with not less than 2 units of local government using natural gas-powered school buses and such private sector fuel cell bus developers to demonstrate the use of fuel cell-powered school buses.

(b) COST SHARING.—The non-Federal contribution for activities funded under this section shall be not less than—

(1) 20 percent for fuel infrastructure development activities; and

(2) 50 percent for demonstration activities and for development activities not described in paragraph (1).

(c) REPORTS TO CONGRESS.—Not later than 3 years after the date of enactment of this Act, the Secretary shall transmit to Congress a report that—

(1) evaluates the process of converting natural gas infrastructure to accommodate fuel cell-powered school buses; and

(2) assesses the results of the development and demonstration program under this section.

(d) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $25,000,000 for the period of fiscal years 2006 through 2008.

Subtitle C—Fuel Cell Transit Bus Demonstration

SEC. 821. FUEL CELL TRANSIT BUS DEMONSTRATION.

(a) IN GENERAL.—The Secretary, in consultation with the Secretary of Transportation, shall establish a transit bus demonstration program to make competitive, merit-based awards for 5-year projects to demonstrate not more than 25 fuel cell transit buses (and necessary infrastructure) in 5 geographically dispersed localities.

(b) PREFERENCE.—In selecting projects under this section, the Secretary shall give preference to projects that are most likely to mitigate congestion and improve air quality.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $10,000,000 for each of fiscal years 2006 through 2010.

TITLE IX—CLEAN COAL POWER INITIATIVE

SEC. 901. AUTHORIZATION OF APPROPRIATIONS.

(a) CLEAN COAL POWER INITIATIVE.—There are authorized to be appropriated to the Secretary to carry out the activities authorized by this title $200,000,000 for each of fiscal years 2006 through 2012, to remain available until expended.

(b) REPORT.—The Secretary shall transmit to Congress the report required by this subsection not later than March 31, 2006. The report shall include, with respect to subsection (a), a 10-year plan containing—

(1) a detailed assessment of whether the aggregate funding levels provided under subsection (a) are the appropriate funding levels for that program;

(2) a detailed description of how proposals will be solicited and evaluated, including a list of all activities expected to be undertaken;

(3) a detailed list of technical milestones for each coal and related technology that will be pursued; and

(4) a detailed description of how the program will avoid problems enumerated in General Accounting Office reports on the Clean Coal Technology Program, including problems that have resulted in unspent funds and projects that failed either financially or scientifically.

SEC. 902. PROJECT CRITERIA.

(a) IN GENERAL.—The Secretary shall not provide funding under this title for any project that does not advance efficiency, environmental performance, and cost competitiveness well beyond the level of technologies that are in commercial service or have been demonstrated on a scale that the Secretary determines is sufficient to demonstrate that commercial service is viable as of the date of enactment of this Act.

(b) TECHNICAL CRITERIA FOR CLEAN COAL POWER INITIATIVE.—

(1) GASIFICATION PROJECTS.—

(A) IN GENERAL.—In allocating the funds made available under section 901(a), the Secretary shall ensure that at least 60 percent of the funds are used only for projects on coal-based gasification technologies, including gasification combined cycle, gasification fuel cells, gasification coproduction, and hybrid gasification/combustion.

(B) TECHNICAL MILESTONES.—The Secretary shall periodically set technical milestones specifying the emission and thermal efficiency levels that coal gasification projects under this title shall be designed, and reasonably expected, to achieve. The technical milestones shall become more restrictive during the life of the program. The Secretary shall set the periodic milestones so as to achieve by 2020 coal gasification projects able—

(i) to remove 99 percent of sulfur dioxide;

(ii) to emit not more than .05 lbs of NO_X per million Btu;

(iii) to achieve substantial reductions in mercury emissions; and

(iv) to achieve a thermal efficiency of—

(I) 60 percent for coal of more than 9,000 Btu;

(II) 59 percent for coal of 7,000 to 9,000 Btu; and

(III) 50 percent for coal of less than 7,000 Btu.

(2) OTHER PROJECTS.—The Secretary shall periodically set technical milestones and ensure that up to 40 percent of the funds appropriated pursuant to section 901(a) are used for projects not described in paragraph (1). The milestones shall specify the emission and thermal efficiency levels that projects funded under this paragraph shall be designed to and reasonably expected to achieve. The technical milestones shall become more restrictive during the life of the program. The Secretary shall set the periodic milestones so as to achieve by 2010 projects able—

(A) to remove 97 percent of sulfur dioxide;

(B) to emit no more than .08 lbs of NO_X per million Btu;

(C) to achieve substantial reductions in mercury emissions; and

(D) to achieve a thermal efficiency of—

(i) 45 percent for coal of more than 9,000 Btu;

(ii) 44 percent for coal of 7,000 to 9,000 Btu; and

(iii) 40 percent for coal of less than 7,000 Btu.

(3) CONSULTATION.—Before setting the technical milestones under paragraphs (1)(B) and (2), the Secretary shall consult with the Administrator of the Environmental Protection Agency and interested entities, including coal producers, industries using coal, organizations to promote coal or advanced coal technologies, environmental organizations, and organizations representing workers.

(4) EXISTING UNITS.—In the case of projects at units in existence on the date of enactment of this Act, in lieu of the thermal efficiency requirements set forth in paragraph (1)(B)(iv) and (2)(D), the milestones shall be designed to achieve an overall thermal design efficiency improvement, compared to the efficiency of the unit as operated, of not less than—

(A) 7 percent for coal of more than 9,000 Btu;

(B) 6 percent for coal of 7,000 to 9,000 Btu; or

(C) 4 percent for coal of less than 7,000 Btu.

(5) PERMITTED USES.—In carrying out this title, the Secretary may fund projects that include, as part of the project, the separation and capture of carbon dioxide.

(c) FINANCIAL CRITERIA.—The Secretary shall not provide a funding award under this title unless the recipient documents to the satisfaction of the Secretary that—

(1) the award recipient is financially viable without the receipt of additional Federal funding;

(2) the recipient will provide sufficient information to the Secretary to enable the Secretary to ensure that the award funds are spent efficiently and effectively; and

(3) a market exists for the technology being demonstrated or applied, as evidenced by statements of interest in writing from potential purchasers of the technology.

(d) FINANCIAL ASSISTANCE.—The Secretary shall provide financial assistance to projects that meet the requirements of subsections (a), (b), and (c) and are likely to—

(1) achieve overall cost reductions in the utilization of coal to generate useful forms of energy;

(2) improve the competitiveness of coal among various forms of energy in order to maintain a diversity of fuel choices in the United States to meet electricity generation requirements; and

(3) demonstrate methods and equipment that are applicable to 25 percent of the electricity generating facilities, using various types of coal, that use coal as the primary feedstock as of the date of enactment of this Act.

(e) FEDERAL SHARE.—The Federal share of the cost of a coal or related technology project funded by the Secretary under this title shall not exceed 50 percent.

(f) APPLICABILITY.—No technology, or level of emission reduction, shall be treated as adequately demonstrated for purposes of section 111 of the Clean Air Act (42

U.S.C. 7411), achievable for purposes of section 169 of that Act (42 U.S.C. 7479), or achievable in practice for purposes of section 171 of that Act (42 U.S.C. 7501) solely by reason of the use of such technology, or the achievement of such emission reduction, by 1 or more facilities receiving assistance under this title.

SEC. 903. REPORT.

Not later than 1 year after the date of enactment of this Act, and once every 2 years thereafter through 2012, the Secretary, in consultation with other appropriate Federal agencies, shall transmit to Congress a report describing—

(1) the technical milestones set forth in section 902 and how those milestones ensure progress toward meeting the requirements of subsections (b)(1)(B) and (b)(2) of section 902; and

(2) the status of projects funded under this title.

SEC. 904. CLEAN COAL CENTERS OF EXCELLENCE.

As part of the program authorized in section 901, the Secretary shall award competitive, merit-based grants to universities for the establishment of Centers of Excellence for Energy Systems of the Future. The Secretary shall provide grants to universities that show the greatest potential for advancing new clean coal technologies.

TITLE X—IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS

SEC. 1001. IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS.

(a) RECONFIGURATION OF POSITION OF DIRECTOR OF THE OFFICE OF SCIENCE.—Section 209 of the Department of Energy Organization Act (42 U.S.C. 7139) is amended to read as follows:

"OFFICE OF SCIENCE

"SEC. 209. (a) There shall be within the Department an Office of Science, to be headed by an Assistant Secretary of Science, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

"(b) The Assistant Secretary of Science shall be in addition to the Assistant Secretaries provided for under section 203 of this Act.

"(c) It shall be the duty and responsibility of the Assistant Secretary of Science to carry out the fundamental science and engineering research functions of the Department, including the responsibility for policy and management of such research, as well as other functions vested in the Secretary which he may assign to the Assistant Secretary.".

(b) ADDITIONAL ASSISTANT SECRETARY POSITION TO ENABLE IMPROVED MANAGEMENT OF NUCLEAR ENERGY ISSUES.—(1) Section 203(a) of the Department of Energy Organization Act (42 U.S.C. 7133(a)) is amended by striking "There shall be in the Department six Assistant Secretaries" and inserting "Except as provided in section 209, there shall be in the Department seven Assistant Secretaries".

(2) It is the sense of the Congress that the leadership for departmental missions in nuclear energy should be at the Assistant Secretary level.

(c) TECHNICAL AND CONFORMING AMENDMENTS.—(1) Section 5315 of title 5, United States Code, is amended by—

(A) striking "Director, Office of Science, Department of Energy."; and

(B) striking "Assistant Secretaries of Energy (6)" and inserting "Assistant Secretaries of Energy (8)".

(2) The table of contents for the Department of Energy Organization Act (42 U.S.C. 7101 note) is amended—

(A) by striking "Section 209" and inserting "Sec. 209";

(B) by striking "213." and inserting "Sec. 213.";

(C) by striking "214." and inserting "Sec. 214.";

(D) by striking "215." and inserting "Sec. 215."; and

(E) by striking "216." and inserting "Sec. 216.".

II. Purpose of the Bill

The purpose of H.R. 610, the Energy Research, Development, Demonstration, and Commercial Application Act of 2005, is to authorize the scientific and energy research, development, and demonstration (RD&D), and commercial application programs, projects, and activities of the Department of Energy (Department or DOE).

III. Background and Need for Legislation

Affordable energy is essential to the Nation's continued prosperity. Volatile world oil markets, along with soaring natural gas and electricity prices, have replaced the relatively low energy prices enjoyed over most of the two decades before the turn of the century. World events in recent years have illustrated once again the important connections between energy policy and national security policy. In addition, there are increasing concerns about the environmental impact of energy use. Consequently, energy is once again on the front burner of the Nation's agenda.

The Committee on Science has a significant role in the legislative implementation of energy policy. Under rule X, clause 1(o)(1) of the Rules of the House, the Committee on Science has jurisdiction over "all bills, resolutions, and other matters relating to . . . [all] energy research, development, and demonstrations, and projects therefor, . . ." Similarly, the Committee has jurisdiction over environmental research and development (R&D) under rule X, clause 1(o)(4); over the commercial application of energy technology under rule X, clause 1(o)(6); and over scientific RD&D under rule X, clause 1(o)(14).

H.R. 610 focuses on DOE's support of major energy RD&D and commercial application activities, including those related to solar and renewable energy, energy efficiency, fossil energy, and nuclear and fusion energy. DOE also is a major funding source for basic research in the physical sciences.

DOE's general authority lies in several statutes, including the Atomic Energy Act of 1954 (P.L. 83–703), the Energy Reorganization Act of 1974 (P.L. 93–438), the Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93–577), and the Department of Energy Organization Act (P.L. 95–91), which established DOE in the Executive Branch on October 1, 1977 as a cabinet-level agency. Beyond this general authority, statutes such as the Energy Policy Act of 1992 (P.L. 102–486) authorize numerous specific RD&D and commercial application activities. However, with three exceptions—methane hydrate R&D and Renewable Indian Energy Resources, and a portion of high performance computing programs—none of the Department's existing civilian programs has specific fiscal authorizations for fiscal year 2006 and beyond. As a consequence, there is a need for a comprehensive authorization bill to provide guidance and direction to the Department that will preserve and strengthen the Nation's energy future and science base.

Energy legislation has been debated in the last two Congresses, and H.R. 610 includes many of the provisions related to DOE's science and technology programs from the conference report for H.R. 6, the Energy Policy Act of 2003 passed by the House in the 108th Congress. The science and technology provisions related to DOE in H.R. 6, in turn, were based in part on negotiated agree-

ments reached in conference on H.R. 4, the Securing America's Future Energy Act of 2001. These negotiations were conducted by the Committee on Science of the House of Representatives and the Committee on Energy and Natural Resources of the Senate, with the participation of the Committee on Energy and Commerce of the House of Representatives, which managed the bill.

H.R. 4 was omnibus energy legislation intended "[t]o enhance energy conservation, research and development and to provide for security and diversity in the energy supply for the American people, and for other purposes." The Science Committee developed the legislative provisions in Division B, relating to energy RD&D. It also developed the provisions in Division E, relating to clean coal technology, in conjunction with the Committee on Energy and Commerce. Division B was taken from the text of H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001, introduced by Science Committee Chairman Sherwood Boehlert (NY–23) on July 11, 2001. H.R. 2460 was based on information gathered at a series of hearings by the Committee on Science and on the recommendations of the Administration's National Energy Policy Development Group, published in May, 2001. The bill was referred solely to the Committee on Science, which marked up the bill on July 18, 2001 and reported the bill to the full House on July 31, 2001 (H. Rept. 107–177). Division E, relating to Federal clean coal technology program authorizations, also originated as the text of H.R. 2460, with changes negotiated with the Committee on Energy and Commerce.

H.R. 4 was introduced in the House on July 27, 2001. It was referred to the Committee on Energy and Commerce and, in addition, to the Committees on Science, Ways and Means, Resources, Education and the Workforce, Transportation and Infrastructure, the Budget, and Financial Services. The Science Committee discharged the bill on July 31, 2001, on which date the Committee on Rules filed H. Rept. 107–178 on H. Res. 216, providing for consideration of H.R. 4.

On August 2, 2001, the House passed H.R. 4, as amended, by the Yeas and Nays: 240–189 (Rollcall No. 320).

On April 25, 2002, the Senate passed H.R. 4, by the Yeas and Nays: 88–11 (Rollcall No. 94) after striking all after the enacting clause and inserting the text of S. 517, the Senate companion measure, as amended. The Senate Amendment contained several titles and provisions falling within the jurisdiction of the Committee on Science, including provisions related to energy research, development, demonstration and commercial application of energy technology (Sections 513–516, 770–772, 807–809, 814–816, 824, 832, Titles XII, Title XIV, Sections 1502, 1504–1505, Title XVI and Sections 1801–1805), indemnification of nuclear energy programs (Sections 501–507, and 509), and global climate change policy and climate science and technology (Sections 1001–1022 and Titles XI and XIII).

On May 1, 2002, the Senate Majority Leader appointed Mr. Bingaman, Mr. Hollings, Mr. Baucus, Mr. Kerry, Mr. Rockefeller, Mr. Breaux, Mr. Reid (NV), Mr. Jeffords, Mr. Lieberman, Mr. Murkowski, Mr. Domenici, Mr. Grassley, Mr. Nickles, Mr. Lott, Mr. Craig, Mr. Campbell and Mr. Thomas to the Committee on Conference on H.R. 4.

The House disagreed with the Senate amendment to H.R. 4 and agreed to a conference, ultimately naming 48 conferees from the House. From the Committee on Science, the Speaker appointed Mr. Boehlert, Mr. Bartlett (MD), and Mr. Hall (TX), provided that Mr. Costello be appointed in lieu of Mr. Hall for consideration of Division E and Ms. Woolsey be appointed in lieu of Mr. Hall for consideration of Sections 2001–2178 and 2201–2261 of Division B of the House bill and modifications committed to conference.

The Conferees met on June 27, July 25, September 12, 19, 25 and 26, and October 2 and 3, of 2002 and reached agreement on a number of key provisions in the Conference, including provisions related to Clean Coal RD&D. In addition, in discussions on the remainder of the bill's provisions relating to energy RD&D and the commercial application of energy technology, conferees reached consensus on the overwhelming majority of issues, with the House and Senate exchanging offers that were identical on all but a few issues. However, the Conferees were unable to resolve differences on the remainder of the bill and the legislation died with the adjournment of the 107th Congress.

H.R. 238, as introduced in the 108th Congress, reflected the final House position on energy science and technology issues in the unconcluded conference on H.R. 4. As such, H.R. 238 represented, in many instances, compromise positions negotiated between the House and Senate aimed at developing a balanced energy RD&D program.

H.R. 6 was omnibus energy legislation developed in the 108th Congress intended "[t]o enhance energy conservation, research and development and to provide for security and diversity in the energy supply for the American people, and for other purposes." The Science Committee developed the legislative provisions in Title IX relating to energy RD&D. It also developed, in conjunction with the Committee on Energy and Commerce, the provisions in Title IV, Subtitle A, relating to clean coal technology, parts of Title VII relating to advanced vehicles and clean school buses, Title VIII relating to hydrogen RD&D, Title X relating to DOE management, and parts of Title XII, Subtitle B related to electricity transmission and distribution RD&D.

Title IX was taken from the text of H.R. 238, the Energy Research, Development, Demonstration, and Commercial Application Act of 2003, introduced by Science Committee Chairman Sherwood Boehlert (NY–24) on January 8, 2003. The bill was referred to the Committee on Science (as well as the Committee on Resources), and subsequently on February 20, 2003 to the Subcommittee on Energy, which discharged the bill on March 20, 2003. The full Science Committee marked up the bill on April 2, 2003 and ordered the bill, as amended, reported to the full House. On May 22, 2003, the Science Committee filed the report on the bill (H. Rept. 108–128, Part I), and the Committee on Resources was granted an extension for further consideration ending not later than June 27, 2003. On June 27, 2003, the Committee on Resources discharged the bill.

H.R. 6 was introduced in the House on April 7, 2003. It was referred to the Committee on Energy and Commerce and, in addition, to the Committees on Science, Ways and Means, Resources, Education and the Workforce, Transportation and Infrastructure, Agri-

culture, Judiciary and Financial Services. On April 10, 2003, the Committee on Rules filed H. Rept. 108–69 on H. Res. 189, providing for consideration of H.R. 6.

On April 11, 2003, the House passed H.R. 6, as amended, by the Yeas and Nays: 247–175 (Rollcall No. 145).

On July 31, 2003, the Senate passed H.R. 6, by the Yeas and Nays: 84–14 (Rollcall No. 317) after striking all after the enacting clause and inserting the text of the Senate amendment to H.R. 4 from the 107th Congress. The Senate Amendment contained several titles and provisions falling within the jurisdiction of the Committee on Science, including provisions related to energy research, development, demonstration and commercial application of energy technology (Sections 513–516, 770–772, 807–809, 814–816, 824, 832, Titles XII, Title XIV, Sections 1502, 1504–1505, Title XVI and Sections 1801–1805), indemnification of nuclear energy programs (Sections 501–507, and 509), and global climate change policy and climate science and technology (Sections 1001–1022 and Titles XI and XIII).

On September 4, 2003, the Senate Majority Leader appointed Mr. Domenici; Mr. Nickles; Mr. Craig; Mr. Campbell; Mr. Thomas; Mr. Grassley; Mr. Lott; Mr. Bingaman; Mr. Dorgan; Mr. Graham (FL); Mr. Wyden; Mr. Johnson; and Mr. Baucus to the Committee on Conference on H.R. 6.

The House disagreed with the Senate amendment to H.R. 6 and agreed to a conference, ultimately naming 45 conferees from the House. From the Committee on Science, the Speaker appointed Mr. Boehlert, Mrs. Biggert, and Mr. Hall (TX), provided that Mr. Costello be appointed in lieu of Mr. Hall for consideration of Division E and Mr. Lampson be appointed in lieu of Mr. Hall for consideration of Sections 21708 and Division F of the House bill, and Sections 824 and 1223 of the Senate amendment and modifications committed to conference.

The Conferees first met on September 5, 2003 and on November 18, 2003 reported in the House (H. Rept. 108–375). The report was brought up for consideration under the provisions of H. Res. 443, and agreed to by the Yeas and Nays 246–180 (Rollcall No. 630). However, the Senate was unable to invoke cloture to bring the conference report up for a vote, and the legislation died with the adjournment of the 108th Congress.

As introduced, H.R. 610 incorporates many of the provisions of H.R. 6, with the provisions of shared jurisdiction with the Energy and Commerce changed only to update the dates in the authorizations.

IV. Summary of Hearings

During the 107th Congress, the Full Committee on Science held four hearings, and the Subcommittee on Energy held nine hearings relevant to H.R. 610. Those hearings are described in the Summary of Activities, Committee on Science, U.S. House of Representatives for the 107th Congress (H. Rept. 107–809).

During the 108th Congress, the Full Committee on Science held 10 hearings relevant to H.R. 610:

1. February 13, 2003 hearing on "An Overview of the Federal R&D Budget for Fiscal Year 2004." Appearing as witnesses were (1) Dr. John H. Marburger III, Director, Office of Science

and Technology Policy (OSTP); (2) Dr. Samuel W. Bodman, Deputy Secretary, Department of Commerce; (3) Dr. Rita R. Colwell, Director, National Science Foundation (NSF); and (4) Mr. Robert Card, Under Secretary of Energy for Energy, Science and Environment, DOE.

2. March 5, 2003 hearing on "The Path to a Hydrogen Economy." Appearing as witnesses were (1) Mr. David Garman, Assistant Secretary for Energy Efficiency and Renewable Energy, DOE; (2) Dr. Alan C. Lloyd, Chairman, California Fuel Cell Partnership; (3) Dr. Joan Ogden, Research Scientist, Princeton Environmental Institute; (4) Dr. Larry Burns, Vice President, Research, Development and Planning, General Motors; and (5) Mr. Don Huberts, Chief Executive Officer, Shell Hydrogen.

3. March 19, 2003 hearing on "H.R. 766, The Nanotechnology Research and Development Act of 2003." Appearing as witnesses were (1) Senator George Allen (R–VA); (2) Senator Ron Wyden (D–OR); (3) Mr. Richard M. Russell, Associate Director for Technology, OSTP; (4) Dr. Thomas N. Theis, Director of Physical Sciences, IBM Research Division, Thomas J. Watson Research Center in Yorktown, New York; (5) Dr. James Roberto, the Associate Laboratory Director for Physical Sciences, Oak Ridge National Laboratory; (6) Dr. Carl A. Batt, Co-Director, Nanobiotechnology Center, Cornell University; and (7) Mr. Alan Marty, executive-in-residence, JP Morgan.

4. April 9, 2003 hearing on "The Societal Implications of Nanotechnology." Appearing as witnesses were (1) Mr. Raymond Kurzweil, Chairman and CEO, Kurzweil Technologies, Inc.; (2) Dr. Vicki L. Colvin, Executive Director, Center for Biological and Environmental Nanotechnology; Associate Professor of Chemistry, Rice University; (3) Dr. Langdon Winner, Professor of Political Science, Department of Science and Technology Studies, Rensselaer Polytechnic Institute; and (4) Ms. Christine Peterson, President, Foresight Institute.

5. July 16, 2003 hearing on "Supercomputing: Is the U.S. on the Right Path?" Appearing as witnesses were (1) Dr. Raymond L. Orbach, Director, Office of Science, DOE; (2) Dr. Peter A. Freeman, Assistant Director, Computer and Information Science Directorate, NSF; (3) Dr. Daniel A. Reed, Director, National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign; and (4) Mr. Vincent F. Scarafino, Manager, Numerically Intensive Computing, Ford Motor Company.

6. December 5, 2003 hearing on "Nanotechnology Research and Development: The Biggest Little Thing in Texas." Appearing as witnesses were (1) Dr. Rick Reidy, Research Professor, University of North Texas; (2) Dr. Da Hsuan Feng, Vice President for Research and Graduate Education, University of Texas, Dallas; (3) Dr. Ron Elsenbaumer, Vice President for Research, University of Texas, Arlington; (4) Mr. Chris Gintz, CEO, NanoHoldings LLC; and (5) Dr. John Randall, Chief Technology Officer, Vice President of Research, Zyvex Corporation.

7. February 11, 2004 hearing on "An Overview of the Federal R&D Budget for Fiscal Year 2005." Appearing as witnesses were (1) Dr. John H. Marburger III, Director, OSTP; (2) Dr.

Rita R. Colwell, Director, NSF; (3) Dr. Charles E. McQueary, Under Secretary for Science and Technology, Department of Homeland Security; (4) Mr. Philip J. Bond, Under Secretary of Commerce for Technology; and (5) Dr. Raymond L. Orbach, Director, Office of Science, DOE

8. March 3, 2004 hearing on "Reviewing the Hydrogen Fuel and FreedomCAR Initiatives." Appearing as witnesses were (1) Mr. David Garman Assistant Secretary for Energy Efficiency and Renewable Energy, DOE; (2) Dr. Michael Ramage, Chair of the National Academy of Sciences Committee on Alternatives and Strategies for Future Hydrogen Production and Use; and (3) Dr. Peter Eisenberger, Chair of the American Physical Society's Panel on Public Affairs Energy Subcommittee.

9. March 17, 2004 hearing on "Green Chemistry Research and Development Act of 2004." Appearing as witnesses were (1) Dr. Arden Bement, Acting Director, NSF; (2) Dr. Paul Gilman, Assistant Administrator for Research and Development, Environmental Protection Agency; (3) Dr. Berkeley Cue, Vice President of Pharmaceutical Sciences, Pfizer Global Research and Development; (4) Mr. Steven Bradfield, Vice President of Environmental Development, Shaw Industries, Inc.; and (5) Dr. Edward Woodhouse, Associate Professor of Political Science and Technology Studies, Rensselaer Polytechnic Institute.

10. May 13, 2004 hearing on "H.R. 4218, High-Performance Computing Revitalization Act of 2004." Appearing as witnesses were (1) Dr. John H. Marburger III, Director, OSTP; (2) Dr. Irving Wladawsky-Berger, Vice President for Technology and Strategy, IBM Corporation; (3) Dr. Rick Stevens, Director, Mathematics and Computer Science Division, Argonne National Laboratory; and (4) Dr. Daniel A. Reed, William R Kenan, Jr. Eminent Professor, University of North Carolina at Chapel Hill.

During the 108th Congress, the Subcommittee on Energy held 9 hearings relevant to H.R. 610:

1. June 10, 2003 hearing on "The Future of University Nuclear Science and Engineering Programs." Appearing as witness were (1) Dr. Gail H. Marcus, Principal Deputy Director, Office of Nuclear Energy, Science and Technology, DOE; (2) Dr. Daniel M. Kammen, Director of the Renewable and Appropriate Energy Laboratory at the University of California, Berkeley; (3) Ms. Angelina Howard, Executive Vice President of Policy, Planning and External Affairs, Nuclear Energy Institute; (4) Dr. James F. Stubbins, Head of the Nuclear, Plasma, and Radiological Engineering Department at the University of Illinois at Urbana-Champaign, Illinois; and (5) Dr. David M. "Mike" Slaughter, Chair of the Nuclear Engineering Program and Director of the Center for Excellence in Nuclear Technology, Engineering, and Research, University of Utah.

2. July 10, 2003 hearing on "Competition for Department of Energy Laboratory Contracts: What is the Impact on Science?" Appearing as witnesses were (1) Mr. Robert Card, Undersecretary for Energy, Science and Environment, DOE; (2) Ms. Robin Nazzaro, Director of Natural Resources and Environment at the General Accounting Office; (3) Dr. Paul Fleury, Dean of

Engineering and Frederick William Beinecke Professor of Engineering and Applied Physics at Yale University; and (4) Dr. John McTague, Professor of Materials at the University of California, Santa Barbara.

3. September 25, 2003 hearing on "Keeping the Lights On: Removing Barriers to Technology to Prevent Blackouts." Appearing as witnesses were (1) Mr. James W. Glotfelty, Director of the Office of Electric Transmission and Distribution, DOE; (2) Mr. T.J. Glauthier, President and Chief Executive Officer of the Electricity Innovation Institute, Electric Power Research Institute (EPRI); (3) Mr. Thomas R. Casten, Chairman and CEO of Private Power LLC; and (4) Dr. Vernon L. Smith, Nobel Laureate, Professor of Economics and Law and the Director of the Interdisciplinary Center for Economic Science at George Mason University.

4. November 6, 2003 hearing on "What Are the Administration Priorities for Climate Change Technology?" Appearing as witnesses were (1) Mr. David Conover, Director of the interagency Climate Change Technology Program (CCTP), DOE; (2) Mr. George Rudins, Deputy Assistant Secretary for Coal and Power Systems, DOE; (3) Dr. Sally Benson, Deputy Director for Operations, Lawrence Berkeley National Laboratory (LBNL); and (4) Dr. Marilyn Brown, Director of Energy Efficiency and Renewable Energy at the Oak Ridge National Laboratory (ORNL).

5. December 4, 2003 hearing on "Review of Non-Oil and Gas Research Activities in the Houston-Galveston-Gulf Coast Area." Appearing as witnesses were (1) Mr. Todd Mitchell, President, Houston Advanced Research Center; (2) Dr. Richard Smalley, University Professor, Director of the Carbon Nanotechnology Lab, Rice University; (3) Dr. Mark Holtzapple, Professor, Department of Chemical Engineering, Texas A&M University; (4) Robert "Bob" Hennekes, Vice President, Technology Marketing, Shell Global Solutions; and (5) Dr. Franklin Chang-Diaz, Johnson Space Center, National Aeronautics and Space Administration (NASA).

6. March 24, 2004 hearing on "Priorities in the Department of Energy Budget for Fiscal Year 2005." Appearing as witnesses were (1) Dr. James Decker, Principal Deputy Director of the Office of Science, DOE; (2) Mr. David Garman, Assistant Secretary for Energy Efficiency and Renewable Energy, DOE; (3) Mr. Mark R. Maddox, acting Assistant Secretary for Fossil Energy, DOE; (4) Mr. William D. Magwood, IV, Director of the Office of Nuclear Energy, Science and Technology, DOE; and (5) Mr. James W. Glotfelty, Director of Office of Electric Transmission and Distribution, DOE.

7. May 19, 2004 hearing on "The Impact of Federal Energy Efficiency and Renewable Energy R&D Programs." Appearing as witnesses were (1) Mr. Steven Nadel, Executive Director of the American Council for an Energy-Efficient Economy (ACEEE); (2) Mr. Paul Konove, President of Carolina Country Builders of Chatham County Inc.; (3) Ms. Vivian Loftness, Head of the School of Architecture at Carnegie-Mellon University; (4) Mr. John B. Carberry, Director of Environmental Technology for the DuPont Company in Wilmington, Delaware; (5)

Mr. Peter Smith, President of the New York State Energy Research and Development Authority (NYSERDA); (6) Mr. Daniel L. Sosland, executive director of Environment Northeast.

8. May 20, 2004 hearing on "An Examination of H.R. 3890, A Bill to Reauthorize the Metals Program at the Department of Energy." Appearing as witnesses were (1) Mr. Douglas L. Faulkner, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, DOE; (2) Mr. Richard A. Shulkosky, Vice President for Sales, Marketing, and Product Development at the INTEG Process Group; (3) Ms. Lisa A. Roudabush, General Manager of Research for the United States Steel Corporation; (4) Dr. Ronald Sutherland, Consulting Economist and Adjunct Professor of Law at the George Mason University School of Law.

9. June 24, 2004 hearing on "Nuclear R&D and the Idaho National Laboratory." Appearing as witnesses were (1) Mr. William D. Magwood, IV, Director of the Office of Nuclear Energy, Science and Technology, DOE; (2) Dr. Alan Waltar, Director of Nuclear Energy at the Pacific Northwest National Laboratory (PNNL); (3) Dr. Robert Long, President of Nuclear Stewardship LLC; and (4) Dr. Andrew Klein, Chair of Nuclear Engineering Department at Oregon State University.

During the 109th Congress, the Full Committee on Science has held two hearings relevant to H.R. 610:

1. February 9, 2005 hearing on "Improving the Nation's Energy Security: Can Cars and Trucks be Made More Fuel Efficient?" Appearing as witnesses were (1) Mr. William Reilly, Aqua International Partners; (2) Mr. Paul Portney, President of Resources for the Future; (3) Dr. David Greene, Oak Ridge National Laboratory, Center for Transportation Analysis, National Transportation Research Center; (4) Mr. K.G. Duleep, Managing Director of Transportation, Energy and Environmental Analysis, Inc.; and (5) Mr. Michael J. Stanton, Vice President of Government Affairs, Alliance of Automobile Manufacturers.

2. February 16, 2005 hearing on "An Overview of the Federal R&D Budget for Fiscal Year 2006." Appearing as witnesses were (1) Dr. John H. Marburger III, Director, OSTP; (2) Dr. Samuel W. Bodman, Secretary, DOE; (3) Dr. Arden Bement, Director, NSF; (4) Dr. Charles E. McQueary, Under Secretary for Science and Technology, Department of Homeland Security; and (5) Dr. Theordore W. Kassinger, Deputy Secretary of the Department of Commerce.

V. Committee Actions

As summarized in H. Rept. 107–809, the Full Committee on Science heard testimony in the 107th Congress relevant to the programs authorized in H.R. 610 at hearings held on February 28, May 23, and June 21, 2001, and on February 2, 2002; the Subcommittee on Energy heard testimony relevant to the programs authorized in H.R. 610 at hearings held on March 22, April 26, May 3, May 17, May 24, June 12, and June 14, 2001, and on June 24 and June 26, 2002.

As summarized in Section IV of this report, the Full Committee heard testimony in the 108th Congress relevant to the programs

authorized in H.R. 610 at hearings held on February 13, March 5, March 19, April 9, July 16, and December 5, 2003, and on February 11, March 3, March 17 and May 13, 2004; the Subcommittee on Energy heard testimony relevant to the programs authorized in H.R. 610 at hearings held on June 10, July 10, September 25, November 6, and December 4, 2003, and on March 24, May 19, May 20 and June 24, 2004.

On February 8, 2005, Representative Judy Biggert, Chairman of the Energy Subcommittee of the Committee on Science, introduced H.R. 610, the Energy Research, Development, Demonstration, and Commercial Application Act of 2005, a bill to provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes.

As summarized in Section IV of this report, the Full Committee heard testimony in the 109th Congress relevant to the programs authorized in H.R. 610 at hearings held on February 9, 2005 and February 16, 2005.

The Committee on Science met to consider H.R. 610 on Wednesday, February 10, 2005 and considered the following amendments to the bill:

Mrs. Biggert offered amendments en bloc to various portions of the bill. The en bloc amendments, which were accepted en bloc and agreed to by voice vote, comprised many technical, clarifying and conforming changes, as well as substantive changes to the underlying bill:

a. Amended Section 101(a) to clarify that high energy physics and nuclear physics were distinct disciplines.

b. Amended Section 101(a) to add a missing "and" to "advanced scientific and computing research."

c. Amended Section 101(b)(2) to clarify that the spending cap applies only to Federal funds and does not preclude those involved in developing and constructing the Rare Isotope Accelerator from seeking funding from other sources, such as State and local governments.

d. Amended Section 102(d) to fix an incorrect Section reference.

e. Amended Section 107(b) to clarify that the scholarship is available only to support full-time graduate students.

f. Added a new section (Section 109—Science and Engineering Pilot Program) to establish a pilot program, run by a university consortium associated with Oak Ridge National Laboratories, to help science teachers. The program can be expanded nationwide, on a competitive basis, beginning in fiscal year 2008.

g. Redesignated subsequent section as Section 110 after insertion of previous amendment.

h. Amended Section 109(b) (now redesignated as Section 110(b)) to add allocations for the new Section 109, Science and Engineering Pilot Program, as follows: $4 million per year for fiscal years 2006 through 2008, and $8 million per year for fiscal years 2009 and 2010.

i. Amended Section 204(b)(3) to replace "Secretary" with "Director of the Office of Science" to make it clear that the Science Advisory Committee for the Office of Science reports to the Director of the Office of Science.

j. Amended Section 204(b)(3) to give DOE more flexibility in composing science advisory committees.

k. Amended Section 208 to clarify that any facility intended to be made available as a user facility should have a best practices implementation plan before it is allowed to function as a user facility (regardless of whether or not it is so designated).

l. Amended Section 303 to delete reference to a Section that is stricken by a subsequent amendment.

m. Deleted Subsection 303(b), which is replaced with Section 307 by a subsequent amendment.

n. Redesignated subsequent subsection numbers after deletion in previous amendment.

o. Added a new subsection (Subsection 303(b): Standardization Report and Program) to establish a program to research whether building standards can be changed to improve the energy efficiency and other qualities of buildings. Under the program, the National Institute of Building Sciences (NIBS) would conduct research evaluating current voluntary consensus standards for high-performance buildings. Based on that evaluation, Department of Energy (DOE) would provide grants and technical assistance to standards-writing organizations that wanted to improve the ability of their standards to result in higher performing buildings.

p. Deleted Subsection 304(c).

q. Added a new section (Section 307—Next Generation Lighting Initiative) to establish an alliance of manufacturers to partner with the government in solid-state lighting technology R&D. In the program, the Secretary could select an industry alliance to provide direction to the research, to ensure that the research is useful for commercial products. The industry alliance would also get non-exclusive rights to negotiate with researchers funded under the program.

r. Inserted a new Section 308 to replace old Section 307, with refined definitions.

s. Redesignated subsequent section as Section 309 after insertion of previous amendments.

t. Amended new Section 309 to remove reference to previously deleted Subsection 304(c).

u. Amended new Section 309 to remove reference to previously deleted Subsection 303(b).

v. Amended new Section 309 to include authorizations for the Next Generation Lighting Initiative, as follows: $20 million in fiscal year 2006, $30 million in fiscal year 2007, and $50 million in fiscal years 2008 through 2010.

w. Redesignated Section 309 as Section 310.

x. Added a new Subsection (Subsection 322(c)—High Voltage Transmission Lines) to require the Secretary to award a grant to a university research program to design and test techniques for optimizing power flow through existing high voltage transmission lines.

y. Amended Section 323 to adjust authorization levels for fiscal years 2006 and 2007.

z. Amended Subsection 323(c) to include a $2 million authorization in fiscal year 2006 for High Voltage Transmission Lines.

aa. Added a new Subsection (Subsection 409(c)—Renewable Energy in Public Buildings) to establish a program to encourage the demonstration of renewable energy in state and local government buildings.

bb. Added a new Section (Section 606. Carbon Dioxide Capture Research and Development) to authorize research and development aimed at developing carbon dioxide capture technologies that could be used on existing coal-fired power plants.

cc. Redesignated Section 606 to Section 607 after insertion of previous amendment.

dd. Amended new Section 607 to include authorizations for Carbon Dioxide Capture Research and Development as follows: $20 million for fiscal year 2006, $25 million for fiscal year 2007, $30 million for fiscal year 2008, $35 million for fiscal year 2009, $40 million for fiscal year 2010.

ee. Amended the table of contents accordingly.

Mr. Costello and Mr. Calvert offered an amendment to the bill to authorize the Nuclear Regulatory Commission and Occupational Safety and Health Administration to regulate nuclear and worker safety and health at DOE's non-military laboratories. The amendment was subsequently withdrawn.

With a quorum present, Mr. Gordon moved that the Committee favorably report the bill, H.R. 610, as amended, to the House with the recommendation that the bill as amended do pass; that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes; and that the Chairman take all necessary steps to bring the bill before the House for consideration. The motion was agreed to by voice vote.

Mr. Boehlert moved that: (1) Members have two subsequent calendar days in which to submit supplemental, minority or additional views on the measure; and (2) pursuant to clause 1 of rule XXII of the Rules of the House of Representatives, the Chairman may offer such motions as may be necessary in the House to go to conference with the Senate on H.R. 610 or a similar Senate bill.

VI. Summary of Major Provisions of Bill as Amended

Sections 1 and 2 of the bill contain a short title and definitions.

Title I—Science

This Title authorizes $23.7 billion for the Office of Science for fiscal years 2006–2010, including $1.8 billion for fusion, $1.6 billion for scientific computing research, and $100 million in fiscal year 2006 for systems biology. It also authorizes and sets a schedule and costs for the construction and operation of the Rare Isotope Accelerator, for which the Department of Energy (DOE) is in the process of selecting a site; authorizes and limits U.S. participation in ITER, the international fusion project; authorizes basic research related to the President's hydrogen initiative; establishes a scholarship for service program; and establishes a science and engineering pilot program.

Title II—Research administration

This title requires cost sharing (with a Secretarial waiver permitted) of 20 percent for basic and applied research projects, and 50 percent for demonstration and commercial application projects;

requires open competition for all DOE awards, but allows (with Congressional notification) DOE to hold competitions only within a class of institutions (i.e., just National Laboratories, or just industry, or just universities); prohibits the designations of new National Laboratories; and requires plans for new user facilities, for existing DOE facilities, and for better coordinating DOE programs.

Title III—Energy efficiency

This title authorizes $4.0 billion for fiscal years 2006–2010 including $1.36 billion for vehicle efficiency R&D; $830 million for buildings energy efficiency R&D; $715 million for industrial energy efficiency R&D, and $200 million for a Next Generation Lighting Initiative. It also authorizes $1.25 billion for R&D related to distributed energy systems, electricity transmission and distribution systems, and energy assurance. In addition, this title authorizes a new program to provide grants to promote the design of energy efficient buildings; authorizes a program to make use of batteries from electric vehicles; and authorizes a research program for high voltage transmission lines.

Title IV—Renewable energy

This title authorizes $3.91 billion for fiscal years 2006–2010 including $990 million for solar energy R&D; $1.51 billion for bioenergy R&D, including $750 million for a biorefinery demonstration program; $310 million for wind energy R&D; and $150 million for geothermal energy R&D. It also authorizes a new $800 million program of grants to states, which would use the money to award competitive grants for the demonstration of solar energy technology.

Title V—Nuclear energy programs

This title authorizes $2.25 billion for fiscal years 2006–2010 for nuclear science and engineering, including R&D on advanced nuclear fuel recycling; support for nuclear science and engineering at universities; and support for improved nuclear research infrastructure and facilities. It also authorizes $1.25 billion for research, development, design and construction of a next generation demonstration nuclear power plant. In addition, this title requires plans for DOE nuclear energy facilities and for the new Idaho National Laboratory. It also authorizes and sets guidelines for the Next Generation Nuclear Plant program.

Title VI—Fossil energy

This title authorizes $3.1 billion for fiscal years 2006–2010 for R&D on advanced coal, oil and gas technologies, transportation fuels, and fuel cells, and includes $150 million for carbon dioxide capture R&D for existing power plants. This title also authorizes a new ten-year program of research on ultra-deep drilling technology with mandatory funding. This program includes a provision that would require, over ten years, $1.5 billion of mandatory spending from Federal oil and gas royalty funds and authorize $500 million in appropriations to be used for ultra-deepwater and unconventional oil and gas research.

Title VII—Hydrogen

This title authorizes $2.15 billion for fiscal years 2006–2010 for research, development and demonstration required under the President's Hydrogen Initiative, including R&D on fuel cell vehicles and hydrogen production.

Title VIII—Advanced vehicles

This title establishes a $200 million demonstration program for alternative-fueled and advanced vehicles and supporting infrastructure. It also establishes a $190 million demonstration program of alternative fuel, clean diesel and fuel cell school buses, of which $55 million is for a clean diesel school bus retrofit demonstration program. It also authorizes a $50 million demonstration program for fuel cell transit buses.

Title IX—Clean Coal Power Initiative

This title authorizes $200 million per year for fiscal years 2006–2012 for RD&D on advanced clean coal technology, including clean coal centers of excellence.

Title X—Improved coordination and management of Civilian Science and Technology Programs

This title designates the head of the Office of Science as an Assistant Secretary and creates an additional assistant secretary position to enable improved management of nuclear energy issues.

VII. Section-by-Section Analysis of the Bill as Amended

Sec. 1. Short Title; Table of Contents

Short Title: "Energy Research, Development, Demonstration, and Commercial Application Act of 2005".

Subsection (b) contains the table of contents for the Act's 10 titles.

Sec. 2. Definitions

Defines terms used in the Act.

TITLE I—SCIENCE

Sec. 101. Office of Science Programs

Authorizes Office of Science programs in high energy physics, nuclear physics, biological and environmental research, basic energy sciences, advanced scientific computing research, and fusion energy sciences. It also provides for facilities and infrastructure support and activities in education, outreach, information, analysis and coordination. This section also requires the Secretary to construct and operate a Rare Isotope Accelerator (RIA). Total RIA construction costs are capped $1.1 billion and construction must commence no later than September 30, 2008.

Sec. 102. Systems Biology Program

Authorizes a program in systems biology including genetics, protein science, and computational biology. Directs the program to identify biological processes that could be developed for energy and

environment-related applications. Prohibits the program from conducting biomedical research or research on human cells.

Sec. 103. Catalysis Research and Development Program

Authorizes a catalysis science program, including catalyst design and synthesis using experimental approaches, as well as computational design at the nanoscale.

Sec. 104. Hydrogen

Authorizes fundamental research and development (R&D) within the Office of Science to support the hydrogen program described in Title VII.

Sec. 105. Advanced Scientific Computing Research

Authorizes an advanced scientific computing research program including activities authorized in the Department of Energy High-End Computing Revitalization Act of 2004, and research in applied mathematics.

Sec. 106. Fusion Energy Sciences Program

Directs DOE to develop a program and submit a fusion energy science research plan to Congress. Authorizes the Secretary to join the international fusion experiment known as ITER, and mandates that any agreement between U.S. and its international partners must meet specific requirements to protect U.S. economic and scientific interests. The restrictions on any possible agreement are enforced by prohibiting U.S. funding for ITER construction until the Secretary has submitted to Congress the research plan, the international agreement for U.S. participation in ITER, a description of ITER's management structure, and a report describing how ITER will be funded without reducing funding for other programs, including other fusion programs, in the Office of Science. Provides for a domestic magnetic fusion burning plasma experiment if the Secretary determines that construction and operation of ITER is unlikely or infeasible.

Sec. 107. Science and Technology Scholarship Program

Creates a program in which students receive scholarships in exchange for a commitment to work for DOE upon completion of their degrees. Scholarship recipients are obligated to work two years for each year of scholarship they receive.

Sec. 108. Office of Scientific and Technical Information

Authorizes the Secretary to maintain the Office of Scientific and Technical Information.

Sec. 109. Science and Engineering Pilot Program

Establishes a pilot program, run by a university consortium associated with Oak Ridge National Laboratories, to help science teachers. The program can be expanded nationwide, on a competitive basis in fiscal year 2008.

Sec. 110. Authorization of Appropriations

Authorizes $23.7 billion for fiscal years (FY) 2006–2010 for the Office of Science. From this amount, $1.65 billion is allocated for

advanced scientific computing research, $1.82 billion for fusion energy sciences, $8.4 million for the science and technology scholarship program and $39 million for the Office of Scientific and Technical Information.

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

Sec. 201. Cost Sharing

Requires minimum non-federal contributions of 20 percent of the cost of R&D, and 50 percent for demonstration and commercial application projects. Allows the Secretary to reduce these requirements based on either technical barriers or the nature of the research being sponsored (fundamental, inherently non-proprietary research).

Sec. 202. Reprogramming

Requires the Secretary to report to Congress 60 days after appropriations are enacted describing how appropriated funds will be distributed under this authorization. Requires 30-day Congressional review for any Departmental request that exceeds 2 percent or $2 million to move money between programs.

Sec. 203. Merit-Based Competition

Requires all funding under this Act be competitively awarded after an impartial merit review. The Secretary may restrict competitions to certain classes of recipients (e.g., universities, national laboratories) but must notify Congress within 30 days if a competition is run within only one class of recipients or if the Secretary waives the competition requirement for any solicitation.

Sec. 204. External Technical Review of Departmental Programs

Requires the Secretary to establish new or designate existing advisory committees to review the programs for energy efficiency R&D, renewable energy R&D, nuclear energy R&D and fossil energy R&D. For the Office of Science, it requires that the Secretary maintain existing scientific program advisory committees, report to Congress on any plans to change these committees' membership requirements, and create a new overall science advisory committee that includes members from the existing committees. Requires a National Academy of Sciences review and assessment of all the programs under this Act.

Sec. 205. Competitive Award of Management Contracts

Requires competitive award of management and operations contracts for non-defense National Laboratories unless the Secretary provides a waiver and Congress is notified two months in advance.

Sec. 206. National Laboratory Designation

Prohibits the Secretary from designating any new National Laboratories.

Sec. 207. Report on Equal Employment Opportunity Practices

Requires the Secretary to submit to Congress a comprehensive report on equal opportunity practices at the National Laboratories.

Sec. 208. User Facility Best Practices Plan

Requires the Secretary to submit a plan to Congress describing how each new user facility will provide appropriate staff to support a wide range of users; a fair method for allocating time to users; and safe and fiscally prudent operations.

Sec. 209. Support for Science and Energy Infrastructure and Facilities

Requires the Secretary to develop and implement a strategy for maintaining, closing, modifying, or constructing infrastructure and facilities at each non-military National Laboratory and Department research facility, and to transmit to Congress a summary of this strategy not later than June 1, 2007.

Sec. 210. Coordination Plan

Requires the Secretary to develop a plan to improve coordination and collaboration for all research, development, demonstration and commercial application activities among the Office and Science and the applied programs at the Department.

Sec. 211. Availability of Funds

Requires that if funds appropriated for activities under this title remain unused after three years, the funds must be returned to the Treasury.

TITLE III—ENERGY EFFICIENCY

SUBTITLE A—VEHICLES, BUILDINGS AND INDUSTRIES

Sec. 301. Programs

Authorizes energy efficiency R&D programs related to vehicles, buildings, and industrial energy use. Requires the Secretary to transmit to Congress a report containing quantifiable 5-year cost and performance goals for these programs, and annual reports describing progress in achieving these goals.

Sec 302. Vehicles

Authorizes R&D programs on advanced technologies to improve the energy efficiency and environmental performance of light-duty and heavy-duty vehicles.

Sec 303. Buildings

Authorizes a program of R&D to improve the energy efficiency of buildings. The program is required to use a whole-buildings approach, integrating work on elements including advanced controls, building envelope, building systems components and on-site generation of renewable energy. It also authorizes a pilot grant program for the demonstration of advanced energy efficiency technologies for buildings and authorizes a study pertaining to voluntary consensus standards for high-performance building.

Sec 304. Industries

Authorizes R&D programs to improve the energy efficiency, environmental performance and process efficiency of major energy-con-

suming industries, including advanced control technologies for electric motors.

Sec. 305. Demonstration and Commercial Application

Authorizes the Secretary to promote demonstration and commercial application of innovative, cost-effective energy efficiency technologies, including through grants to non-profit institutions, State and local governments, universities, or consortia for Advanced Energy Technology Transfer Centers. The Secretary is required to report to Congress on the results of these activities.

Sec 306. Secondary Electric Vehicle Battery Use Program

Authorizes an R&D program to facilitate the reuse of batteries from electric vehicles for other purposes, such as bulk power and commercial power storage.

Sec. 307. Next Generation Lighting Initiative

Establishes a program to advance commercialization of next generation lighting through an alliance of manufacturers to partner with the government in solid-state lighting technology R&D. In the program, the Secretary would select an industry alliance to provide direction to the research, to make sure the research is useful for commercial products. The industry alliance would also get non-exclusive rights to negotiate with researchers funded under the program.

Sec. 308. Definitions

Defines "cost-effective" and "whole-buildings approach" for the purposes of this title.

Sec. 309. Authorization of Appropriations

Authorizes $4.0 billion for the energy efficiency R&D programs under this subtitle for FY 2006–2010. Of this amount, $1.36 billion is allocated for Vehicles; $830 million for Buildings, including $50 million for the Energy Efficient Building Pilot Grant Program; $715 million is for Industrial Technologies, including $6 million for an Electric Motor Control Technology Program; $50 million is for Demonstration and Commercial Application; and $32 million is for a Secondary Electric Vehicle Battery Program; and $200 million for the Next Generation Lighting Initiative.

Sec. 310. Limitation on Use of Funds

Prohibits the use of any of the funds authorized under this subtitle for programs funded under other authorities.

SUBTITLE B—DISTRIBUTED ENERGY AND ELECTRIC ENERGY SYSTEMS

Sec. 321. Distributed Energy

Authorizes an R&D program to improve grid reliability technologies, and on systems to improve the reliability and efficiency of distributed energy resources. Requires the Secretary to make competitive merit-based grants to consortia for the development of residential combined heat and power technologies.

Sec. 322. Electricity Transmission and Distribution and Energy Assurance

Authorizes an R&D program on advanced control devices to improve the energy efficiency and reliability of the electric transmission and distribution systems including a university research program to test power line optimization.

Sec. 323. Authorization of Appropriations

Authorizes $1.25 billion for the Distributed Energy and Electric Energy Systems programs for FY 2006–2010, including $40 million for Micro-cogeneration and $745 million for Electricity Transmission and Distribution and Energy Assurance, and $2 million for power line optimization.

TITLE IV—RENEWABLE ENERGY

Sec. 401. Findings

This section contains the findings of Congress with respect to the relationship between United States investment in renewable energy and U.S. competitiveness in the world market, job impacts, energy security and reliability, and the environment.

Sec. 402. Definitions

Defines "biobased product" and "cellulosic biomass" for the purposes of this title.

Sec. 403. Programs

Authorizes renewable energy R&D programs with the objectives of increased conversion efficiency, decreased generation and delivery costs, promotion of energy supply diversity, improved United States energy security and environmental sustainability. Requires the Secretary to transmit to Congress a report containing quantifiable five-year cost and performance goals for these programs, and thereafter annual reports describing progress in achieving these goals.

Sec. 404. Solar

Authorizes R&D programs for solar energy, including for photovoltaics, heating, and concentrating solar power. Requires the programs to focus on the integration of photovoltaic technologies into buildings and manufacturing techniques for the production of low-cost, high-quality solar systems.

Sec. 405. Bioenergy Programs

Authorizes R&D programs for cellulosic biomass, including for the production of heat, electricity, fuels and biobased products. Establishes, in partnership with industry, a biomass integrated refinery demonstration program consisting of at least 5 integrated biorefineries.

Sec. 406. Wind

Authorizes R&D programs for wind energy, including offshore wind energy, low speed wind energy, testing and verification, and distributed wind energy generation. Authorizes the Secretary to construct a wind turbine test facility.

Sec. 407. Geothermal

Authorizes an R&D program for geothermal energy, focusing on developing improved and low-cost technologies for geothermal installations.

Sec. 408. Photovoltaic Demonstration Program

Establishes a grant program to States for the demonstration of advanced photovoltaic solar energy technology. Under the program, the Federal government will distribute funds to the States that they, in turn, will competitively award to support demonstrations of solar energy technology. States are required to fund at least 10 percent of a demonstration project; the federal contribution may not exceed 40 percent. No demonstration project can receive more than $1 million in Federal and State funds. The Secretary is required to report to Congress on the costs and results of this program after 5 years.

Sec. 409. Additional Programs

Authorizes R&D programs for ocean energy (including wave energy), kinetic hydro turbines, and the combined use of renewable energy technologies with other energy technologies. Requires the Secretary to commission a National Academy of Sciences study on renewable generation of ocean energy including wave, tidal, current and thermal energy. Also authorizes the Secretary to give grants to state or local governments to demonstrate renewable energy technologies in public buildings.

Sec. 410. Analysis and Evaluation

Authorizes the Secretary to conduct analysis and evaluation in support of renewable energy programs under this title for guiding budget and program decisions.

Sec. 411. Authorization of Appropriations

Authorizes $3.91 billion for FY 2006–2010 to carry out all activities under this title. Of these funds, $990 million is allocated for the solar programs in section 404, $1.51 billion is for the bioenergy program is section 405, including $750 million for the biorefinery demonstration program, $310 million is for the wind program in section 406, including $41 million for the wind facility, $150 million is for the geothermal program in section 407, and $800 million is for the photovoltaic demonstration program in section 408.

TITLE V—NUCLEAR ENERGY PROGRAMS

Sec. 501. Definition

Defines "junior faculty" for the purposes of this title.

Sec. 502. Programs

Authorizes civilian nuclear energy research, development, demonstration and commercial application programs with the objectives of promoting the viability of nuclear energy, reducing the likelihood of nuclear proliferation, maintaining excellence in nuclear research at universities and the National Labs, maintaining state-of-the-art nuclear research facilities and infrastructure, supporting industry and reducing environmental impacts. Requires the Secretary to

transmit to Congress a report containing quantifiable 5-year cost and performance goals for these programs, and thereafter annual reports describing progress in achieving these goals.

SUBTITLE A—NUCLEAR ENERGY RESEARCH PROGRAMS

Sec. 511. Advanced Fuel Recycling Program

Authorizes a R&D program on nuclear fuel recycling technologies to reduce the risk of nuclear proliferation, and minimize environmental and public health and safety impacts.

Sec. 512. University Nuclear Science and Engineering Support

Authorizes the Secretary to support new and existing programs to promote university research and education in nuclear engineering, including supporting university research reactors.

Sec. 513. University-National Laboratory Interactions

Establishes a fellowship program for professors to spend time at the National Labs in the areas of nuclear science and technology and for National Lab staff to spend time in related departments at universities.

Sec. 514. Nuclear Power 2010 Program

Authorizes the Secretary to carry out a Nuclear Program 2010 Program to encourage industry to license and deploy a new power plant by 2010.

Sec. 515. Generation IV Nuclear Energy Systems Initiative

Authorizes the Secretary to carry out a Generation IV Nuclear Energy Systems Initiative, an R&D program for passively safe, proliferation-resistant nuclear plant designs.

Sec. 516. Civilian Infrastructure and Facilities

Authorizes the Secretary to operate and maintain infrastructure and facilities to support nuclear energy research, development, demonstration and commercial application.

Sec. 517. Nuclear Energy Research and Development Infrastructure Plan

Requires the Secretary to develop a plan for facilities improvements and investments that will be required to establish the programs under this title as among the best in the world in nuclear research.

Sec. 518. Idaho National Laboratory Facilities Plan

Requires the Secretary to develop a plan for the facilities at the Idaho National Laboratory, taking into account resources at other National Laboratories.

Sec. 519. Authorization of Appropriations

Authorizes $2.25 billion for FY 2006–2010 to carry out the activities under this subtitle. Of those funds, $244 million is allocated for university support described in section 512.

SUBTITLE B—NEXT GENERATION NUCLEAR PLANT PROGRAM

Sec. 531. Definitions

Defines "demonstration plant," "construction," and "operation" for the purposes of this subtitle.

Sec. 532. Next Generation Nuclear Power Plant

Authorizes a program of research, development, demonstration and commercial application of advanced nuclear reactor technology. The objective is to design and demonstrate the next generation of nuclear fission power plant.

Sec. 533. Advisory Committee

Requires the Secretary to appoint an advisory committee for the Next Generation Nuclear Power Plant program.

Sec. 534. Program Requirements

Describes the requirements for the program under this subtitle, including the requirements for program elements, partnerships, plans for construction and operation, international collaboration and program plan.

Sec. 535. Authorization of appropriations

This section authorizes $750 million for FY 2006–2010 to carry out the activities under this subtitle, in addition to such sums as necessary with a limit of $500 million for construction activities.

TITLE VI—FOSSIL ENERGY

SUBTITLE A—RESEARCH PROGRAMS

Sec. 601. Enhanced Fossil Energy Research and Development Programs

Authorizes programs, to be run in conjunction with industry, of fossil energy research, development, demonstration and commercial application programs, including for coal, oil, natural gas, transportation fuels and fuel cells. The objectives of these programs shall include increasing the conversion efficiency of all forms of fossil energy, decreasing costs, promoting diversity of energy supply, improving U.S. energy security and reducing environmental impacts. Requires the Secretary to transmit to Congress a report containing quantifiable 5-year cost and performance goals for these programs, and thereafter annual reports describing progress in achieving these goals.

Sec. 602. Fossil Research and Development

Authorizes a program of fossil energy research, development, demonstration and commercial application to reduce emissions from fossil fuel, including from coal-based products, through the development of advanced technologies by 2015.

Sec. 603. Oil and Gas Research and Development

Authorizes a program of oil and gas research, development, demonstration and commercial application to advance the science and technology available to domestic petroleum producers.

Sec. 604. Transportation Fuels

Authorizes a program of transportation fuel research, development, demonstration and commercial application to increase the price elasticity of oil supply and demand.

Sec. 605. Fuel Cells

Authorizes R&D programs on fuel cells for low-cost, high-efficiency fuel-flexible, modular power systems. Authorizes a demonstration of fuel cell proton exchange membrane technology for various applications.

Sec. 606. Carbon Dioxide Capture Research and Development

Authorizes research and development aimed at developing carbon dioxide capture technologies that could be used on existing coal-fired power plants.

Sec. 607. Authorization of Appropriations

Authorizes $3.1 billion for FY 2006–2010 to carry out the fossil energy programs described in this subtitle, including $150 million for carbon dioxide capture from existing plants.

SUBTITLE B—ULTRA-DEEPWATER AND UNCONVENTIONAL NATURAL GAS AND OTHER PETROLEUM RESOURCES

Sec. 611. Program Authority

Authorizes programs on ultra-deepwater and unconventional natural gas and other petroleum resource exploration, production and environmental mitigation. Limits the programs to work in areas currently eligible to be leased for exploration and requires consultation with the Secretary of the Interior. Requires a study to determine if methane hydrates research should be carried out under this Act.

Sec. 612. Ultra-Deepwater Program

Describes how the ultra-deepwater program should be carried out, assigning responsibilities to the Secretary and a private consortium that may be selected by the Secretary to help manage the program. Establishes procedures to address conflicts of interest.

Sec. 613. Unconventional Natural Gas and Other Petroleum Resources Program

Authorizes the Secretary to establish a separate R&D program for onshore unconventional oil and gas exploration for resources in economically inaccessible areas.

Sec. 614. Additional Requirements for Awards

Establishes requirements for applicants to the ultra-deepwater program to describe the intended commercial use of any technology to be demonstrated under the Act, and provides flexibility concerning the location of demonstration projects in deepwater depths of less than 1,500 meters and allows reduction of cost sharing for independent producers.

Sec. 615. Advisory Committees

Requires the Secretary to establish two separate advisory committees for ultra-deepwater and unconventional resource programs and specifies their duties and compensation levels for their members.

Sec. 616. Limits on Participation

Limits participation in the program to U.S. companies or foreign companies that are based in countries that allow reciprocity.

Sec. 617. Sunset

Terminates the ultra-deepwater and unconventional research programs on September 30, 2015.

Sec. 618. Definitions

Defines "deepwater," "independent producer of oil and gas," "program consortium," "remote or inconsequential," "small producer," "ultra-deepwater," "ultra-deepwater architecture," "ultra-deepwater technology," and "unconventional natural gas and other petroleum resources" for the purposes of this subtitle.

Sec. 619. Funding

Establishes in the Treasury an Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Fund, including a mandatory provision that requires, after other obligations, $1.5 billion of Federal oil and gas royalty funds over ten years, and authorizes appropriations of $500 million over ten years, to be used for ultra-deepwater and unconventional oil and gas research.

TITLE VII—HYDROGEN

Sec. 701. Definitions

Defines "advisory committee," "fuel cell," "infrastructure," and "light duty vehicle" for the purposes of this title.

Sec. 702. Plan

Requires the Secretary to submit a detailed plan to Congress describing the program's research agenda, the technical milestones used to evaluate the performance of the program, and the role that the National Laboratories, universities, small businesses and other partners will play.

Sec. 703. Programs

Authorizes a research, development, demonstration, and commercial application program for hydrogen-powered fuel cell vehicles and the refueling infrastructure to support them, with the goal of enabling the automotive industry to make a decision to bring such vehicles to market by 2015. Specifies activities related to hydrogen production, delivery, and storage and the development of fuel cell technologies and the necessary codes and standards. Establishes project selection criteria for a hydrogen demonstration program. Requires a competitive merit review process and specifies cost sharing requirements.

Sec. 704. Interagency Task Force

Establishes an interagency task forced, chaired by the Secretary, to assist in the implementation of the hydrogen program.

Sec. 705. Advisory Committee

Establishes an advisory committee, comprising representatives from domestic industry, academia, professional societies, government agencies and other organizations, to provide advice to the Secretary.

Sec. 706. External Review

Requires a competitively selected non-governmental body, such as the National Academy of Sciences, to review the program's research plan and conduct a biennial review of the progress made by the program.

Sec. 707. Miscellaneous Provisions

Requires the Secretary to avoid unnecessary duplication when carrying out the activities under this Act, authorizes the Secretary to enter into cost-sharing agreements with other governments, authorizes the Secretary to represent the United States, and provides that nothing in the Act alters the Department's regulatory authority.

Sec. 708. Savings Clause

Clarifies that nothing in this title shall be construed to affect the authority of the Secretary of Transportation with respect to vehicles or transportation regulations of any type, or research activities supported by the Department of Transportation.

Sec. 709. Authorization of Appropriations

Authorizes $2.15 billion for the program for FY 2006–2010.

TITLE VIII—ADVANCED VEHICLES

SUBTITLE A—PILOT PROGRAM

Sec. 801. Definitions

Defines "alternative fueled vehicle," "fuel cell vehicle," "hybrid vehicle," "neighborhood electric vehicle," "ultra-low sulfur diesel vehicles," and "pilot program" for the purposes of this subtitle.

Sec. 802. Pilot Program

Establishes a competitive grant program to provide not more than 15 geographically dispersed demonstration projects for state and local governments or metropolitan transportation authorities. Grants can be utilized for the demonstration of alternative fueled vehicles, fuel cell vehicles, hybrid vehicles, ultra-low sulfur diesel vehicles and infrastructure associated with alternative fueled, fuel cell and hybrid vehicle projects. Establishes additional requirements for grants.

Sec. 803. Reports to Congress

Requires the Secretary to issue a report to Congress on the grants in Sec. 802 as well as evaluations of the effectiveness of the program.

Sec. 804. Authorization of Appropriations

Authorizes $200 million to carry out subtitle A, to remain available until expended.

SUBTITLE B—CLEAN SCHOOL BUSES

Sec. 811. Definitions

Defines "Administrator," "alternative fuel," "alternative fuel school bus," "emissions control retrofit technology," "idling," "ultra-low sulfur diesel fuel" and "ultra-low sulfur diesel fuel school bus" for the purposes of this subtitle.

Sec. 812. Program for Replacement of Certain School Buses With Clean School Buses

Establishs a program for awarding grants to eligible recipients for the demonstration and commercial application of alternative fuel school buses and ultra-low sulfur diesel fuel school buses. Use of funds for alternative fuel infrastructure is limited to 25 percent of the price of the alternative fuel school buses acquired. To carry out this section, $110 million is authorized for FY 2006–2007.

Sec. 813. Diesel Retrofit Program

Authorizes the Secretary and the Administrator of the Environmental Protection Agency to establish a pilot program for awarding grants to eligible recipients for the demonstration and commercial application of retrofit technologies for ultra-low sulfur diesel school buses. To carry out this section, $55 million is authorized for FY 2006–2007.

Sec. 814. Fuel Cell School Buses

Authorizes the Secretary to establish a program to enter into cooperative agreements for the development and demonstration of fuel cell-powered buses. Cost sharing under this provision is specified with regard to infrastructure and demonstration activities. To carry out this section, $25 million is authorized for FY 2006–2008.

SUBTITLE C—FUEL CELL TRANSIT BUS DEMONSTRATION

Sec. 821. Fuel Cell Transit Bus Demonstration

Authorizes the Secretary to establish a transit bus demonstration program to demonstrate not more than 12 fuel cell transit buses (and necessary infrastructure) in three geographically dispersed localities. To carry out this section, $50 million is authorized for FY 2006–2010.

TITLE IX—CLEAN COAL

Sec. 901. Authorization of Appropriations

Authorizes $1.4 billion for a Clean Coal Power Initiative at the Department for FY 2006–2012. Requires the Secretary to transmit

a report, including a ten-year research plan, to Congress regarding certain implementation activities.

Sec. 902. Project Criteria

Establishes technical criteria that are to be required for projects funded under the Clean Coal Power Initiative. Requires that the Secretary, in consultation with certain parties, set technical milestones specifying the emissions levels that projects must be designed to and reasonably expected to achieve. Establishes financial assistance criteria applicable to projects, and limits the Federal share of a project to not more than 50 percent of the cost of a project. Stipulates that a technology used at, or emissions reduction levels achieved by, facilities receiving assistance under title V cannot be considered to be required under sections 111, 169, and 171 of the Clean Air Act simply by virtue of having been operated in this program.

Sec. 903. Report

Requires the Secretary, in consultation with other appropriate agencies, to transmit a report to Congress on the technical milestones and the status of projects funded under title IX no later than one year after the date of the enactment of the title, and once every two years thereafter through 2012.

Sec. 904. Clean Coal Centers of Excellence

Authorizes the Secretary to award competitive, merit-based grants to universities for the establishment of Centers of Excellence for Energy Systems of the Future. Requires that the Secretary provide grants to universities that can show the greatest potential for advancing new clean coal technologies.

TITLE X—IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS

Sec. 1001. Improved Coordination and Management of Civilian Science and Technology Programs

Amends the Department of Energy Organization Act to elevate the position of Director of the Office of Science to an Assistant Secretary. Increases the overall number of Assistant Secretaries in the Department from six to eight, and expresses the Sense of Congress that leadership for departmental missions in nuclear energy should be at the Assistant Secretary level.

VIII. COMMITTEE VIEWS

Authorizing levels in this Act are intended to cover all research, development, demonstration and commercial application activities in a particular area (e.g. energy efficiency), not just the programs specified in the Act.

TITLE I—SCIENCE

In an October 2002 report, the President's Council of Advisors on Science and Technology Subcommittee on Federal Investment in Science and Technology and its National Benefits observed:

> All evidence points to a need to improve funding for physical sciences and engineering. Continuation of present patterns will lead to an inability to sustain our nation's technical and scientific leadership. * * * Lack of funding in these * * * disciplines is cause for concern for a number of reasons: [The number of b]oth full-time graduate and Ph.D. students in most physical sciences, math and engineering are decreasing. * * * Facilities and infrastructure in general for the physical sciences are becoming less than adequate for the needs of today's research problems. It is widely understood and acknowledged that the interdependence of the various disciplines requires that all advance together.

H.R. 610, therefore, authorizes a significant budget increase for DOE's Office of Science, because of its primary role in funding the physical sciences. Unique among civilian science agencies, the Office of Science is responsible for operating specialized user facilities and supporting large teams of scientists capable of tackling large-scale, complex, multi-disciplinary problems that are national priorities in scientific research, such as those in nanotechnology. For more than a decade, however, Office of Science budgets have stagnated or declined. The increase recommended in this bill would reinvigorate these programs and assure America's continued scientific leadership.

The decline in the number of physical science and engineering degrees awarded to U.S. citizens is well documented and a cause for concern, even alarm, given the requirements of our economy and the shortage of technical personnel to fulfill them. The Committee notes, further, that the growth in expert personnel abroad, combined with the diminishing numbers of Americans entering the physical sciences, mathematics and engineering—an unhealthy trend—is leading corporations to locate more of their R&D activities outside the United States.

The Committee also recognizes that research conducted by universities is vital to the success of the Office of Science program and that the training of a national workforce skilled in a wide variety of physical science disciplines, including computing and engineering, is essential. Approximately one quarter of the Office of Science budget supports competitive, merit-reviewed grants to about 2,000 individual investigators at more than 250 universities and institutions nationwide. Although it is the prime supporter of the physical sciences and is responsible for a major share of university research in these fields, DOE is able to fund only 10 percent of the grant applications it receives. Even in a priority area such as nanotechnology, DOE is able to fund only 13.5 percent of submitted applications.

Sec. 104. Hydrogen.—The Committee is pleased that the Office of Science is engaged in research to support the President's Hydrogen Initiative. As noted by the American Physical Society and the National Academy of Sciences in separate reports, (The Hydrogen Initiative, American Physical Society, March 2004, and The Hydrogen Economy: Opportunities, Costs, Barriers, and R&D Needs, Committee on Alternatives and Strategies for Future Hydrogen Production and Use, National Research Council, National Academies Press, 2004) some of the barriers to success in the hydrogen pro-

gram will require breakthroughs in basic science and can be best addressed with the resources of the Office of Science.

Sec. 106. Fusion energy sciences program

Sec. 106(c). United States participation in ITER.—Although the challenges and uncertainties associated with the development of practical fusion energy are significant, the Committee recognizes that the reward for success is great: a safe, environmentally attractive and virtually unlimited base-load power source.

The Committee also recognizes that U.S. magnetic fusion research has reached a major milestone. As the result of substantial progress in fusion research over the past several years, the U.S. fusion research community has developed a strong consensus that magnetic fusion is ready to take the next step toward fusion energy: a burning plasma experiment. Several outside reviewers including the National Research Council have echoed this conclusion. Further, the consensus within the fusion community is that as a first choice, the U.S. should satisfactorily conclude negotiations leading toward the construction of an international burning plasma research project—the ITER project. The preponderance of the international fusion community, including the European Union, Japan, Russia, Canada, China and most recently South Korea, is moving forward with negotiations over the financing and the location of the ITER project. The second choice would be a domestic burning plasma device.

H.R. 610 authorizes U.S. participation in the ITER project if certain prescribed conditions are met. The bill's conditions for ITER participation are meant to reflect lessons learned from U.S. participation in other major domestic and international science projects: there must be cost protections; the U.S. role must be clearly defined; the U.S. must share equitably in experimental design, operations and collective decision making; the collaboration must maximize benefit to the U.S. domestic fusion program; and there must be a reasonable exit strategy for U.S. participation. The authorization also calls for the Secretary to submit to Congress its plan for U.S. participation in ITER prior to any U.S. contribution being made toward ITER construction. The Committee wants to ensure that Congress will have ample time to review the final decision to join the ITER project after the negotiations are complete and DOE has submitted its reports.

Regardless of whether ITER goes forward, the U.S. fusion energy sciences program must be strengthened. This strengthening is necessary to revitalize a program that faces increased demands to utilize existing experiments more fully, increase its scientific and computational base, diversify its lines of enquiry in terms of innovative approaches to fusion, and maintain its place as a world leader in the face of European and Japanese programs of much greater size. Hence, the Committee authorizes increased funding for domestic fusion energy sciences program for the next four fiscal years.

Finally, it is the Committee's view that a strengthened domestic fusion research program is critical for participation in ITER. Therefore, the Committee has included separate authorizing levels for the initial four years of ITER participation in order to emphasize that funding for U.S. participation in ITER should complement, not compete with the U.S. domestic fusion program. An attempt to par-

tially or wholly fund ITER at the expense of the U.S. domestic fusion program could result in a weakened domestic fusion program that would be unable to fully utilize or leverage the value of participation in ITER.

Sec. 107. Science and Technology Scholarship Program.—The Committee is concerned about the ability of DOE to attract and retain the scientific and technical personnel it needs to effectively carry out its programs. H.R. 610 contains a provision that the Committee intends and expects to result in the award of scholarships for talented young scientists pursuing graduate degrees in scientific and technical disciplines of importance to DOE. This section requires the Secretary to develop a scholarship program for U.S. citizen graduate students in appropriate science and engineering programs. The goal of this legislative effort is to provide a mechanism for agencies needing a highly trained/educated science and engineering workforce to have access to a greater number of qualified U.S. candidates. In addition, this effort is aimed at encouraging U.S. citizens to attend such graduate programs. Students participating in this program will receive scholarships in exchange for a commitment to work at DOE upon completion of their degrees.

Sec. 108. Office of Scientific and Technical Information.—The Committee is aware that while the Office of Scientific and Technical Information (OSTI) is currently housed in the Office of Science, it serves as an important resource for all of DOE's research programs. The Committee urges the Secretary to ensure that OSTI is well supported within the Department and continues to provide appropriate public access to the energy, science, and technology research and development (R&D) information generated by the Department and its precursors.

Funding for OSTI authorized under section 108 does not include the portion of Science program direction funding used for salaries and other typical expenses for OSTI staff. The funds authorized to be appropriated to the Secretary for section 108 are for contracts, grants, and scholarships.

In particular, continuing activities supported by OSTI should include:

(1) Access to and Preservation of Non-Published R&D Literature: For technical reports, e-prints, preprints, and other forms of non-published, Departmentally-sponsored R&D information, provide electronic tools for full-text search and retrieval and preserve such documents in accordance with relevant statutes and regulations. For classified R&D information, maintain adequate security measures to ensure access is restricted to those with proper clearance and need-to-know credentials.

(2) Other Relevant Information: Through collaboration with other science agencies and other sources of R&D information, provide tools and services, such as Science.gov, that foster scientific knowledge and advancement and allow citizens to find and use federal R&D information irrespective of the sponsoring agency.

Sec. 109. Science and Engineering Pilot Program.—As part of the Federal government effort to help ensure that more of our nation's youth have the background to major in science, engineering and

mathematics, the Department of Energy, through the Office of Science, has played a leading role in facilitating participation of educators and future teachers in research teams at research universities and the National Laboratories. Oak Ridge Associated Universities (ORAU) has been a leader in this work and also manages similar work for the National Science Foundation, the Department of Homeland Security, and the National Aeronautics and Space Administration. (NASA) One ORAU project, done at an experimental level with Johns Hopkins and Carnegie Mellon Universities, has permitted teachers to join research teams for five-week periods with the goals of increasing their understanding of how scientists do their work and of developing lesson plans based on these experiences that can be replicated by other teachers. This section authorizes expanding this effort throughout a region that includes Pennsylvania, Maryland, Tennessee and neighboring states with the goal of taking the concept nationwide in three years. Since such a regional approach requires substantial involvement of institutions with experience in the training and continuing education of teachers, the Committee is pleased that Middle Tennessee State University with its NASA Educator Resource Center plays a lead role as the initial teacher training participant for the pilot program. Any nationwide expansion of the program shall be subject to the competition provisions in section 203.

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

Sec. 203. Merit-based competition.—The Committee is aware that concerns have been raised about whether and how the Department awards funds competitively. The Committee believes that there are occasions when competition within one of the five classes in this section may be sufficient to provide the public benefits of merit-based competition. The Committee also believes that, in some cases, it may be necessary to restrict competition to ensure an adequate laboratory infrastructure for federal and public purposes. However, the Committee requests notification in order to determine whether the competition requirements of this section are appropriate. The Committee also believes that there are situations in which competitions cannot be held in a timely fashion. In those circumstances, the Committee requests notification in order to determine whether the waiver provisions of this section are appropriate.

Sec. 207. Report on equal employment opportunity practices.—This Section directs the Secretary to transmit a biennial report on equal employment practices at non-military energy laboratories. The Committee expects the Secretary to deliver the first of these reports within 12 months of the date of enactment of this Act. A GAO report entitled "Equal Employment Opportunity: Information on Personnel Actions, Employee Concerns, and Oversight at Six DOE Laboratories" (GAO–05–190) was issued in response to the request of the Chair of the Energy Subcommittee, and the Committee anticipates that the Secretary's initial report will address the findings of that study.

Sec. 208. User facility best practices plan.—The Committee believes that the Office of Science user facilities have been generally well-run and are an asset to the nation. However, as new parts of the Department embark on the creation of user facilities, it is important for the Department to review best practices and lessons

learned at existing facilities and apply those lessons to any new user facility, including those in the applied energy programs.

Sec. 209. Support for science and energy infrastructure and facilities.—The Committee is aware of the October 2004 report of the National Academy of Sciences "Intelligent Sustainment and Renewal of Department of Energy Facilities and Infrastructure" and believes that the recommendations that the Department dedicate additional resources to maintenance and upkeep of existing facilities is of paramount importance. The Department supports the operation of major scientific user facilities such as synchrotron light sources for the national scientific and technological community. Of the increased funding authorized for the Office of Science, The Committee recommends that the DOE increase the budgets for operations and maintenance of the Office's user facilities to maximize their operation and run times. These budgets have not increased substantially since 1980, even as key infrastructure has aged and now requires additional maintenance. In many cases, the scientific output and accessibility of these facilities is impaired by inadequate operations budgets and lack of funds for appropriate upgrades.

Sec. 210. Coordination plan.—The Committee is concerned that the Department has not consistently captured the research synergies available among its programs: challenges of high-temperature materials, for instance, are encountered in the nuclear, fossil and renewable energy programs, and could likely benefit from activities in the Office of Science. The Committee is aware of past successful collaborations between Departmental program offices such as the joint report on carbon sequestration done by Office of Science, Office of Biological and Environmental Research, and Fossil Energy, and the more recent joint workshop addressing the material science issues presented by advanced fission and fusion reactors. However, the Committee feels that a more thorough and structured approach is needed to maximize the return on Federal investment.

TITLE III—ENERGY EFFICIENCY

The Committee is aware of the enormous potential for energy efficiency to contribute to U.S. energy needs. Efficiency gains are the quickest, cheapest and cleanest method for making more energy available for new uses, for securing our nation's energy supply, and for reducing our dependence on foreign sources of energy. At an Energy Subcommittee hearing, witness Thomas R. Casten, Chairman and Chief Executive Officer of Primary Energy (Oak Brook, Illinois), testified that he had calculated the potential for cogeneration of electricity from industrial waste heat to be 300 gigawatts, approximately three times the amount of electricity provided by the current fleet of nuclear power plants, or about 1,000 standard fossil plants. Efficiency can, even with modest efforts, dramatically lower prices and reduce volatility in both the electricity and natural gas markets by reducing pressure on supplies, especially during peak loads.

SUBTITLE A—VEHICLES, BUILDINGS AND INDUSTRIES

Section 302. Vehicles.—The Committee is concerned that the potential for significant near-term gains in energy efficiency for vehicles is not being fully realized, in part because limited funding has tended to focus on hydrogen fuel cell vehicles. Therefore, the funding authorizations in this section are intended to be used for R&D on technologies to achieve shorter-term gains in energy efficiency and are not meant to be used for R&D under the longer-term hydrogen initiative, except in cases where technologies can readily be applied to both internal combustion engine or hybrid/electric vehicles and hydrogen-powered vehicles. Funding for hydrogen R&D is authorized separately under Title VII of this Act.

The Committee is aware of a research center at Clemson University for automotive research which specializes in many areas which are relevant for the DOE vehicle technology program, including lightweight materials, more efficient engines and transmissions, drive-by-wire, computer-aided design of materials, advanced thermal management technologies, and whole-car design. The Committee urges the Secretary to consider the facility at Clemson for activities in the vehicles program, but also as part of activities authorized under Title VII—Hydrogen, and in research on the production of biodiesel.

Section 303. Buildings.—The Committee believes that, in addition to energy efficiency and environmental performance, occupant health and indoor-air quality are important attributes to consider in the whole-buildings approach described in subsection (a). In addition, the Committee directs the Department to continue R&D and development on Smart Window technologies including electrochromics and other advanced technologies in energy-efficient windows, doors, and skylights.

Sec. 303(b). Energy efficient building pilot grant program.—The Committee views this pilot grant program as a means to promote demonstration and commercial application of innovative energy technologies, and to simultaneously encourage energy efficiency in buildings and educate the community about opportunities for efficiency. The Committee expects that the Secretary will establish guidelines for this program within 6 months of enactment of this Act, and will issue the first solicitation for grant proposals within 1 year. Furthermore, the Committee intends for the Secretary to consider a broad range of applicants, including owners of commercial, institutional, public and residential buildings. Finally, in paragraph (4)(B), the Committee expects that the independent certification organization will have procedures for obtaining data and that a summary of such procedures will be appended to the report to Congress required in paragraph (5).

Sec. 303(c). Standardization report and program.—The National Institute of Building Sciences (NIBS) maintains a web site called the Whole Building Design Guide (WBDG) that is an invaluable source of information on high performance buildings and makes that information available to all in a user-friendly manner. Much of the information contained on this site has resulted from the research and development activities of the Department of Energy and other agencies. However, to encourage the use of this knowledge, high performance building standards and procedures must be de-

veloped before this knowledge is used in new and renovated buildings on a routine basis. In an effort to stimulate the formulation of voluntary consensus standards, the Committee directs the Department to enter into an arrangement with NIBS to assess how well current private sector standards match state-of-the-art knowledge on the design, construction, operation, repair, and renovation of high-performance buildings as represented by the WBDG. NIBS, working with the appropriate industry groups and standards development organizations, is to make recommendations on steps the Secretary can take to accelerate the development of procedures, including voluntary consensus standards, encompassing on a life cycle basis, all major high-performance building attributes. These high-performance building standards shall include energy efficiency, environmental quality, sustainability, safety and security, and accessibility. Once this assessment is complete, the Secretary, in cooperation with NIBS as appropriate, is directed to establish a program of technical assistance and grants to bring about, on an accelerated timetable, the promulgation of a comprehensive set of high performance building procedures and related standards, for both new construction and renovation. The Secretary and the National Laboratories are both asked to encourage participation of their employees with relevant expertise in the work of the standards development organizations under this section.

Sec. 304. Industries.—The Committee has attempted to provide the Secretary with additional flexibility to operate the industrial energy efficiency programs by defining a threshold for industries that shall be included in the program. The industries that are the most energy intensive tomorrow may not be the same industries as today. Those industries that currently account for more than 1.0% of the total nationwide energy consumption include: aluminum, chemicals, forest product, glass, metal casting, mining, petroleum refining, steel and water treatment.

Sec. 304(b). Electric motor control technology.—The Committee is aware of the potential of optical/graphical programming for driving, controlling, and improving virtually all types of electric motors. Successful development of a simple, low cost, and generic solution for the intelligent control of electric motors could significantly improve their energy efficiency. Such technology could have tremendous impact on the heating, ventilation, and air conditioning (HVAC) industry, among others.

DOE, through the Office of Industrial Technologies, has already invested in several promising energy efficiency technologies, including the development of an optical programming system for intelligent control of electric air conditioning motors. From 1999–2002, the New York State Energy Research and Development Authority (NYSERDA) also invested significantly in an optical programming technology to improve the efficiency of HVAC motors. DOE program staff from the National Renewable Energy Laboratory (NREL) have reviewed this electric motor control, optical programming technology and concluded that successful implementation of the technology could lead to significant improvements in HVAC efficiency.

Consequently, the Committee encourages DOE to fund larger demonstrations through its Industrial Technologies Program, Building Technologies Program, or other programs to encourage the

commercial application and wider acceptance of electric motor-control technology. As part of this effort, the Committee instructs DOE to work with NYSERDA to include this technology as part of a wider demonstration of energy efficient technology in institutional settings such as schools for grades K–12.

The Committee has also included language directing the Secretary to conduct additional research, development, demonstration, and commercial application of this technology. The Committee intends that the Secretary fund promising applications by small businesses that have special expertise in this area.

Sec. 305. Demonstration and commercial application.—The Committee's intent is to encourage the Secretary to put more effort into moving energy efficiency technologies developed at the Department off the shelf and into the marketplace. The Committee feels that Departmental participation in demonstration and commercial application efforts is crucial to fulfilling the Department's mission to achieve economy-wide gains in energy efficiency through the development of advanced technologies.

Sec. 305(c). Advanced energy technology transfer centers.—The Committee is aware that viable commercial technologies and best practices for utilizing energy efficiency in buildings and industrial processes have been developed in DOE laboratories and in the private sector. These technologies are currently available, but often lack sufficient market penetration and adoption to have substantial impacts on energy use. This is due not only to a lack of incentives for their use, but to the lack of exposure of these technologies to building and energy professionals that would most benefit from these applications. Restructuring of power markets has left utilities that supported demand-side energy efficiency technologies with little financial incentive to continue programs that were designed to promote these technologies.

Paragraph (1) of subsection (c) authorizes the establishment of a national network of regional centers to provide training, and demonstration of clean, energy-efficient technologies and methods developed in both DOE laboratories and by private firms. The Committee intends that the centers be located to serve all regions of the country, while siting the centers based on greatest need.

Paragraph (2) generally prescribes the primary functions and capabilities of the centers. Specifically, these centers should operate an extensive outreach program providing information, training and technical advice to a wide audience of building and industry professionals, technicians and organizations responsible for energy demand.

The Department will serve as a central coordinating body for the activities of the network of regional centers. In this capacity, the Department will be responsible for the dissemination and transfer of information among the regional centers, scheduling of classes and demonstrations, and will be the developer of curricula for the network and aggregator of findings, solutions and technologies developed through the regional centers, among other duties.

SUBTITLE B—DISTRIBUTED ENERGY AND ELECTRIC ENERGY SYSTEMS

Sec. 321. Distributed energy.—The Committee wants to emphasize that R&D on energy storage remains a crucial component of

both the distributed energy program and the transmission and distribution program.

Sec. 321(b). Micro-Cogeneration Energy Technology.—The Committee commends the Department on its actions to advance micro-cogeneration technology. This subsection is intended to help realize the potential of cogeneration technology as a clean source of energy for a variety of applications. Many believe the space heating industry is often overlooked in the development of such distributed cogeneration systems. The Committee believes that, with further research and development, cogeneration of electric power as a by-product of building heating system operation could provide significant environmental benefits at low cost and high reliability and that the heating appliance industry is uniquely positioned to provide reliable electricity using environmentally friendly cogeneration power with practical technology.

Sec. 322(c). High voltage transmission lines.—Greater demands for capacity are being put on the bulk power transmission system as the nation consumes more electricity. The Committee supports research directed toward finding ways to optimize the carrying capacity of transmission lines. The Secretary is directed to award a grant to a university research programs to undertake the development of technologies to accomplish this goal. The Committee strongly encourages the Secretary to consider Tennessee Technological University as the recipient.

TITLE IV—RENEWABLE ENERGY

Sec. 401. Findings.—The Committee notes, with concern, that while the renewable energy equipment business is a growth industry around the world, the United States has been losing market share. From 1996 to 2003, the U.S. share of solar electric panel production fell from 44 percent to 13 percent. Both Germany and Japan are investing heavily in renewable technologies, and each country employs more than five times as many workers in producing solar panels as does the U.S. The Committee believes there is great potential for domestically produced renewable energy to reduce our dependence on foreign fuels and lower emissions of both greenhouse gases and criteria pollutants. Renewable energy can substitute for important portions of our current energy demand: solar electric panels produce peak output when the most inefficient power plants come on line, in mid-afternoon, and thus can significantly reduce demand for natural gas. Biofuels made from a variety of regional feedstocks, including woody plants, have enormous potential to substitute for foreign oil while increasing rural incomes.

Sec. 405. Bioenergy Programs.—The Committee is aware of research at a biofuels processing facility in New York to convert cellulose materials into levulinic acid for multiple applications. As part of this work, the State University of New York College of Environmental Science and Forestry is developing a Bioenergy and Bioproducts Technology Center, focusing on biofuels from lignocellulosic biomaterial. The Committee strongly encourages the Secretary to consider providing substantial financial assistance for this biofuels proposal.

The Committee also intends that Section 405 authorizes the Secretary to provide assistance for an integrated rice straw project in Gridley, California, to convert rice straw into ethanol, electric

power, and silica, and an ethanol production facility in Maryland to convert barley grain into ethanol for use in motor vehicles or other uses.

Sec. 405(c). Biomass Integrated Refinery Demonstration.—The Committee has long supported bio-based products and energy, and believes biomass holds great promise for easing the nation's dependence on petroleum, while reducing new carbon dioxide emissions. In order to be successful, this new effort must receive support similar to other energy technologies, so the authorization level for this demonstration program is similar in scale to the authorization level for the Next Generation Nuclear Plant and the Clean Coal Power Initiative. The Committee intends for the integrated biorefineries to be situated in diverse regions of the country, and for each biorefinery to use a different regionally appropriate feedstock, to the extent practicable. The Committee urges the Secretary to incorporate existing university and National Laboratory experience, such as at the State University of New York College of Environmental Science and Forestry and the National Renewable Energy Laboratory, and to engage industry to help carry out the demonstrations and to help ensure that the technologies are commercially applicable.

Sec. 408. Photovoltaic Demonstration Program.—The Committee has a strong interest in solar technology, and feels that the benefits of using photovoltaics are worthy of significant increases in Federal investment, especially in light of foreign competition. With the level of funding recommended for this Section, the Secretary should be able to demonstrate at least 300 megawatts of energy across the country. The benefits of the solar demonstration program include the production of peak power, which reduces the price of peak electricity for all customers, with minimal environmental impact, and predominantly displaces consumption of natural gas. By conducting the demonstration program through the States, the Committee feels that the Secretary can make the best use of limited federal dollars by tailoring the program to the needs and opportunities in each region of the country.

The States are required to submit proposals to be eligible for the program, which along with the required 10 percent State cost-share, ensures that the States are committed to the goals of the program. If States do not submit qualifying proposals, unclaimed funds are distributed to the States that do submit qualifying proposals. If sufficient funds are appropriated, then the Secretary shall allocate 25 percent of the available funds through a national competition, based on the quality of the proposals submitted by the States that qualify for the program.

Sec. 409(c). Renewable energy in public buildings.—This section establishes a DOE grant program for local and state governments that plan to deploy solar and other renewable energy source technologies in public buildings that they own or operate. The grants can provide up to 40 percent of the incremental cost of the renewable energy project. The Committee believes this program is a key way for DOE to be a financial partner with state and local municipalities that are committed to the long-term and expanding use of renewable energy technology as part of its energy infrastructure. For instance, Sebastopol, California, in conjunction with staff and students at Sonoma State University's Department of Environ-

mental Studies and Planning, has developed a plan to use solar technology in Sebastopol's residential, commercial, and municipal buildings, with the eventual goal to completely transition the city to solar energy.

TITLE V—NUCLEAR ENERGY PROGRAMS

Sec. 502. Programs.—The Committee believes that nuclear energy must continue to be an important part of our energy portfolio, and that the Department should maintain and enhance its efforts to increase nuclear energy's viability, provide the technical means to reduce the likelihood of proliferation, help maintain the nation's nuclear research and education infrastructure. The program overall should be oriented toward the construction of a next-generation nuclear plant, with the research activities organized around that primary goal. The Committee remains concerned that the necessary infrastructure to carry out the program is not yet in place. The Department has not yet shown a clear path forward to ensuring that the necessary resources will be made available, and will be organized in a manner that will maximize the utility of existing resources to achieve the program goals. The Committee is also concerned that the university-based research activities that were formerly carried out under the nuclear energy research initiative are not receiving adequate support, and will not be carried out under other programs.

SUBTITLE A—NUCLEAR ENERGY RESEARCH PROGRAMS

Sec. 512. University Nuclear Science and Engineering Support.—This Section authorizes new and existing programs to promote university research and education in nuclear engineering. The Committee is aware of concerns within the university nuclear research reactor community that DOE may be considering reducing its support for numerous university reactors. The Committee urges the Department to continue to maintain, and even expand, its support of the existing research reactor infrastructure. The Committee believes that a sustainable approach to nuclear power must include ongoing support for nuclear research reactors throughout the various regions of the United States.

SUBTITLE B—NEXT GENERATION NUCLEAR PLANT PROGRAM

Sec. 532. Next Generation Nuclear Power Plant.—The Committee is concerned that the management plan for the construction and operation of the next generation nuclear plant (NGNP) is not sufficiently defined to allow potential partners to begin planning for technology selection, much less investment. While the Committee has authorized considerable funding for R&D on the NGNP, construction funding, while authorized, is restricted until an adequate management plan is delivered to the Congress.

TITLE VI—FOSSIL ENERGY

SUBTITLE A—RESEARCH PROGRAMS

Sec. 601. Enhanced Fossil Energy Research and Development Programs.—The Committee notes that traditionally a substantial majority of the funds in the fossil energy research budget have been

dedicated to coal research and development, because coal is the fossil energy resource with the largest known reserves, and because it is in the national interest to learn how to use this resource in a more efficient and environmentally benign manner. Therefore, the Committee expects that coal research and development comprise at least 60 percent of the program authorized under this section.

Sec. 606. Carbon Dioxide Capture Research and Development.—The Committee supports the current efforts of the Department to develop technologies to capture and sequester carbon dioxide emissions as part of the Department's Coal R&D program. However, the Committee believes that through more focused technology development, pulverized coal-fired power plants may also be able to achieve reductions in carbon dioxide emissions. The Secretary is directed to establish a program to cost effectively develop technologies to be retrofitted to the current generation of pulverized coal units that will make contributions toward the capture of carbon dioxide that would otherwise be emitted from these systems.

SUBTITLE B—ULTRA-DEEPWATER AND UNCONVENTIONAL NATURAL GAS AND OTHER PETROLEUM RESOURCES

Sec. 611. Program Authority.—Subtitle B authorizes a new program at the Department for research, development, demonstration, and commercial application of ultra-deepwater and unconventional natural gas and other petroleum exploration technologies. For purposes of this program, ultra-deepwater is defined to be in excess of 1,500 meters below the surface of the ocean. The Committee is hopeful that this technology will enable the U.S. to increase the supplies of oil and gas from the central and western Gulf of Mexico and other areas already open to drilling. The Department is allowed to carry out the program through a non-profit research consortium, modeled on the highly successful example of SEMATECH, which guided jointly funded efforts of the Department of Defense and the semiconductor industry. The Committee intends that the Secretary exercise continuing oversight over any research consortium. It is the Secretary's responsibility to ensure that the public interest is being served by the consortium's projects, that the projects are making the desired technical progress, and that the public's money is being properly spent. Part 3 also requires annual audits by an independent, outside auditing firm. Such audits were also required of SEMATECH.

Section 611(b) asks the Secretary to report to the Congress his recommendation on whether methane hydrates research should be included in the scope of activities outlined in this subtitle.

The ultra deep program of R&D and demonstration would be applicable only in certain areas. Section 611(c) prohibits field activities under the program authorized by this Part in any offshore areas that are currently under federal moratoria, such as areas off the coasts of California or North Carolina.

Sec. 612. Ultra-Deepwater Program.—Section 612(a) requires that all the projects undertaken under this program have among their major goals the improvement of safety and the limiting of environmental impacts. The Committee expects the Secretary to carefully monitor the program to ensure that safety and environmental

impacts are specifically addressed in the projects funded through the consortium.

In the report called for in Section 612(e)(5), the Secretary shall include an estimate of the net present value of any additional royalties, taking into account any production that would have eventually occurred without the Federal program, using discount rates derived from standard natural resource extraction models.

Sec. 614. Additional Requirements for Awards.—This Section sets specific requirements for awards, including specification of commercial use of technologies, standards for intellectual property, the circumstances under which cost-sharing might be reduced, and the need for technology transfer activities as part of each award. The Committee expects the Department to make every effort to include companies and independent producers of oil and gas that have had less than $500 million in annual revenues over the last three years. The requirements in Section 614(c) are not intended by the Committee to affect existing requirements of the Bayh-Dole Act in any way. Section 614(e) provides the Secretary with authority to reduce cost sharing based on technological risk. The Committee expects that such reductions in cost sharing would be for a period not to exceed two years.

TITLE VII—HYDROGEN

The Committee has long been involved in hydrogen research, development, demonstration and the commercial application of hydrogen-related technologies. The Committee authorized hydrogen science and technology programs in the original Spark M. Matsunaga Act of 1990 and Hydrogen Future Act of 1996. During the conference on comprehensive energy legislation in the 107th Congress (H.R. 4), the Committee negotiated language with the Senate conferees on amending the Matsunaga and Hydrogen Future Acts, which was reflected in H.R. 238 as introduced. In the 108th Congress, further revisions to the hydrogen title were made in the conference on comprehensive energy legislation (H.R. 6). That language passed the House and is preserved in H.R. 610.

The Committee strongly supports the President's commitment to hydrogen, but is particularly intent that the President's FreedomCAR and Hydrogen Initiatives address the following areas:

1. Stationary Power Generation.—The President's Hydrogen Initiative has a clear focus on hydrogen fuel cell vehicles and the infrastructure to support them. Such vehicles hold potentially enormous benefits for the Nation, in terms of improved energy efficiency, near zero emissions, and reduced dependence on foreign oil. However, stationary applications face fewer technical barriers before becoming commercially viable, especially in niche market applications. The Committee strongly encourages the Department to support stationary fuel cell research, which will lead to technology advances applicable to fuel cell vehicles.

2. Meaningful Demonstrations.—Past efforts by the Department to demonstrate technologies have not always been successful in providing reproducible models for commercial applications. As the Department demonstrates hydrogen and fuel cell technology, the Committee urges the Department to choose applications that have value in the commercial market, and

can be easily reproduced, rather than one-of-a-kind examples that do not advance the technology's acceptance. The bill requires meaningful demonstrations, such as placing the technology into an existing facility. Demonstrations could include placing stationary fuel cells into critical telecommunications switching stations, which require uninterruptible power.

3. Integration of Policy into the Research Plan.—The Committee expects the research plan to explicitly state the specific policy assumptions that are guiding the development of the R&D agenda. While the Committee understands that the Department cannot yet be sure exactly what policies will be put in place to facilitate the transition to a hydrogen economy, DOE cannot put together an R&D agenda without making some assumptions about the future policy environment. For example, the mix of sources we choose to tap for hydrogen (coal, natural gas, renewables, etc.) will be greatly affected by government policy (air regulations, tax incentives, and so forth). The way those sources are used will also be affected by government policy. (For example, will carbon sequestration be required in the production of hydrogen?) Since DOE's R&D agenda must facilitate the development of technologies that can be put to work in a relatively short time in "the real world," DOE's decisions about R&D investments must take into account how that world will be shaped by government policy.

4. Report and Review.—The Committee commends the Department on the plan and review already undertaken with the National Academy of Sciences. The Committee intends that the initial plan and review required by Section 706 has already been met by the Department's work with the National Academy. The Department is still required to submit updates to the plan, and continue with external reviews as described in Section 706.

5. Coordination.—Although the majority of the President's initiative will be located in the Office of Energy Efficiency and Renewable Energy, it is the intention of the Committee that the Department conduct all hydrogen and fuel cell work in a coordinated manner to prevent duplication and provide maximum benefit. The Committee strongly encourages the Department to involve the Office of Science in areas of basic research relevant to the program. Additionally, the Committee notes that four separate sections of the bill authorize fuel cell RD&D and commercial application: Section 321 in Distributed Energy, Sections 602 and 605 in Fossil Energy, Title VII authorizing the President's Hydrogen Initiative, Section 814 pertaining to fuel cell school buses, and Section 821 pertaining to fuel cell bus demonstration programs. The Committee intends that the Secretary coordinate implementations of these provisions to maximize their integration and effectiveness.

The Committee intends that the term "overall" in Section 703(b)(2) indicate that the complete fuel cycle, or "well-to-wheels," efficiency and environmental costs be considered as the Department is considering various technology options for the production, delivery, and use of hydrogen.

The Committee is aware of expertise within the Department's National Laboratories that may be relevant to the problem of hydrogen storage, one of the most difficult challenges in the hydrogen economy. The Committee urges the Secretary to take advantage of existing expertise in the National Laboratories; for example, Savannah River National Laboratory's experience with tritium could be relevant to hydrogen research challenges.

TITLE VIII—ADVANCED VEHICLES

Sec. 802. Pilot program.—In selecting applicants and project sites, the Secretary should, consistent with section 201, give special consideration to proposals that address environmental needs in Clean Air Act nonattainment areas like the Washington, DC metropolitan region and in communities seeking to meet zero air emission goals, like Santa Clara County, California.

Sec. 812. Program for replacement of certain school buses with clean school buses.—The Committee recognizes the safety and health benefits of replacing school buses that were manufactured before 1991. The Committee directs the Administrator to focus on replacing those buses which pose the greatest risk to school children, those manufactured before 1977. The Committee also directs the Administrator to use alternative fuel school buses to the greatest extent feasible, because of their national security benefit in addition to the health and safety benefits.

The Committee is aware that a large percentage of all school bus fleets are privately owned and operated under contract to public school districts. Contractors provide service for most of the nonattainment areas in the country. To ensure that EPA focuses its efforts on replacing and retrofitting school buses in the communities with the greatest need and opportunity to affect air quality, the Committee has included flexibility for the Administrator to provide grant funds to privately run systems by allowing for joint applications to the school bus operators and the districts they serve and to nonprofit trade associations whose members include private school bus contractors. The Committee has included safeguards to ensure that the funds used for the purchase or retrofit of privately owned school buses will benefit the local school system and its students.

Sec. 821. Fuel cell transit bus demonstration.—This Section directs the Secretary to establish a comprehensive public private partnership program to demonstrate hydrogen fuel cell transit bus technology. The Committee recognizes that fuel cell technology could significantly contribute to improving the cost effectiveness and environmental impact of mass transit options. However, more research and development work needs to be done to address a number of issues related to this technology. This demonstration program should specifically address numerous aspects of the introduction of this new technology, including consideration of the following components:

1. Design and production of the Polymer Electrolyte Membrane (PEM) fuel cell power plant, electric drive and other components and integration of the power plant system with the bus chassis;

2. Demonstration of system reliability and durability capable of meeting the initial mission requirements of transit bus authorities;

3. Design and development of a fuel cell friendly bus chassis that can become a standard platform for transit bus Original Equipment Manufacturers (OEM);

4. Transit bus infrastructure requirements such as hydrogen production, storage and distribution;

5. On-site demonstration of hydrogen production using: commercial and renewable, gaseous and liquid fuels, and water electrolysis coupled with a renewable energy source;

6. Design, development and demonstration of a hydrogen storage system;

7. Data collection, verification and testing, and information dissemination;

8. Identification and implementation of necessary codes and standards for the safe use of hydrogen as a fuel suitable for the transit bus application, including the PEM fuel cell power plant system and related operational facilities; and

9. Completion of fleet vehicle evaluation program by bus operators along normal transit routes, providing equipment manufacturers and transit operators with the necessary analyses to enable operation of hydrogen PEM fuel cell transit buses over a range of operating environments.

The Committee is aware that the Department of Transportation is currently developing and funding a number of Bus Rapid Transit (BRT) demonstration programs around the country. The Committee believes that the BRT program is structured in a way that would facilitate the execution of this fuel cell bus demonstration program, as well as reducing redundancy in interagency research, and recommends the Secretary consider coordinating this fuel cell demonstration with existing BRT initiatives where there is local support to do so. The Committee also recognizes that local organizations, such as the Houston Galveston Area Council and the Zero Emission Bus program undertaken jointly by Santa Clara and San Mateo counties, are well equipped to assist the Federal Government in demonstrating the benefits from research on fuel cell technologies used for low-emission mass transit vehicles.

TITLE IX—CLEAN COAL

Like the Administration, the Committee believes that coal is likely to continue to be a significant source of electric power in the U.S. for years to come, given its domestic abundance. However, if that is to be the case, coal must become a far more efficient and cleaner fuel. Section 901 authorizes appropriations of $200 million per year for fiscal years 2006 through 2012, for the Clean Coal Power Initiative (CCPI). Section 902 sets out project criteria, including technical milestones for reduced emissions and for improved thermal efficiency. The Committee notes that improvements in efficiency in existing plants will be necessary to keep them competitive. As such, the efficiency targets set out in Section 902(b)(4) for efficiency refer to changes in the total plant efficiency. For example, for coal of 7000 British thermal units per pound (btu/lb), these targets require that plants would be expected to improve from 29 percent total plant efficiency to 33 percent total plant efficiency. Such im-

provements will require, among other actions, government investment in research, development, demonstration and commercial application of truly advanced coal technologies. Neither the taxpayers nor the coal industry will be well served in the long run if government investments are made in technologies that do not "push the envelope." Moreover, a concerted effort will be needed to strengthen the management of clean coal programs.

With those concerns in mind, Title IX places a number of requirements and restrictions on coal programs, particularly on the CCPI. First, the Committee requires a detailed report on how CCPI will be organized and implemented. The Committee is troubled that an explanation of how the $2 billion figure was arrived at, and how the money will be spent, has not been forthcoming from the Department. Given the priority the Administration has placed on the CCPI, the Committee has allowed the Initiative to begin. However, the Committee has required submission of a detailed report outlining how the program will be executed.

The report must be specific in explaining how the $2 billion figure was developed, the scope of the program, how the program will operate, what technical milestones will be established and how they will be achieved, and how the program can be guided or informed by the successes and failures of past clean coal efforts. Section 903 requires that the report contain a number of specific components. First, the report must contain a detailed assessment of whether the aggregate funding levels provided under subsection (a) are the appropriate funding levels for that program. The Committee expects that this section will include an estimate of the total number of demonstrations of a given class of technology that is necessary to prove acceptance of the technology by industry, the approximate risk and cost reductions likely from second and successive demonstrations, and how these changes in cost and risk should affect the program's industrial participants' willingness to cost-share.

Second, the report must contain a detailed description of how proposals will be solicited and evaluated, including a list of all activities expected to be undertaken. The Committee expects that this section will include the relative weights of technical merit, of cost sharing, of the financial ability of the participant to complete the project, of the anticipated size of the target market, and other considerations factored into project evaluations. The Committee expects that this section will also include an evaluation of the market segments for which each technology demonstrated in the program is intended, the share of the overall coal power market of each technology and the share of the overall electricity market of each technology.

Third, the report must contain a detailed list of technical milestones for each coal and related technology that will be pursued. The Committee expects that this section will define the performance levels—especially emissions and efficiency criteria outlined in section 902 that successive projects are anticipated to meet, and the timeline for project awards to meet each performance level.

Finally, the report must include a detailed description of how the program will avoid problems enumerated in GAO reports on the Clean Coal Technology Program, including problems that have resulted in unspent funds and projects that failed either financially

or scientifically. The Committee expects that this section will include a detailed plan on contract mechanisms and enforcement to ensure that project partners with successful projects meet their obligations.

The biennial report mentioned in Section 903 can be submitted as a part of the annual report required by Public Law 99–190 in the Clean Coal Technology Program, provided that it includes all the information required by that law. The Committee expects that cost-sharing will continue to be an important tool for leveraging scarce Federal resources, and therefore expects that the Department will continue to use cost-sharing as a major factor in project selection, especially in regard to demonstration projects. As milestones are met in the program and technologies approach commercialization, the Committee expects an increase in the private contribution to the program. The Act also establishes strict environmental standards that projects must be designed to meet and reasonably be expected to achieve in order to receive funding. Moreover, at least 60 percent of the funding must be devoted to projects related to gasification (which may include sequestration), because these are technologies that are furthest from development and promise the greatest environmental benefit among economically viable technologies, and, therefore, are the ones most deserving of government support.

The Committee intends that the Secretary set strict, achievable, specific environmental milestones to ensure that the projects comply with Section 902. The environmental criteria in this Act, which are taken from industry's own technology roadmap, are not mere advisory guidelines. They are precise requirements that the program must be designed to meet.

The Committee intends that the efficiency requirements refer to generation efficiency and that the efficiency numbers apply to plants that are exclusively generating power. The Secretary should issue equivalent efficiency numbers for plants involved in the production of industrial chemicals or other activities.

The Act also sets strict financial criteria for participants in CCPI. These criteria are absolutely essential to the success of the program. The Committee intends that the Secretary require specific, written documentation and audits from the participants to meet the requirements of subsection 903(c). For example, a market should exist for the technology being demonstrated or applied, as evidenced by statements of interest in writing from potential purchasers of technology. The Committee recommends that the Secretary consult with objective, outside experts in developing the report, including those from the National Academy of Sciences and GAO. The Committee also recommends that, in writing the report and carrying out the program, the Secretary consult with environmental groups and other environmental experts, the coal industry, the utility industry, and the coal equipment manufacturing industry.

Sec. 904. Clean Coal Centers of Excellence.—This section directs the Secretary to provide grants to universities for the establishment of clean coal centers of excellence. Based on the Subcommittee on Energy's June 12, 2001 hearing on Clean Coal Technology and subsequent discussions and materials, the Committee strongly encourages the Secretary to consider as potential recipi-

ents Southern Illinois University, the University of Pittsburgh, Carnegie-Mellon University, and the Center for Electric Power at Tennessee Technological University.

IX. Cost Estimate

Rule XIII, clause 3(c)(2) of the Rules of the House of Representatives requires each Committee Report on a measure approved by the Committee to include: (1) An estimate by the Committee of the costs that would be incurred in carrying out the bill or joint resolution in the fiscal year in which it is reported and in each of the five fiscal years following that fiscal year (or for the authorized duration of any program authorized by the bill or joint resolution if less than five years); (2) a comparison of the estimate of costs described in subparagraph (1) of this paragraph made by the Committee with any estimate of such costs made by a government agency and submitted to such Committee; and (3) when practicable, a comparison of the total estimated funding level for the relevant programs with the appropriate levels under current law. However, House Rule XIII, clause 3(d)(3)(B) provides that this requirement does not apply when a cost estimate and comparison prepared by the Director of the Congressional Budget Office under Section 402 of the Congressional Budget Act of 1974 has been submitted prior to the filing of the report and included in the report pursuant to House Rule XIII, clause 3(c)(3). A cost estimate and comparison prepared by the Director of the Congressional Budget Office under Section 402 of the Congressional Budget Act of 1974 has been submitted to the Committee on Science prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

Rule XIII, clause 3(c)(2) of the House of Representatives requires each Committee Report that accompanies a measure providing new budget authority (other than continuing appropriations), new spending authority, or new credit authority, or changes in revenues or tax expenditures to contain a cost estimate, as required by Section 308(a)(1) of the Congressional Budget Act of 1974 and, when practicable, with respect to estimates of new budget authority, a comparison of the total estimated funding level for the relevant program (or programs) to the appropriate levels under current law.

H.R. 610 contains new budget authority, credit authority, or changes in revenues or tax expenditures under Section 619(a), by diverting $1.5 billion of royalty funds that would otherwise have gone to the Treasury for the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Fund. Assuming that the sums authorized under the bill are appropriated, H.R. 610 also authorizes additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. Congressional Budget Office Cost Estimate

April 20, 2005.

Hon. Sherwood L. Boehlert,
Chairman, Committee on Science,
House of Representatives, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has prepared the enclosed cost estimate for H.R. 610, the Energy Research, Development, Demonstration, and Commercial Application Act of 2005.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Mike Waters.

Sincerely,

Douglas Holtz-Eakin,
Director.

Enclosure.

H.R. 610—Energy Research, Development, Demonstration, and Commercial Application Act of 2005

Summary: H.R. 610 would authorize appropriations for various research and development activities at the Department of Energy (DOE) and the Environmental Protection Agency. Most of those activities would be related to energy production, conservation, or research and development. Assuming appropriation of the specified amounts, CBO estimates that implementing H.R. 610 would cost $3.3 billion in 2006 and $36.2 billion over the 2006–2010 period. CBO estimates that enacting the bill also would increase direct spending by $540 million over the 2006–2010 period and by $1.3 billion over the 2006–2015 period. Enacting the bill would not affect revenues.

H.R. 610 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA). States and other public entities would benefit from the programs and grants authorized in this bill; any costs they face would result from participation in voluntary Federal programs.

Estimated cost to the Federal Government: The estimated bydgetary impact of H.R. 610 is shown in the following table. The costs of this legislation fall within budget function 250 (science, space, and technology), 270 (energy), and 300 (natural resources and the environment).

TABLE 1.—ESTIMATED CHANGES IN SPENDING UNDER H.R. 610 OVER THE 2005–2010 PERIOD

	By fiscal year, millions of dollars—					
	2005	2006	2007	2008	2009	2010
SPENDING SUBJECT TO APPROPRIATION						
Spending under current law for programs authorized by H.R. 610:						
Budget authority[a]	5,300	0	0	0	0	0
Estimated outlays	5,156	2,744	536	75	29	0
Proposed changes:						
DOE Science Programs:						
Specified authorization level	0	3,785	4,153	4,628	5,300	5,800
Estimated outlays	0	1,893	3,780	4,372	4,940	5,516
Energy Efficiency Programs:						
Specified authorization level	0	840	940	1,050	1,190	1,275
Estimated outlays	0	420	764	980	1,104	1,212

TABLE 1.—ESTIMATED CHANGES IN SPENDING UNDER H.R. 610 OVER THE 2005–2010 PERIOD—Continued

	By fiscal year, millions of dollars—					
	2005	2006	2007	2008	2009	2010
Renewable Energy Research:						
Specified authorization level	0	465	605	775	940	1,125
Estimated outlays	0	209	458	637	817	990
Nuclear Energy Programs:						
Specified authorization level	0	557	577	599	621	645
Estimated outlays	0	251	482	556	605	627
Fossil Energy Programs:						
Specified authorization level	0	633	661	676	691	707
Estimated outlays	0	253	454	659	678	693
Hydrogen Fuel Development:						
Specified authorization level	0	274	375	450	500	550
Estimated outlays	0	123	278	380	456	511
Advanced Vehicle Technology:						
Specified authorization level	0	300	135	35	10	10
Estimated outlays	0	120	189	120	40	14
Clean Coal Technology:						
Specified authorization level	0	200	200	200	200	200
Estimated outlays	0	50	100	130	160	180
Total proposed changes:						
Specified authorization level	0	7,054	7,646	8,413	9,452	10,312
Estimated outlays	0	3,319	6,506	7,834	8,799	9,743
Spending under H.R. 610:						
Specified authorization level [a]	5,300	7,054	7,646	8,413	9,452	10,312
Estimated outlays	5,156	6,063	7,043	7,909	8,828	9,743
CHANGES IN DIRECT SPENDING						
Budget authority	0	150	150	150	150	150
Estimated outlays	0	30	75	135	150	150

[a] The 2005 level is the amount appropriated for that year for DOE programs related to science, energy supply, fossil energy, and certain energy conservation programs.

Basis of estimate

For this estimate, CBO assumes that the amounts authorized by H.R. 610 will be appropriated for each fiscal year and that spending will follow historical patterns for ongoing or similar activities.

Spending subject to appropriation

H.R. 610 would authorize the appropriation of nearly $7.1 billion in 2006 and $42.9 billion over the 2006–2010 period for research, development, and demonstration activities related to energy consumption and supply. Over half the total funding, $23.7 billion, would be for the Department of Energy's science programs. CBO estimates that implementing H.R. 610 would cost $3.3 billion in 2006 and about $36.2 billion over the 2006–2010 period, assuming appropriation of the specified amount. CBO estimates that implementing:

Title I would cost $1.9 billion in 2006 and $20.5 billion over the 2006–2010 period for the Department of Energy's science programs;

Title III would cost $420 million in 2006 and $4.5 billion over the 2006–2010 period for energy efficiency programs related to vehicles, buildings, industry, and electric energy systems;

Title IV would cost $209 million in 2006 and $3.1 billion over the 2006–2010 period for renewable energy research and devel-

opment related to solar, bioenergy, wind, geothermal, and photovoltaic programs;

Title V would cost $251 million in 2006 and $2.5 billion over the 2006–2010 period for nuclear energy programs, including assistance to DOE to participate in the design, building, and operation of a demonstration nuclear power plant using advanced technology;

Title VI would cost $253 million in 2006 and $2.7 billion over the 2006–2010 period for fossil energy programs, including a new program for the research and development of unconventional petroleum resources;

Title VII would cost $123 million in 2006 and $1.7 billion over the 2006–2010 period for programs to develop hydrogen as an energy source;

Title VIII would cost $120 million in 2006 and $483 million over the 2006–2010 period for programs related to advanced vehicle technology, such as vehicles that run on fuel cells, ultra-low sulfur diesel, and hybrid technology; and

Title IX would cost $50 million in 2006 and $620 million over the 2006–2010 period for providing assistance to electricity projects using clean coal technologies.

Direct spending

H.R. 610 would establish a new program to develop unconventional sources of petroleum and natural gas from both onshore sources and from the deep waters of the Outer Continental Shelf. Under the program, $150 million per year over the 2006–2015 period would be deposited into a new Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Fund for expenditure by DOE without further appropriation. Those funds would come from royalties, rents, and bonuses paid by private firms to the government—under current law—for minerals production activity on federal land. In 2004, such receipts totaled about $7.5 billion. Such collections are currently deposited into the Treasury and are not available unless appropriated. Enacting H.R. 610 would not affect the amounts of future collections. CBO estimates that implementing the new program would cost $30 million in 2006 and $1.3 billion over the 2006–2015 period (see Table 2).

TABLE 2.—CHANGES IN DIRECT SPENDING UNDER H.R. 610 OVER THE 2005–2015 PERIOD

	By fiscal year, in millions of dollars—										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Budget Authority	0	150	150	150	150	150	150	150	150	150	150
Estimated Outlays	0	30	75	135	150	150	150	150	150	150	150

INTERGOVERNMENTAL AND PRIVATE-SECTOR IMPACT

H.R. 610 contains no intergovernmental or private-sector mandates as defined in UMRA. States and other public entities would benefit from the programs and grants authorized in this bill; any costs they face would result from participation in voluntary federal programs.

Estimate prepared by: Federal costs: Lisa Cash Driskill, Susanne Mehlman, and Mike Waters; impact on state, local, and tribal gov-

ernments: Theresa Gullo; impact on the private sector: Paige Piper/Bach.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

XI. Compliance With Public Law 104–4

H.R. 610 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

Rule XIII, clause 3(c)(1) of the Rules of the House of Representatives requires each Committee Report on a measure approved by the Committee to include oversight findings and recommendations required pursuant to clause 2(b)(1) of rule X. The Committee on Science's oversight findings and recommendations are reflected in the body of this report.

XIII. Constitutional Authority Statement

Rule XIII, clause 3(d)(1) of the Rules of the House of Representatives requires that each report of a Committee on a public bill or public joint resolution shall contain a statement citing the specific powers granted to Congress in the Constitution to enact the law proposed by the bill or joint resolution. Article I, Section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 610.

XIV. Federal Advisory Committee Statement

H.R. 610 creates four advisory committee(s) within the meaning of Section 5(b) of the Federal Advisory Committee Act whose functions are not currently being performed, nor could they be performed by one or more agencies, by an advisory committee already in existence, or by enlarging the mandate of an existing advisory committee:

1. Section 204(b)(3) requires the Secretary of Energy to establish a science advisory committee, to advise the Secretary on science issues, that must include the chairs of the programmatic advisory committees for the Office of Science.
2. Section 305(c) requires the Secretary to establish an Advisory Committee for Advanced Energy Technology Transfer Centers composed of members from State or local energy offices, energy professionals, trade or professional associations, architects, engineers, construction professionals, manufacturers, the research community, and nonprofit energy or environmental organizations to advise the Secretary on the establishment of the Centers under this Section.
3. Section 615(a) requires the Secretary to establish the Ultra-Deepwater Advisory Committee. The purpose of this advisory committee is to advise the Secretary on the development and implementation of programs related to ultra-deepwater natural gas and other petroleum resources.
4. Section 615(b) requires the Secretary to establish the Unconventional Resources Technology Advisory Committee. The purpose of this advisory committee is to advise the Secretary on the development and implementation of programs under

this part related to unconventional natural gas and other petroleum resources.

In addition, Section 204(a) authorizes the creation of at least four advisory committees within the meaning of Section 5(b) of the Federal Advisory Committee Act whose functions are not currently being performed, but whose functions could potentially be assumed by expanding the mandate of existing committees. The decision to establish new committees or expand existing ones is left to the discretion of the Secretary.

Section 533 requires the Secretary to appoint a subcommittee of the Nuclear Research Advisory Committee to oversee the Next Generation Nuclear Plant project.

Section 705 requires the Secretary to establish the Hydrogen Technical and Fuel Cell Advisory Committee consisting of experts drawn from domestic industry, academia, professional societies, governmental laboratories, and financial, environmental, and other organizations, as appropriate, to review and advise on the progress made through the programs and activities authorized. It is the Committee's intent that this advisory committee replaces the existing Hydrogen Advisory Technical Panel created by the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990.

XV. Congressional Accountability Act

The Committee finds that H.R. 610 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of Section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVI. Statement on Preemption of State, Local, or Tribal Law

H.R. 610 is not intended to preempt any State, local, or Tribal law.

XVII. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

DEPARTMENT OF ENERGY ORGANIZATION ACT

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Department of Energy Organization Act".

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TITLE II—ESTABLISHMENT OF THE DEPARTMENT

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Sec. 215. Office of Counterintelligence.
Sec. 216. Office of Intelligence.

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TITLE II—ESTABLISHMENT OF THE DEPARTMENT

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ASSISTANT SECRETARIES

SEC. 203. (a) [There shall be in the Department six Assistant Secretaries] *Except as provided in section 209, there shall be in the Department seven Assistant Secretaries*, each of whom shall be appointed by the President, by and with the advice and consent of the Senate; who shall be compensated at the rate provided for at level IV of the Executive Schedule under section 5315 of title 5, United States Code; and who shall perform, in accordance with applicable law, such of the functions transferred or delegated to, or vested in, the Secretary as he shall prescribe in accordance with the provisions of this Act. The functions which the Secretary shall assign to the Assistant Secretaries include, but are not limited to, the following:

(1) * * *

* * * * * * *

[OFFICE OF SCIENCE

[SEC. 209. (a) There shall be within the Department an Office of Science to be headed by a Director, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

[(b) It shall be the duty and responsibility of the Director—

[(1) to advise the Secretary with respect to the physical research program transferred to the Department from the Energy Research and Development Administration;

[(2) to monitor the Department's energy research and development programs in order to advise the Secretary with respect to any undesirable duplication or gaps in such programs;

[(3) to advise the Secretary with respect to the well-being and management of the multipurpose laboratories under the jurisdiction of the Department, excluding laboratories that constitute part of the nuclear weapons complex;

[(4) to advise the Secretary with respect to education and training activities required for effective short- and long-term basic and applied research activities of the Department;

[(5) to advise the Secretary with respect to grants and other forms of financial assistance required for effective short- and long-term basic and applied research activities of the Department; and

[(6) to carry out such additional duties assigned to the Office by the Secretary relating to basic and applied research, including but not limited to supervision or support of research activities carried out by any of the Assistant Secretaries designated

by section 203 of this Act, as the Secretary considers advantageous.]

OFFICE OF SCIENCE

SEC. 209. (a) There shall be within the Department an Office of Science, to be headed by an Assistant Secretary of Science, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

(b) The Assistant Secretary of Science shall be in addition to the Assistant Secretaries provided for under section 203 of this Act.

(c) It shall be the duty and responsibility of the Assistant Secretary of Science to carry out the fundamental science and engineering research functions of the Department, including the responsibility for policy and management of such research, as well as other functions vested in the Secretary which he may assign to the Assistant Secretary.

* * * * * * *

SECTION 5315 OF TITLE 5, UNITED STATES CODE

§ 5315. Positions at level IV

Level IV of the Executive Schedule applies to the following positions, for which the annual rate of basic pay shall be the rate determined with respect to such level under chapter 11 of title 2, as adjusted by section 5318 of this title:

Deputy Administrator of General Services.

* * * * * * *

[Assistant Secretaries of Energy (6)] *Assistant Secretaries of Energy (8).*

* * * * * * *

[Director, Office of Science, Department of Energy.]

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XVIII. COMMITTEE RECOMMENDATIONS

On February 10, 2005, a quorum being present, the Committee favorably reported H.R. 610, the Energy Research, Development, Demonstration and Commercial Application Act of 2005, as amended, by a voice vote, and recommended its enactment.

XIX. STATEMENT OF GENERAL PERFORMANCE GOALS AND OBJECTIVES

Pursuant to clause 3(c) of House rule XIII, the outcome-related goals of H.R. 610, as enumerated in the following sections, are to be used to guide the conduct of balanced energy research, development, demonstration and commercial application portfolio of programs in order to meet the purposes of H.R. 610: Section 101 relating to Office of Science programs; Section 301 relating to programs for Vehicles, Buildings and Industries; Section 321 relating to programs in Distributed Energy; Section 322 relating to programs in

Electricity Transmission and Distribution and Energy Assurance; Section 403 relating to programs in Renewable Energy; Section 502 relating to programs in Nuclear Energy; Section 601 relating to programs in Fossil Energy; and Section 703 relating to programs in Hydrogen. Additional goals can be found throughout H.R. 610, including: Section 102 relating to Systems Biology; Section 106 relating to the plan for Fusion Energy Sciences Program; Section 107 relating to the Department of Energy Science and Technology Scholarship Program; Section 109 relating to a Science and Engineering Pilot Program; Section 210 relating to a Coordination Plan; and Section 812 relating to the establishment of a program for Clean School Buses.

XX. Exchange of Committee Correspondence

U.S. House of Representatives,
Committee on Energy and Commerce,
Washington, DC, June 17, 2005.

Hon. Sherwood L. Boehlert,
Chairman, Committee on Science,
House of Representatives, Washington, DC.

Dear Chairman Boehlert: Thank you for your letter in regards to H.R. 1640, the Energy Policy Act of 2005.

As the Committee on Science was named as an additional Committee of jurisdiction upon the bills introduction, I acknowledge and appreciate your willingness to not exercise your full referral on the bill. In doing so, I agree that your decision to forgo further action on the bill will not prejudice the Committee on Science with respect to its jurisdictional prerogatives on this legislation or similar legislation. Further, I recognize your right to request conferees on those provisions within the Committee on the Science's jurisdiction should they be the subject of a House-Senate conference on this or similar legislation.

I will include your letter and this response in the Committee's report on H.R. 1640, and I look forward to working with you as we prepare to go to bring comprehensive energy legislation to the American people.

Sincerely,

Joe Barton,
Chairman.

U.S. House of Representatives,
Committee on Science,
Washington, DC, May 24, 2005.

Hon. Joe Barton,
Chairman, Committee on Energy and Commerce,
House of Representatives, Washington, DC.

Dear Chairman Barton: On April 14, 2005, you introduced H.R. 1640, a bill to ensure jobs for our future with secure and reliable energy. The bill was referred to the Committee on Energy and Commerce, and in addition to the Committee on Science (among others). The bill contains provisions that fall within the jurisdiction of the Committee on Science.

In deference to your desire to bring this legislation before the House in an expeditious manner as part of H.R. 6, I did not exercise this Committee's right to consider H.R. 1640. Despite waiving consideration of H.R. 1640, the Committee on Science did not waive its jurisdiction over those provisions in H.R. 1640, as introduced, that fall within our Committee's jurisdiction. Specifically:

Science has sole jurisdiction over the following provisions: §§ 107–108; 302; 416; 631; 651–652; 711–712; 731; 744; 751; 759; 810; Title IX (except section 949); 1003; 1225; 1227; 1447–1448; 1610.

Science has sole jurisdiction over the following provisions, but recognizes that they have yet to be definitively litigated: §§ 401–404; 721–724; 741–743.

Science shares jurisdiction over the following provisions: §§ 109; 126; 131; 205–207; 411; 601–612; 622; 629; 661; 665; 753–754; 757; 801–809; 949; 1001–1002; 1004; 1224; 1226; 1505; 1510; 1605; 1608–1609; 1613.

Additionally, the Committee on Science expressly reserves its authority to seek conferees on any provisions that are within its jurisdiction during any House-Senate conference that may be convened on this legislation, H.R. 6, or similar legislation which falls within this Committee's jurisdiction. I also ask for your commitment to support any request by the Science Committee for conferees on those provisions within this legislation, H.R. 6, or similar legislation that fall within Science's jurisdiction.

I request that you include this letter as part of the report for H.R. 1640 and we will likewise include our exchange of letters within the report to be filed for the Science Committee's Energy bill—H.R. 610. In a related letter, I have written the Parliamentarian asserting the Committee's jurisdictional claims over numerous provisions in H.R. 6.

Thank you for your consideration and attention regarding these matters.

Sincerely,

SHERWOOD BOEHLERT,
Chairman.

XXI. ADDITIONAL VIEWS

I am taking this opportunity to comment on the impact that we can expect this legislation to have on our air quality. My constituents in Dallas, Texas are currently enduring all the health hazards that are related to living in both an ozone non-attainment area and an ozone transport region. In fact, the American Lung Association reports that nearly a half-million people in the Dallas-Fort Worth area live with diseases that are aggravated by air pollution.

I am a Nurse by training, and I understand that the illnesses and diseases that are attributed to excessive smog and air pollution are very real. Ozone pollution burns cell walls in the lungs and air passages, causing tissues to swell, chest pain, coughing, irritation and congestion. The disproportionate incidence of asthma among inner-city children is well documented, and these innocent children have no control over the sources of this pollution.

It has been the policy of this Administration to go to unusual lengths to intentionally and indefinitely postpone enforcement of the Clean Air Act, as it pertains to emissions in these ozone non-attainment and ozone transport areas. This obstinance finally led to four Federal Court rulings that shot down the extension of air quality deadlines that disregarded the Clean Air Act requirements. Unfortunately, last year an attempt was made to use the Energy bill to overrule the courts. Judging from this experience, I am wary that this legislation may once again be diverted to include such provisions, modifying deadlines to comply with the Clean Air Act. To further delay compliance and clean-up will result in increased health care costs for my constituents at a time when the healthcare system is broken, making such policy all the more egregious.

As a matter of fact, having served as Ranking Member on the Research Subcommittee, I have witnessed the expenditure of hundreds of millions of taxpayer dollars, by DOE and other agencies, on clean air related research and development projects. On one hand, we have asked the taxpayers to fund research intended to help industry mitigate pollution levels surrounding their plants, and to make it possible for car makers to produce cleaner burning fuel systems. Yet with the other hand, we almost took away any real incentives industry has to pursue a commercial application for all of this taxpayer funded research. We have the technology to significantly improve our air quality. It is time to give our constituents the opportunity to benefit from it.

Last year, a powerful member of the Energy and Commerce Committee slipped instructions into the Energy Conference report to overturn the court decisions. Shame on the Congress, if it happens again this year. Such a rider shows reckless disregard for the health consequences that dirty air has for other Americans that live in smoggy cities across the country. This country has waited a long time for an up to date comprehensive Energy bill. I chal-

lenge my colleagues to pass an energy bill with a clean text, unfettered by such sneaky and backhanded conduct that occurs behind the locked doors of conference rooms.

EDDIE BERNICE JOHNSON.

ADDITIONAL VIEWS OF MESSRS. COSTELLO AND CALVERT ON IMPLEMENTATION OF EXTERNAL REGULATION AT DOE CIVILIAN LABORATORIES

In the Committee's markup on this bill, we offered an amendment to H.R. 610, the Science portion of the Energy Bill, which provides for the external regulation of nuclear safety and occupational safety and health at the Department of Energy (DOE) civilian labs. This amendment would direct the Department to get out of the business of regulating itself in the areas of nuclear and worker safety.

Discussion of external regulation at the labs is an old idea. In 1993, then Secretary of DOE, Hazel O'Leary, announced that she would seek to implement external regulation of worker safety. Then, in 1994, legislation was introduced forcing DOE to stop self-regulating their nuclear facilities. DOE responded to these legislative initiatives by launching advisory groups to lay out a path to external regulation.

In 1997, the DOE ran a 2-year pilot program to determine the costs and benefits of external regulation. The Nuclear Regulatory Commission (NRC) and the Occupational Safety Health Administration (OSHA) concluded the pilot to have been successful.

The laboratory managers have also favored external regulation. They believe external regulation would free up overhead costs involved in self-regulation and allow them to redirect resources towards doing more science. From the labs' perspective, DOE is an inconsistent regulator with changes in standards, reporting requirements, and interventions. They prefer to be covered by the less mercurial agencies that regulate the civilian nuclear industry. After ten years of studying this issue, we already know that external regulation is the right answer.

There is broad consensus everywhere outside of DOE that the labs should be subject to external regulation. GAO, the labs and potential regulators all agree with external regulations. We believe the workers, the communities near the labs, and the taxpayers all deserve to see this happen sooner rather than later. This amendment is intended as another signal to DOE that foot-dragging and endless studies will not satisfy this Committee or this Congress.

COSTELLO/CALVERT AMENDMENT

To provide for the external regulation of nuclear safety and occupational safety and health responsibilities at any nonmilitary energy laboratory owned or operated by the Department of Energy.

SECTION 1. EXTERNAL REGULATION OF DEPARTMENT.

(a) ELIMINATION OF DEPARTMENT AUTHORITY.—Effective 2 years after the date of enactment of this Act, the Department shall have no regulatory or enforcement authority with respect to nuclear

safety and occupational safety and health responsibilities assumed by the Nuclear Regulatory Commission under subsection (b) or by the Occupational Safety and Health Administration under subsection (c) at any nonmilitary energy laboratory owned or operated by the Department.

(b) NUCLEAR REGULATORY COMMISSION AUTHORITY.—

(1) NUCLEAR SAFETY REGULATORY AND ENFORCEMENT RESPONSIBILITIES.—Effective 2 years after the date of enactment of this Act, the Nuclear Regulatory Commission shall assume the nuclear safety regulatory and enforcement responsibilities of the Department under the Atomic Energy Act of 1954 with regard to nonmilitary energy laboratories owned or operated by the Department.

(2) LICENSED ENTITIES.—For the purposes of carrying out at nonmilitary energy laboratories owned or operated by the Department regulatory and enforcement responsibilities described in paragraph (1), the Nuclear Regulatory Commission may regulate, through licensing, certification, or other appropriate means, the Department's contractors.

(3) DECOMMISSIONING.—A contractor operating a nonmilitary energy laboratory owned by the Department shall not be responsible for the costs of decommissioning that facility. No enforcement action may be taken against such contractor for any violation of Nuclear Regulatory Commission decommissioning requirements, if such violation is the result of a failure of the Department to authorize or fund decommissioning activities. The Nuclear Regulatory Commission and the Department shall, not later than 1 year after the date of enactment of this Act, enter into a memorandum of understanding establishing decommissioning procedures and requirements for nonmilitary energy laboratories owned or operated by the Department.

(4) ACCELERATORS.—Notwithstanding the provisions of the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), effective 2 years after the date of enactment of this Act, the Nuclear Regulatory Commission shall have exclusive regulatory authority over accelerators, other electronic sources of radiation not assigned to the Commission as of the date of enactment of this Act, accelerator-produced radioisotopes, and naturally occurring radioactive materials at nonmilitary energy laboratories, consistent with the authorities granted the Nuclear Regulatory Commission in the Atomic Energy Act of 1954. Until such time as the Commission has completed a rulemaking for the foregoing equipment and radioisotopes, nonmilitary energy laboratories shall be required to meet the requirements stipulated in a license for the facility.

(5) ADMINISTRATION.—The responsibilities assumed by the Nuclear Regulatory Commission under this subsection shall be administered by the Nuclear Regulatory Commission, not by States.

(6) JUDICIAL REVIEW.—Section 189b. of the Atomic Energy Act of 1954 (42 U.S.C. 2239(b)) is amended by adding the following paragraph after paragraph (4):

"(5) Any final order or regulation of the Commission establishing standards to govern nonmilitary energy laboratories

owned or operated by the Department of Energy that is issued to implement the Commission's responsibilities under the Act which enacted this paragraph, and any final determination of the Commission relating to whether a nonmilitary energy laboratory owned or operated by the Department is in compliance with such standards and all applicable Commission regulations or orders.".

(7) EMPLOYEE PROTECTION.—Any Department contractor operating a nonmilitary energy laboratory that is regulated by the Nuclear Regulatory Commission under this section shall be subject to section 211 of the Energy Reorganization Act of 1974 (42 U.S.C. 5851) to the same extent as any other employer subject to such section 211.

(8) CONFLICT OF INTEREST.—Section 170A of the Atomic Energy Act of 1954 (42 U.S.C. 2210a) applies to contracts, agreements, or other arrangements of the Nuclear Regulatory Commission proposed or entered into pursuant to its responsibilities assumed under this subsection.

(c) OCCUPATIONAL SAFETY AND HEALTH.—

(1) OSHA JURISDICTION.—Notwithstanding section 4(b)(1) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653(b)(1)), effective 2 years after the date of enactment of this Act, the Occupational Safety and Health Administration shall assume the exclusive regulatory and enforcement responsibilities of the Department relating to matters covered by the Occupational Safety and Health Act of 1970 with regard to all nonmilitary energy laboratories owned or operated by the Department, except as provided in paragraph (2). The responsibilities assumed by the Occupational Safety and Health Administration under this subsection shall be administered by the Occupational Safety and Health Administration, not by States. Any Department contractor operating such a laboratory shall, with respect to matters relating to occupational safety and health, be considered to be an employer for purposes of the Occupational Safety and Health Act of 1970.

(2) REGULATION OF HAZARDS CONTAINING RADIOLOGICAL AND NON-RADIOLOGICAL COMPONENT.—If a hazard at a nonmilitary energy laboratory owned or operated by the Department presents a risk of occupational exposure and contains both a radiological and non-radiological component, the Occupational Safety and Health Administration and the Nuclear Regulatory Commission shall, effective 2 years after the date of enactment of this Act, share regulatory and enforcement responsibilities with respect to the hazard in accordance with the memorandum of understanding entered into pursuant to subsection (d).

(d) MEMORANDUM OF UNDERSTANDING.—The Nuclear Regulatory Commission and the Occupational Safety and Health Administration shall, not later than 1 year after the date of enactment of this Act, enter into and transmit to the Congress a memorandum of understanding to govern the exercise of their respective authorities over nuclear safety and occupational safety and health at nonmilitary energy laboratories owned or operated by the Department.

(e) CIVIL PENALTIES.—The Department's contractor operating a nonmilitary energy laboratory owned or operated by the Department shall not be liable for civil penalties under the Atomic Energy Act of 1954 or the Occupational Safety and Health Act of 1970 for any actions taken before the date of transfer of regulatory authority under this section, pursuant to the instructions of a Federal agency in preparation for the transfer of regulatory and enforcement responsibilities required by this section.

(f) INDEMNIFICATION.—The Secretary shall continue to indemnify nonmilitary energy laboratories owned or operated by the Department in accordance with the provisions of section 170 d. of the Atomic Energy Act of 1954.

(g) DEPARTMENT REPORTING REQUIREMENT.—Not later than 18 months after the date of enactment of this Act, the Secretary shall transmit to the Congress a plan for the termination of the Department's regulatory and enforcement responsibilities for nonmilitary energy laboratories owned or operated by the Department required by this section. The report shall include—

(1) a detailed transition plan, drafted in coordination with the Nuclear Regulatory Commission and the Occupational Safety and Health Administration, giving the schedule for termination of self-regulation authority as outlined in subsection (a), including the activities to be coordinated with the Nuclear Regulatory Commission and the Occupational Safety and Health Administration;

(2) a description of any issues remaining to be resolved with the Nuclear Regulatory Commission, the Occupational Safety and Health Administration, or other external regulators, and a timetable for resolving such issues by the authority transfer date established under this section; and

(3) an estimate of—

(A) the annual cost of administering and implementing self-regulation of the nuclear safety and occupational safety and health responsibilities described in subsections (b) and (c) at nonmilitary energy laboratories owned or operated by the Department;

(B) the number of Federal and contractor employees administering and implementing such self-regulation; and

(C) the extent and schedule by which the Department and the staffs at its nonmilitary energy laboratories will be reduced as a result of implementation of this section.

(h) GENERAL ACCOUNTABILITY OFFICE REPORTING REQUIREMENT.—The Comptroller General of the United States shall periodically report to the Congress on the progress made in implementing this section. The Comptroller General shall provide a report not later than 20 months after the date of enactment of this Act on the Department's transition plan, and not later than 26 months after the date of enactment of this Act on the implementation of Nuclear Regulatory Commission and Occupational Safety and Health Administration regulations in the nonmilitary energy laboratories.

(i) DEFINITIONS.—For purposes of this section—

(1) the term "Department" means the Department of Energy;

(2) the term "nonmilitary energy laboratory" means—

(A) Ames Laboratory;

(B) Argonne National Laboratory;
(C) Brookhaven National Laboratory;
(D) Fermi National Accelerator Laboratory;
(E) Lawrence Berkeley National Laboratory;
(F) Oak Ridge National Laboratory;
(G) Pacific Northwest National Laboratory;
(H) Princeton Plasma Physics Laboratory;
(I) Stanford Linear Accelerator Center; or
(J) Thomas Jefferson National Accelerator Facility; and
(3) the term 'Secretary' means the Secretary of Energy.

JERRY F. COSTELLO.
KEN CALVERT.

XXII. PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 610, ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACT OF 2005

THURSDAY, FEBRUARY 10, 2005

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE,
Washington, DC.

The Committee met, pursuant to other business, at 10:17 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Sherwood L. Boehlert [Chairman of the Committee] presiding.

Chairman BOEHLERT. We will now proceed with opening statements, and I will start with mine.

I want to welcome everyone to our first markup of the year. I think that once again the Science Committee will set the standard for how an Energy Bill should be produced. The bill we will have before us today is bipartisan and balanced. It addresses both supply and demand, both fossil fuels and renewables, both existing fuels and promising newer ones like hydrogen.

The bill, H.R. 610, is based on the conference report for last Congress's Energy Bill, H.R. 6. We have, however, improved the language and added some innovative new programs, particularly programs to demonstrate energy efficiency and renewable energy technologies.

The bill reflects suggestions from a range of Members on both sides of the aisle, including freshmen Members, most notably Mr. Inglis. I want to congratulate Mrs. Biggert for introducing the measure.

I also want to thank her and Mr. Gordon and our respective staffs for working out the issues that remained after the introduction of the bill. Mrs. Biggert will be offering a manager's amendment, which is also bipartisan and also balanced, and which will improve the bill even further.

I predict a smooth markup that should serve us well as a comprehensive bill is pieced together for the House Floor.

Mr. Gordon.

[The prepared statement of Chairman Boehlert follows:]

PREPARED STATEMENT OF CHAIRMAN SHERWOOD L. BOEHLERT

I want to welcome everyone to our first markup of the year. I think that once again the Science Committee will set the standard for how an Energy Bill should be produced. The bill we have before us today is bipartisan and balanced. It ad-

dresses both supply and demand, both fossil fuels and renewables, both existing fuels and promising newer ones like hydrogen.

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The bill reflects suggestions from a range of Members on both sides of the aisle, including freshman Members, most notably Mr. Inglis. I want to congratulate Mrs. Biggert for introducing the measure.

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I predict a smooth markup that should serve us well as a comprehensive bill is pieced together for the House Floor.

Mr. GORDON. Thank you, Mr. Chairman.

As you have pointed out in hearings yesterday and in the past, our—part of our national security is intermixed with our energy—or our lack of dependency on energy from other countries, and I think we all need to keep this in mind. And I think that we ultimately will have an Energy Bill that is going to be balanced, both from production and as well as conservation. I was at a meeting two days ago where various Committees that were reporting the Energy Bill laid out what they were doing and what their prospects were. It was interesting that our committee, in making our recommendation, was the only one that said that we put together a consensus bill and that it wasn't contentious. It really was unique among all of the other committees that were involved. So I want to thank you and your staff for working to try to bring this together as a consensus.

I would like to say that Mr. Costello, I think, had a good amendment that was passed by this committee two years ago. I know that it ran into problems with jurisdiction now. I hope he will have a chance to be here later so that he can put this back in place so that as this process continues, I hope that we will have a chance, in conference or elsewhere, to take a look at it.

But with that exception, as I say, I think that we have got a bill that is unique in this Congress as being both bipartisan and productive. I thank you and your staff for working together, and I look forward to moving forward with this legislation.

Chairman BOEHLERT. Thank you very much for those comments, Mr. Gordon.

[The prepared statement of Mrs. Biggert follows:]

PREPARED STATEMENT OF REPRESENTATIVE JUDY BIGGERT

Thank you, Mr. Chairman, for those kind words. It has been an honor and a privilege working with you and our excellent subcommittee staff on a very important portion of much-needed comprehensive energy legislation.

I will keep my remarks brief, since this bill does not represent new or uncharted territory for this committee. Far from it.

The provisions in this bill are very similar to those in the conference report to H.R. 6, which passed the House by a bipartisan vote of 246 to 180 in 2003. Completely unchanged are those provisions over which the Science Committee shares jurisdiction with other committees, including sections pertaining to ultra-deep drilling, hydrogen, clean coal, and vehicles.

The only changes that do exist in this bill are ones that reflect the latest research, the emergence of innovative technologies, and new ways of thinking about our power problems.

Most noteworthy is a pilot grant program to encourage the design and construction of energy efficient buildings that demonstrate new efficiency technologies. Also

worth mentioning are two new additions to the title on renewable energy R&D. First is a grant program for States to support the development and demonstration of solar technologies nationwide. Second, the bill requires the Department to work with industry to create biorefinery demonstration projects. As a result, this bill does more for renewable energy R&D than any other energy bill previously considered by this committee.

This bill has enjoyed bipartisan support because it is balanced. And a balanced energy policy is what we need desperately.

We simply cannot meet today's energy needs—much less tomorrow's—with yesterday's energy infrastructure and technologies. That's why this bill represents the best investment in advanced, cutting edge energy technologies to expand and diversify our energy supply, meet growing demand, and reduce the environmental impact of energy production and use.

I would be remiss if I did not mention that the bill also provides significant support for the basic research—especially in the physical sciences—underpinning the development of such technologies. For instance, in addition to basic fusion research and expanding the use of supercomputers for research, the bill supports the construction and operation of a Rare Isotope Accelerator. This RIA will study unique forms of radiation leading to advances and applications in medicine, advanced materials, national security, and environmental protection.

In closing, I want to thank my many colleagues on the Subcommittee and the Full Committee for their contributions to the development of this bill. In particular, I want to thank the Ranking Member of the Full Committee, Mr. Gordon, for his useful suggestions.

I also want to thank a new Member of the Subcommittee who's not really new to Congress, my colleague Mr. Inglis, for his interest in this bill and his insight into how research at Clemson can complement DOE's work on lightweight materials and vehicle systems.

Finally, I want to recognize and congratulate the Subcommittee's new Ranking Member, Mr. Honda. It's been a real pleasure working with you for the last 10 minutes or so in your new capacity. Seriously though, I'm looking forward to working with you during this Congress to ensure the DOE is delivering on the promise of energy R&D to make our nation prosperous and secure.

This will be the third consecutive Congress in which we have considered legislation that supports a balanced and comprehensive portfolio of energy R&D programs. And with the Members' support, this could be the third consecutive time that the Science Committee reports this important bill by voice vote. I hope the third time is the charm for these critical provisions. I urge my colleagues to support this bill.

[The prepared statement of Mr. Inglis follows:]

PREPARED STATEMENT OF REPRESENTATIVE BOB INGLIS

Thank you Mr. Chairman and I just want to say how encouraged I am to be working with the Members of this committee. First impressions can set the course of a relationship, and I have certainly been impressed with the competence and helpfulness of this committee.

Mr. Chairman, almost twenty-five percent of our country's trade deficit comes from foreign oil. Soon, the world's production of oil will not be able to keep up with our demand. Not only do we need to reduce our dependence on foreign oil, we need to expand our available options for energy. We need to develop fuels of the future.

I am encouraged by the President's emphasis on finding the next generation of affordable energy in his budget. In particular, his commitment to the hydrogen economy is exciting. We have the responsibility to be stewards of the environment, and a vehicle whose exhaust is water vapor is a great step in that direction.

But there is much we can do now. This bill contains language that will help make the next cars we buy smarter, safer, and more fuel efficient. By reducing the weight of individual parts and improving the way they fit together, we can make a significant impact in the near-term.

The International Center for Automotive Research (ICAR)—a partnership of Clemson University, BMW, Michelin, IBM, and Microsoft—is currently researching these areas—technologies like vehicle weight reduction, gasoline engine and fuel cell efficiency, hydrogen production, and other fuels of the future. ICAR has the ability to implement many of the programs described in this bill, and I look forward to seeing the work they can do in conjunction with the Department of Energy and the hydrogen roadmap.

I would also like to mention to the Committee the work being done at the Department of Energy's Savannah River Site. Savannah River Site was granted National

Lab status in 2004, and has expertise in tritium storage that will be useful to the Department's efforts to research the storage and transmission of hydrogen to the U.S. market.

Mr. Chairman, in closing, I want to thank you for the opportunity to work with this committee to add language to the bill that will direct Department of Energy research toward automotive efficiency. I trust we will continue to work in this committee for the good of our nation in energy research.

[The prepared statement of Mr. Costello follows:]

PREPARED STATEMENT OF REPRESENTATIVE JERRY F. COSTELLO

Good morning. Thank you, Chairman Boehlert, for including the clean coal provisions and authorizing a new carbon sequestration program in today's markup of the energy bill.

Coal is absolutely critical to our nation's economic health and global competitiveness. There is no present alternative to coal to meet our energy needs. New and improved technologies hold the promise of far greater emissions reductions and increased efficiency.

The clean coal provisions and the new carbon capture program included in this bill would assist in burning coal more efficiently and cleanly. These cleaner coal technology initiatives encourage development of new technologies for cleaner, higher efficiency coal combustion in new and established plants with the hope of achieving a healthier environment while maintaining jobs.

I look forward to further collaboration with you, as this bill moves closer to consideration by the House.

[The prepared statement of Ms. Woolsey follows:]

PREPARED STATEMENT OF REPRESENTATIVE LYNN WOOLSEY

Thank you, Chairman Boehlert. I want you to know that I appreciate all the hard work you do as the Chairman of this committee, and I'm glad we're here today to address our nation's energy issues.

My home State of California, and especially the Bay Area district I represent—Marin and Sonoma Counties, right across the Golden Gate Bridge from San Francisco—are keenly aware of the need to re-examine our national energy priorities.

For too long the U.S. has made short-sighted decisions about our energy future, putting our faith in fossil fuels as our primary energy source.

On a global scale, our faith in fossil fuel-based power has contributed to a rise in greenhouse gases and the onset of global climate change. And, let's not forget that our dependence on fossil fuels—largely obtained from the volatile Middle East region—makes us less secure as a nation.

That's why I believe we need to chart a new energy strategy that will embrace the use of alternative power sources while at the same time reducing our overall demand for energy.

The bill that we are working on today contains energy efficiency provisions from my own comprehensive energy legislation, the *Renewable Energy and Energy Efficiency Act of 2003,* which I re-introduced yesterday for the 109th Congress.

In particular, the section of the bill before us today that requires the Secretary of Energy to complete an assessment report on renewable resources comes straight from my legislation.

In the short-term, we must identify and invest in developing and promoting alternative energy sources and the use of more energy efficient technologies.

There's no doubt in my mind that an investment in renewable energy will protect our environment and guarantee a better future for our children, and we will be safer as a nation when we are less dependent on foreign fossil fuels.

Thank you, and I yield back.

[The prepared statement of Mr. Honda follows:]

PREPARED STATEMENT OF REPRESENTATIVE MICHAEL HONDA

Thank you Mr. Chairman.

I don't know that there is anything that I can say about this bill that has not already been said the previous two times this committee has marked it up during my time in Congress. But now that I am the Ranking Minority Member on the Energy Subcommittee, I would like to emphasize how important I feel it is that we invest in energy efficiency and renewable energy technologies in order to reduce our

dependence on imported fossil fuels and to reduce the human impact on the global climate.

This research portion of the Energy Bill includes such beneficial programs as energy efficiency and renewable energy research and development, the next generation lighting initiative, and the clean school buses program. We have also increased support for the basic sciences at the Department of Energy generally and focused on several programs in particular, such as nanotechnology research and development, U.S. participation in the ITER fusion energy project, and advanced scientific computing for energy missions.

I commend the bipartisan leadership of the Science Committee for including these important provisions in the bill. I am also grateful for the inclusion of provisions that will advance the Next Generation Lighting Initiative and will assist the Santa Clara Valley Transportation Authority, located in my district, in its efforts to employ zero emission buses, which will help address air quality challenges in California and also will reduce our impact on the climate.

I only wish that the committees working on the other sections of the omnibus Energy Bill could craft their sections of the bill in the bipartisan fashion that the Science Committee has worked on H.R. 610 so that we could truly achieve a balanced, forward thinking national energy policy that recognizes the limitations of fossil fuel supplies and invests in the research, development, and deployment that will be needed to transition to a sustainable energy culture.

Chairman BOEHLERT. You know, a number of people have observed that we did this rather smoothly in the last Congress. They said, "Well, why were they able to develop a consensus on that Committee when the others were so actively engaged in sniping back and forth in bitter disputes and everything?" And then someone drew the conclusion, "Well, maybe they didn't have anything controversial in their bill, that is why they worked so well." And I quickly disabused him of that notion, pointing out that we had ultra deep sea drilling, which is one of Mr. Hall's prime targets; clean coal technology, a number of your Members, led by Mr. Costello, are very concerned about that; nuclear energy, we all have a deep and abiding interest in that and concern about it. But we addressed these issues in the manner in which the Committee has become accustomed to acting. We work across the center aisle. The staff is always in consultation. And I think we have an open communication policy, which serves your side and my side well, because when all is said and done, we are all on the same side.

So with that, I ask unanimous consent that the bill, as considered, be read and open to amendment at any point. Without objection, so ordered.

The first amendment on the roster is an amendment offered by Mrs. Biggert, the Chair of the Energy Subcommittee. I ask unanimous consent that——

Ms. BIGGERT. Mr. Chairman——

Chairman BOEHLERT. —it be considered en bloc.

Ms. BIGGERT.—I have an amendment at the desk.

Chairman BOEHLERT. Without objection, so ordered. The Clerk will report the amendment.

Ms. TESSIERI. En bloc amendments to H.R. 610, offered by Mrs. Biggert of Illinois.

Chairman BOEHLERT. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

The gentlelady is recognized for five minutes to discuss her amendment.

Ms. BIGGERT. Thank you, Mr. Chairman, and thank you for the privilege of working with you and the Subcommittee—Energy Subcommittee and the fine job that they did on this work.

The manager's amendment to H.R. 610 includes technical changes to the bill as well as a number of amendments offered by the Minority and accepted by the Majority after negotiations. The technical changes to the bill include a correction requested by industry that would delete the sections referring to the Steel and Aluminum Energy Conservation and Technology Act. They also include a change requested by Mr. Honda.

And here, I would like to congratulate Mr. Honda for being the Ranking Member of the Subcommittee. It will be nice to be able to work with him. He has only been, I think for about 10 minutes now, the Ranking Member, so I look forward to working with him.

Chairman BOEHLERT. You will find that a pleasant experience.

Ms. BIGGERT. Good. But it does include a change requested by Mr. Honda that would replace language in the bill regarding the Next Generation Lighting Initiative with the language in the conference report.

Finally, the manager's amendment clarifies that the scholarship program included in the bill, at Mr. Rohrabacher's request, is to entice graduate students to careers in the Department. Also included are five amendments offered by my Democratic colleagues.

Number one is the amendment offered by Ranking Member Gordon authorizing a pilot program involving Oak Ridge University associates and the DOE Office of Science. It would provide training opportunities for elementary and secondary schoolteachers in math, science, and engineering and could be replicated nationwide if successful.

A second amendment offered by Ranking Member Gordon would create a university research program to work in conjunction with the Tennessee Valley Authority to design and test state-of-the-art inspection and optimization techniques for high-voltage power lines and thus improve electricity capacity and reliability.

Third is an amendment offered by Mr. Costello and supported by industry that provides grants through an open, competitive process for the research and development of technologies to capture carbon dioxide from existing coal power plants and equipment. The Clean Coal Technology Program, which is already in the bill, is focused on new power plants only.

Fourth, an amendment offered by Ms. Jackson Lee, provides grants and technical assistance to standards development organizations to revise and update standards for high-performance buildings so that they are consistent with recommendations from the National Institute of Buildings and Sciences.

Finally, an amendment offered by Ms. Woolsey would promote the use of renewable energy technologies in public buildings.

Let me just say a couple more words here about the bill.

And for those new Members that are here, the provisions in this bill are very similar to those in the conference report, H.R. 6, which passed the House by a bipartisan vote of 246 to 180 in 2003. Completely unchanged are those provisions over which the Science Committee shares jurisdiction with other Committees, including sections pertaining to ultra deep drilling, hydrogen, clean coal, and vehicles. The only changes that do exist in this bill are the ones that reflect the latest research, the emergence of innovative technologies and new ways of thinking about our power programs.

So this bill has certainly enjoyed bipartisan support, because it is balanced, and a balanced energy policy is what we need desperately. We certainly could not meet today's energy needs, much less tomorrow's, with yesterday's energy infrastructure and technologies. And that is why this bill represents the best investment in advanced, cutting-edge energy technologies to expand and diversify our energy supply, meet growing demand, and reduce the environmental impact of energy production and use.

I would be remiss if I did not mention that the bill also provides significant support for the basic research, especially in the physical sciences underpinning the development of such technologies. For instance, in addition to basic fusion research and expanding the use of supercomputers for research, the bill supports the construction and operation of a Rare Isotope Accelerator. This RIA will study unique forms of radiation leading to advances and applications in medicine, advanced materials, national security, and environmental protection.

And I would like to thank the so many colleagues on the Subcommittee and the Full Committee for their contributions to the development of this bill.

And with that, I would urge my colleagues to support the manager's amendment.

[The prepared statement of Mrs. Biggert follows:]

PREPARED STATEMENT OF REPRESENTATIVE JUDY BIGGERT

Mr. Chairman, the manager's amendment to H.R. 610 includes technical changes to the bill, as well as a number of amendments offered by the minority and accepted by the majority after some negotiation.

The technical changes to the bill include a correction requested by industry that would delete the sections referring to the Steel and Aluminum Energy Conservation and Technology Act. They also include a change requested by Mr. Honda that would replace language in the bill regarding the Next Generation Lighting Initiative with the language in the conference report.

Finally, the manager's amendment clarifies that the scholarship program, included in the bill at Mr. Rohrabacher's request, is to entice graduate students to careers in the Department.

Also included are five amendments offered by my Democratic colleagues.

1. First is an amendment offered by Ranking Member Gordon authorizing a pilot program involving Oak Ridge University Associates and the DOE Office of Science. It would provide training opportunities for elementary and secondary school teachers in math, science, and engineering, and could be replicated nationwide if successful.

2. A second amendment offered by Ranking Member Gordon would create a university research program to work in conjunction with the Tennessee Valley Authority to design and test state-of-the-art inspection and optimization techniques for high-voltage power lines, and thus improve electricity capacity and reliability.

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4. Fourth, an amendment offered by Ms. Jackson Lee provides grants and technical assistance to standards development organizations to revise and update standards for high-performance buildings so they are consistent with recommendations from the National Institute of Building Sciences; and

5. Finally, an amendment offered by Ms. Woolsey would promote the use of renewable energy technologies in public buildings.

I urge my colleagues to support the manager's amendment, and I yield back the balance of my time.

Chairman BOEHLERT. Thank you very much.

Mr. Gordon.

Mr. GORDON. Thank you, Mr. Chairman.

And Ms. Biggert, I want to thank you for your good work in putting this en bloc amendment together. I think it is a good en bloc, and I will yield to any of our Members who would like to address specifics of this en bloc.

Ms. Woolsey.

Ms. WOOLSEY. Thank you. Thank you to our Ranking Member and our Chairman and to the Ranking Member of the Subcommittee, Ms. Biggert.

My amendment that was included in the en bloc, H.R. 610, would require the Secretary of Energy to establish a program that brings renewable energy technology into public buildings, buildings owned or operated by State and local governments. This program would bring technologies that utilize solar, wind, geothermal, and other energy sources into public buildings. And by developing this program at the State and local level, we can lead by example. We can demonstrate the value of innovative, new energy technologies. And this program is based on a city in my District, Sebastopol, California, which has begun an amazing project of retrofitting many of its public buildings, and they are utilizing solar energy sources. I think most people here, all of us, realize that greater reliance on renewable energy and efficient energy sources would not only help reduce our dependence on foreign oil and relieve the overload of our power grids, it would also help the—our effort to curb pollution and to protect our environment.

Greater reliance on energy-efficient technologies can and should begin in the public sector. By working toward this goal now, we will truly realize the promise of clean, renewable, energy dependence in our future.

And I thank the Ranking Member and the Chair of the Energy Subcommittee for including this in the en bloc. Thank you very much.

Mr. GORDON. Reclaiming my time, I just want to compliment Ms. Woolsey on bringing this issue before us. This is a better amendment for what she has done, and I yield to Mr. Costello.

Mr. COSTELLO. I thank the Ranking Member and the Chairman for including the carbon sequestration provisions in the en bloc amendment. Let me say, Mr. Chairman, that you and I and Mr. Gordon have worked on these issues in the past, and I appreciate your openness, your willingness to accept this provision. I believe that the clean coal provisions and the new carbon capture program included in this bill will help in burning coal more efficiently and cleanly in the future. These cleaner coal technology initiatives encourage development of new technologies for cleaner, higher efficiency coal combustion in new and established plants, with the hope of achieving a healthier environment while maintaining jobs, not only in my District in Southern Illinois, but throughout the country and it will lessen our dependence on foreign oil as well develop our—and use our resources here at home.

So I thank you, Mr. Chairman, and Mr. Gordon.

Chairman BOEHLERT. You are kindly welcome.

Any other Members seek recognition? If not, the vote occurs on the amendment. All in favor, say aye. Opposed, no. The ayes have it.

The next amendment on the roster is amendment number two, an amendment offered by the gentleman from Illinois, Mr. Costello. Are you ready to proceed?

Mr. COSTELLO. Mr. Chairman, I am. Mr. Chairman, this is the——

Chairman BOEHLERT. Well, the Clerk will report the amendment.

Ms. TESSIERI. Amendment to H.R. 610 offered by Mr. Costello of Illinois.

Chairman BOEHLERT. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

The gentleman from Illinois is recognized for five minutes.

Mr. COSTELLO. Mr. Chairman, I thank you.

And Mr. Chairman, this is an amendment that is being offered by myself and my friend, Mr. Calvert from California. Mr. Chairman, this is an amendment that this Full Committee approved in a markup on April the 2nd of 2003. It is the same exact amendment that was approved by the Committee.

The amendment provides for external regulation of nuclear safety and occupational safety for workers at the Department of Energy's civilian labs. Unlike any other governmental, educational, or private sector research and development facilities in the United States, DOE's civilian labs are not subjected to external regulation to help ensure safety and safe operations of their labs. They regulate themselves. DOE has a bad track record of regulating themselves. I think Members of this committee understand that. I think people in the industry understand it. It is well documented in testimony before this committee on many occasions. When Mr. Calvert was Chairman of the Subcommittee on Energy, he held hearings on this very topic. We have many reports from the GAO, the Inspector General's Office. It is well documented that DOE does a lousy job of regulating itself.

And in fact, in 1993, DOE's then-Secretary agreed that they, in fact, at the Department of Energy would implement external regulation within the Department. But of course, it never happened. There were delays, studies. Every excuse conceivable was used, and in 1997, DOE ran a two-year pilot program, another study to determine the cost and benefits of external regulation. After the two-year pilot program, both the Nuclear Regulatory Commission and OSHA concluded that external regulation would indeed be beneficial and that, in fact, millions of dollars would be saved by the Department of Energy that could be used to go into other science and technology programs.

Mr. Chairman, external regulation is strongly supported by, number one—every single manager of every one of these labs have told the GAO that, in fact, they support external regulation. It would be good for their operation, and it would be good for their budget. Two, the GAO, the Nuclear Regulatory Commission, OSHA, and this committee have gone on record supporting external regulation. We need to put an end to all of the delays, the stalls, and all of the studies that have been conducted over at DOE. We

need to take the Department of Energy and their civilian labs and to monitor them and regulate them for safety reasons, as we do for every other research and development facility operated by the government, educational organizations, and the private sector. They have to comply with these external regulations, why shouldn't the civilian labs at the Department of Energy?

So I ask you, Mr. Chairman, to support this amendment, and I ask my colleagues to support it as well.

Chairman BOEHLERT. Thank you very much.

Mr. Calvert, do you wish to be heard?

Mr. CALVERT. Yes, thank you, Mr. Chairman.

I want to congratulate my good friend, Mr. Costello, for attempting to require external regulation of nuclear safety and occupational safety and health at the 10 non-military civilian labs for the Department of Energy. We have worked together on this external regulations for some time, and I appreciate his efforts to keep Congress focused on the goal of bringing real common sense reform to our civilian labs.

Discussion of external regulations at the labs is an old idea and a debate that has been monitored by Congress, and specifically this committee, since the early 1990s. In fact, six years ago, I had the pleasure to chair a very educational Energy Subcommittee hearing on this exact topic. The Department had just finished its initial pilot program, demonstrated the practicability of ending the Department's self-regulation of nuclear safety and worker safety and health, and highlighted the consensus among these outside of DOE that external regulation was the right step to take.

As Mr. Costello noted, numerous GAO and DOE reports submitted to Congress, as well as the work of the House Appropriations Energy and Water Subcommittees, underscores what is made so clear at the 1999 hearing, that external regulation would provide better safety to workers and communities near labs while allowing the labs themselves to focus on science and technology.

As Mr. Costello also noted, lab detectives tell us they could reduce their environment safety and health overhead by 30 percent. That means taxpayers don't just win by having safer labs through this reform, we also win by seeing more of our tax dollars going toward the central mission of the labs, world-class science that changes the way we see the world, and even the way we live.

Now I understand there may be Members on my side of the aisle that are concerned about bringing OSHA in as a regulatory body at our civilian science labs. I understand these concerns, as a former restaurant owner and operator who had to follow OSHA regulations to stay in business, however it is somewhat hypocritical for the government to require the private sector to follow the rules and standards for worker safety that Federal Government, in this case, does not follow. Shouldn't the government abide by the same procedures and rules?

So I certainly think, Mr. Chairman, that this is a good bill. Over 10 years of congressional debate and studies examining the issues is more than enough. The Department of Energy should relinquish all worker and nuclear safety oversight for a safer and more cost-effective system.

And I want to again thank Mr. Costello for his good work in this, and I want to thank you, Mr. Chairman, for letting me be heard on this.

Chairman BOEHLERT. Thank you very much, Mr. Calvert.

Ms. Biggert.

Ms. BIGGERT. Thank you, Mr. Chairman.

We debated this issue and this bill before, and I was skeptical then, and I remain skeptical now about the amendment. I recognize that the National Laboratories have been generally supportive, but I also know that the Department of Energy has not been supportive of this. And I think the National Labs are special precisely because they operate and maintain complex, sophisticated facilities and equipment that exists nowhere else in the world. And the Department of Energy possesses an intimate knowledge and understanding of these facilities and machines and the unique threats that they pose to worker health and safety and how best those threats can be neutralized or mitigated.

And I wonder how exactly are OSHA and the NRC supposed to regulate and monitor such a facility and do it a way that isn't costly, burdensome, and disruptive to those trying to use the facility. What entity in America wants to exchange one regulator for two regulators? And why exchange the regulator with expertise for two that start at square one.

And I really think, and even more disturbing to me, is that the times have changed since 9/11. And I am concerned about national security and homeland security issues. As former Energy Secretary Abraham said, and I quote, "All DOE laboratories perform important national security work. At this time of heightened national security concerns, it would be ill advised to experiment with the transition to external regulation that, at the very least, would divert valuable resources."

And then there is just one other thing that bothers me just a little bit is that I do serve as the vice chair of the Work Force Protection Subcommittee of the Education Committee, which has jurisdiction over OSHA. And I question whether—and I do—and I am concerned that they would have sequential jurisdiction over this bill, which would have some ramifications that I don't think we want to see.

I know I am concerned—and I am concerned about the safety lapse that occurred at Stanford, but we can not leap to the conclusion that the accident would not have occurred on OSHA's or the NRC's watch. If it is safety and worker health that we are concerned about, then I think we should at least give the new Secretary of Energy, Mr. Bodman, an opportunity to address this issue. And I agree with my colleagues that this is not the last word on the subject of external regulation, but I don't think this is the time to include this in the bill.

And with that, I would yield back the balance of my time.

Chairman BOEHLERT. Thank you very much.

Ms. JACKSON LEE. Mr. Chairman.

Chairman BOEHLERT. Ms. Jackson Lee.

Ms. JACKSON LEE. Mr. Chairman, I don't have an amendment, but I would like to strike the last word.

Chairman BOEHLERT. Speak to the amendment?

Ms. JACKSON LEE. After the voting. We—have we passed this previous?

Chairman BOEHLERT. No, no. We have the Costello amendment under——

Mr. COSTELLO. Mr. Chairman, I thought it passed by a voice vote.

Ms. JACKSON LEE. And that is what I was assuming, Mr. Chairman.

Chairman BOEHLERT. That is how they operate in Chicago. For Mr. Baird, the West Coast, and the Eastern Board and the East Coast, we don't operate quite like that.

But let us dispense with this, and then we will go right——

Ms. JACKSON LEE. Absolutely, Mr. Chairman.

Chairman BOEHLERT. Just let me say that the Chair, I support the amendment, but some parliamentary issues have been raised, so I understand the sponsors, if I understand correctly, will withdraw it, and I think—thank them for that. And then I hope we can work—find another way to address the issue, because this is the—I think it is an important issue, but we have got to get over this parliamentary hurdle.

So with that, Mr. Costello.

Mr. COSTELLO. Mr. Chairman, thank you. And I appreciate your commitment to try and work in the future on this issue. And my colleague, Mrs. Biggert, I would say in—on your other Committee and where you wear your other hat, that apparently is claiming some jurisdiction over this issue, which they did not claim in 2003 when we had this same amendment, I would ask you, if you would, to try and address this in that Committee. And when this bill ends up in conference, I would hope, Mr. Chairman and Mr. Gordon, that you would work with us, with Mr. Calvert and I, to include this in the final bill. It is an important issue. You know, it is disturbing to me, and should be disturbing to everyone on this committee, that we have 10 civilian labs that regulate themselves without any external regulation or oversight.

With that, Mr. Chairman, I thank my colleague, Mr. Calvert, and I withdraw the amendment.

Chairman BOEHLERT. Without objection, so ordered.

And I thank both you and Mr. Calvert, and I thank Mrs. Biggert for usually—usual productive intervention.

Now the Chair has the distinct privilege of representing—recognizing the gentlelady from Texas, Ms. Jackson Lee.

Ms. JACKSON LEE. Thank you, Mr. Chairman. I don't mind your representation as well.

Let me thank my colleagues and Congresswoman Biggert for accepting my amendment as one of the en bloc amendments. And let me just briefly acknowledge, I believe that this gives us a very strong first statement or first start, if you will, or continuing start on the question of energy-efficient buildings, which all of us possess in our congressional Districts one way or the other, even federal buildings. But this amendment is to arrange for an assessment of how well the current voluntary consensus standards related to buildings reflect the latest technologies for the design, construction, operation, repair, and renovation of high-performance buildings.

This is valuable because we are all looking to be energy-efficient and energy-independent. And I hope that the Secretary of Energy will move expeditiously, as this legislation makes its way through the Congress, to begin his assessment to give us a good road map on how we can utilize our very precious energy resources.

I thank my colleagues again for the acceptance of the amendment, and I yield back my time at this time.

[The prepared statement of Ms. Jackson Lee follows:]

PREPARED STATEMENT OF REPRESENTATIVE SHEILA JACKSON LEE

Chairman Boehlert, Ranking Member Gordon,

Today, I offer an amendment to H.R. 610, the *Energy Research, Development, Demonstration, and Commercial Application Act of 2005,* as part of the En Bloc amendments presented by Mrs. Biggert.

My amendment requires the Secretary of Energy to arrange for an assessment of how well the current voluntary consensus standards related to buildings reflect the latest technologies for the design, construction, operation, repair, and renovation of high performance buildings. Included in this assessment are recommendations on how to accelerate the development and promulgation of voluntary consensus standards for high performance buildings. Based on this assessment, the Secretary is required to provide technical assistance and grants to support standards development organizations in the revision of existing standards to reflect current knowledge of high performance buildings and the issuance of new standards dealing with issues unaddressed in the existing building standards.

Voluntary Consensus Standards (VCS) serve as the foundation of the United States' standardization system and its distinctive infrastructure. These standards are developed by a wide range of stakeholders—including consumer and labor interests, organizations, industry, and government at all levels and all jurisdictions, whether federal, State or local. VCS effectively and efficiently provide technical guidance on the production and operation of a wide array of materials, products, and services across a multitude of industry sectors without burdensome government intervention.

For nearly 100 years, the voluntary consensus standards system has helped to create a standards development community consisting of diverse private and public sector interests. The robust working partnerships that now exist among all nationally interested parties have led to the development of tens of thousands of voluntary consensus standards for the United States, the effective representation of U.S. needs and viewpoints in regional and international standards-setting activities, and the minimization or elimination of overlap and duplication in standards-setting activities.

I believe that the amendment that I offer today will help to catalyze the development of future building codes and construction practices that will lead to buildings which are not only more energy efficient and economical to operate, but which also incorporate the appropriate homeland security technologies and resistance to natural disasters such as earthquakes, floods, and hurricanes.

Chairman BOEHLERT. Thank you very much.

I just wanted to thank Ms. Johnson for withdrawing her proposed amendment and continuing to work with the Committee. We really appreciate that.

Are there any other amendments?

Mr. EHLERS. Mr. Chairman.

Chairman BOEHLERT. Dr. Ehlers.

Mr. EHLERS. Thank you, Mr. Chairman.

I do not have an amendment, but I just want to make a comment and request that you work with me on this as this goes to the Floor. There is a section in here dealing with competition. And the bill provides that the Secretary may restrict competition to certain classes of recipients, for example universities and National Laboratories, but must notify Congress within 30 days if a competition is

run within the one class of recipients or if the Secretary waives the competition requirement for any solicitation.

I have discussed this with the Director of the Office of Science. I understand the reason for it, and I have no objection to the proposal. My only concern is notifying Congress 30 days after it has happened. And I would like to request that, as we go through the process on the Floor, we change that to immediate notification. There is no reason to delay notifying the Congress when they have taken this action, which is to remove competition. I think we should know about it right away so we can raise some objection, if necessary.

Chairman BOEHLERT. Thank you very much. I look forward to working with you on that.

Mr. EHLERS. I thank you.

Chairman BOEHLERT. Are there any other amendments? Hearing none, the vote is on the bill, as amended, H.R. 610, *Energy Research, Development, Demonstration, and Commercial Application Act of 2005,* as amended. All of those in favor, say aye. Opposed, no. In the opinion of the Chair, the ayes have it.

I will now recognize Mr. Gordon to offer a motion.

Mr. GORDON. Mr. Chairman, I move that the Committee favorably report H.R. 610, as amended, to the House with the recommendation that the bill, as amended, do pass. Furthermore, I move the staff be instructed to prepare the legislative report and make necessary technical and conforming changes, that the Chairman take all necessary steps to bring the bill before the House for consideration.

Chairman BOEHLERT. The question is on the motion to report the bill, as amended, favorably. Those in favor of the motion will signify by saying aye. Opposed, no. The ayes have it, and the resolution is favorably reported.

Without objection, the motion to reconsider is laid upon the table. I move that Members have two subsequent calendar days in which to submit supplemental Minority or additional views on the measure. I move, pursuant to Clause 1 of Rule 22 of the Rules of the House of Representatives, that the Committee authorize the Chairman to offer such motions as may be necessary in the House to adopt and pass H.R. 610, *Energy Research, Development, Demonstration, and Commercial Application Act of 2005,* as amended. Without objection, so ordered.

This concludes our hearing, and I think you will agree that we have handled it in an expeditious manner. I would point out it is in the early stages of this 109th Congress, and already, this committee has had high-profile, important hearings on the tsunami, on the Hubble Telescope, on fuel efficiency, and now this today. We are moving. We are making progress. Thank you all for your participation. The meeting is adjourned.

[Whereupon, at 10:50 a.m., the Committee was adjourned.]

Appendix

H.R. 610, Summary of H.R. 610, Section-by-Section Analysis, Amendment Roster

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(Original Signature of Member)

109TH CONGRESS
1ST SESSION

H. R. 610

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

IN THE HOUSE OF REPRESENTATIVES

Mrs. BIGGERT for herself and Mr. Boehlert introduced the following bill; which was referred to the Committee on _____

A BILL

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

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "Energy Research, Development, Demonstration, and Commercial Application Act of 2005".

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

Sec. 1. Short title; table of contents.
Sec. 2. Definitions.

TITLE I—SCIENCE PROGRAMS

Sec. 101. Office of Science programs.
Sec. 102. Systems biology program.
Sec. 103. Catalysis Research and Development Program.
Sec. 104. Hydrogen.
Sec. 105. Advanced scientific computing research.
Sec. 106. Fusion Energy Sciences program.
Sec. 107. Science and Technology Scholarship Program.
Sec. 108. Office of Scientific and Technical Information.
Sec. 109. Authorization of appropriations.

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

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

TITLE III—ENERGY EFFICIENCY

Subtitle A—Vehicles, Buildings, and Industries

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

Subtitle B—Distributed Energy and Electric Energy Systems

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

TITLE IV—RENEWABLE ENERGY

Sec. 401. Findings.
Sec. 402. Definitions.

Sec. 403. Programs.
Sec. 404. Solar.
Sec. 405. Bioenergy programs.
Sec. 406. Wind.
Sec. 407. Geothermal.
Sec. 408. Photovoltaic demonstration program.
Sec. 409. Additional programs.
Sec. 410. Analysis and evaluation.
Sec. 411. Authorization of appropriations.

TITLE V—NUCLEAR ENERGY PROGRAMS

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

Subtitle A—Nuclear energy research programs

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

Subtitle B—Next Generation Nuclear Plant Program

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

TITLE VI—FOSSIL ENERGY

Subtitle A—Research Programs

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

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

Sec. 611. Program authority.
Sec. 612. Ultra-deepwater Program.
Sec. 613. Unconventional natural gas and other petroleum resources Program.
Sec. 614. Additional requirements for awards.
Sec. 615. Advisory committees.
Sec. 616. Limits on participation.
Sec. 617. Sunset.
Sec. 618. Definitions.
Sec. 619. Funding.

TITLE VII—HYDROGEN

Sec. 701. Definitions.
Sec. 702. Plan.
Sec. 703. Programs.
Sec. 704. Interagency task force.
Sec. 705. Advisory Committee.
Sec. 706. External review.
Sec. 707. Miscellaneous provisions.
Sec. 708. Savings clause.
Sec. 709. Authorization of appropriations.

TITLE VIII—ADVANCED VEHICLES

Subtitle A—Pilot Program

Sec. 801. Definitions.
Sec. 802. Pilot program.
Sec. 803. Reports to Congress.
Sec. 804. Authorization of appropriations.

Subtitle B—Clean school buses

Sec. 811. Definitions.
Sec. 812. Program for replacement of certain school buses with clean school buses.
Sec. 813. Diesel retrofit program.
Sec. 814. Fuel cell school buses.

Subtitle C—Fuel cell transit bus demonstration

Sec. 821. Fuel cell transit bus demonstration.

TITLE IX—CLEAN COAL POWER INITIATIVE

Sec. 901. Authorization of appropriations.
Sec. 902. Project criteria.
Sec. 903. Report.
Sec. 904. Clean coal centers of excellence.

TITLE X—IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS

Sec. 1001. Improved coordination and management of civilian science and technology programs.

1 **SEC. 2. DEFINITIONS.**

2 For purposes of this Act:

3 (1) APPLIED PROGRAMS.—The term "applied
4 programs" means the research, development, dem-
5 onstration, and commercial application programs of
6 the Department concerning energy efficiency, renew-

1 able energy, nuclear energy, fossil energy, and elec-
2 tricity transmission and distribution.
3 (2) BIOMASS.—The term "biomass" means—
4 (A) any organic material grown for the
5 purpose of being converted to energy;
6 (B) any organic byproduct of agriculture
7 (including wastes from food production and
8 processing) that can be converted into energy;
9 or
10 (C) any waste material that can be con-
11 verted to energy, is segregated from other waste
12 materials, and is derived from—
13 (i) any of the following forest-related
14 resources: mill residues, precommercial
15 thinnings, slash, brush, or otherwise non-
16 merchantable material; or
17 (ii) wood waste materials, including
18 waste pallets, crates, dunnage, manufac-
19 turing and construction wood wastes (other
20 than pressure-treated, chemically-treated,
21 or painted wood wastes), and landscape or
22 right-of-way tree trimmings, but not in-
23 cluding municipal solid waste, gas derived
24 from the biodegradation of municipal solid
25 waste, or paper that is commonly recycled.

1 (3) DEPARTMENT.—The term "Department"
2 means the Department of Energy.
3 (4) DEPARTMENTAL MISSION.—The term "de-
4 partmental mission" means any of the functions
5 vested in the Secretary of Energy by the Depart-
6 ment of Energy Organization Act (42 U.S.C. 7101
7 et seq.) or other law.
8 (5) INSTITUTION OF HIGHER EDUCATION.—The
9 term "institution of higher education" has the
10 meaning given that term in section 101(a) of the
11 Higher Education Act of 1965 (20 U.S.C. 1001(a)).
12 (6) NATIONAL LABORATORY.—The term "Na-
13 tional Laboratory" means any of the following lab-
14 oratories owned by the Department:
15 (A) Ames Laboratory.
16 (B) Argonne National Laboratory.
17 (C) Brookhaven National Laboratory.
18 (D) Fermi National Accelerator Labora-
19 tory.
20 (E) Idaho National Laboratory.
21 (F) Lawrence Berkeley National Labora-
22 tory.
23 (G) Lawrence Livermore National Labora-
24 tory.
25 (H) Los Alamos National Laboratory.

1 (I) National Energy Technology Labora-
2 tory.
3 (J) National Renewable Energy Labora-
4 tory.
5 (K) Oak Ridge National Laboratory.
6 (L) Pacific Northwest National Labora-
7 tory.
8 (M) Princeton Plasma Physics Laboratory.
9 (N) Sandia National Laboratories.
10 (O) Savannah River National Laboratory.
11 (P) Stanford Linear Accelerator Center.
12 (Q) Thomas Jefferson National Accel-
13 erator Facility.
14 (7) RENEWABLE ENERGY.—The term "renew-
15 able energy" means energy from wind, sunlight, the
16 flow of water, heat from the Earth, or biomass that
17 can be converted into a usable form such as process
18 heat, electricity, fuel, or space heat.
19 (8) SECRETARY.—The term "Secretary" means
20 the Secretary of Energy.
21 (9) STATE.—The term "State" means any of
22 the several States, the District of Columbia, the
23 Commonwealth of Puerto Rico, the United States
24 Virgin Islands, Guam, American Samoa, the North-

1 ern Mariana Islands, and any other commonwealth,
2 territory, or possession of the United States.
3 (10) UNIVERSITY.—The term "university" has
4 the meaning given the term "institution of higher
5 education" in section 101 of the Higher Education
6 Act of 1965 (20 U.S.C. 1001).
7 (11) USER FACILITY.—The term "user facility"
8 means a research and development facility sup-
9 ported, in whole or in part, by Departmental funds
10 that is open, at a minimum, to all qualified United
11 States researchers.

12 **TITLE I—SCIENCE PROGRAMS**

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

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

1 (1) ESTABLISHMENT.—The Secretary shall con-
2 struct and operate a Rare Isotope Accelerator. The
3 Secretary shall commence construction no later than
4 September 30, 2008.
5 (2) AUTHORIZATION OF APPROPRIATIONS.—
6 There are authorized to be appropriated to the Sec-
7 retary such sums as may be necessary to carry out
8 this subsection. The Secretary shall not spend more
9 than $1,100,000,000 for all activities associated
10 with the Rare Isotope Accelerator prior to operation.
11 **SEC. 102. SYSTEMS BIOLOGY PROGRAM.**
12 (a) PROGRAM.—
13 (1) ESTABLISHMENT.—The Secretary shall es-
14 tablish a research, development, and demonstration
15 program in genetics, protein science, and computa-
16 tional biology to support the energy, national secu-
17 rity, and environmental missions of the Department.
18 (2) GRANTS.—The program shall support indi-
19 vidual researchers and multidisciplinary teams of re-
20 searchers through competitive, merit-reviewed
21 grants.
22 (3) CONSULTATION.—In carrying out the pro-
23 gram, the Secretary shall consult with other Federal
24 agencies that conduct genetic and protein research.

1 (b) GOALS.—The program shall have the goal of de-
2 veloping technologies and methods based on the biological
3 functions of genomes, microbes, and plants that—
4 (1) can facilitate the production of fuels, includ-
5 ing hydrogen;
6 (2) convert carbon dioxide to organic carbon;
7 (3) detoxify soils and water, including at De-
8 partmental facilities, contaminated with heavy met-
9 als and radiological materials; and
10 (4) address other Department missions as iden-
11 tified by the Secretary.
12 (c) PLAN.—
13 (1) DEVELOPMENT OF PLAN.—Not later than 1
14 year after the date of enactment of this Act, the
15 Secretary shall prepare and transmit to Congress a
16 research plan describing how the program author-
17 ized pursuant to this section will be undertaken to
18 accomplish the program goals established in sub-
19 section (b).
20 (2) REVIEW OF PLAN.—The Secretary shall
21 contract with the National Academy of Sciences to
22 review the research plan developed under this sub-
23 section. The Secretary shall transmit the review to
24 Congress not later than 18 months after transmittal
25 of the research plan under paragraph (1), along with

1 the Secretary's response to the recommendations
2 contained in the review.
3 (d) USER FACILITIES AND ANCILLARY EQUIP-
4 MENT.—Within the funds authorized to be appropriated
5 pursuant to this title, the amounts specified under section
6 109(b)(1), (c)(1), (d)(1), (e)(1), and (f)(1) shall be avail-
7 able for projects to develop, plan, construct, acquire, or
8 operate special equipment, instrumentation, or facilities,
9 including user facilities, for researchers conducting re-
10 search, development, demonstration, and commercial ap-
11 plication in systems biology and proteomics and associated
12 biological disciplines.
13 (e) PROHIBITION ON BIOMEDICAL AND HUMAN CELL
14 AND HUMAN SUBJECT RESEARCH.—
15 (1) NO BIOMEDICAL RESEARCH.—In carrying
16 out the program under this section, the Secretary
17 shall not conduct biomedical research.
18 (2) LIMITATIONS.—Nothing in this section shall
19 authorize the Secretary to conduct any research or
20 demonstrations—
21 (A) on human cells or human subjects; or
22 (B) designed to have direct application
23 with respect to human cells or human subjects.

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

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

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

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

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

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

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

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

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

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

1 **SEC. 104. HYDROGEN.**

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

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

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

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

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

26 (b) PLANNING.—

1 (1) IN GENERAL.—Not later than 180 days
2 after the date of enactment of this Act, the Sec-
3 retary shall transmit to Congress a plan, with pro-
4 posed cost estimates, budgets, and lists of potential
5 international partners, for the implementation of the
6 policy described in subsection (a). The plan shall en-
7 sure that—
8 (A) existing fusion research facilities are
9 more fully utilized;
10 (B) fusion science, technology, theory, ad-
11 vanced computation, modeling, and simulation
12 are strengthened;
13 (C) new magnetic and inertial fusion re-
14 search and development facilities are selected
15 based on scientific innovation, cost effective-
16 ness, and their potential to advance the goal of
17 practical fusion energy at the earliest date pos-
18 sible, and those that are selected are funded at
19 a cost-effective rate;
20 (D) communication of scientific results and
21 methods between the fusion energy science com-
22 munity and the broader scientific and tech-
23 nology communities is improved;
24 (E) inertial confinement fusion facilities
25 are utilized to the extent practicable for the

1 purpose of inertial fusion energy research and
2 development; and
3 (F) attractive alternative inertial and mag-
4 netic fusion energy approaches are more fully
5 explored.
6 (2) COSTS AND SCHEDULES.—Such plan shall
7 also address the status of and, to the degree pos-
8 sible, costs and schedules for—
9 (A) the design and implementation of
10 international or national facilities for the test-
11 ing of fusion materials; and
12 (B) the design and implementation of
13 international or national facilities for the test-
14 ing and development of key fusion technologies.
15 (c) UNITED STATES PARTICIPATION IN ITER.—
16 (1) IN GENERAL.—The United States may par-
17 ticipate in ITER only in accordance with this sub-
18 section.
19 (2) AGREEMENT.—
20 (A) IN GENERAL.—The Secretary is au-
21 thorized to negotiate an agreement for United
22 States participation in ITER.
23 (B) CONTENTS.—Any agreement for
24 United States participation in ITER shall, at a
25 minimum—

1 (i) clearly define the United States fi-
2 nancial contribution to construction and
3 operating costs, as well as any other costs
4 associated with the project;
5 (ii) ensure that the share of ITER's
6 high-technology components manufactured
7 in the United States is at least propor-
8 tionate to the United States financial con-
9 tribution to ITER;
10 (iii) ensure that the United States will
11 not be financially responsible for cost over-
12 runs in components manufactured in other
13 ITER participating countries;
14 (iv) guarantee the United States full
15 access to all data generated by ITER;
16 (v) enable United States researchers
17 to propose and carry out an equitable
18 share of the experiments at ITER;
19 (vi) provide the United States with a
20 role in all collective decisionmaking related
21 to ITER; and
22 (vii) describe the process for dis-
23 continuing or decommissioning ITER and
24 any United States role in that process.

1 (3) PLAN.—The Secretary, in consultation with
2 the Fusion Energy Sciences Advisory Committee,
3 shall develop a plan for the participation of United
4 States scientists in ITER that shall include the
5 United States research agenda for ITER, methods
6 to evaluate whether ITER is promoting progress to-
7 ward making fusion a reliable and affordable source
8 of power, and a description of how work at ITER
9 will relate to other elements of the United States fu-
10 sion program. The Secretary shall request a review
11 of the plan by the National Academy of Sciences.
12 (4) LIMITATION.—No Federal funds shall be
13 expended for the construction of ITER until the
14 Secretary has transmitted to Congress—
15 (A) the agreement negotiated pursuant to
16 paragraph (2) and 120 days have elapsed since
17 that transmission;
18 (B) a report describing the management
19 structure of ITER and providing a fixed dollar
20 estimate of the cost of United States participa-
21 tion in the construction of ITER, and 120 days
22 have elapsed since that transmission;
23 (C) a report describing how United States
24 participation in ITER will be funded without
25 reducing funding for other programs in the Of-

1 fice of Science, including other fusion programs,
2 and 60 days have elapsed since that trans-
3 mission; and
4 (D) the plan required by paragraph (3)
5 (but not the National Academy of Sciences re-
6 view of that plan), and 60 days have elapsed
7 since that transmission.
8 (5) ALTERNATIVE TO ITER.—If at any time
9 during the negotiations on ITER, the Secretary de-
10 termines that construction and operation of ITER is
11 unlikely or infeasible, the Secretary shall send to
12 Congress, as part of the budget request for the fol-
13 lowing year, a plan for implementing a domestic
14 burning plasma experiment including costs and
15 schedules for such a plan. The Secretary shall refine
16 such plan in full consultation with the Fusion En-
17 ergy Sciences Advisory Committee and shall also
18 transmit such plan to the National Academy of
19 Sciences for review.
20 (6) DEFINITIONS.—In this subsection:
21 (A) CONSTRUCTION.— The term "con-
22 struction" means the physical construction of
23 the ITER facility, and the physical construc-
24 tion, purchase, or manufacture of equipment or
25 components that are specifically designed for

1 the ITER facility, but does not mean the design
2 of the facility, equipment, or components.
3 (B) ITER.—The term "ITER" means the
4 international burning plasma fusion research
5 project in which the President announced
6 United States participation on January 30,
7 2003, or any similar international project.

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

10 (a) ESTABLISHMENT OF PROGRAM.—
11 (1) IN GENERAL.—The Secretary is authorized
12 to establish a Science and Technology Scholarship
13 Program to award scholarships to individuals that is
14 designed to recruit and prepare students for careers
15 in the Department.
16 (2) COMPETITIVE PROCESS.—Individuals shall
17 be selected to receive scholarships under this section
18 through a competitive process primarily on the basis
19 of academic merit, with consideration given to finan-
20 cial need and the goal of promoting the participation
21 of individuals identified in section 33 or 34 of the
22 Science and Engineering Equal Opportunities Act
23 (42 U.S.C. 1885a or 1885b).
24 (3) SERVICE AGREEMENTS.—To carry out the
25 Program the Secretary shall enter into contractual

1 agreements with individuals selected under para-
2 graph (2) under which the individuals agree to serve
3 as full-time employees of the Department, for the
4 period described in subsection (f)(1), in positions
5 needed by the Department and for which the individ-
6 uals are qualified, in exchange for receiving a schol-
7 arship.
8 (b) SCHOLARSHIP ELIGIBILITY.—In order to be eligi-
9 ble to participate in the Program, an individual must—
10 (1) be enrolled or accepted for enrollment as a
11 full-time student at an institution of higher edu-
12 cation in an academic program or field of study de-
13 scribed in the list made available under subsection
14 (d);
15 (2) be a United States citizen; and
16 (3) at the time of the initial scholarship award,
17 not be a Federal employee as defined in section
18 2105 of title 5 of the United States Code.
19 (c) APPLICATION REQUIRED.—An individual seeking
20 a scholarship under this section shall submit an applica-
21 tion to the Secretary at such time, in such manner, and
22 containing such information, agreements, or assurances as
23 the Secretary may require.
24 (d) ELIGIBLE ACADEMIC PROGRAMS.—The Secretary
25 shall make publicly available a list of academic programs

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

4 (e) SCHOLARSHIP REQUIREMENT.—

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

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

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

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

1 (5) CONTRACTS REGARDING DIRECT PAYMENTS
2 TO INSTITUTIONS.—The Secretary may enter into a
3 contractual agreement with an institution of higher
4 education under which the amounts provided for a
5 scholarship under this section for tuition, fees, and
6 other authorized expenses are paid directly to the in-
7 stitution with respect to which the scholarship is
8 provided.
9 (f) PERIOD OF OBLIGATED SERVICE.—
10 (1) DURATION OF SERVICE.—The period of
11 service for which an individual shall be obligated to
12 serve as an employee of the Department is, except
13 as provided in subsection (h)(2), 24 months for each
14 academic year for which a scholarship under this
15 section is provided.
16 (2) SCHEDULE FOR SERVICE.—
17 (A) IN GENERAL.—Except as provided in
18 subparagraph (B), obligated service under para-
19 graph (1) shall begin not later than 60 days
20 after the individual obtains the educational de-
21 gree for which the scholarship was provided.
22 (B) DEFERRAL.—The Secretary may defer
23 the obligation of an individual to provide a pe-
24 riod of service under paragraph (1) if the Sec-
25 retary determines that such a deferral is appro-

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

1 CONDITIONS OF DEFERMENT.—A scholarship recipi-
2 ent who, for any reason, fails to begin or complete
3 a service obligation under this section after comple-
4 tion of academic training, or fails to comply with the
5 terms and conditions of deferment established by the
6 Secretary pursuant to subsection (f)(2)(B), shall be
7 in breach of the contractual agreement. When a re-
8 cipient breaches an agreement for the reasons stated
9 in the preceding sentence, the recipient shall be lia-
10 ble to the United States for an amount equal to—
11 (A) the total amount of scholarships re-
12 ceived by such individual under this section;
13 plus
14 (B) the interest on the amounts of such
15 awards which would be payable if at the time
16 the awards were received they were loans bear-
17 ing interest at the maximum legal prevailing
18 rate, as determined by the Treasurer of the
19 United States,
20 multiplied by 3.
21 (h) WAIVER OR SUSPENSION OF OBLIGATION.—
22 (1) DEATH OF INDIVIDUAL.—Any obligation of
23 an individual incurred under the Program (or a con-
24 tractual agreement thereunder) for service or pay-

1 ment shall be canceled upon the death of the indi-
2 vidual.
3 (2) IMPOSSIBILITY OR EXTREME HARDSHIP.—
4 The Secretary shall by regulation provide for the
5 partial or total waiver or suspension of any obliga-
6 tion of service or payment incurred by an individual
7 under the Program (or a contractual agreement
8 thereunder) whenever compliance by the individual is
9 impossible or would involve extreme hardship to the
10 individual, or if enforcement of such obligation with
11 respect to the individual would be contrary to the
12 best interests of the Government.
13 (i) DEFINITIONS.—In this section the following defi-
14 nitions apply:
15 (1) COST OF ATTENDANCE.—The term "cost of
16 attendance" has the meaning given that term in sec-
17 tion 472 of the Higher Education Act of 1965 (20
18 U.S.C. 1087*ll*).
19 (2) PROGRAM.—The term "Program" means
20 the Science and Technology Scholarship Program es-
21 tablished under this section.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
2 FORMATION.—For activities under section 108,
3 $7,000,000.
4 (c) 2007 ALLOCATIONS.—From amounts authorized
5 under subsection (a)(2), the following sums are authorized
6 for fiscal year 2007:
7 (1) SYSTEMS BIOLOGY.—For activities under
8 section 102, such sums as may be necessary.
9 (2) SCIENTIFIC COMPUTING.—For activities
10 under section 105, $270,000,000.
11 (3) FUSION ENERGY SCIENCES.—For activities
12 under section 106, excluding activities under sub-
13 section (e) of that section, $349,000,000.
14 (4) SCHOLARSHIP.—For the scholarship pro-
15 gram described in section 107, $1,600,000.
16 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
17 FORMATION.—For activities under section 108,
18 $7,500,000.
19 (d) 2008 ALLOCATIONS.—From amounts authorized
20 under subsection (a)(3), the following sums are authorized
21 for fiscal year 2008:
22 (1) SYSTEMS BIOLOGY.—For activities under
23 section 102, such sums as may be necessary.
24 (2) SCIENTIFIC COMPUTING.—For activities
25 under section 105, $350,000,000.

1 (3) FUSION ENERGY SCIENCES.—For activities
2 under section 106, excluding activities under sub-
3 section (c) of that section, $362,000,000.
4 (4) SCHOLARSHIP.—For the scholarship pro-
5 gram described in section 107, $2,000,000.
6 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
7 FORMATION.—For activities under section 108,
8 $8,000,000.
9 (c) 2009 ALLOCATIONS.—From amounts authorized
10 under subsection (a)(4), the following sums are authorized
11 for fiscal year 2009:
12 (1) SYSTEMS BIOLOGY.—For activities under
13 section 102, such sums as may be necessary.
14 (2) SCIENTIFIC COMPUTING.—For activities
15 under section 105, $375,000,000.
16 (3) FUSION ENERGY SCIENCES.—For activities
17 under section 106, excluding activities under sub-
18 section (c) of that section, $377,000,000.
19 (4) SCHOLARSHIP.—For the scholarship pro-
20 gram described in section 107, $2,000,000.
21 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
22 FORMATION.—For activities under section 108,
23 $8,000,000.

1 (f) 2010 ALLOCATIONS.—From amounts authorized
2 under subsection (a)(5), the following sums are authorized
3 for fiscal year 2010:
4 (1) SYSTEMS BIOLOGY.—For activities under
5 section 102, such sums as may be necessary.
6 (2) SCIENTIFIC COMPUTING.—For activities
7 under section 105, $400,000,000.
8 (3) FUSION ENERGY SCIENCES.—For activities
9 under section 106, excluding activities under sub-
10 section (c) of that section, $393,000,000.
11 (4) SCHOLARSHIP.—For the scholarship pro-
12 gram described in section 107, $2,000,000.
13 (5) OFFICE OF SCIENTIFIC AND TECHNICAL IN-
14 FORMATION.—For activities under section 108,
15 $8,500,000.
16 (g) ITER CONSTRUCTION.—From amounts author-
17 ized under subsection (a) and in addition to amounts au-
18 thorized under subsections (b)(3), (c)(3), (d)(3), (e)(3),
19 and (f)(3), there are authorized to be appropriated to the
20 Secretary such sums as may be necessary for ITER con-
21 struction, consistent with the limitations of section 106(c).

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

SEC. 201. COST SHARING.

(a) RESEARCH AND DEVELOPMENT.—Except as otherwise provided in this Act, for research and development programs carried out under this Act, the Secretary shall require a commitment from non-Federal sources of at least 20 percent of the cost of the project. The Secretary may reduce or eliminate the non-Federal requirement under this subsection if the Secretary determines that the research and development is of a basic or fundamental nature.

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

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

1 (a) or (b), the Secretary may include personnel, services,
2 equipment, and other resources.
3 (d) SIZE OF NON-FEDERAL SHARE.—The Secretary
4 may consider the amount of the non-Federal share in se-
5 lecting projects under this Act.
6 **SEC. 202. REPROGRAMMING.**
7 (a) DISTRIBUTION REPORT.—Not later than 60 days
8 after the date of enactment of an Act appropriating
9 amounts authorized under this Act, the Secretary shall
10 transmit to Congress a report explaining how such
11 amounts will be distributed among the activities author-
12 ized by this Act.
13 (b) REPROGRAMMING LETTER.—No amount author-
14 ized by this Act shall be obligated or expended for a pur-
15 pose inconsistent with the appropriations Act appro-
16 priating such amount, the report accompanying such ap-
17 propriations Act, or a distribution report transmitted
18 under subsection (a) if such obligation or expenditure
19 would change an individual amount, as represented in
20 such an Act, report, or distribution report, by more than
21 2 percent or $2,000,000, whichever is smaller, unless the
22 Secretary has transmitted to Congress a letter of expla-
23 nation and a period of 30 days has elapsed after Congress
24 receives the letter.

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

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

7 (a) COMPETITIVE MERIT REVIEW.—Awardees of
8 funds authorized under this Act shall be selected through
9 open competitions. Funds shall be competitively awarded
10 only after an impartial review of the scientific and tech-
11 nical merit of the proposals for such awards has been car-
12 ried out by or for the Department on the basis of criteria
13 outlined by the Secretary in the solicitation of proposals.
14 (b) COMPETITION.—Competitive awards under this
15 Act shall involve competitions open to all qualified entities
16 within one or more of the following categories:
17 (1) Institutions of higher education.
18 (2) National Laboratories.
19 (3) Nonprofit and for-profit private entities.
20 (4) State and local governments.
21 (5) Consortia of entities described in para-
22 graphs (1) through (4).
23 (c) CONGRESSIONAL NOTIFICATION.—The Secretary
24 shall notify Congress within 30 days after awarding more
25 than $500,000 through a competition described in sub-

1 section (b) that is limited to 1 of the categories described
2 in paragraphs (1) through (4) of subsection (b).
3 (d) WAIVERS.—The Secretary may waive the require-
4 ment under subsection (a) requiring competition if the
5 Secretary considers it necessary to more quickly advance
6 research, development, demonstration, or commercial ap-
7 plication activities. The Secretary shall notify Congress
8 within 30 days when a waiver is granted under this sub-
9 section. The Secretary may not delegate the waiver au-
10 thority under this subsection for awards over $500,000.
11 **SEC. 204. EXTERNAL TECHNICAL REVIEW OF DEPART-**
12 **MENTAL PROGRAMS.**
13 (a) NATIONAL APPLIED ENERGY RESEARCH AND
14 DEVELOPMENT ADVISORY COMMITTEES.—
15 (1) IN GENERAL.—The Secretary shall establish
16 one or more advisory committees to review and ad-
17 vise the Department's applied programs in the fol-
18 lowing areas:
19 (A) Energy efficiency.
20 (B) Renewable energy.
21 (C) Nuclear energy.
22 (D) Fossil energy.
23 (2) EXISTING ADVISORY COMMITTEES.—The
24 Secretary may designate an existing advisory com-
25 mittee within the Department to fulfill the respon-

1 sibilities of an advisory committee under this sub-
2 section.
3 (b) OFFICE OF SCIENCE ADVISORY COMMITTEES.—
4 (1) USE OF EXISTING COMMITTEES.—Except as
5 otherwise provided under the Federal Advisory Com-
6 mittee Act, the Secretary shall continue to use the
7 scientific program advisory committees chartered
8 under the Federal Advisory Committee Act (5
9 U.S.C. App.) by the Office of Science to oversee re-
10 search and development programs under that Office.
11 (2) REPORT.—Before the Department issues
12 any new guidance regarding the membership for Of-
13 fice of Science scientific program advisory commit-
14 tees, the Secretary shall transmit a report to the
15 Congress outlining the reasons for the proposed
16 changes, and 60 days must have elapsed after trans-
17 mittal of the report before the Department may im-
18 plement those changes.
19 (3) SCIENCE ADVISORY COMMITTEE.—
20 (A) ESTABLISHMENT.—There shall be a
21 Science Advisory Committee for the Office of
22 Science that includes the chairs of each of the
23 advisory committees described in paragraph (1).
24 (B) RESPONSIBILITIES.—The Science Ad-
25 visory Committee shall—

1 (i) advise the Secretary on science
2 issues;
3 (ii) advise the Secretary with respect
4 to the well-being and management of the
5 National Laboratories and Department re-
6 search facilities;
7 (iii) advise the Secretary with respect
8 to education and workforce training activi-
9 ties required for effective short-term and
10 long-term basic and applied research ac-
11 tivities of the Office of Science; and
12 (iv) advise the Secretary with respect
13 to the well-being of the university research
14 programs supported by the Office of
15 Science.
16 (c) MEMBERSHIP.—Each member of an advisory
17 committee appointed under this section shall have signifi-
18 cant scientific, technical, or other appropriate expertise.
19 The membership of each committee shall represent a wide
20 range of expertise, including at least one third with exper-
21 tise from outside the disciplines covered by the program,
22 and a diverse set of interests.
23 (d) MEETINGS AND PURPOSES.—Each advisory com-
24 mittee under this section shall meet at least semiannually
25 to review and advise on the progress made by the respec-

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

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

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

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

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

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

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

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

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

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

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

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

1 (4) a summary of disciplinary actions and their
2 disposition by either the Department or the relevant
3 contractors for each laboratory;
4 (5) a summary of outreach efforts to attract
5 women and minorities to the laboratories;
6 (6) a summary of efforts to retain women and
7 minorities in the laboratories; and
8 (7) a summary of collaboration efforts with the
9 Office of Federal Contract Compliance Programs to
10 improve equal employment opportunity practices at
11 the laboratories.

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

13 The Secretary shall not designate any new or existing
14 facility as a user facility until the Secretary, for that
15 facility—
16 (1) develops a plan to ensure that the facility
17 will—
18 (A) have a skilled staff to support a wide
19 range of users;
20 (B) have a fair method for allocating time
21 to users that provides for input from facility
22 management, user representatives, and outside
23 experts; and
24 (C) be operated in a safe and fiscally pru-
25 dent manner; and

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

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

5 (a) STRATEGY.—The Secretary shall develop and im-
6 plement a strategy for infrastructure and facilities sup-
7 ported primarily from the Office of Science and the ap-
8 plied programs at each National Laboratory and Depart-
9 ment research facility. Such strategy shall provide cost-
10 effective means for—
11 (1) maintaining existing facilities and infra-
12 structure, as needed;
13 (2) closing unneeded facilities;
14 (3) making facility modifications; and
15 (4) building new facilities.
16 (b) REPORT.—
17 (1) REQUIREMENT.—The Secretary shall pre-
18 pare and transmit to the Congress not later than
19 June 1, 2007, a report summarizing the strategies
20 developed under subsection (a).
21 (2) CONTENTS.—For each National Laboratory
22 and Department research facility, for the facilities
23 primarily used for science and energy research, such
24 report shall contain—

1 (A) the current priority list of proposed fa-
2 cilities and infrastructure projects, including
3 cost and schedule requirements;
4 (B) a current 10-year plan that dem-
5 onstrates the reconfiguration of its facilities and
6 infrastructure to meet its missions and to ad-
7 dress its long-term operational costs and return
8 on investment;
9 (C) the total current budget for all facili-
10 ties and infrastructure funding; and
11 (D) the current status of each facility and
12 infrastructure project compared to the original
13 baseline cost, schedule, and scope.

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

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

20 (b) PLAN CONTENTS.—The plan shall describe—
21 (1) how the Secretary will ensure that the ap-
22 plied programs are coordinating their activities, in-
23 cluding a description of specific research questions
24 that cross organizational boundaries and of how the
25 relevant applied programs are coordinating their ef-

1 forts to answer those questions, and how such cross-
2 cutting research questions will be identified in the
3 future;
4 (2) how the Secretary will ensure that research
5 that has been supported by the Office of Science is
6 being or will be used by the applied programs, in-
7 cluding a description of specific Office of Science-
8 supported research that is relevant to the applied
9 programs and of how the applied programs have
10 used or will use that research; and
11 (3) a description of how the Secretary will en-
12 sure that the research agenda of the Office of
13 Science includes research questions of concern to the
14 applied programs, including a description of specific
15 research questions that the Office of Science will ad-
16 dress to assist the applied programs.
17 (c) PLAN TRANSMITTAL.—The Secretary shall trans-
18 mit the coordination plan to Congress not later than 9
19 months after the date of enactment of this Act, and every
20 2 years thereafter shall transmit a revised coordination
21 plan.
22 (d) CONFERENCE.—Not less than 6 months after the
23 date of enactment of this Act, the Secretary shall convene
24 a conference of program managers from the Office of
25 Science and the applied programs to review ideas and ex-

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

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

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

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

14 **SEC. 301. PROGRAMS.**

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

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

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

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

1 (4) Improving the Nation's energy security.
2 (5) Reducing the environmental impact of en-
3 ergy-related activities.
4 (b) GOALS.—
5 (1) INITIAL GOALS.—In accordance with the
6 performance plan and report requirements in section
7 4 of the Government Performance Results Act of
8 1993, the Secretary shall transmit to the Congress,
9 along with the President's annual budget request for
10 fiscal year 2007, a report containing outcome meas-
11 ures with explicitly stated cost and performance
12 baselines. The measures shall specify energy effi-
13 ciency performance goals, with quantifiable 5-year
14 cost and energy savings target levels, for vehicles,
15 buildings, and industries, and any other such goals
16 the Secretary considers appropriate.
17 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
18 retary shall transmit to the Congress, along with the
19 President's annual budget request for each fiscal
20 year after 2007, a report containing—
21 (A) a description, including quantitative
22 analysis, of progress in achieving performance
23 goals transmitted under paragraph (1), as com-
24 pared to the baselines transmitted under para-
25 graph (1); and

1 (B) any amendments to such goals.

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

7 **SEC. 302. VEHICLES.**

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

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

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

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

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

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

1 fuel economy of the vehicle, including fiber optics to
2 replace traditional wiring;
3 (6) thermoelectric devices that capture waste
4 heat and convert thermal energy into electricity; and
5 (7) advanced drivetrains.

6 **SEC. 303. BUILDINGS.**

7 (a) PROGRAM.—The Secretary shall conduct a pro-
8 gram of research, development, demonstration, and com-
9 mercial application of cost-effective technologies, for new
10 construction and retrofit, to improve the energy efficiency
11 and environmental performance of commercial, industrial,
12 institutional, and residential buildings. The program shall
13 use a whole-buildings approach, integrating work on ele-
14 ments including—
15 (1) advanced controls, including occupancy sen-
16 sors, daylighting controls, wireless technologies,
17 automated responses to changes in the internal and
18 external environment, and real time delivery of infor-
19 mation on building system and component perform-
20 ance;
21 (2) building envelope, including windows, roof-
22 ing systems and materials, and building-integrated
23 photovoltaics;
24 (3) building systems components, including—

1 (A) lighting, including the Next Generation
2 Lighting Initiative described in subsection (b);
3 (B) appliances, including advanced tech-
4 nologies, such as stand-by load technologies, for
5 office equipment, food service equipment, and
6 laundry equipment; and
7 (C) heating, ventilation, and cooling sys-
8 tems, including ground-source heat pumps and
9 radiant heating; and
10 (4) onsite renewable energy generation.
11 (b) NEXT GENERATION LIGHTING INITIATIVE.—The
12 program conducted under subsection (a)(3)(A) shall in-
13 clude a Next Generation Lighting Initiative to support re-
14 search, development, demonstration, and commercial ap-
15 plication activities related to advanced lighting tech-
16 nologies for both general white light illumination needs
17 and specialized applications such as exit ramp and stair-
18 way illumination. Such activities shall be focused on ad-
19 vanced lighting technologies, including solid-state organic
20 and inorganic technologies that, compared to current
21 lighting technologies, deliver superior performance, are
22 longer lasting, are more energy-efficient, are better
23 matched to customer needs, have less environmental im-
24 pact, and are cost-competitive.

1 (c) ENERGY EFFICIENT BUILDING PILOT GRANT
2 PROGRAM.—
3 (1) IN GENERAL.—Not later than 6 months
4 after the date of enactment of this Act, the Sec-
5 retary shall establish a pilot program to award
6 grants to businesses and organizations for new con-
7 struction of energy efficient buildings, or major ren-
8 ovations of buildings that will result in energy effi-
9 cient buildings, to demonstrate innovative energy ef-
10 ficiency technologies, especially those sponsored by
11 the Department.
12 (2) AWARDS.—The Secretary shall award
13 grants under this subsection competitively to those
14 applicants whose proposals—
15 (A) best demonstrate—
16 (i) likelihood to meet or exceed the de-
17 sign standards referred to in paragraph
18 (7);
19 (ii) likelihood to maximize cost-effec-
20 tive energy efficiency opportunities; and
21 (iii) advanced energy efficiency tech-
22 nologies; and
23 (B) are least likely to be realized without
24 Federal assistance.

1 (3) AMOUNT OF GRANTS.—Grants under this
2 subsection shall be for up to 50 percent of design
3 and energy modeling costs, not to exceed $50,000
4 per building. No single grantee may be eligible for
5 more than 3 grants per year under this program.
6 (4) GRANT PAYMENTS.—
7 (A) INITIAL PAYMENT.—The Secretary
8 shall pay 50 percent of the total amount of the
9 grant to grant recipients upon selection.
10 (B) REMAINDER OF PAYMENT.—The Sec-
11 retary shall pay the remaining 50 percent of the
12 grant only after independent certification of
13 operational buildings for compliance with the
14 standards for energy efficient buildings de-
15 scribed in paragraph (7).
16 (C) FAILURE TO COMPLY.—The Secretary
17 shall not provide the remainder of the payment
18 unless the building is certified within 6 months
19 after operation of the completed building to
20 meet the requirements described in subpara-
21 graph (B), or in the case of major renovations
22 the building is certified within 6 months of the
23 completion of the renovations.
24 (5) REPORT TO CONGRESS.—Not later than 3
25 years after awarding the first grant under this sub-

1 section, the Secretary shall transmit to Congress a
2 report containing—
3 (A) the total number and dollar amount of
4 grants awarded under this subsection; and
5 (B) an estimate of aggregate cost and en-
6 ergy savings enabled by the pilot program
7 under this subsection.
8 (6) ADMINISTRATIVE EXPENSES.—Administra-
9 tive expenses for the program under this subsection
10 shall not exceed 10 percent of appropriated funds.
11 (7) DEFINITION OF ENERGY EFFICIENT BUILD-
12 ING.—For purposes of this subsection, the term "en-
13 ergy efficient building" means a building that is
14 independently certified—
15 (A) to meet or exceed the applicable
16 United States Green Building Council's Leader-
17 ship in Energy and Environmental Design
18 standards for a silver, gold, or platinum rating;
19 and
20 (B) to achieve a reduction in energy con-
21 sumption of—
22 (i) at least 25 percent for new con-
23 struction, compared to the energy stand-
24 ards set by the Federal Building Code (10
25 CFR part 434); and

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

4 **SEC. 304. INDUSTRIES.**

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

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

1 (c) REAUTHORIZATION OF STEEL AND ALUMINUM
2 ENERGY CONSERVATION AND TECHNOLOGY COMPETI-
3 TIVENESS ACT OF 1988.—
4 (1) AUTHORIZATION OF APPROPRIATIONS.—
5 Section 9 of the Steel and Aluminum Energy Con-
6 servation and Technology Competitiveness Act of
7 1988 (15. U.S.C. 5108) is amended to read as fol-
8 lows:
9 **"SEC. 9. AUTHORIZATION OF APPROPRIATIONS.**
10 "There are authorized to be appropriated to the Sec-
11 retary to carry out this Act $20,000,000 for each of fiscal
12 years 2006 through 2010.".
13 (2) STEEL PROJECT PRIORITIES.—Section
14 4(c)(1) of the Steel and Aluminum Energy Con-
15 servation and Technology Competitiveness Act of
16 1988 (15 U.S.C. 5103(c)(1)) is amended—
17 (A) in subparagraph (H), by striking
18 "coatings for sheet steels" and inserting "sheet
19 and bar steels"; and
20 (B) by adding at the end the following new
21 subparagraph:
22 "(K) The development of technologies
23 which reduce greenhouse gas emissions.".

1 (3) CONFORMING AMENDMENTS.—The Steel
2 and Aluminum Energy Conservation and Technology
3 Competitiveness Act of 1988 is further amended—
4 (A) by striking section 7 (15 U.S.C. 5106);
5 and
6 (B) in section 4(b)—
7 (i) in the subsection heading, by in-
8 serting "AND REPORT" after "MANAGE-
9 MENT PLAN";
10 (ii) by striking "Within 6 months
11 after the date of enactment of this Act"
12 and inserting "Not later than 6 months
13 after the date of enactment of the Act en-
14 acting this sentence";
15 (iii) by striking "to expand the steel
16 research and development initiative to in-
17 clude aluminum and"; and
18 (iv) by inserting ", and shall transmit
19 such plan to Congress" after "carry out
20 the purposes of this Act".
21 **SEC. 305. DEMONSTRATION AND COMMERCIAL APPLICA-**
22 **TION.**
23 (a) APPLIANCES AND TESTING.—The Secretary shall
24 conduct research and analysis to determine whether, given
25 Department-sponsored and other advances in energy effi-

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

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

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

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

25 (2) ACTIVITIES.—

1 (A) IN GENERAL.—Each Center shall oper-
2 ate a program to encourage demonstration and
3 commercial application of advanced energy
4 methods and technologies through education
5 and outreach to building and industrial profes-
6 sionals, and to other individuals and organiza-
7 tions with an interest in efficient energy use.
8 (B) ADVISORY PANEL.—Each Center shall
9 establish an advisory panel to advise the Center
10 on how best to accomplish the activities under
11 subparagraph (A).
12 (3) APPLICATION.—A person seeking a grant
13 under this subsection shall submit to the Secretary
14 an application in such form and containing such in-
15 formation as the Secretary may require. The Sec-
16 retary may award a grant under this subsection to
17 an entity already in existence if the entity is other-
18 wise eligible under this subsection.
19 (4) SELECTION CRITERIA.—The Secretary shall
20 award grants under this subsection on the basis of
21 the following criteria, at a minimum:
22 (A) The ability of the applicant to carry
23 out the activities in paragraph (2).
24 (B) The extent to which the applicant will
25 coordinate the activities of the Center with

1 other entities, such as State and local govern-
2 ments, utilities, and educational and research
3 institutions.
4 (5) MATCHING FUNDS.—The Secretary shall re-
5 quire a non-Federal matching requirement of at
6 least 50 percent of the costs of establishing and op-
7 erating each Center.
8 (6) ADVISORY COMMITTEE.—The Secretary
9 shall establish an advisory committee to advise the
10 Secretary on the establishment of Centers under this
11 subsection. The advisory committee shall be com-
12 posed of individuals with expertise in the area of ad-
13 vanced energy methods and technologies, including
14 at least 1 representative from—
15 (A) State or local energy offices;
16 (B) energy professionals;
17 (C) trade or professional associations;
18 (D) architects, engineers, or construction
19 professionals;
20 (E) manufacturers;
21 (F) the research community; and
22 (G) nonprofit energy or environmental or-
23 ganizations.
24 (7) DEFINITIONS.—For purposes of this sub-
25 section:

1 (A) ADVANCED ENERGY METHODS AND
2 TECHNOLOGIES.—The term "advanced energy
3 methods and technologies" means all methods
4 and technologies that promote energy efficiency
5 and conservation, including distributed genera-
6 tion technologies, and life-cycle analysis of en-
7 ergy use.
8 (B) CENTER.—The term "Center" means
9 an Advanced Energy Technology Transfer Cen-
10 ter established pursuant to this subsection.
11 (C) DISTRIBUTED GENERATION.—The
12 term "distributed generation" means an electric
13 power generation facility that is designed to
14 serve retail electric consumers at or near the fa-
15 cility site.
16 (d) REPORT.—Not later than 2 years after the date
17 of enactment of this Act, and once every 3 years there-
18 after, the Secretary shall transmit to Congress a report
19 on the results of research and analysis under this section.
20 In calculating cost-effectiveness for purposes of such re-
21 ports, the Secretary shall include, at a minimum, the
22 avoided cost of additional energy production, savings to
23 the economy from lower peak energy prices and reduced
24 price volatility, and the public and private benefits of re-
25 duced pollution.

1 **SEC. 306. SECONDARY ELECTRIC VEHICLE BATTERY USE**
2 **PROGRAM.**
3 (a) DEFINITIONS.—For purposes of this section:
4 (1) ASSOCIATED EQUIPMENT.—The term "asso-
5 ciated equipment" means equipment located where
6 the batteries will be used that is necessary to enable
7 the use of the energy stored in the batteries.
8 (2) BATTERY.—The term "battery" means an
9 energy storage device that previously has been used
10 to provide motive power in a vehicle powered in
11 whole or in part by electricity.
12 (b) PROGRAM.—The Secretary shall establish and
13 conduct a research, development, demonstration, and com-
14 mercial application program for the secondary use of bat-
15 teries if the Secretary finds that there are sufficient num-
16 bers of such batteries to support the program. The pro-
17 gram shall be—
18 (1) designed to demonstrate the use of batteries
19 in secondary applications, including utility and com-
20 mercial power storage and power quality;
21 (2) structured to evaluate the performance, in-
22 cluding useful service life and costs, of such bat-
23 teries in field operations, and the necessary sup-
24 porting infrastructure, including reuse and disposal
25 of batteries; and

1 (3) coordinated with ongoing secondary battery
2 use programs at the National Laboratories and in
3 industry.
4 (c) SOLICITATION.—Not later than 180 days after
5 the date of enactment of this Act, if the Secretary finds
6 under subsection (b) that there are sufficient numbers of
7 batteries to support the program, the Secretary shall so-
8 licit proposals to demonstrate the secondary use of bat-
9 teries and associated equipment and supporting infra-
10 structure in geographic locations throughout the United
11 States. The Secretary may make additional solicitations
12 for proposals if the Secretary determines that such solici-
13 tations are necessary to carry out this section.
14 (d) SELECTION OF PROPOSALS.—
15 (1) IN GENERAL.—The Secretary shall, not
16 later than 90 days after the closing date established
17 by the Secretary for receipt of proposals under sub-
18 section (c), select up to 5 proposals which may re-
19 ceive financial assistance under this section, subject
20 to the availability of appropriations.
21 (2) DIVERSITY; ENVIRONMENTAL EFFECT.—In
22 selecting proposals, the Secretary shall consider di-
23 versity of battery type, geographic and climatic di-
24 versity, and life-cycle environmental effects of the
25 approaches.

1 (3) LIMITATION.—No 1 project selected under
2 this section shall receive more than 25 percent of the
3 funds authorized for the program under this section.
4 (4) OPTIMIZATION OF FEDERAL RESOURCES.—
5 The Secretary shall consider the extent of involve-
6 ment of State or local government and other persons
7 in each demonstration project to optimize use of
8 Federal resources.
9 (5) OTHER CRITERIA.—The Secretary may con-
10 sider such other criteria as the Secretary considers
11 appropriate.
12 (e) CONDITIONS.—The Secretary shall require that—
13 (1) relevant information be provided to the De-
14 partment, the users of the batteries, the proposers,
15 and the battery manufacturers;
16 (2) the proposer provide at least 50 percent of
17 the costs associated with the proposal; and
18 (3) the proposer provide to the Secretary such
19 information regarding the disposal of the batteries
20 as the Secretary may require to ensure that the pro-
21 poser disposes of the batteries in accordance with
22 applicable law.

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

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

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

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

12 (1) For fiscal year 2006, $620,000,000,
13 including—

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

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

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

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

1 (E) $10,000,000 for carrying out dem-
2 onstration and commercial applications activi-
3 ties under section 305; and
4 (F) $4,000,000 for carrying out the sec-
5 ondary electric vehicle battery use program
6 under section 306.
7 (2) For fiscal year 2007, $700,000,000,
8 including—
9 (A) $240,000,000 for carrying out the ve-
10 hicles program under section 302;
11 (B) $130,000,000 for carrying out the
12 buildings program under section 303, of which
13 $10,000,000 shall be for the grant program
14 under section 303(c);
15 (C) $115,000,000 for carrying out the in-
16 dustries program under section 304(a);
17 (D) $2,000,000 for carrying out the elec-
18 tric motor control technology program under
19 section 304(b);
20 (E) $10,000,000 for carrying out dem-
21 onstration and commercial applications activi-
22 ties under section 305; and
23 (F) $7,000,000 for carrying out the sec-
24 ondary electric vehicle battery use program
25 under section 306.

1 (3) For fiscal year 2008, $800,000,000,
2 including—
3 (A) $270,000,000 for carrying out the ve-
4 hicles program under section 302;
5 (B) $160,000,000 for carrying out the
6 buildings program under section 303, of which
7 $10,000,000 shall be for the grant program
8 under section 303(c);
9 (C) $140,000,000 for carrying out the in-
10 dustries program under section 304(a);
11 (D) $2,000,000 for carrying out the elec-
12 tric motor control technology program under
13 section 304(b);
14 (E) $10,000,000 for carrying out dem-
15 onstration and commercial applications activi-
16 ties under section 305; and
17 (F) $7,000,000 for carrying out the sec-
18 ondary electric vehicle battery use program
19 under section 306.
20 (4) For fiscal year 2009, $925,000,000,
21 including—
22 (A) $310,000,000 for carrying out the ve-
23 hicles program under section 302;
24 (B) $200,000,000 for carrying out the
25 buildings program under section 303, of which

1 $10,000,000 shall be for the grant program
2 under section 303(c);
3 (C) $170,000,000 for carrying out the in-
4 dustries program under section 304(a);
5 (D) $10,000,000 for carrying out dem-
6 onstration and commercial applications activi-
7 ties under section 305; and
8 (E) $7,000,000 for carrying out the sec-
9 ondary electric vehicle battery use program
10 under section 306.
11 (5) For fiscal year 2010, $1,000,000,000,
12 including—
13 (A) $340,000,000 for carrying out the ve-
14 hicles program under section 302;
15 (B) $240,000,000 for carrying out the
16 buildings program under section 303, of which
17 $10,000,000 shall be for the grant program
18 under section 303(c);
19 (C) $190,000,000 for carrying out the in-
20 dustries program under section 304(a);
21 (D) $10,000,000 for carrying out dem-
22 onstration and commercial applications activi-
23 ties under section 305; and

(E) $7,000,000 for carrying out the secondary electric vehicle battery use program under section 306.

SEC. 309. LIMITATION ON USE OF FUNDS.

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

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

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

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

(4) the Federal Energy Management Program under part 3 of title V of the National Energy Conservation Policy Act (42 U.S.C. 8251 et seq.).

Subtitle B—Distributed Energy and Electric Energy Systems

SEC. 321. DISTRIBUTED ENERGY.

(a) IN GENERAL.—The Secretary shall conduct programs of distributed energy resources and systems reliability and efficiency research, development, demonstration, and commercial application to improve the reliability and efficiency of distributed energy resources and systems,

1 including activities described in this subtitle. The pro-
2 grams shall address advanced energy technologies and sys-
3 tems and advanced grid reliability technologies. The pro-
4 grams shall include the integration of—
5 (1) renewable energy resources;
6 (2) fuel cells;
7 (3) combined heat and power systems;
8 (4) microturbines;
9 (5) advanced natural gas turbines;
10 (6) advanced internal combustion engine gen-
11 erators;
12 (7) energy storage devices;
13 (8) interconnection standards, protocols, and
14 equipment;
15 (9) ancillary equipment for dispatch and con-
16 trol; and
17 (10) any other energy technologies, as appro-
18 priate.
19 (b) MICRO-COGENERATION ENERGY TECH-
20 NOLOGY.—The Secretary shall make competitive, merit-
21 based grants to consortia for the development of micro-
22 cogeneration energy technology. The consortia shall
23 explore—
24 (1) the use of small-scale combined heat and
25 power in residential heating appliances; or

1 (2) the use of excess power to operate other ap-
2 pliances within the residence and supply excess gen-
3 erated power to the power grid.
4 (c) GOALS.—
5 (1) INITIAL GOALS.—In accordance with the
6 performance plan and report requirements in section
7 4 of the Government Performance Results Act of
8 1993, the Secretary shall transmit to the Congress,
9 along with the President's annual budget request for
10 fiscal year 2007, a report containing outcome meas-
11 ures with explicitly stated cost and performance
12 baselines. The measures shall specify performance
13 goals, with quantifiable 5-year cost and energy sav-
14 ings target levels, for distributed energy resources
15 and systems, and any other such goals the Secretary
16 considers appropriate.
17 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
18 retary shall transmit to the Congress, along with the
19 President's annual budget request for each fiscal
20 year after 2007, a report containing—
21 (A) a description, including quantitative
22 analysis, of progress in achieving performance
23 goals transmitted under paragraph (1), as com-
24 pared to the baselines transmitted under para-
25 graph (1); and

1 (B) any amendments to such goals.

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

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

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

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

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

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

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

1 (6) the development and use of high-tempera-
2 ture superconductors to—
3 (A) enhance the reliability, operational
4 flexibility, or power-carrying capability of elec-
5 tric transmission or distribution systems; or
6 (B) increase the efficiency of electric en-
7 ergy generation, transmission, distribution, or
8 storage systems;
9 (7) integration of power systems, including sys-
10 tems to deliver high-quality electric power, electric
11 power reliability, and combined heat and power;
12 (8) supply of electricity to the power grid by
13 small-scale, distributed, and residential-based power
14 generators;
15 (9) the development and use of advanced grid
16 design, operation, and planning tools;
17 (10) any other infrastructure technologies, as
18 appropriate; and
19 (11) technology transfer and education.
20 (b) GOALS.—
21 (1) INITIAL GOALS.—In accordance with the
22 performance plan and report requirements in section
23 4 of the Government Performance Results Act of
24 1993, the Secretary shall transmit to the Congress,
25 along with the President's annual budget request for

1 fiscal year 2007, a report containing outcome meas-
2 ures with explicitly stated cost and performance
3 baselines. The measures shall specify performance
4 goals, with quantifiable 5-year cost and energy sav-
5 ings target levels, for electricity transmission and
6 distribution and energy assurance, and any other
7 such goals the Secretary considers appropriate.
8 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
9 retary shall transmit to the Congress, along with the
10 President's annual budget request for each fiscal
11 year after 2007, a report containing—
12 (A) a description, including quantitative
13 analysis, of progress in achieving performance
14 goals transmitted under paragraph (1), as com-
15 pared to the baselines transmitted under para-
16 graph (1); and
17 (B) any amendments to such goals.
18 **SEC. 323. AUTHORIZATION OF APPROPRIATIONS.**
19 (a) IN GENERAL.—The following sums are author-
20 ized to be appropriated to the Secretary for the purposes
21 of carrying out this subtitle:
22 (1) For fiscal year 2006, $210,000,000.
23 (2) For fiscal year 2007, $230,000,000.
24 (3) For fiscal year 2008, $250,000,000.
25 (4) For fiscal year 2009, $270,000,000.

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

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

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

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

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

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

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

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

15 TITLE IV—RENEWABLE ENERGY

16 SEC. 401. FINDINGS.

17 Congress makes the following findings:

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

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

1 (3) In 2003, Japan spent more than
2 $200,000,000 on solar research, development, dem-
3 onstration, and commercial application and other in-
4 centives, and Germany provided more than
5 $750,000,000 in low cost financing for solar photo-
6 voltaic projects. This compares to United States
7 Government spending of $139,000,000 in 2003 for
8 research, development, demonstration, and commer-
9 cial application and other incentives.
10 (4) Germany and Japan each had domestic
11 photovoltaic industries that employed more than
12 10,000 people in 2003, while in the same year the
13 United States photovoltaics industry employed only
14 2,000 people.
15 (5) The United States is becoming increasingly
16 dependent on imported energy.
17 (6) The high cost of fossil fuels is hurting the
18 United States economy.
19 (7) Small reductions in peak demand can result
20 in very large reductions in price, according to energy
21 market experts.
22 (8) Although the United States has only 2 per-
23 cent of the world's oil reserves and 3 percent of the
24 world's natural gas reserves, our Nation's renewable
25 energy resources are vast and largely untapped.

1 (9) Renewable energy can reduce the demand
2 for imported energy, reducing costs and decreasing
3 the variability of energy prices.
4 (10) By using domestic renewable energy re-
5 sources, the United States can reduce the amount of
6 money sent into unstable regions of the world and
7 keep it in the United States.
8 (11) By supporting renewable energy research
9 and development, and funding demonstration and
10 commercial application programs for renewable en-
11 ergy, the United States can create an export indus-
12 try and improve the balance of trade.
13 (12) Renewable energy can significantly reduce
14 the environmental impacts of energy production.
15 **SEC. 402. DEFINITIONS.**
16 For purposes of this title:
17 (1) BIOBASED PRODUCT.—The term "biobased
18 product" means a product determined by the Sec-
19 retary to be a commercial or industrial product
20 (other than food or feed) that is—
21 (A) composed, in whole or in significant
22 part, of—
23 (i) biological products;

1 (ii) renewable domestic agricultural
2 materials (including plant, animal, and
3 marine materials); or
4 (iii) forestry materials; and
5 (B) produced in connection with the con-
6 version of biomass to energy or fuel.
7 (2) CELLULOSIC BIOMASS.—The term "cel-
8 lulosic biomass" means a crop containing
9 lignocellulose or hemicellulose, including barley
10 grain, grapeseed, forest thinnings, rice bran, rice
11 hulls, rice straw, soybean matter, sugarcane bagasse,
12 and any crop grown specifically for the purpose of
13 producing cellulosic feedstocks.
14 **SEC. 403. PROGRAMS.**
15 (a) IN GENERAL.—The Secretary shall conduct pro-
16 grams of renewable energy research, development, dem-
17 onstration, and commercial application, including activi-
18 ties described in this title. Such programs shall be focused
19 on the following objectives:
20 (1) Increasing the conversion efficiency of all
21 forms of renewable energy through improved tech-
22 nologies.
23 (2) Decreasing the cost of renewable energy
24 generation and delivery.

1 (3) Promoting the diversity of the energy sup-
2 ply.
3 (4) Decreasing the Nation's dependence on for-
4 eign energy supplies.
5 (5) Improving United States energy security.
6 (6) Decreasing the environmental impact of en-
7 ergy-related activities.
8 (7) Increasing the export of renewable genera-
9 tion equipment from the United States.
10 (b) GOALS.—
11 (1) INITIAL GOALS.—In accordance with the
12 performance plan and report requirements in section
13 4 of the Government Performance Results Act of
14 1993, the Secretary shall transmit to the Congress,
15 along with the President's annual budget request for
16 fiscal year 2007, a report containing outcome meas-
17 ures with explicitly stated cost and performance
18 baselines. The measures shall specify renewable en-
19 ergy performance goals, with quantifiable 5-year cost
20 and energy savings target levels, for wind power,
21 photovoltaics, solar thermal systems (including con-
22 centrating and solar hot water), geothermal energy,
23 biomass-based systems, biofuels, and hydropower,
24 and any other such goals the Secretary considers ap-
25 propriate.

1 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
2 retary shall transmit to the Congress, along with the
3 President's annual budget request for each fiscal
4 year after 2007, a report containing—
5 (A) a description, including quantitative
6 analysis, of progress in achieving performance
7 goals transmitted under paragraph (1), as com-
8 pared to the baselines transmitted under para-
9 graph (1); and
10 (B) any amendments to such goals.
11 (c) PUBLIC INPUT.—The Secretary shall consider ad-
12 vice from industry, universities, and other interested par-
13 ties through seeking comments in the Federal Register
14 and other means before transmitting each report under
15 subsection (b).
16 **SEC. 404. SOLAR.**
17 (a) PROGRAM.—The Secretary shall conduct a pro-
18 gram of research, development, demonstration, and com-
19 mercial application for solar energy, including—
20 (1) photovoltaics;
21 (2) solar hot water and solar space heating; and
22 (3) concentrating solar power.
23 (b) BUILDING INTEGRATION.—For photovoltaics,
24 solar hot water, and space heating, the Secretary shall
25 conduct research, development, demonstration, and com-

1 mercial application to support the development of products
2 that can be easily integrated into new and existing build-
3 ings.
4 (c) MANUFACTURE.—The Secretary shall conduct re-
5 search, development, demonstration, and commercial ap-
6 plication of manufacturing techniques that can produce
7 low-cost, high-quality solar systems.
8 **SEC. 405. BIOENERGY PROGRAMS.**
9 (a) PROGRAM.—The Secretary shall conduct a pro-
10 gram of research, development, demonstration, and com-
11 mercial application for cellulosic biomass, including—
12 (1) biomass conversion to heat and electricity;
13 (2) biomass conversion to liquid fuels;
14 (3) biobased products;
15 (4) integrated biorefineries that may produce
16 heat, electricity, liquid fuels, and biobased products;
17 (5) cross-cutting activities on feedstocks and
18 enzymes; and
19 (6) life-cycle economic analysis.
20 (b) BIOFUELS AND BIOBASED PRODUCTS.—The ob-
21 jectives of the biofuels and biobased products programs
22 under paragraphs (2), (3), and (4) of subsection (a), and
23 of the biorefinery demonstration program under sub-
24 section (c), shall be to develop, in partnership with
25 industry—

1 (1) advanced biochemical and thermochemical
2 conversion technologies capable of making high-value
3 biobased chemical feedstocks and products, to sub-
4 stitute for petroleum-based feedstocks and products,
5 biofuels that are price-competitive with gasoline or
6 diesel in either internal combustion engines or fuel
7 cell-powered vehicles, and biobased products from a
8 variety of feedstocks, including grains, cellulosic bio-
9 mass, and agricultural byproducts; and
10 (2) advanced biotechnology processes capable of
11 making biofuels and biobased products, with empha-
12 sis on development of biorefinery technologies, in-
13 cluding enzyme-based processing technologies.
14 (c) BIOMASS INTEGRATED REFINERY DEMONSTRA-
15 TION.—
16 (1) IN GENERAL.—The Secretary shall conduct
17 a program to demonstrate the commercial applica-
18 tion of at least 5 integrated biorefineries. The Sec-
19 retary shall ensure geographical distribution of bio-
20 refinery demonstrations under this subsection. The
21 Secretary shall not provide more than $100,000,000
22 under this subsection for any single biorefinery dem-
23 onstration. The Secretary shall award the biorefinery
24 demonstrations so as to encourage—

1 (A) the demonstration of a wide variety of
2 cellulosic biomass feedstocks;
3 (B) the commercial application of biomass
4 technologies for a variety of uses, including—
5 (i) liquid transportation fuels;
6 (ii) high-value biobased chemicals;
7 (iii) substitutes for petroleum-based
8 feedstocks and products; and
9 (iv) energy in the form of electricity
10 or useful heat; and
11 (C) the demonstration of the collection and
12 treatment of a variety of biomass feedstocks.
13 (2) PROPOSALS.—Not later than 6 months
14 after the date of enactment of this Act, the Sec-
15 retary shall solicit proposals for demonstration of
16 advanced biorefineries. The Secretary shall select
17 only proposals that—
18 (A) demonstrate that the project will be
19 able to operate profitably without direct Federal
20 subsidy after initial construction costs are paid;
21 and
22 (B) enable the biorefinery to be easily rep-
23 licated.
24 (d) GRANTS.—Of the funds authorized to be appro-
25 priated for activities authorized under this section, not less

1 than $5,000,000 for each fiscal year shall be made avail-
2 able for grants to Historically Black Colleges and Univer-
3 sities, Tribal Colleges, and Hispanic-Serving Institutions.
4 **SEC. 406. WIND.**
5 (a) PROGRAM.—The Secretary shall conduct a pro-
6 gram of research, development, demonstration, and com-
7 mercial application for wind energy, including—
8 (1) low speed wind energy;
9 (2) offshore wind energy;
10 (3) testing and verification; and
11 (4) distributed wind energy generation.
12 (b) FACILITY.—The Secretary shall construct and op-
13 erate a research and testing facility capable of testing the
14 largest wind turbines that are expected to be manufac-
15 tured in the next 15 years. The Secretary shall consider
16 the need for testing offshore turbine designs in siting the
17 facility. All private users of the facility shall be required
18 to pay the Department all costs associated with their use
19 of the facility, including capital costs prorated at normal
20 business amortization rates.
21 (c) REGIONAL FIELD VERIFICATION PROGRAM.—Of
22 the funds authorized to be appropriated for activities au-
23 thorized under this section, not less than $4,000,000 for
24 each fiscal year shall be made available for the Regional
25 Field Verification Program of the Department.

1 **SEC. 407. GEOTHERMAL.**

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

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

9 (2) decreasing drilling costs;

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

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

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

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

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

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

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

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

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

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

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

1 solicit proposals from the States to participate in the pro-
2 gram under this section.
3 (e) COMPETITIVE CRITERIA.—In awarding funds in
4 a competitive allocation under subsection (c), the Sec-
5 retary shall consider—
6 (1) the likelihood of a proposal to encourage the
7 demonstration of, or lower the costs of, advanced
8 photovoltaic technologies; and
9 (2) the extent to which a proposal is likely to—
10 (A) maximize the amount of photovoltaics
11 demonstrated;
12 (B) maximize the proportion of non-Fed-
13 eral cost share; and
14 (C) limit State administrative costs.
15 (f) STATE PROGRAM.—A program operated by a
16 State with funding under this section shall provide com-
17 petitive awards for the demonstration of advanced photo-
18 voltaic technologies. Each State program shall—
19 (1) require a contribution of at least 60 percent
20 per award from non-Federal sources, which may in-
21 clude any combination of State, local, and private
22 funds, except that at least 10 percent of the funding
23 must be supplied by the State;
24 (2) limit awards for any single project to a
25 maximum of $1,000,000;

1 (3) prohibit any nongovernmental recipient
2 from receiving more than $1,000,000 per year;
3 (4) endeavor to fund recipients in the commer-
4 cial, industrial, institutional, governmental, and resi-
5 dential sectors;
6 (5) limit State administrative costs to no more
7 than 10 percent of the grant;
8 (6) report annually to the Department on—
9 (A) the amount of funds disbursed;
10 (B) the amount of photovoltaics purchased;
11 and
12 (C) the results of the monitoring under
13 paragraph (7);
14 (7) provide for measurement and verification of
15 the output of a representative sample of the
16 photovoltaics systems demonstrated throughout the
17 average working life of the systems, or at least 20
18 years; and
19 (8) require that applicant buildings must have
20 received an independent energy efficiency audit dur-
21 ing the 6-month period preceding the filing of the
22 application.
23 (g) UNEXPENDED FUNDS.—If a State fails to expend
24 any funds received under subsection (b) or (c) within 3

1 years of receipt, such remaining funds shall be returned
2 to the Treasury.
3 (h) REPORTS.—The Secretary shall report to Con-
4 gress 5 years after funds are first distributed to the States
5 under this section—
6 (1) the amount of photovoltaics demonstrated;
7 (2) the number of projects undertaken;
8 (3) the administrative costs of the program;
9 (4) the amount of funds that each State has
10 not received because of a failure to submit a quali-
11 fying proposal, as described in subsection (b)(3);
12 (5) the results of the monitoring under sub-
13 section (f)(7); and
14 (6) the total amount of funds distributed, in-
15 cluding a breakdown by State.
16 **SEC. 409. ADDITIONAL PROGRAMS.**
17 (a) IN GENERAL.—The Secretary may conduct re-
18 search, development, demonstration, and commercial ap-
19 plication programs of—
20 (1) ocean energy, including wave energy;
21 (2) kinetic hydro turbines; and
22 (3) the combined use of renewable energy tech-
23 nologies with one another and with other energy
24 technologies.
25 (b) MARINE RENEWABLE ENERGY STUDY.—

1 (1) STUDY.—The Secretary shall enter into an
2 arrangement with the National Academy of Sciences
3 to conduct a study on—
4 (A) the feasibility of various methods of re-
5 newable generation of energy from the ocean,
6 including energy from waves, tides, currents,
7 and thermal gradients; and
8 (B) the research, development, demonstra-
9 tion, and commercial application activities re-
10 quired to make marine renewable energy gen-
11 eration competitive with other forms of elec-
12 tricity generation.
13 (2) TRANSMITTAL.—Not later than 1 year after
14 the date of enactment of this Act, the Secretary
15 shall transmit the study to Congress along with the
16 Secretary's recommendations for implementing the
17 results of the study.
18 **SEC. 410. ANALYSIS AND EVALUATION.**
19 (a) IN GENERAL.—The Secretary shall conduct anal-
20 ysis and evaluation in support of the renewable energy
21 programs under this title. These activities shall be used
22 to guide budget and program decisions, and shall
23 include—
24 (1) economic and technical analysis of renew-
25 able energy potential, including resource assessment;

1 (2) analysis of past program performance, both
2 in terms of technical advances and in market intro-
3 duction of renewable energy; and
4 (3) any other analysis or evaluation that the
5 Secretary considers appropriate.
6 (b) FUNDING.—The Secretary may designate up to
7 1 percent of the funds appropriated for carrying out this
8 title for analysis and evaluation activities under this sec-
9 tion.

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

11 The following sums are authorized to be appropriated
12 to the Secretary for the purposes of carrying out this title:
13 (1) For fiscal year 2006, $465,000,000, of
14 which—
15 (A) $100,000,000 shall be for carrying out
16 the solar program under section 404;
17 (B) $200,000,000 shall be for carrying out
18 the bioenergy program under section 405, in-
19 cluding $100,000,000 for the biorefinery dem-
20 onstration program under section 405(e);
21 (C) $55,000,000 shall be for carrying out
22 the wind program under section 406, including
23 $10,000,000 for the facility described in section
24 406(b);

1 (D) $30,000,000 shall be for carrying out
2 the geothermal program under section 407; and
3 (E) $50,000,000 shall be for carrying out
4 the photovoltaic demonstration program under
5 section 408.
6 (2) For fiscal year 2007, $605,000,000, of
7 which—
8 (A) $140,000,000 shall be for carrying out
9 the solar program under section 404;
10 (B) $245,000,000 shall be for carrying out
11 the bioenergy program under section 405, in-
12 cluding $125,000,000 for the biorefinery dem-
13 onstration program under section 405(c);
14 (C) $60,000,000 shall be for carrying out
15 the wind program under section 406, including
16 $15,000,000 for the facility described in section
17 406(b);
18 (D) $30,000,000 shall be for carrying out
19 the geothermal program under section 407; and
20 (E) $100,000,000 shall be for carrying out
21 the photovoltaic demonstration program under
22 section 408.
23 (3) For fiscal year 2008, $775,000,000, of
24 which—

1 (A) $200,000,000 shall be for carrying out
2 the solar program under section 404;
3 (B) $310,000,000 shall be for carrying out
4 the bioenergy program under section 405, in-
5 cluding $150,000,000 for the biorefinery dem-
6 onstration program under section 405(c);
7 (C) $65,000,000 shall be for carrying out
8 the wind program under section 406, including
9 $10,000,000 for the facility described in section
10 406(b);
11 (D) $30,000,000 shall be for carrying out
12 the geothermal program under section 407; and
13 (E) $150,000,000 shall be for carrying out
14 the photovoltaic demonstration program under
15 section 408.
16 (4) For fiscal year 2009, $940,000,000, of
17 which—
18 (A) $250,000,000 shall be for carrying out
19 the solar program under section 404;
20 (B) $355,000,000 shall be for carrying out
21 the bioenergy program under section 405, in-
22 cluding $175,000,000 for the biorefinery dem-
23 onstration program under section 405(c);
24 (C) $65,000,000 shall be for carrying out
25 the wind program under section 406, including

1 $5,000,000 for the facility described in section
2 406(b);
3 (D) $30,000,000 shall be for carrying out
4 the geothermal program under section 407; and
5 (E) $200,000,000 shall be for carrying out
6 the photovoltaic demonstration program under
7 section 408.
8 (5) For fiscal year 2010, $1,125,000,000, of
9 which—
10 (A) $300,000,000 shall be for carrying out
11 the solar program under section 404;
12 (B) $400,000,000 shall be for carrying out
13 the bioenergy program under section 405, in-
14 cluding $200,000,000 for the biorefinery dem-
15 onstration program under section 405(c);
16 (C) $65,000,000 shall be for carrying out
17 the wind program under section 406, including
18 $1,000,000 for the facility described in section
19 406(b);
20 (D) $30,000,000 shall be for carrying out
21 the geothermal program under section 407; and
22 (E) $300,000,000 shall be for carrying out
23 the photovoltaic demonstration program under
24 section 408.

TITLE V—NUCLEAR ENERGY PROGRAMS

SEC. 501. DEFINITION.

In this title, the term "junior faculty" means a faculty member who was awarded a doctorate less than 10 years before receipt of an award from the grant program described in section 512(b)(2).

SEC. 502. PROGRAMS.

(a) IN GENERAL.—The Secretary shall conduct programs of civilian nuclear energy research, development, demonstration, and commercial application, including activities described in this title. Programs under this title shall be focused on—

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

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

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

(4) maintaining National Laboratory and university nuclear programs, including their infrastructure;

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

1 new approaches in nuclear energy, science, and tech-
2 nology;
3 (6) developing, planning, constructing, acquir-
4 ing, and operating special equipment and facilities
5 for the use of researchers;
6 (7) supporting technology transfer and other
7 appropriate activities to assist the nuclear energy in-
8 dustry, and other users of nuclear science and engi-
9 neering, including activities addressing reliability,
10 availability, productivity, component aging, safety,
11 and security of nuclear power plants; and
12 (8) reducing the environmental impact of nu-
13 clear energy-related activities.
14 (b) GOALS.—
15 (1) INITIAL GOALS.—In accordance with the
16 performance plan and report requirements in section
17 4 of the Government Performance Results Act of
18 1993, the Secretary shall transmit to the Congress,
19 along with the President's annual budget request for
20 fiscal year 2007, a report containing outcome meas-
21 ures with explicitly stated cost and performance
22 baselines. The measures shall specify performance
23 goals, with quantifiable 5-year cost improvement and
24 reliability, availability, productivity, and component
25 aging target levels for a wide range of nuclear en-

1 ergy technologies, and any other such goals the Sec-
2 retary considers appropriate.
3 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
4 retary shall transmit to the Congress, along with the
5 President's annual budget request for each fiscal
6 year after 2007, a report containing—
7 (A) a description, including quantitative
8 analysis, of progress in achieving performance
9 goals transmitted under paragraph (1), as com-
10 pared to the baselines transmitted under para-
11 graph (1); and
12 (B) any amendments to such goals.
13 (c) PUBLIC INPUT.—The Secretary shall consider ad-
14 vice from industry, universities, and other interested par-
15 ties through seeking comments in the Federal Register
16 and other means before transmitting each report under
17 subsection (b).

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

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

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

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

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

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

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

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

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

1 dents, which may include fellowships for students to
2 spend time at National Laboratories in the areas of
3 nuclear science, engineering, and health physics with
4 a member of the National Laboratory staff acting as
5 a mentor;
6 (2) conduct a junior faculty research initiation
7 grant program to assist universities in recruiting
8 and retaining new faculty in the nuclear sciences
9 and engineering by awarding grants to junior faculty
10 for research on issues related to nuclear energy engi-
11 neering and science;
12 (3) support fundamental nuclear sciences, engi-
13 neering, and health physics research through a nu-
14 clear engineering education and research program;
15 (4) encourage collaborative nuclear research
16 among industry, National Laboratories, and univer-
17 sities; and
18 (5) support communication and outreach re-
19 lated to nuclear science, engineering, and health
20 physics.
21 (c) STRENGTHENING UNIVERSITY RESEARCH AND
22 TRAINING REACTORS AND ASSOCIATED INFRASTRUC-
23 TURE.—In carrying out the program under this section,
24 the Secretary may support—

1 (1) converting research reactors from high-en-
2 richment fuels to low-enrichment fuels and upgrad-
3 ing operational instrumentation;
4 (2) consortia of universities to broaden access
5 to university research reactors;
6 (3) student training programs, in collaboration
7 with the United States nuclear industry, in reli-
8 censing and upgrading reactors, including through
9 the provision of technical assistance; and
10 (4) reactor improvements as part of a focused
11 effort that emphasizes research, training, and edu-
12 cation, including through the Innovations in Nuclear
13 Infrastructure and Education Program or any simi-
14 lar program.
15 (d) OPERATIONS AND MAINTENANCE.—Funding for
16 a project provided under this section may be used for a
17 portion of the operating and maintenance costs of a re-
18 search reactor at a university used in the project.
19 **SEC. 513. UNIVERSITY-NATIONAL LABORATORY INTER-**
20 **ACTIONS.**
21 The Secretary shall conduct—
22 (1) a fellowship program for professors at uni-
23 versities to spend sabbaticals at National Labora-
24 tories in the areas of nuclear science and technology;
25 and

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

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

5 The Secretary shall carry out a Nuclear Power 2010
6 Program, consistent with recommendations in the October
7 2001 report entitled "A Roadmap to Deploy New Nuclear
8 Power Plants in the United States by 2010" issued by
9 the Nuclear Energy Research Advisory Committee of the
10 Department. The Program shall include—
11 (1) the expertise and capabilities of industry,
12 universities, and National Laboratories in evaluation
13 of advanced nuclear fuel cycles and fuels testing;
14 (2) a variety of reactor designs suitable for both
15 developed and developing nations;
16 (3) participation of international collaborators
17 in research, development, and design efforts as ap-
18 propriate; and
19 (4) university and industry participation.

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

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

1 an informed technical decision about the most promising
2 candidates for the eventual commercial application of ad-
3 vanced fission reactor technology for the generation of
4 electricity. The Initiative shall examine advanced prolifera-
5 tion-resistant and passively safe reactor designs, including
6 designs that—
7 (1) are economically competitive with other elec-
8 tric power generation plants;
9 (2) have higher efficiency, lower cost, and im-
10 proved safety compared to reactors in operation on
11 the date of enactment of this Act;
12 (3) use fuels that are proliferation-resistant and
13 have substantially reduced production of high-level
14 waste per unit of output; and
15 (4) use improved instrumentation.

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

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

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

24 In carrying out section 209, the Secretary shall—

1 (1) develop an inventory of nuclear science and
2 engineering facilities, equipment, expertise, and
3 other assets at all of the National Laboratories;
4 (2) develop a prioritized list of nuclear science
5 and engineering plant and equipment improvements
6 needed at each of the National Laboratories;
7 (3) consider the available facilities and expertise
8 at all National Laboratories and emphasize invest-
9 ments which complement rather than duplicate capa-
10 bilities; and
11 (4) develop a timeline and a proposed budget
12 for the completion of deferred maintenance on plant
13 and equipment,
14 with the goal of ensuring that Department programs
15 under this title will be generally recognized to be among
16 the best in the world.

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

19 (a) PLAN.—The Secretary shall develop a comprehen-
20 sive plan for the facilities at the Idaho National Labora-
21 tory, especially taking into account the resources available
22 at other National Laboratories. In developing the plan, the
23 Secretary shall—
24 (1) evaluate the facilities planning processes
25 utilized by other physical science and engineering re-

1 search and development institutions, both in the
2 United States and abroad, that are generally recog-
3 nized as being among the best in the world, and con-
4 sider how those processes might be adapted toward
5 developing such facilities plan;
6 (2) avoid duplicating, moving, or transferring
7 nuclear science and engineering facilities, equipment,
8 expertise, and other assets that currently exist at
9 other National Laboratories;
10 (3) consider the establishment of a national
11 transuranic analytic chemistry laboratory as a user
12 facility at the Idaho National Laboratory;
13 (4) include a plan to develop, if feasible, the
14 Advanced Test Reactor and Test Reactor Area into
15 a user facility that is more readily accessible to aca-
16 demic and industrial researchers;
17 (5) consider the establishment of a fast neutron
18 source as a user facility;
19 (6) consider the establishment of new "hot
20 cells" and the configuration of "hot cells" most like-
21 ly to advance research, development, demonstration,
22 and commercial application in nuclear science and
23 engineering, especially in the context of the condition
24 and availability of these facilities elsewhere in the
25 National Laboratories; and

1 (7) include a timeline and a proposed budget
2 for the completion of deferred maintenance on plant
3 and equipment.
4 (b) TRANSMITTAL TO CONGRESS.—Not later than
5 one year after the date of enactment of this Act, the Sec-
6 retary shall transmit such plan to Congress.
7 **SEC. 519. AUTHORIZATION OF APPROPRIATIONS.**
8 (a) PROGRAM AUTHORIZATION.—The following sums
9 are authorized to be appropriated to the Secretary for the
10 purposes of carrying out this subtitle:
11 (1) $407,000,000 for fiscal year 2006.
12 (2) $427,000,000 for fiscal year 2007.
13 (3) $449,000,000 for fiscal year 2008.
14 (4) $471,000,000 for fiscal year 2009.
15 (5) $495,000,000 for fiscal year 2010.
16 (b) UNIVERSITY SUPPORT.—Of the funds authorized
17 under subsection (a), the following sums are authorized
18 to be appropriated to carry out section 512:
19 (1) $35,200,000 for fiscal year 2006.
20 (2) $44,350,000 for fiscal year 2007.
21 (3) $49,200,000 for fiscal year 2008.
22 (4) $55,000,000 for fiscal year 2009.
23 (5) $60,000,000 for fiscal year 2010.

Subtitle B—Next Generation Nuclear Plant Program

SEC. 531. DEFINITIONS.

For purposes of this subtitle:

(1) CONSTRUCTION.—The term "construction" means the physical construction of the demonstration plant, and the physical construction, purchase, or manufacture of equipment or components that are specifically designed for the demonstration plant, but does not mean the design of the facility, equipment, or components.

(2) DEMONSTRATION PLANT.—The term "demonstration plant" means an advanced fission reactor power plant constructed and operated in accordance with this subtitle.

(3) OPERATION.—The term "operation" means the operation of the demonstration plant, including general maintenance and provision of power, heating and cooling, and other building services that are specifically for the demonstration plant, but does not mean operations that support other activities co-located with the demonstration plant.

SEC. 532. NEXT GENERATION NUCLEAR POWER PLANT.

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

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

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

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

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

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

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

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

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

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

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

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

1 (2) International activities shall be carried out in con-
2 sultation with the Generation IV International Forum.
3 (3) The program may include demonstration of se-
4 lected program objectives in a partner nation.
5 (c) PROGRAM PLAN.—Not later than one year after
6 the date of enactment of this Act, the Secretary shall
7 transmit to Congress a comprehensive program plan. The
8 program plan shall—
9 (1) describe the plan for development, selection,
10 management, ownership, operation, and decommis-
11 sioning of the demonstration plant;
12 (2) identify program milestones and a timeline
13 for achieving these milestones;
14 (3) provide for development of risk-based cri-
15 teria for any future commercial development of a re-
16 actor architecture based on that of the demonstra-
17 tion plant;
18 (4) include a projected budget required to meet
19 the milestones; and
20 (5) include an explanation of any major pro-
21 gram decisions that deviate from program advice
22 given to the Secretary by the advisory committee es-
23 tablished under section 533.

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

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

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

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

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

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

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

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

18 **TITLE VI—FOSSIL ENERGY**

19 **Subtitle A—Research Programs**

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

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

1 ronmental performance of fossil energy production, up-
2 grading, conversion, and consumption. Such programs
3 shall be focused on—
4 (1) increasing the conversion efficiency of all
5 forms of fossil energy through improved tech-
6 nologies;
7 (2) decreasing the cost of all fossil energy pro-
8 duction, generation, and delivery;
9 (3) promoting diversity of energy supply;
10 (4) decreasing the Nation's dependence on for-
11 eign energy supplies;
12 (5) improving United States energy security;
13 (6) decreasing the environmental impact of en-
14 ergy-related activities; and
15 (7) increasing the export of fossil energy-related
16 equipment, technology, and services from the United
17 States.
18 (b) GOALS.—
19 (1) INITIAL GOALS.—In accordance with the
20 performance plan and report requirements in section
21 4 of the Government Performance Results Act of
22 1993, the Secretary shall transmit to the Congress,
23 along with the President's annual budget request for
24 fiscal year 2007, a report containing outcome meas-
25 ures with explicitly stated cost and performance

1 baselines. The measures shall specify production or
2 efficiency performance goals, with quantifiable 5-
3 year cost and energy savings target levels, for fossil
4 energy, and any other such goals the Secretary con-
5 siders appropriate.
6 (2) SUBSEQUENT TRANSMITTALS.—The Sec-
7 retary shall transmit to the Congress, along with the
8 President's annual budget request for each fiscal
9 year after 2007, a report containing—
10 (A) a description, including quantitative
11 analysis, of progress in achieving performance
12 goals transmitted under paragraph (1), as com-
13 pared to the baselines transmitted under para-
14 graph (1); and
15 (B) any amendments to such goals.
16 (c) COVERED ACTIVITIES.—The Secretary shall en-
17 sure that the goals stated in subsection (b) are illustrative
18 of the outcomes necessary to promote acceptance of the
19 programs' efforts in the marketplace, but at a minimum
20 shall encompass the following areas:
21 (1) Coal gasifiers.
22 (2) Turbine generators, including both natural
23 gas and syngas fueled.

1 (3) Oxygen separation devices, hydrogen sepa-
2 ration devices, and carbon dioxide separation tech-
3 nologies.
4 (4) Coal gas and post-combustion emission
5 cleanup and disposal equipment, including carbon di-
6 oxide capture and disposal equipment.
7 (5) Average per-foot drilling costs for oil and
8 gas, segregated by appropriate drilling regimes, in-
9 cluding onshore versus offshore and depth cat-
10 egories.
11 (6) Production of liquid fuels from nontradi-
12 tional feedstocks, including syngas, biomass, meth-
13 ane, and combinations thereof.
14 (7) Environmental discharge per barrel of oil or
15 oil-equivalent production, including reinjected waste.
16 (8) Surface disturbance on both a per-well and
17 per-barrel of oil or oil-equivalent production basis.
18 (d) PUBLIC INPUT.—The Secretary shall consider ad-
19 vice from industry, universities, and other interested par-
20 ties through seeking comments in the Federal Register
21 and other means before transmitting each report under
22 subsection (b).
23 **SEC. 602. FOSSIL RESEARCH AND DEVELOPMENT.**
24 (a) OBJECTIVES.—The Secretary shall conduct a pro-
25 gram of fossil research, development, demonstration, and

1 commercial application, whose objective shall be to reduce
2 emissions from fossil fuel use by developing technologies,
3 including precombustion technologies, by 2015 with the
4 capability of—
5 (1) dramatically increasing electricity gener-
6 ating efficiencies of coal and natural gas;
7 (2) improving combined heat and power ther-
8 mal efficiencies;
9 (3) improving fuels utilization efficiency of pro-
10 duction of liquid transportation fuels from coal;
11 (4) achieving near-zero emissions of mercury
12 and of emissions that form fine particles, smog, and
13 acid rain;
14 (5) reducing carbon dioxide emissions by at
15 least 40 percent through efficiency improvements
16 and by 100 percent with sequestration; and
17 (6) improved reliability, efficiency, reductions of
18 air pollutant emissions, and reductions in solid waste
19 disposal requirements.
20 (b) COAL-BASED PROJECTS.—The coal-based
21 projects authorized under this section shall be consistent
22 with the objective stated in subsection (a). The program
23 shall emphasize carbon capture and sequestration tech-
24 nologies and gasification technologies, including gasifi-
25 cation combined cycle, gasification fuel cells, gasification

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

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

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

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

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

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

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

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

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

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

9 (2) indirect liquefaction of coal and biomass.

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

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

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

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

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

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

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

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

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

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

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

7 SEC. 611. PROGRAM AUTHORITY.

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

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

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

1 (1) Ultra-deepwater technology, including drill-
2 ing to formations in the Outer Continental Shelf to
3 depths greater than 15,000 feet.
4 (2) Ultra-deepwater architecture.
5 (3) Unconventional natural gas and other petro-
6 leum resource exploration and production tech-
7 nology, including the technology challenges of small
8 producers.
9 (d) LIMITATION ON LOCATION OF FIELD ACTIVI-
10 TIES.—Field activities under the program under this sub-
11 title shall be carried out only—
12 (1) in—
13 (A) areas in the territorial waters of the
14 United States not under any Outer Continental
15 Shelf moratorium as of September 30, 2002;
16 (B) areas onshore in the United States on
17 public land administered by the Secretary of the
18 Interior available for oil and gas leasing, where
19 consistent with applicable law and land use
20 plans; and
21 (C) areas onshore in the United States on
22 State or private land, subject to applicable law;
23 and

1 (2) with the approval of the appropriate Fed-
2 eral or State land management agency or private
3 land owner.
4 (e) RESEARCH AT NATIONAL ENERGY TECHNOLOGY
5 LABORATORY.—The Secretary, through the National En-
6 ergy Technology Laboratory, shall carry out research com-
7 plementary to research under subsection (b).
8 (f) CONSULTATION WITH SECRETARY OF THE INTE-
9 RIOR.—In carrying out this subtitle, the Secretary shall
10 consult regularly with the Secretary of the Interior.
11 **SEC. 612. ULTRA-DEEPWATER PROGRAM.**
12 (a) IN GENERAL.—The Secretary shall carry out the
13 activities under section 611(a), to maximize the use of the
14 ultra-deepwater natural gas and other petroleum resources
15 of the United States by increasing the supply of such re-
16 sources, through reducing the cost and increasing the effi-
17 ciency of exploration for and production of such resources,
18 while improving safety and minimizing environmental im-
19 pacts.
20 (b) ROLE OF THE SECRETARY.—The Secretary shall
21 have ultimate responsibility for, and oversight of, all as-
22 pects of the program under this section.
23 (c) ROLE OF THE PROGRAM CONSORTIUM.—
24 (1) IN GENERAL.—The Secretary may contract
25 with a consortium to—

1 (A) manage awards pursuant to subsection
2 (f)(4);
3 (B) make recommendations to the Sec-
4 retary for project solicitations;
5 (C) disburse funds awarded under sub-
6 section (f) as directed by the Secretary in ac-
7 cordance with the annual plan under subsection
8 (e); and
9 (D) carry out other activities assigned to
10 the program consortium by this section.
11 (2) LIMITATION.—The Secretary may not as-
12 sign any activities to the program consortium except
13 as specifically authorized under this section.
14 (3) CONFLICT OF INTEREST.—
15 (A) PROCEDURES.—The Secretary shall
16 establish procedures—
17 (i) to ensure that each board member,
18 officer, or employee of the program consor-
19 tium who is in a decision-making capacity
20 under subsection (f)(3) or (4) shall disclose
21 to the Secretary any financial interests in,
22 or financial relationships with, applicants
23 for or recipients of awards under this sec-
24 tion, including those of his or her spouse
25 or minor child, unless such relationships or

1 interests would be considered to be remote
2 or inconsequential; and
3 (ii) to require any board member, offi-
4 cer, or employee with a financial relation-
5 ship or interest disclosed under clause (i)
6 to recuse himself or herself from any re-
7 view under subsection (f)(3) or oversight
8 under subsection (f)(4) with respect to
9 such applicant or recipient.
10 (B) FAILURE TO COMPLY.—The Secretary
11 may disqualify an application or revoke an
12 award under this section if a board member, of-
13 ficer, or employee has failed to comply with pro-
14 cedures required under subparagraph (A)(ii).
15 (d) SELECTION OF THE PROGRAM CONSORTIUM.—
16 (1) IN GENERAL.—The Secretary shall select
17 the program consortium through an open, competi-
18 tive process.
19 (2) MEMBERS.—The program consortium may
20 include corporations, trade associations, institutions
21 of higher education, National Laboratories, or other
22 research institutions. After submitting a proposal
23 under paragraph (4), the program consortium may
24 not add members without the consent of the Sec-
25 retary.

1 (3) TAX STATUS.—The program consortium
2 shall be an entity that is exempt from tax under sec-
3 tion 501(c)(3) of the Internal Revenue Code of
4 1986.
5 (4) SCHEDULE.—Not later than 180 days after
6 the date of enactment of this Act, the Secretary
7 shall solicit proposals from eligible consortia to per-
8 form the duties in subsection (c)(1), which shall be
9 submitted not later than 360 days after the date of
10 enactment of this Act. The Secretary shall select the
11 program consortium not later than 18 months after
12 such date of enactment.
13 (5) APPLICATION.—Applicants shall submit a
14 proposal including such information as the Secretary
15 may require. At a minimum, each proposal shall—
16 (A) list all members of the consortium;
17 (B) fully describe the structure of the con-
18 sortium, including any provisions relating to in-
19 tellectual property; and
20 (C) describe how the applicant would carry
21 out the activities of the program consortium
22 under this section.
23 (6) ELIGIBILITY.—To be eligible to be selected
24 as the program consortium, an applicant must be an
25 entity whose members collectively have demonstrated

1 capabilities in planning and managing research, de-
2 velopment, demonstration, and commercial applica-
3 tion programs in natural gas or other petroleum ex-
4 ploration or production.
5 (7) CRITERION.—The Secretary shall consider
6 the amount of the fee an applicant proposes to re-
7 ceive under subsection (g) in selecting a consortium
8 under this section.
9 (e) ANNUAL PLAN.—
10 (1) IN GENERAL.—The program under this sec-
11 tion shall be carried out pursuant to an annual plan
12 prepared by the Secretary in accordance with para-
13 graph (2).
14 (2) DEVELOPMENT.—
15 (A) SOLICITATION OF RECOMMENDA-
16 TIONS.—Before drafting an annual plan under
17 this subsection, the Secretary shall solicit spe-
18 cific written recommendations from the pro-
19 gram consortium for each element to be ad-
20 dressed in the plan, including those described in
21 paragraph (4). The Secretary may request that
22 the program consortium submit its rec-
23 ommendations in the form of a draft annual
24 plan.

1 (B) SUBMISSION OF RECOMMENDATIONS;
2 OTHER COMMENT.—The Secretary shall submit
3 the recommendations of the program consor-
4 tium under subparagraph (A) to the Ultra-
5 Deepwater Advisory Committee established
6 under section 615(a) for review, and such Advi-
7 sory Committee shall provide to the Secretary
8 written comments by a date determined by the
9 Secretary. The Secretary may also solicit com-
10 ments from any other experts.
11 (C) CONSULTATION.—The Secretary shall
12 consult regularly with the program consortium
13 throughout the preparation of the annual plan.
14 (3) PUBLICATION.—The Secretary shall trans-
15 mit to Congress and publish in the Federal Register
16 the annual plan, along with any written comments
17 received under paragraph (2)(A) and (B).
18 (4) CONTENTS.—The annual plan shall describe
19 the ongoing and prospective activities of the pro-
20 gram under this section and shall include—
21 (A) a list of any solicitations for awards
22 that the Secretary plans to issue to carry out
23 research, development, demonstration, or com-
24 mercial application activities, including the top-
25 ics for such work, who would be eligible to

1 apply, selection criteria, and the duration of
2 awards; and
3 (B) a description of the activities expected
4 of the program consortium to carry out sub-
5 section (f)(4).
6 (5) ESTIMATES OF INCREASED ROYALTY RE-
7 CEIPTS.—The Secretary, in consultation with the
8 Secretary of the Interior, shall provide an annual re-
9 port to Congress with the President's budget on the
10 estimated cumulative increase in Federal royalty re-
11 ceipts (if any) resulting from the implementation of
12 this subtitle. The initial report under this paragraph
13 shall be submitted in the first President's budget fol-
14 lowing the completion of the first annual plan re-
15 quired under this subsection.
16 (f) AWARDS.—
17 (1) IN GENERAL.—The Secretary shall make
18 awards to carry out research, development, dem-
19 onstration, and commercial application activities
20 under the program under this section. The program
21 consortium shall not be eligible to receive such
22 awards, but members of the program consortium
23 may receive such awards.
24 (2) PROPOSALS.—The Secretary shall solicit
25 proposals for awards under this subsection in such

1 manner and at such time as the Secretary may pre-
2 scribe, in consultation with the program consortium.
3 (3) REVIEW.—The Secretary shall make awards
4 under this subsection through a competitive process,
5 which shall include a review by individuals selected
6 by the Secretary. Such individuals shall include, for
7 each application, Federal officials, the program con-
8 sortium, and non-Federal experts who are not board
9 members, officers, or employees of the program con-
10 sortium or of a member of the program consortium.
11 (4) OVERSIGHT.—
12 (A) IN GENERAL.—The program consor-
13 tium shall oversee the implementation of
14 awards under this subsection, consistent with
15 the annual plan under subsection (e), including
16 disbursing funds and monitoring activities car-
17 ried out under such awards for compliance with
18 the terms and conditions of the awards.
19 (B) EFFECT.—Nothing in subparagraph
20 (A) shall limit the authority or responsibility of
21 the Secretary to oversee awards, or limit the
22 authority of the Secretary to review or revoke
23 awards.
24 (C) PROVISION OF INFORMATION.—The
25 Secretary shall provide to the program consor-

1 tium the information necessary for the program
2 consortium to carry out its responsibilities
3 under this paragraph.
4 (g) ADMINISTRATIVE COSTS.—
5 (1) IN GENERAL.—To compensate the program
6 consortium for carrying out its activities under this
7 section, the Secretary shall provide to the program
8 consortium funds sufficient to administer the pro-
9 gram. This compensation may include a manage-
10 ment fee consistent with Department of Energy con-
11 tracting practices and procedures.
12 (2) ADVANCE.—The Secretary shall advance
13 funds to the program consortium upon selection of
14 the consortium, which shall be deducted from
15 amounts to be provided under paragraph (1).
16 (h) AUDIT.—The Secretary shall retain an inde-
17 pendent, commercial auditor to determine the extent to
18 which funds provided to the program consortium, and
19 funds provided under awards made under subsection (f),
20 have been expended in a manner consistent with the pur-
21 poses and requirements of this subtitle. The auditor shall
22 transmit a report annually to the Secretary, who shall
23 transmit the report to Congress, along with a plan to rem-
24 edy any deficiencies cited in the report.

1 **SEC. 613. UNCONVENTIONAL NATURAL GAS AND OTHER PE-**
2 **TROLEUM RESOURCES PROGRAM.**
3 (a) IN GENERAL.—The Secretary shall carry out ac-
4 tivities under section 611(b)(3), to maximize the use of
5 the onshore unconventional natural gas and other petro-
6 leum resources of the United States, by increasing the
7 supply of such resources, through reducing the cost and
8 increasing the efficiency of exploration for and production
9 of such resources, while improving safety and minimizing
10 environmental impacts.
11 (b) AWARDS.—
12 (1) IN GENERAL.—The Secretary shall carry
13 out this section through awards to research con-
14 sortia made through an open, competitive process.
15 As a condition of award of funds, qualified research
16 consortia shall—
17 (A) demonstrate capability and experience
18 in unconventional onshore natural gas or other
19 petroleum research and development;
20 (B) provide a research plan that dem-
21 onstrates how additional natural gas or oil pro-
22 duction will be achieved; and
23 (C) at the request of the Secretary, provide
24 technical advice to the Secretary for the pur-
25 poses of developing the annual plan required
26 under subsection (e).

1 (2) PRODUCTION POTENTIAL.—The Secretary
2 shall seek to ensure that the number and types of
3 awards made under this subsection have reasonable
4 potential to lead to additional oil and natural gas
5 production on Federal lands.
6 (3) SCHEDULE.—To carry out this subsection,
7 not later than 180 days after the date of enactment
8 of this Act, the Secretary shall solicit proposals from
9 research consortia, which shall be submitted not
10 later than 360 days after the date of enactment of
11 this Act. The Secretary shall select the first group
12 of research consortia to receive awards under this
13 subsection not later than 18 months after such date
14 of enactment.
15 (c) AUDIT.—The Secretary shall retain an inde-
16 pendent, commercial auditor to determine the extent to
17 which funds provided under awards made under this sec-
18 tion have been expended in a manner consistent with the
19 purposes and requirements of this subtitle. The auditor
20 shall transmit a report annually to the Secretary, who
21 shall transmit the report to Congress, along with a plan
22 to remedy any deficiencies cited in the report.
23 (d) FOCUS AREAS FOR AWARDS.—
24 (1) UNCONVENTIONAL RESOURCES.—Awards
25 from allocations under section 619(d)(2) shall focus

1 on areas including advanced coalbed methane, deep
2 drilling, natural gas production from tight sands,
3 natural gas production from gas shales, stranded
4 gas, innovative exploration and production tech-
5 niques, enhanced recovery techniques, and environ-
6 mental mitigation of unconventional natural gas and
7 other petroleum resources exploration and produc-
8 tion.

9 (2) SMALL PRODUCERS.—Awards from alloca-
10 tions under section 619(d)(3) shall be made to con-
11 sortia consisting of small producers or organized pri-
12 marily for the benefit of small producers, and shall
13 focus on areas including complex geology involving
14 rapid changes in the type and quality of the oil and
15 gas reservoirs across the reservoir; low reservoir
16 pressure; unconventional natural gas reservoirs in
17 coalbeds, deep reservoirs, tight sands, or shales; and
18 unconventional oil reservoirs in tar sands and oil
19 shales.

20 (e) ANNUAL PLAN.—

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

25 (2) DEVELOPMENT.—

1 (A) WRITTEN RECOMMENDATIONS.—Be-
2 fore drafting an annual plan under this sub-
3 section, the Secretary shall solicit specific writ-
4 ten recommendations from the research con-
5 sortia receiving awards under subsection (b)
6 and the Unconventional Resources Technology
7 Advisory Committee for each element to be ad-
8 dressed in the plan, including those described in
9 subparagraph (D).
10 (B) CONSULTATION.—The Secretary shall
11 consult regularly with the research consortia
12 throughout the preparation of the annual plan.
13 (C) PUBLICATION.—The Secretary shall
14 transmit to Congress and publish in the Fed-
15 eral Register the annual plan, along with any
16 written comments received under subparagraph
17 (A).
18 (D) CONTENTS.—The annual plan shall
19 describe the ongoing and prospective activities
20 under this section and shall include a list of any
21 solicitations for awards that the Secretary plans
22 to issue to carry out research, development,
23 demonstration, or commercial application activi-
24 ties, including the topics for such work, who

1 would be eligible to apply, selection criteria, and
2 the duration of awards.
3 (3) ESTIMATES OF INCREASED ROYALTY RE-
4 CEIPTS.—The Secretary, in consultation with the
5 Secretary of the Interior, shall provide an annual re-
6 port to Congress with the President's budget on the
7 estimated cumulative increase in Federal royalty re-
8 ceipts (if any) resulting from the implementation of
9 this subtitle. The initial report under this paragraph
10 shall be submitted in the first President's budget fol-
11 lowing the completion of the first annual plan re-
12 quired under this subsection.
13 (f) ACTIVITIES BY THE UNITED STATES GEOLOGI-
14 CAL SURVEY.—The Secretary of the Interior, through the
15 United States Geological Survey, shall, where appropriate,
16 carry out programs of long-term research to complement
17 the programs under this section.
18 **SEC. 614. ADDITIONAL REQUIREMENTS FOR AWARDS.**
19 (a) DEMONSTRATION PROJECTS.—An application for
20 an award under this subtitle for a demonstration project
21 shall describe with specificity the intended commercial use
22 of the technology to be demonstrated.
23 (b) FLEXIBILITY IN LOCATING DEMONSTRATION
24 PROJECTS.—Subject to the limitation in section 611(c),
25 a demonstration project under this subtitle relating to an

1 ultra-deepwater technology or an ultra-deepwater architec-
2 ture may be conducted in deepwater depths.
3 (c) INTELLECTUAL PROPERTY AGREEMENTS.—If an
4 award under this subtitle is made to a consortium (other
5 than the program consortium), the consortium shall pro-
6 vide to the Secretary a signed contract agreed to by all
7 members of the consortium describing the rights of each
8 member to intellectual property used or developed under
9 the award.
10 (d) TECHNOLOGY TRANSFER.—2.5 percent of the
11 amount of each award made under this subtitle shall be
12 designated for technology transfer and outreach activities
13 under this subtitle.
14 (e) COST SHARING REDUCTION FOR INDEPENDENT
15 PRODUCERS.—In applying the cost sharing requirements
16 under [section ____] to an award under this subtitle the
17 Secretary may reduce or eliminate the non-Federal re-
18 quirement if the Secretary determines that the reduction
19 is necessary and appropriate considering the technological
20 risks involved in the project.
21 **SEC. 615. ADVISORY COMMITTEES.**
22 (a) ULTRA-DEEPWATER ADVISORY COMMITTEE.—
23 (1) ESTABLISHMENT.—Not later than 270 days
24 after the date of enactment of this Act, the Sec-

1 retary shall establish an advisory committee to be
2 known as the Ultra-Deepwater Advisory Committee.
3 (2) MEMBERSHIP.—The advisory committee
4 under this subsection shall be composed of members
5 appointed by the Secretary including—
6 (A) individuals with extensive research ex-
7 perience or operational knowledge of offshore
8 natural gas and other petroleum exploration
9 and production;
10 (B) individuals broadly representative of
11 the affected interests in ultra-deepwater natural
12 gas and other petroleum production, including
13 interests in environmental protection and safe
14 operations;
15 (C) no individuals who are Federal employ-
16 ees; and
17 (D) no individuals who are board members,
18 officers, or employees of the program consor-
19 tium.
20 (3) DUTIES.—The advisory committee under
21 this subsection shall—
22 (A) advise the Secretary on the develop-
23 ment and implementation of programs under
24 this subtitle related to ultra-deepwater natural
25 gas and other petroleum resources; and

1 (B) carry out section 612(e)(2)(B).
2 (4) COMPENSATION.—A member of the advi-
3 sory committee under this subsection shall serve
4 without compensation but shall receive travel ex-
5 penses in accordance with applicable provisions
6 under subchapter I of chapter 57 of title 5, United
7 States Code.
8 (b) UNCONVENTIONAL RESOURCES TECHNOLOGY
9 ADVISORY COMMITTEE.—
10 (1) ESTABLISHMENT.—Not later than 270 days
11 after the date of enactment of this Act, the Sec-
12 retary shall establish an advisory committee to be
13 known as the Unconventional Resources Technology
14 Advisory Committee.
15 (2) MEMBERSHIP.—The advisory committee
16 under this subsection shall be composed of members
17 appointed by the Secretary including—
18 (A) a majority of members who are em-
19 ployees or representatives of independent pro-
20 ducers of natural gas and other petroleum, in-
21 cluding small producers;
22 (B) individuals with extensive research ex-
23 perience or operational knowledge of unconven-
24 tional natural gas and other petroleum resource
25 exploration and production;

1 (C) individuals broadly representative of
2 the affected interests in unconventional natural
3 gas and other petroleum resource exploration
4 and production, including interests in environ-
5 mental protection and safe operations; and
6 (D) no individuals who are Federal em-
7 ployees.
8 (3) DUTIES.—The advisory committee under
9 this subsection shall advise the Secretary on the de-
10 velopment and implementation of activities under
11 this subtitle related to unconventional natural gas
12 and other petroleum resources.
13 (4) COMPENSATION.—A member of the advi-
14 sory committee under this subsection shall serve
15 without compensation but shall receive travel ex-
16 penses in accordance with applicable provisions
17 under subchapter I of chapter 57 of title 5, United
18 States Code.
19 (c) PROHIBITION.—No advisory committee estab-
20 lished under this section shall make recommendations on
21 funding awards to particular consortia or other entities,
22 or for specific projects.
23 **SEC. 616. LIMITS ON PARTICIPATION.**
24 An entity shall be eligible to receive an award under
25 this subtitle only if the Secretary finds—

1 (1) that the entity's participation in the pro-
2 gram under this subtitle would be in the economic
3 interest of the United States; and
4 (2) that either—
5 (A) the entity is a United States-owned en-
6 tity organized under the laws of the United
7 States; or
8 (B) the entity is organized under the laws
9 of the United States and has a parent entity or-
10 ganized under the laws of a country that
11 affords—
12 (i) to United States-owned entities op-
13 portunities, comparable to those afforded
14 to any other entity, to participate in any
15 cooperative research venture similar to
16 those authorized under this subtitle;
17 (ii) to United States-owned entities
18 local investment opportunities comparable
19 to those afforded to any other entity; and
20 (iii) adequate and effective protection
21 for the intellectual property rights of
22 United States-owned entities.
23 **SEC. 617. SUNSET.**
24 The authority provided by this subtitle shall termi-
25 nate on September 30, 2015.

1 **SEC. 618. DEFINITIONS.**

2 In this subtitle:

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

6 (2) INDEPENDENT PRODUCER OF OIL OR
7 GAS.—

8 (A) IN GENERAL.—The term "independent
9 producer of oil or gas" means any person that
10 produces oil or gas other than a person to
11 whom subsection (c) of section 613A of the In-
12 ternal Revenue Code of 1986 does not apply by
13 reason of paragraph (2) (relating to certain re-
14 tailers) or paragraph (4) (relating to certain re-
15 finers) of section 613A(d) of such Code.

16 (B) RULES FOR APPLYING PARAGRAPHS (2)
17 AND (4) OF SECTION 613A(d).—For purposes of
18 subparagraph (A), paragraphs (2) and (4) of
19 section 613A(d) of the Internal Revenue Code
20 of 1986 shall be applied by substituting "cal-
21 endar year" for "taxable year" each place it ap-
22 pears in such paragraphs.

23 (3) PROGRAM CONSORTIUM.—The term "pro-
24 gram consortium" means the consortium selected
25 under section 612(d).

1 (4) REMOTE OR INCONSEQUENTIAL.—The term
2 "remote or inconsequential" has the meaning given
3 that term in regulations issued by the Office of Gov-
4 ernment Ethics under section 208(b)(2) of title 18,
5 United States Code.
6 (5) SMALL PRODUCER.—The term "small pro-
7 ducer" means an entity organized under the laws of
8 the United States with production levels of less than
9 1,000 barrels per day of oil equivalent.
10 (6) ULTRA-DEEPWATER.—The term "ultra-
11 deepwater" means a water depth that is equal to or
12 greater than 1,500 meters.
13 (7) ULTRA-DEEPWATER ARCHITECTURE.—The
14 term "ultra-deepwater architecture" means the inte-
15 gration of technologies for the exploration for, or
16 production of, natural gas or other petroleum re-
17 sources located at ultra-deepwater depths.
18 (8) ULTRA-DEEPWATER TECHNOLOGY.—The
19 term "ultra-deepwater technology" means a discrete
20 technology that is specially suited to address 1 or
21 more challenges associated with the exploration for,
22 or production of, natural gas or other petroleum re-
23 sources located at ultra-deepwater depths.
24 (9) UNCONVENTIONAL NATURAL GAS AND
25 OTHER PETROLEUM RESOURCE.—The term "uncon-

1 ventional natural gas and other petroleum resource"
2 means natural gas and other petroleum resource lo-
3 cated onshore in an economically inaccessible geo-
4 logical formation, including resources of small pro-
5 ducers.

6 **SEC. 619. FUNDING.**

7 (a) IN GENERAL.—

8 (1) OIL AND GAS LEASE INCOME.—For each of
9 fiscal years 2006 through 2015, from any Federal
10 royalties, rents, and bonuses derived from Federal
11 onshore and offshore oil and gas leases issued under
12 the Outer Continental Shelf Lands Act and the Min-
13 eral Leasing Act which are deposited in the Treas-
14 ury, and after distribution of any such funds as de-
15 scribed in subsection (c), $150,000,000 shall be de-
16 posited into the Ultra-Deepwater and Unconven-
17 tional Natural Gas and Other Petroleum Research
18 Fund (in this section referred to as the Fund). For
19 purposes of this section, the term "royalties" ex-
20 cludes proceeds from the sale of royalty production
21 taken in kind and royalty production that is trans-
22 ferred under section 27(a)(3) of the Outer Conti-
23 nental Shelf Lands Act (43 U.S.C. 1353(a)(3)).

24 (2) AUTHORIZATION OF APPROPRIATIONS.—In
25 addition to amounts described in paragraph (1),

1 there are authorized to be appropriated to the Sec-
2 retary, to be deposited in the Fund, $50,000,000 for
3 each of the fiscal years 2006 through 2015, to re-
4 main available until expended.
5 (b) OBLIGATIONAL AUTHORITY.—Monies in the
6 Fund shall be available to the Secretary for obligation
7 under this subtitle without fiscal year limitation, to remain
8 available until expended.
9 (c) PRIOR DISTRIBUTIONS.—The distributions de-
10 scribed in subsection (a) are those required by law—
11 (1) to States and to the Reclamation Fund
12 under the Mineral Leasing Act (30 U.S.C. 191(a));
13 and
14 (2) to other funds receiving monies from Fed-
15 eral oil and gas leasing programs, including—
16 (A) any recipients pursuant to section 8(g)
17 of the Outer Continental Shelf Lands Act (43
18 U.S.C. 1337(g));
19 (B) the Land and Water Conservation
20 Fund, pursuant to section 2(c) of the Land and
21 Water Conservation Fund Act of 1965 (16
22 U.S.C. 4601–5(c));
23 (C) the Historic Preservation Fund, pursu-
24 ant to section 108 of the National Historic
25 Preservation Act (16 U.S.C. 470h); and

1 (D) the Secure Energy Reinvestment
2 Fund.
3 (d) ALLOCATION.—Amounts obligated from the Fund
4 under this section in each fiscal year shall be allocated
5 as follows:
6 (1) 50 percent shall be for activities under sec-
7 tion 612.
8 (2) 35 percent shall be for activities under sec-
9 tion 613(d)(1).
10 (3) 10 percent shall be for activities under sec-
11 tion 613(d)(2).
12 (4) 5 percent shall be for research under section
13 611(d).
14 (e) FUND.—There is hereby established in the Treas-
15 ury of the United States a separate fund to be known as
16 the "Ultra-Deepwater and Unconventional Natural Gas
17 and Other Petroleum Research Fund".

18 # TITLE VII—HYDROGEN

19 **SEC. 701. DEFINITIONS.**

20 In this title:
21 (1) ADVISORY COMMITTEE.—The term "Advi-
22 sory Committee" means the Hydrogen Technical and
23 Fuel Cell Advisory Committee established under sec-
24 tion 705.

1 (2) FUEL CELL.—The term "fuel cell" means a
2 device that directly converts the chemical energy of
3 a fuel and an oxidant into electricity by an electro-
4 chemical process taking place at separate electrodes
5 in the device.
6 (3) INFRASTRUCTURE.—The term "infrastruc-
7 ture" means the equipment, systems, or facilities
8 used to produce, distribute, deliver, or store hydro-
9 gen.
10 (4) LIGHT DUTY VEHICLE.—The term "light
11 duty vehicle" means a car or truck classified by the
12 Department of Transportation as a Class I or ILA
13 vehicle.
14 **SEC. 702. PLAN.**
15 Not later than 6 months after the date of enactment
16 of this Act, the Secretary shall transmit to Congress a
17 coordinated plan for the programs described in this title
18 and any other programs of the Department that are di-
19 rectly related to fuel cells or hydrogen. The plan shall de-
20 scribe, at a minimum—
21 (1) the agenda for the next 5 years for the pro-
22 grams authorized under this title, including the
23 agenda for each activity enumerated in section
24 703(a);

1 (2) the types of entities that will carry out the
2 activities under this title and what role each entity
3 is expected to play;
4 (3) the milestones that will be used to evaluate
5 the programs for the next 5 years;
6 (4) the most significant technical and nontech-
7 nical hurdles that stand in the way of achieving the
8 goals described in section 703(b), and how the pro-
9 grams will address those hurdles; and
10 (5) the policy assumptions that are implicit in
11 the plan, including any assumptions that would af-
12 fect the sources of hydrogen or the marketability of
13 hydrogen-related products.
14 **SEC. 703. PROGRAMS.**
15 (a) ACTIVITIES.—The Secretary, in partnership with
16 the private sector, shall conduct programs to address—
17 (1) production of hydrogen from diverse energy
18 sources, including—
19 (A) fossil fuels, which may include carbon
20 capture and sequestration;
21 (B) hydrogen-carrier fuels (including eth-
22 anol and methanol);
23 (C) renewable energy resources, including
24 biomass; and
25 (D) nuclear energy;

1 (2) use of hydrogen for commercial, industrial,
2 and residential electric power generation;
3 (3) safe delivery of hydrogen or hydrogen-car-
4 rier fuels, including—
5 (A) transmission by pipeline and other dis-
6 tribution methods; and
7 (B) convenient and economic refueling of
8 vehicles either at central refueling stations or
9 through distributed on-site generation;
10 (4) advanced vehicle technologies, including—
11 (A) engine and emission control systems;
12 (B) energy storage, electric propulsion, and
13 hybrid systems;
14 (C) automotive materials; and
15 (D) other advanced vehicle technologies;
16 (5) storage of hydrogen or hydrogen-carrier
17 fuels, including development of materials for safe
18 and economic storage in gaseous, liquid, or solid
19 form at refueling facilities and onboard vehicles;
20 (6) development of safe, durable, affordable,
21 and efficient fuel cells, including fuel-flexible fuel cell
22 power systems, improved manufacturing processes,
23 high-temperature membranes, cost-effective fuel
24 processing for natural gas, fuel cell stack and system

1 reliability, low temperature operation, and cold start
2 capability;
3 (7) development, after consultation with the pri-
4 vate sector, of necessary codes and standards (in-
5 cluding international codes and standards and vol-
6 untary consensus standards adopted in accordance
7 with OMB Circular A–119) and safety practices for
8 the production, distribution, storage, and use of hy-
9 drogen, hydrogen-carrier fuels, and related products;
10 and
11 (8) a public education program to develop im-
12 proved knowledge and acceptability of hydrogen-
13 based systems.
14 (b) PROGRAM GOALS.—
15 (1) VEHICLES.—For vehicles, the goals of the
16 program are—
17 (A) to enable a commitment by auto-
18 makers no later than year 2015 to offer safe,
19 affordable, and technically viable hydrogen fuel
20 cell vehicles in the mass consumer market; and
21 (B) to enable production, delivery, and ac-
22 ceptance by consumers of model year 2020 hy-
23 drogen fuel cell and other hydrogen-powered ve-
24 hicles that will have—
25 (i) a range of at least 300 miles;

1 (ii) improved performance and ease of
2 driving;
3 (iii) safety and performance com-
4 parable to vehicle technologies in the mar-
5 ket; and
6 (iv) when compared to light duty vehi-
7 cles in model year 2003—
8 (I) fuel economy that is substan-
9 tially higher;
10 (II) substantially lower emissions
11 of air pollutants; and
12 (III) equivalent or improved vehi-
13 cle fuel system crash integrity and oc-
14 cupant protection.
15 (2) HYDROGEN ENERGY AND ENERGY INFRA-
16 STRUCTURE.—For hydrogen energy and energy in-
17 frastructure, the goals of the program are to enable
18 a commitment not later than 2015 that will lead to
19 infrastructure by 2020 that will provide—
20 (A) safe and convenient refueling;
21 (B) improved overall efficiency;
22 (C) widespread availability of hydrogen
23 from domestic energy sources through—
24 (i) production, with consideration of
25 emissions levels;

1 (ii) delivery, including transmission by
2 pipeline and other distribution methods for
3 hydrogen; and
4 (iii) storage, including storage in sur-
5 face transportation vehicles;
6 (D) hydrogen for fuel cells, internal com-
7 bustion engines, and other energy conversion
8 devices for portable, stationary, and transpor-
9 tation applications; and
10 (E) other technologies consistent with the
11 Department's plan.
12 (3) FUEL CELLS.—The goals for fuel cells and
13 their portable, stationary, and transportation appli-
14 cations are to enable—
15 (A) safe, economical, and environmentally
16 sound hydrogen fuel cells;
17 (B) fuel cells for light duty and other vehi-
18 cles; and
19 (C) other technologies consistent with the
20 Department's plan.
21 (c) DEMONSTRATION.—In carrying out the programs
22 under this section, the Secretary shall fund a limited num-
23 ber of demonstration projects, consistent with a deter-
24 mination of the maturity, cost-effectiveness, and environ-
25 mental impacts of technologies supporting each project. In

1 selecting projects under this subsection, the Secretary
2 shall, to the extent practicable and in the public interest,
3 select projects that—
4 (1) involve using hydrogen and related products
5 at existing facilities or installations, such as existing
6 office buildings, military bases, vehicle fleet centers,
7 transit bus authorities, or units of the National Park
8 System;
9 (2) depend on reliable power from hydrogen to
10 carry out essential activities;
11 (3) lead to the replication of hydrogen tech-
12 nologies and draw such technologies into the market-
13 place;
14 (4) include vehicle, portable, and stationary
15 demonstrations of fuel cell and hydrogen-based en-
16 ergy technologies;
17 (5) address the interdependency of demand for
18 hydrogen fuel cell applications and hydrogen fuel in-
19 frastructure;
20 (6) raise awareness of hydrogen technology
21 among the public;
22 (7) facilitate identification of an optimum tech-
23 nology among competing alternatives;
24 (8) address distributed generation using renew-
25 able sources; and

1 (9) address applications specific to rural or re-
2 mote locations, including isolated villages and is-
3 lands, the National Park System, and tribal entities.
4 The Secretary shall give preference to projects which ad-
5 dress multiple elements contained in paragraphs (1)
6 through (9).
7 (d) DEPLOYMENT.—In carrying out the programs
8 under this section, the Secretary shall, in partnership with
9 the private sector, conduct activities to facilitate the de-
10 ployment of hydrogen energy and energy infrastructure,
11 fuel cells, and advanced vehicle technologies.
12 (e) FUNDING.—
13 (1) IN GENERAL.—The Secretary shall carry
14 out the programs under this section using a competi-
15 tive, merit-based review process and consistent with
16 the generally applicable Federal laws and regulations
17 governing awards of financial assistance, contracts,
18 or other agreements.
19 (2) RESEARCH CENTERS.—Activities under this
20 section may be carried out by funding nationally rec-
21 ognized university-based or Federal laboratory re-
22 search centers.
23 (f) DISCLOSURE.—Section 623 of the Energy Policy
24 Act of 1992 (42 U.S.C. 13293) relating to the protection
25 of information shall apply to projects carried out through

1 grants, cooperative agreements, or contracts under this
2 title.

3 **SEC. 704. INTERAGENCY TASK FORCE.**

4 (a) ESTABLISHMENT.—Not later than 120 days after
5 the date of enactment of this Act, the President shall es-
6 tablish an interagency task force chaired by the Secretary
7 with representatives from each of the following:
8 (1) The Office of Science and Technology Pol-
9 icy within the Executive Office of the President.
10 (2) The Department of Transportation.
11 (3) The Department of Defense.
12 (4) The Department of Commerce (including
13 the National Institute of Standards and Tech-
14 nology).
15 (5) The Department of State.
16 (6) The Environmental Protection Agency.
17 (7) The National Aeronautics and Space Ad-
18 ministration.
19 (8) Other Federal agencies as the Secretary de-
20 termines appropriate.
21 (b) DUTIES.—
22 (1) PLANNING.—The interagency task force
23 shall work toward—
24 (A) a safe, economical, and environ-
25 mentally sound fuel infrastructure for hydrogen

1 and hydrogen-carrier fuels, including an infra-
2 structure that supports buses and other fleet
3 transportation;
4 (B) fuel cells in government and other ap-
5 plications, including portable, stationary, and
6 transportation applications;
7 (C) distributed power generation, including
8 the generation of combined heat, power, and
9 clean fuels including hydrogen;
10 (D) uniform hydrogen codes, standards,
11 and safety protocols; and
12 (E) vehicle hydrogen fuel system integrity
13 safety performance.
14 (2) ACTIVITIES.—The interagency task force
15 may organize workshops and conferences, may issue
16 publications, and may create databases to carry out
17 its duties. The interagency task force shall—
18 (A) foster the exchange of generic, non-
19 proprietary information and technology among
20 industry, academia, and government;
21 (B) develop and maintain an inventory and
22 assessment of hydrogen, fuel cells, and other
23 advanced technologies, including the commercial
24 capability of each technology for the economic

1 and environmentally safe production, distribu-
2 tion, delivery, storage, and use of hydrogen;
3 (C) integrate technical and other informa-
4 tion made available as a result of the programs
5 and activities under this title;
6 (D) promote the marketplace introduction
7 of infrastructure for hydrogen fuel vehicles; and
8 (E) conduct an education program to pro-
9 vide hydrogen and fuel cell information to po-
10 tential end-users.
11 (c) AGENCY COOPERATION.—The heads of all agen-
12 cies, including those whose agencies are not represented
13 on the interagency task force, shall cooperate with and
14 furnish information to the interagency task force, the Ad-
15 visory Committee, and the Department.
16 **SEC. 705. ADVISORY COMMITTEE.**
17 (a) ESTABLISHMENT.—The Hydrogen Technical and
18 Fuel Cell Advisory Committee is established to advise the
19 Secretary on the programs and activities under this title.
20 (b) MEMBERSHIP.—
21 (1) MEMBERS.—The Advisory Committee shall
22 be comprised of not fewer than 12 nor more than 25
23 members. The members shall be appointed by the
24 Secretary to represent domestic industry, academia,
25 professional societies, government agencies, Federal

1 laboratories, previous advisory panels, and financial,
2 environmental, and other appropriate organizations
3 based on the Department's assessment of the tech-
4 nical and other qualifications of committee members
5 and the needs of the Advisory Committee.
6 (2) TERMS.—The term of a member of the Ad-
7 visory Committee shall not be more than 3 years.
8 The Secretary may appoint members of the Advisory
9 Committee in a manner that allows the terms of the
10 members serving at any time to expire at spaced in-
11 tervals so as to ensure continuity in the functioning
12 of the Advisory Committee. A member of the Advi-
13 sory Committee whose term is expiring may be re-
14 appointed.
15 (3) CHAIRPERSON.—The Advisory Committee
16 shall have a chairperson, who is elected by the mem-
17 bers from among their number.
18 (c) REVIEW.—The Advisory Committee shall review
19 and make recommendations to the Secretary on—
20 (1) the implementation of programs and activi-
21 ties under this title;
22 (2) the safety, economical, and environmental
23 consequences of technologies for the production, dis-
24 tribution, delivery, storage, or use of hydrogen en-
25 ergy and fuel cells; and

1 (3) the plan under section 702.
2 (d) RESPONSE.—
3 (1) CONSIDERATION OF RECOMMENDATIONS.—
4 The Secretary shall consider, but need not adopt,
5 any recommendations of the Advisory Committee
6 under subsection (c).
7 (2) BIENNIAL REPORT.—The Secretary shall
8 transmit a biennial report to Congress describing
9 any recommendations made by the Advisory Com-
10 mittee since the previous report. The report shall in-
11 clude a description of how the Secretary has imple-
12 mented or plans to implement the recommendations,
13 or an explanation of the reasons that a recommenda-
14 tion will not be implemented. The report shall be
15 transmitted along with the President's budget pro-
16 posal.
17 (e) SUPPORT.—The Secretary shall provide resources
18 necessary in the judgment of the Secretary for the Advi-
19 sory Committee to carry out its responsibilities under this
20 title.
21 **SEC. 706. EXTERNAL REVIEW.**
22 (a) PLAN.—The Secretary shall enter into an ar-
23 rangement with the National Academy of Sciences to re-
24 view the plan prepared under section 702, which shall be
25 completed not later than 6 months after the Academy re-

1 ceives the plan. Not later than 45 days after receiving the
2 review, the Secretary shall transmit the review to Congress
3 along with a plan to implement the review's recommenda-
4 tions or an explanation of the reasons that a recommenda-
5 tion will not be implemented.

6 (b) ADDITIONAL REVIEW.—The Secretary shall enter
7 into an arrangement with the National Academy of
8 Sciences under which the Academy will review the pro-
9 grams under section 703 during the fourth year following
10 the date of enactment of this Act. The Academy's review
11 shall include the research priorities and technical mile-
12 stones, and evaluate the progress toward achieving them.
13 The review shall be completed not later than 5 years after
14 the date of enactment of this Act. Not later than 45 days
15 after receiving the review, the Secretary shall transmit the
16 review to Congress along with a plan to implement the
17 review's recommendations or an explanation for the rea-
18 sons that a recommendation will not be implemented.

19 **SEC. 707. MISCELLANEOUS PROVISIONS.**

20 (a) REPRESENTATION.—The Secretary may rep-
21 resent the United States interests with respect to activities
22 and programs under this title, in coordination with the
23 Department of Transportation, the National Institute of
24 Standards and Technology, and other relevant Federal

1 agencies, before governments and nongovernmental orga-
2 nizations including—
3 (1) other Federal, State, regional, and local
4 governments and their representatives;
5 (2) industry and its representatives, including
6 members of the energy and transportation indus-
7 tries; and
8 (3) in consultation with the Department of
9 State, foreign governments and their representatives
10 including international organizations.
11 (b) REGULATORY AUTHORITY.—Nothing in this title
12 shall be construed to alter the regulatory authority of the
13 Department.
14 **SEC. 708. SAVINGS CLAUSE.**
15 Nothing in this title shall be construed to affect the
16 authority of the Secretary of Transportation that may
17 exist prior to the date of enactment of this Act with re-
18 spect to—
19 (1) research into, and regulation of, hydrogen-
20 powered vehicles fuel systems integrity, standards,
21 and safety under subtitle VI of title 49, United
22 States Code;
23 (2) regulation of hazardous materials transpor-
24 tation under chapter 51 of title 49, United States
25 Code;

1 (3) regulation of pipeline safety under chapter
2 601 of title 49, United States Code;
3 (4) encouragement and promotion of research,
4 development, and deployment activities relating to
5 advanced vehicle technologies under section 5506 of
6 title 49, United States Code;
7 (5) regulation of motor vehicle safety under
8 chapter 301 of title 49, United States Code;
9 (6) automobile fuel economy under chapter 329
10 of title 49, United States Code; or
11 (7) representation of the interests of the United
12 States with respect to the activities and programs
13 under the authority of title 49, United States Code.
14 **SEC. 709. AUTHORIZATION OF APPROPRIATIONS.**
15 There are authorized to be appropriated to the Sec-
16 retary to carry out this title, in addition to any amounts
17 made available for these purposes under other Acts—
18 (1) $273,500,000 for fiscal year 2006;
19 (2) $375,000,000 for fiscal year 2007;
20 (3) $450,000,000 for fiscal year 2008;
21 (4) $500,000,000 for fiscal year 2009; and
22 (5) $550,000,000 for fiscal year 2010.

TITLE VIII—ADVANCED VEHICLES

Subtitle A—Pilot Program

SEC. 801. DEFINITIONS.

In this subtitle:

(1) ALTERNATIVE FUELED VEHICLE.—

(A) IN GENERAL.—The term "alternative fueled vehicle" means a vehicle propelled solely on an alternative fuel (as defined in section 301 of the Energy Policy Act of 1992 (42 U.S.C. 13211)).

(B) EXCLUSION.—The term "alternative fueled vehicle" does not include a vehicle that the Secretary determines, by regulation, does not yield substantial environmental benefits over a vehicle operating solely on gasoline or diesel derived from fossil fuels.

(2) FUEL CELL VEHICLE.—The term "fuel cell vehicle" means a vehicle propelled by an electric motor powered by a fuel cell system that converts chemical energy into electricity by combining oxygen (from air) with hydrogen fuel that is stored on the vehicle or is produced onboard by reformation of a hydrocarbon fuel. Such fuel cell system may or may

1 not include the use of auxiliary energy storage sys-
2 tems to enhance vehicle performance.
3 (3) HYBRID VEHICLE.—The term "hybrid vehi-
4 cle" means a medium or heavy duty vehicle propelled
5 by an internal combustion engine or heat engine
6 using any combustible fuel and an onboard recharge-
7 able energy storage device.
8 (4) NEIGHBORHOOD ELECTRIC VEHICLE.—The
9 term "neighborhood electric vehicle" means a motor
10 vehicle that—
11 (A) meets the definition of a low-speed ve-
12 hicle (as defined in part 571 of title 49, Code
13 of Federal Regulations);
14 (B) meets the definition of a zero-emission
15 vehicle (as defined in section 86.1702–99 of
16 title 40, Code of Federal Regulations);
17 (C) meets the requirements of Federal
18 Motor Vehicle Safety Standard No. 500; and
19 (D) has a maximum speed of not greater
20 than 25 miles per hour.
21 (5) PILOT PROGRAM.—The term "pilot pro-
22 gram" means the competitive grant program estab-
23 lished under section 802.
24 (6) ULTRA-LOW SULFUR DIESEL VEHICLE.—
25 The term "ultra-low sulfur diesel vehicle" means a

1 vehicle manufactured in model year 2005 or 2006
2 powered by a heavy-duty diesel engine that—
3 (A) is fueled by diesel fuel that contains
4 sulfur at not more than 15 parts per million;
5 and
6 (B) emits not more than the lesser of—
7 (i) 2.5 grams per brake horsepower-
8 hour of nonmethane hydrocarbons and ox-
9 ides of nitrogen and .01 grams per brake
10 horsepower-hour of particulate matter; or
11 (ii) the quantity of emissions of non-
12 methane hydrocarbons, oxides of nitrogen,
13 and particulate matter of the best-per-
14 forming technology of ultra-low sulfur die-
15 sel vehicles of the same class and applica-
16 tion that are commercially available.

17 **SEC. 802. PILOT PROGRAM.**

18 (a) ESTABLISHMENT.—The Secretary, in consulta-
19 tion with the Secretary of Transportation, shall establish
20 a competitive grant pilot program, to be administered
21 through the Clean Cities Program of the Department of
22 Energy, to provide not more than 15 geographically dis-
23 persed project grants to State governments, local govern-
24 ments, or metropolitan transportation authorities to carry

1 out a project or projects for the purposes described in sub-
2 section (b).
3 (b) GRANT PURPOSES.—A grant under this section
4 may be used for the following purposes:
5 (1) The acquisition of alternative fueled vehicles
6 or fuel cell vehicles, including—
7 (A) passenger vehicles (including neighbor-
8 hood electric vehicles); and
9 (B) motorized 2-wheel bicycles, scooters, or
10 other vehicles for use by law enforcement per-
11 sonnel or other State or local government or
12 metropolitan transportation authority employ-
13 ees.
14 (2) The acquisition of alternative fueled vehi-
15 cles, hybrid vehicles, or fuel cell vehicles, including—
16 (A) buses used for public transportation or
17 transportation to and from schools;
18 (B) delivery vehicles for goods or services;
19 and
20 (C) ground support vehicles at public air-
21 ports (including vehicles to carry baggage or
22 push or pull airplanes toward or away from ter-
23 minal gates).
24 (3) The acquisition of ultra-low sulfur diesel ve-
25 hicles.

1 (4) Installation or acquisition of infrastructure
2 necessary to directly support an alternative fueled
3 vehicle, fuel cell vehicle, or hybrid vehicle project
4 funded by the grant, including fueling and other
5 support equipment.
6 (5) Operation and maintenance of vehicles, in-
7 frastructure, and equipment acquired as part of a
8 project funded by the grant.
9 (c) APPLICATIONS.—
10 (1) REQUIREMENTS.—
11 (A) IN GENERAL.—The Secretary shall
12 issue requirements for applying for grants
13 under the pilot program.
14 (B) MINIMUM REQUIREMENTS.—At a min-
15 imum, the Secretary shall require that an appli-
16 cation for a grant—
17 (i) be submitted by the head of a
18 State or local government or a metropoli-
19 tan transportation authority, or any com-
20 bination thereof, and a registered partici-
21 pant in the Clean Cities Program of the
22 Department of Energy; and
23 (ii) include—
24 (I) a description of the project
25 proposed in the application, including

1 how the project meets the require-
2 ments of this subtitle;
3 (II) an estimate of the ridership
4 or degree of use of the project;
5 (III) an estimate of the air pollu-
6 tion emissions reduced and fossil fuel
7 displaced as a result of the project,
8 and a plan to collect and disseminate
9 environmental data, related to the
10 project to be funded under the grant,
11 over the life of the project;
12 (IV) a description of how the
13 project will be sustainable without
14 Federal assistance after the comple-
15 tion of the term of the grant;
16 (V) a complete description of the
17 costs of the project, including acquisi-
18 tion, construction, operation, and
19 maintenance costs over the expected
20 life of the project;
21 (VI) a description of which costs
22 of the project will be supported by
23 Federal assistance under this subtitle;
24 and

1 (VII) documentation to the satis-
2 faction of the Secretary that diesel
3 fuel containing sulfur at not more
4 than 15 parts per million is available
5 for carrying out the project, and a
6 commitment by the applicant to use
7 such fuel in carrying out the project.
8 (2) PARTNERS.—An applicant under paragraph
9 (1) may carry out a project under the pilot program
10 in partnership with public and private entities.
11 (d) SELECTION CRITERIA.—In evaluating applica-
12 tions under the pilot program, the Secretary shall—
13 (1) consider each applicant's previous experi-
14 ence with similar projects; and
15 (2) give priority consideration to applications
16 that—
17 (A) are most likely to maximize protection
18 of the environment;
19 (B) demonstrate the greatest commitment
20 on the part of the applicant to ensure funding
21 for the proposed project and the greatest likeli-
22 hood that the project will be maintained or ex-
23 panded after Federal assistance under this sub-
24 title is completed; and

1 (C) exceed the minimum requirements of
2 subsection (c)(1)(B)(ii).
3 (e) PILOT PROJECT REQUIREMENTS.—
4 (1) MAXIMUM AMOUNT.—The Secretary shall
5 not provide more than $20,000,000 in Federal as-
6 sistance under the pilot program to any applicant.
7 (2) COST SHARING.—The Secretary shall not
8 provide more than 50 percent of the cost, incurred
9 during the period of the grant, of any project under
10 the pilot program.
11 (3) MAXIMUM PERIOD OF GRANTS.—The Sec-
12 retary shall not fund any applicant under the pilot
13 program for more than 5 years.
14 (4) DEPLOYMENT AND DISTRIBUTION.—The
15 Secretary shall seek to the maximum extent prac-
16 ticable to ensure a broad geographic distribution of
17 project sites.
18 (5) TRANSFER OF INFORMATION AND KNOWL-
19 EDGE.—The Secretary shall establish mechanisms to
20 ensure that the information and knowledge gained
21 by participants in the pilot program are transferred
22 among the pilot program participants and to other
23 interested parties, including other applicants that
24 submitted applications.
25 (f) SCHEDULE.—

1 (1) PUBLICATION.—Not later than 90 days
2 after the date of enactment of this Act, the Sec-
3 retary shall publish in the Federal Register, Com-
4 merce Business Daily, and elsewhere as appropriate,
5 a request for applications to undertake projects
6 under the pilot program. Applications shall be due
7 not later than 180 days after the date of publication
8 of the notice.
9 (2) SELECTION.—Not later than 180 days after
10 the date by which applications for grants are due,
11 the Secretary shall select by competitive, peer re-
12 viewed proposal, all applications for projects to be
13 awarded a grant under the pilot program.
14 (g) LIMIT ON FUNDING.—The Secretary shall pro-
15 vide not less than 20 nor more than 25 percent of the
16 grant funding made available under this section for the
17 acquisition of ultra-low sulfur diesel vehicles.
18 **SEC. 803. REPORTS TO CONGRESS.**
19 (a) INITIAL REPORT.—Not later than 60 days after
20 the date on which grants are awarded under this subtitle,
21 the Secretary shall submit to Congress a report
22 containing—
23 (1) an identification of the grant recipients and
24 a description of the projects to be funded;

1 (2) an identification of other applicants that
2 submitted applications for the pilot program; and
3 (3) a description of the mechanisms used by the
4 Secretary to ensure that the information and knowl-
5 edge gained by participants in the pilot program are
6 transferred among the pilot program participants
7 and to other interested parties, including other ap-
8 plicants that submitted applications.
9 (b) EVALUATION.—Not later than 3 years after the
10 date of enactment of this Act, and annually thereafter
11 until the pilot program ends, the Secretary shall submit
12 to Congress a report containing an evaluation of the effec-
13 tiveness of the pilot program, including—
14 (1) an assessment of the benefits to the envi-
15 ronment derived from the projects included in the
16 pilot program; and
17 (2) an estimate of the potential benefits to the
18 environment to be derived from widespread applica-
19 tion of alternative fueled vehicles and ultra-low sul-
20 fur diesel vehicles.
21 **SEC. 804. AUTHORIZATION OF APPROPRIATIONS.**
22 There are authorized to be appropriated to the Sec-
23 retary to carry out this subtitle $200,000,000, to remain
24 available until expended.

1 **Subtitle B—Clean School Buses**

2 **SEC. 811. DEFINITIONS.**

3 In this subtitle:

4 (1) ADMINISTRATOR.—The term "Adminis-
5 trator" means the Administrator of the Environ-
6 mental Protection Agency.

7 (2) ALTERNATIVE FUEL.—The term "alter-
8 native fuel" means liquefied natural gas, compressed
9 natural gas, liquefied petroleum gas, hydrogen, pro-
10 pane, or methanol or ethanol at no less than 85 per-
11 cent by volume.

12 (3) ALTERNATIVE FUEL SCHOOL BUS.—The
13 term "alternative fuel school bus" means a school
14 bus that meets all of the requirements of this sub-
15 title and is operated solely on an alternative fuel.

16 (4) EMISSIONS CONTROL RETROFIT TECH-
17 NOLOGY.—The term "emissions control retrofit tech-
18 nology" means a particulate filter or other emissions
19 control equipment that is verified or certified by the
20 Administrator or the California Air Resources Board
21 as an effective emission reduction technology when
22 installed on an existing school bus.

23 (5) IDLING.—The term "idling" means oper-
24 ating an engine while remaining stationary for more
25 than approximately 15 minutes, except that the term

1 does not apply to routine stoppages associated with
2 traffic movement or congestion.
3 (6) ULTRA-LOW SULFUR DIESEL FUEL.—The
4 term "ultra-low sulfur diesel fuel" means diesel fuel
5 that contains sulfur at not more than 15 parts per
6 million.
7 (7) ULTRA-LOW SULFUR DIESEL FUEL SCHOOL
8 BUS.—The term "ultra-low sulfur diesel fuel school
9 bus" means a school bus that meets all of the re-
10 quirements of this subtitle and is operated solely on
11 ultra-low sulfur diesel fuel.

12 **SEC. 812. PROGRAM FOR REPLACEMENT OF CERTAIN**
13 **SCHOOL BUSES WITH CLEAN SCHOOL BUSES.**

14 (a) ESTABLISHMENT.—The Administrator, in con-
15 sultation with the Secretary and other appropriate Federal
16 departments and agencies, shall establish a program for
17 awarding grants on a competitive basis to eligible entities
18 for the replacement of existing school buses manufactured
19 before model year 1991 with alternative fuel school buses
20 and ultra-low sulfur diesel fuel school buses.
21 (b) REQUIREMENTS.—
22 (1) IN GENERAL.—Not later than 90 days after
23 the date of enactment of this Act, the Administrator
24 shall establish and publish in the Federal Register
25 grant requirements on eligibility for assistance, and

1 on implementation of the program established under
2 subsection (a), including instructions for the submis-
3 sion of grant applications and certification require-
4 ments to ensure compliance with this subtitle.
5 (2) APPLICATION DEADLINES.—The require-
6 ments established under paragraph (1) shall require
7 submission of grant applications not later than—
8 (A) in the case of the first year of program
9 implementation, the date that is 180 days after
10 the publication of the requirements in the Fed-
11 eral Register; and
12 (B) in the case of each subsequent year,
13 June 1 of the year.
14 (c) ELIGIBLE RECIPIENTS.—A grant shall be award-
15 ed under this section only—
16 (1) to 1 or more local or State governmental
17 entities responsible for providing school bus service
18 to 1 or more public school systems or responsible for
19 the purchase of school buses;
20 (2) to 1 or more contracting entities that pro-
21 vide school bus service to 1 or more public school
22 systems, if the grant application is submitted jointly
23 with the 1 or more school systems to be served by
24 the buses, except that the application may provide
25 that buses purchased using funds awarded shall be

1 owned, operated, and maintained exclusively by the
2 1 or more contracting entities; or
3 (3) to a nonprofit school transportation associa-
4 tion representing private contracting entities, if the
5 association has notified and received approval from
6 the 1 or more school systems to be served by the
7 buses.
8 (d) AWARD DEADLINES.—
9 (1) IN GENERAL.—Subject to paragraph (2),
10 the Administrator shall award a grant made to a
11 qualified applicant for a fiscal year—
12 (A) in the case of the first fiscal year of
13 program implementation, not later than the
14 date that is 90 days after the application dead-
15 line established under subsection (b)(2); and
16 (B) in the case of each subsequent fiscal
17 year, not later than August 1 of the fiscal year.
18 (2) INSUFFICIENT NUMBER OF QUALIFIED
19 GRANT APPLICATIONS.—If the Administrator does
20 not receive a sufficient number of qualified grant ap-
21 plications to meet the requirements of subsection
22 (i)(1) for a fiscal year, the Administrator shall
23 award a grant made to a qualified applicant under
24 subsection (i)(2) not later than September 30 of the
25 fiscal year.

1 (e) TYPES OF GRANTS.—

2 (1) IN GENERAL.—A grant under this section
3 shall be used for the replacement of school buses
4 manufactured before model year 1991 with alter-
5 native fuel school buses and ultra-low sulfur diesel
6 fuel school buses.

7 (2) NO ECONOMIC BENEFIT.—Other than the
8 receipt of the grant, a recipient of a grant under this
9 section may not receive any economic benefit in con-
10 nection with the receipt of the grant.

11 (3) PRIORITY OF GRANT APPLICATIONS.—The
12 Administrator shall give priority to applicants that
13 propose to replace school buses manufactured before
14 model year 1977.

15 (f) CONDITIONS OF GRANT.—A grant provided under
16 this section shall include the following conditions:

17 (1) SCHOOL BUS FLEET.—All buses acquired
18 with funds provided under the grant shall be oper-
19 ated as part of the school bus fleet for which the
20 grant was made for a minimum of 5 years.

21 (2) USE OF FUNDS.—Funds provided under the
22 grant may only be used—

23 (A) to pay the cost, except as provided in
24 paragraph (3), of new alternative fuel school
25 buses or ultra-low sulfur diesel fuel school

1 buses, including State taxes and contract fees
2 associated with the acquisition of such buses;
3 and
4 (B) to provide—
5 (i) up to 20 percent of the price of the
6 alternative fuel school buses acquired, for
7 necessary alternative fuel infrastructure if
8 the infrastructure will only be available to
9 the grant recipient; and
10 (ii) up to 25 percent of the price of
11 the alternative fuel school buses acquired,
12 for necessary alternative fuel infrastructure
13 if the infrastructure will be available to the
14 grant recipient and to other bus fleets.
15 (3) GRANT RECIPIENT FUNDS.—The grant re-
16 cipient shall be required to provide at least—
17 (A) in the case of a grant recipient de-
18 scribed in paragraph (1) or (3) of subsection
19 (c), the lesser of—
20 (i) an amount equal to 15 percent of
21 the total cost of each bus received; or
22 (ii) $15,000 per bus; and
23 (B) in the case of a grant recipient de-
24 scribed in subsection (c)(2), the lesser of—

1 (i) an amount equal to 20 percent of
2 the total cost of each bus received; or
3 (ii) $20,000 per bus.
4 (4) ULTRA-LOW SULFUR DIESEL FUEL.—In the
5 case of a grant recipient receiving a grant for ultra-
6 low sulfur diesel fuel school buses, the grant recipi-
7 ent shall be required to provide documentation to
8 the satisfaction of the Administrator that diesel fuel
9 containing sulfur at not more than 15 parts per mil-
10 lion is available for carrying out the purposes of the
11 grant, and a commitment by the applicant to use
12 such fuel in carrying out the purposes of the grant.
13 (5) TIMING.—All alternative fuel school buses,
14 ultra-low sulfur diesel fuel school buses, or alter-
15 native fuel infrastructure acquired under a grant
16 awarded under this section shall be purchased and
17 placed in service as soon as practicable.
18 (g) BUSES.—
19 (1) IN GENERAL.—Except as provided in para-
20 graph (2), funding under a grant made under this
21 section for the acquisition of new alternative fuel
22 school buses or ultra-low sulfur diesel fuel school
23 buses shall only be used to acquire school buses—
24 (A) with a gross vehicle weight of greater
25 than 14,000 pounds;

1 (B) that are powered by a heavy duty en-
2 gine;
3 (C) in the case of alternative fuel school
4 buses manufactured in model years 2005 and
5 2006, that emit not more than 1.8 grams per
6 brake horsepower-hour of nonmethane hydro-
7 carbons and oxides of nitrogen and .01 grams
8 per brake horsepower-hour of particulate mat-
9 ter; and
10 (D) in the case of ultra-low sulfur diesel
11 fuel school buses manufactured in model years
12 2005 and 2006, that emit not more than 2.5
13 grams per brake horsepower-hour of non-
14 methane hydrocarbons and oxides of nitrogen
15 and .01 grams per brake horsepower-hour of
16 particulate matter.
17 (2) LIMITATIONS.—A bus shall not be acquired
18 under this section that emits nonmethane hydro-
19 carbons, oxides of nitrogen, or particulate matter at
20 a rate greater than the best performing technology
21 of the same class of ultra-low sulfur diesel fuel
22 school buses commercially available at the time the
23 grant is made.
24 (h) DEPLOYMENT AND DISTRIBUTION.—The Admin-
25 istrator shall—

1 (1) seek, to the maximum extent practicable, to
2 achieve nationwide deployment of alternative fuel
3 school buses and ultra-low sulfur diesel fuel school
4 buses through the program under this section; and
5 (2) ensure a broad geographic distribution of
6 grant awards, with a goal of no State receiving more
7 than 10 percent of the grant funding made available
8 under this section for a fiscal year.
9 (i) ALLOCATION OF FUNDS.—
10 (1) IN GENERAL.—Subject to paragraph (2), of
11 the amount of grant funding made available to carry
12 out this section for any fiscal year, the Adminis-
13 trator shall use—
14 (A) 70 percent for the acquisition of alter-
15 native fuel school buses or supporting infra-
16 structure; and
17 (B) 30 percent for the acquisition of ultra-
18 low sulfur diesel fuel school buses.
19 (2) INSUFFICIENT NUMBER OF QUALIFIED
20 GRANT APPLICATIONS.—After the first fiscal year in
21 which this program is in effect, if the Administrator
22 does not receive a sufficient number of qualified
23 grant applications to meet the requirements of sub-
24 paragraph (A) or (B) of paragraph (1) for a fiscal
25 year, effective beginning on August 1 of the fiscal

1 year, the Administrator shall make the remaining
2 funds available to other qualified grant applicants
3 under this section.
4 (j) REDUCTION OF SCHOOL BUS IDLING.—Each
5 local educational agency (as defined in section 9101 of the
6 Elementary and Secondary Education Act of 1965 (20
7 U.S.C. 7801)) that receives Federal funds under the Ele-
8 mentary and Secondary Education Act of 1965 (20 U.S.C.
9 6301 et seq.) is encouraged to develop a policy, consistent
10 with the health, safety, and welfare of students and the
11 proper operation and maintenance of school buses, to re-
12 duce the incidence of unnecessary school bus idling at
13 schools when picking up and unloading students.
14 (k) ANNUAL REPORT.—
15 (1) IN GENERAL.—Not later than January 31
16 of each year, the Administrator shall transmit to
17 Congress a report evaluating implementation of the
18 programs under this section and section 813.
19 (2) COMPONENTS.—The reports shall include a
20 description of—
21 (A) the total number of grant applications
22 received;
23 (B) the number and types of alternative
24 fuel school buses, ultra-low sulfur diesel fuel

1 school buses, and retrofitted buses requested in
2 grant applications;
3 (C) grants awarded and the criteria used
4 to select the grant recipients;
5 (D) certified engine emission levels of all
6 buses purchased or retrofitted under the pro-
7 grams under this section and section 813;
8 (E) an evaluation of the in-use emission
9 level of buses purchased or retrofitted under the
10 programs under this section and section 813;
11 and
12 (F) any other information the Adminis-
13 trator considers appropriate.
14 (l) AUTHORIZATION OF APPROPRIATIONS.—There
15 are authorized to be appropriated to the Administrator to
16 carry out this section—
17 (1) $45,000,000 for fiscal year 2006; and
18 (2) $65,000,000 for fiscal year 2007.
19 **SEC. 813. DIESEL RETROFIT PROGRAM.**
20 (a) ESTABLISHMENT.—The Administrator, in con-
21 sultation with the Secretary, shall establish a program for
22 awarding grants on a competitive basis to entities for the
23 installation of retrofit technologies for diesel school buses.
24 (b) ELIGIBLE RECIPIENTS.—A grant shall be award-
25 ed under this section only—

1 (1) to a local or State governmental entity re-
2 sponsible for providing school bus service to 1 or
3 more public school systems;
4 (2) to 1 or more contracting entities that pro-
5 vide school bus service to 1 or more public school
6 systems, if the grant application is submitted jointly
7 with the 1 or more school systems that the buses
8 will serve, except that the application may provide
9 that buses purchased using funds awarded shall be
10 owned, operated, and maintained exclusively by the
11 1 or more contracting entities; or
12 (3) to a nonprofit school transportation associa-
13 tion representing private contracting entities, if the
14 association has notified and received approval from
15 the 1 or more school systems to be served by the
16 buses.
17 (c) AWARDS.—
18 (1) IN GENERAL.—The Administrator shall
19 seek, to the maximum extent practicable, to ensure
20 a broad geographic distribution of grants under this
21 section.
22 (2) PREFERENCES.—In making awards of
23 grants under this section, the Administrator shall
24 give preference to proposals that—

1 (A) will achieve the greatest reductions in
2 emissions of nonmethane hydrocarbons, oxides
3 of nitrogen, or particulate matter per proposal
4 or per bus; or
5 (B) involve the use of emissions control
6 retrofit technology on diesel school buses that
7 operate solely on ultra-low sulfur diesel fuel.
8 (d) CONDITIONS OF GRANT.—A grant shall be pro-
9 vided under this section on the conditions that—
10 (1) buses on which retrofit emissions-control
11 technology are to be demonstrated—
12 (A) will operate on ultra-low sulfur diesel
13 fuel where such fuel is reasonably available or
14 required for sale by State or local law or regula-
15 tion;
16 (B) were manufactured in model year 1991
17 or later; and
18 (C) will be used for the transportation of
19 school children to and from school for a min-
20 imum of 5 years;
21 (2) grant funds will be used for the purchase of
22 emission control retrofit technology, including State
23 taxes and contract fees; and
24 (3) grant recipients will provide at least 15 per-
25 cent of the total cost of the retrofit, including the

1 purchase of emission control retrofit technology and
2 all necessary labor for installation of the retrofit.
3 (e) VERIFICATION.—Not later than 90 days after the
4 date of enactment of this Act, the Administrator shall
5 publish in the Federal Register procedures to verify—
6 (1) the retrofit emissions-control technology to
7 be demonstrated;
8 (2) that buses powered by ultra-low sulfur die-
9 sel fuel on which retrofit emissions-control tech-
10 nology are to be demonstrated will operate on diesel
11 fuel containing not more than 15 parts per million
12 of sulfur; and
13 (3) that grants are administered in accordance
14 with this section.
15 (f) AUTHORIZATION OF APPROPRIATIONS.—There
16 are authorized to be appropriated to the Administrator to
17 carry out this section—
18 (1) $20,000,000 for fiscal year 2006; and
19 (2) $35,000,000 for fiscal year 2007.
20 **SEC. 814. FUEL CELL SCHOOL BUSES.**
21 (a) ESTABLISHMENT.—The Secretary shall establish
22 a program for entering into cooperative agreements—
23 (1) with private sector fuel cell bus developers
24 for the development of fuel cell-powered school
25 buses; and

1 (2) subsequently, with not less than 2 units of
2 local government using natural gas-powered school
3 buses and such private sector fuel cell bus developers
4 to demonstrate the use of fuel cell-powered school
5 buses.
6 (b) COST SHARING.—The non-Federal contribution
7 for activities funded under this section shall be not less
8 than—
9 (1) 20 percent for fuel infrastructure develop-
10 ment activities; and
11 (2) 50 percent for demonstration activities and
12 for development activities not described in paragraph
13 (1).
14 (c) REPORTS TO CONGRESS.—Not later than 3 years
15 after the date of enactment of this Act, the Secretary shall
16 transmit to Congress a report that—
17 (1) evaluates the process of converting natural
18 gas infrastructure to accommodate fuel cell-powered
19 school buses; and
20 (2) assesses the results of the development and
21 demonstration program under this section.
22 (d) AUTHORIZATION OF APPROPRIATIONS.—There
23 are authorized to be appropriated to the Secretary to carry
24 out this section $25,000,000 for the period of fiscal years
25 2006 through 2008.

1 **Subtitle C—Fuel Cell Transit Bus**
2 **Demonstration**

3 **SEC. 821. FUEL CELL TRANSIT BUS DEMONSTRATION.**

4 (a) IN GENERAL.—The Secretary, in consultation
5 with the Secretary of Transportation, shall establish a
6 transit bus demonstration program to make competitive,
7 merit-based awards for 5-year projects to demonstrate not
8 more than 25 fuel cell transit buses (and necessary infra-
9 structure) in 5 geographically dispersed localities.

10 (b) PREFERENCE.—In selecting projects under this
11 section, the Secretary shall give preference to projects that
12 are most likely to mitigate congestion and improve air
13 quality.

14 (c) AUTHORIZATION OF APPROPRIATIONS.—There
15 are authorized to be appropriated to the Secretary to carry
16 out this section $10,000,000 for each of fiscal years 2006
17 through 2010.

18 **TITLE IX—CLEAN COAL POWER**
19 **INITIATIVE**

20 **SEC. 901. AUTHORIZATION OF APPROPRIATIONS.**

21 (a) CLEAN COAL POWER INITIATIVE.—There are au-
22 thorized to be appropriated to the Secretary to carry out
23 the activities authorized by this title $200,000,000 for
24 each of fiscal years 2006 through 2012, to remain avail-
25 able until expended.

1 (b) REPORT.—The Secretary shall transmit to Con-
2 gress the report required by this subsection not later than
3 March 31, 2006. The report shall include, with respect
4 to subsection (a), a 10-year plan containing—
5 (1) a detailed assessment of whether the aggre-
6 gate funding levels provided under subsection (a) are
7 the appropriate funding levels for that program;
8 (2) a detailed description of how proposals will
9 be solicited and evaluated, including a list of all ac-
10 tivities expected to be undertaken;
11 (3) a detailed list of technical milestones for
12 each coal and related technology that will be pur-
13 sued; and
14 (4) a detailed description of how the program
15 will avoid problems enumerated in General Account-
16 ing Office reports on the Clean Coal Technology
17 Program, including problems that have resulted in
18 unspent funds and projects that failed either finan-
19 cially or scientifically.
20 **SEC. 902. PROJECT CRITERIA.**
21 (a) IN GENERAL.—The Secretary shall not provide
22 funding under this title for any project that does not ad-
23 vance efficiency, environmental performance, and cost
24 competitiveness well beyond the level of technologies that
25 are in commercial service or have been demonstrated on

1 a scale that the Secretary determines is sufficient to dem-
2 onstrate that commercial service is viable as of the date
3 of enactment of this Act.
4 (b) TECHNICAL CRITERIA FOR CLEAN COAL POWER
5 INITIATIVE.—
6 (1) GASIFICATION PROJECTS.—
7 (A) IN GENERAL.—In allocating the funds
8 made available under section 901(a), the Sec-
9 retary shall ensure that at least 60 percent of
10 the funds are used only for projects on coal-
11 based gasification technologies, including gasifi-
12 cation combined cycle, gasification fuel cells,
13 gasification coproduction, and hybrid gasifi-
14 cation/combustion.
15 (B) TECHNICAL MILESTONES.—The Sec-
16 retary shall periodically set technical milestones
17 specifying the emission and thermal efficiency
18 levels that coal gasification projects under this
19 title shall be designed, and reasonably expected,
20 to achieve. The technical milestones shall be-
21 come more restrictive during the life of the pro-
22 gram. The Secretary shall set the periodic mile-
23 stones so as to achieve by 2020 coal gasification
24 projects able—

1 (i) to remove 99 percent of sulfur di-
2 oxide;
3 (ii) to emit not more than .05 lbs of
4 NO_x per million Btu;
5 (iii) to achieve substantial reductions
6 in mercury emissions; and
7 (iv) to achieve a thermal efficiency
8 of—
9 (I) 60 percent for coal of more
10 than 9,000 Btu;
11 (II) 59 percent for coal of 7,000
12 to 9,000 Btu; and
13 (III) 50 percent for coal of less
14 than 7,000 Btu.
15 (2) OTHER PROJECTS.—The Secretary shall pe-
16 riodically set technical milestones and ensure that up
17 to 40 percent of the funds appropriated pursuant to
18 section 901(a) are used for projects not described in
19 paragraph (1). The milestones shall specify the
20 emission and thermal efficiency levels that projects
21 funded under this paragraph shall be designed to
22 and reasonably expected to achieve. The technical
23 milestones shall become more restrictive during the
24 life of the program. The Secretary shall set the peri-

1 odic milestones so as to achieve by 2010 projects
2 able—
3 (A) to remove 97 percent of sulfur dioxide;
4 (B) to emit no more than .08 lbs of NO_x
5 per million Btu;
6 (C) to achieve substantial reductions in
7 mercury emissions; and
8 (D) to achieve a thermal efficiency of—
9 (i) 45 percent for coal of more than
10 9,000 Btu;
11 (ii) 44 percent for coal of 7,000 to
12 9,000 Btu; and
13 (iii) 40 percent for coal of less than
14 7,000 Btu.
15 (3) CONSULTATION.—Before setting the tech-
16 nical milestones under paragraphs (1)(B) and (2),
17 the Secretary shall consult with the Administrator of
18 the Environmental Protection Agency and interested
19 entities, including coal producers, industries using
20 coal, organizations to promote coal or advanced coal
21 technologies, environmental organizations, and orga-
22 nizations representing workers.
23 (4) EXISTING UNITS.—In the case of projects
24 at units in existence on the date of enactment of this
25 Act, in lieu of the thermal efficiency requirements

1 set forth in paragraph (1)(B)(iv) and (2)(D), the
2 milestones shall be designed to achieve an overall
3 thermal design efficiency improvement, compared to
4 the efficiency of the unit as operated, of not less
5 than—
6 (A) 7 percent for coal of more than 9,000
7 Btu;
8 (B) 6 percent for coal of 7,000 to 9,000
9 Btu; or
10 (C) 4 percent for coal of less than 7,000
11 Btu.
12 (5) PERMITTED USES.—In carrying out this
13 title, the Secretary may fund projects that include,
14 as part of the project, the separation and capture of
15 carbon dioxide.
16 (c) FINANCIAL CRITERIA.—The Secretary shall not
17 provide a funding award under this title unless the recipi-
18 ent documents to the satisfaction of the Secretary that—
19 (1) the award recipient is financially viable
20 without the receipt of additional Federal funding;
21 (2) the recipient will provide sufficient informa-
22 tion to the Secretary to enable the Secretary to en-
23 sure that the award funds are spent efficiently and
24 effectively; and

1 (3) a market exists for the technology being
2 demonstrated or applied, as evidenced by statements
3 of interest in writing from potential purchasers of
4 the technology.
5 (d) FINANCIAL ASSISTANCE.—The Secretary shall
6 provide financial assistance to projects that meet the re-
7 quirements of subsections (a), (b), and (c) and are likely
8 to—
9 (1) achieve overall cost reductions in the utiliza-
10 tion of coal to generate useful forms of energy;
11 (2) improve the competitiveness of coal among
12 various forms of energy in order to maintain a diver-
13 sity of fuel choices in the United States to meet elec-
14 tricity generation requirements; and
15 (3) demonstrate methods and equipment that
16 are applicable to 25 percent of the electricity gener-
17 ating facilities, using various types of coal, that use
18 coal as the primary feedstock as of the date of en-
19 actment of this Act.
20 (e) FEDERAL SHARE.—The Federal share of the cost
21 of a coal or related technology project funded by the Sec-
22 retary under this title shall not exceed 50 percent.
23 (f) APPLICABILITY.—No technology, or level of emis-
24 sion reduction, shall be treated as adequately dem-
25 onstrated for purposes of section 111 of the Clean Air Act

1 (42 U.S.C. 7411), achievable for purposes of section 169
2 of that Act (42 U.S.C. 7479), or achievable in practice
3 for purposes of section 171 of that Act (42 U.S.C. 7501)
4 solely by reason of the use of such technology, or the
5 achievement of such emission reduction, by 1 or more fa-
6 cilities receiving assistance under this title.

7 **SEC. 903. REPORT.**

8 Not later than 1 year after the date of enactment
9 of this Act, and once every 2 years thereafter through
10 2012, the Secretary, in consultation with other appro-
11 priate Federal agencies, shall transmit to Congress a re-
12 port describing—

13 (1) the technical milestones set forth in section
14 902 and how those milestones ensure progress to-
15 ward meeting the requirements of subsections
16 (b)(1)(B) and (b)(2) of section 902; and

17 (2) the status of projects funded under this
18 title.

19 **SEC. 904. CLEAN COAL CENTERS OF EXCELLENCE.**

20 As part of the program authorized in section 901,
21 the Secretary shall award competitive, merit-based grants
22 to universities for the establishment of Centers of Excel-
23 lence for Energy Systems of the Future. The Secretary
24 shall provide grants to universities that show the greatest
25 potential for advancing new clean coal technologies.

TITLE X—IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS

SEC. 1001. IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS.

(a) RECONFIGURATION OF POSITION OF DIRECTOR OF THE OFFICE OF SCIENCE.—Section 209 of the Department of Energy Organization Act (41 U.S.C. 7139) is amended to read as follows:

"OFFICE OF SCIENCE

"SEC. 209. (a) There shall be within the Department an Office of Science, to be headed by an Assistant Secretary of Science, who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall be compensated at the rate provided for level IV of the Executive Schedule under section 5315 of title 5, United States Code.

"(b) The Assistant Secretary of Science shall be in addition to the Assistant Secretaries provided for under section 203 of this Act.

"(c) It shall be the duty and responsibility of the Assistant Secretary of Science to carry out the fundamental science and engineering research functions of the Depart-

1 ment, including the responsibility for policy and manage-
2 ment of such research, as well as other functions vested
3 in the Secretary which he may assign to the Assistant Sec-
4 retary.".

5 (b) ADDITIONAL ASSISTANT SECRETARY POSITION
6 TO ENABLE IMPROVED MANAGEMENT OF NUCLEAR EN-
7 ERGY ISSUES.—(1) Section 203(a) of the Department of
8 Energy Organization Act (42 U.S.C. 7133(a)) is amended
9 by striking "There shall be in the Department six Assist-
10 ant Secretaries" and inserting "Except as provided in sec-
11 tion 209, there shall be in the Department seven Assistant
12 Secretaries".

13 (2) It is the sense of the Congress that the leadership
14 for departmental missions in nuclear energy should be at
15 the Assistant Secretary level.

16 (c) TECHNICAL AND CONFORMING AMENDMENTS.—
17 (1) Section 5315 of title 5, United States Code, is amend-
18 ed by—

19 (A) striking "Director, Office of Science, De-
20 partment of Energy."; and

21 (B) striking "Assistant Secretaries of Energy
22 (6)" and inserting "Assistant Secretaries of Energy
23 (8)".

1 (2) The table of contents for the Department of En-
2 ergy Organization Act (42 U.S.C. 7101 note) is
3 amended—
4 (A) by striking "Section 209" and inserting
5 "Sec. 209";
6 (B) by striking "213." and inserting "Sec.
7 213.";
8 (C) by striking "214." and inserting "Sec.
9 214.";
10 (D) by striking "215." and inserting "Sec.
11 215."; and
12 (E) by striking "216." and inserting "Sec.
13 216.".

SUMMARY OF H.R. 610, ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACT OF 2005

The bill is based on the Science Committee's contributions to the H.R. 6 conference report from the 108th Congress. The sections of H.R. 6 on which the Science Committee worked with other committees (the hydrogen title, clean coal, some vehicle provisions, ultra-deep drilling funding) are included in H.R. 610 without changes, other than dates and minor technical changes. H.R. 610 authorizes appropriations of just under $44 billion (B) over five years for energy research, development, and demonstration. (See chart.)

Title I—Science:

- Authorizes $23.7 billion for the Office of Science for fiscal years 2006–2010, including $1.8 B for fusion, $1.6 B for scientific computing research, and $100 M in fiscal year 2006 for systems biology.
- Authorizes and sets a schedule and costs for the construction and operation of the Rare Isotope Accelerator, for which the Department of Energy (DOE) is in the process of selecting a site. (new language)
- Authorize and limits U.S. participation in ITER, the international fusion project. (same language as H.R. 6)
- Authorizes basic research related to the President's hydrogen initiative. (new language)
- Establishes a scholarship for service program. (H.R. 6 language)

Title II—Research Administration:

- Requires cost sharing (with a Secretarial waiver permitted) of 20 percent for basic and applied research projects, and 50 percent for demonstration and commercial application projects. (H.R. 6 language)
- Requires open competition for all DOE awards, but allows (with Congressional notification) DOE to hold competitions only within a class of institutions (i.e., just National Laboratories, or just industry, or just universities). (new language)
- Prohibits the designations of new National Laboratories. (new language)
- Requires plans for new user facilities, for existing DOE facilities, and for better coordinating DOE programs.

Title III—Energy Efficiency:

- Authorizes $4.0 billion for fiscal years 2006–2010, including $1.36 B for vehicle efficiency R&D, $830 M for energy efficiency R&D for buildings, and $715 M for industrial energy efficiency R&D. It also authorizes $1.25 billion for R&D related to distributed energy systems, electricity transmission and distribution systems, and energy assurance.
- Authorizes a new program to provide grants to promote the design of energy efficient buildings. (new language)
- Authorizes a program to make use of batteries from electric vehicles. (H.R. 6 language)

Title IV—Renewable Energy:

- Authorizes $3.91 billion for fiscal years 2006–2010, including $990 M for solar energy R&D, $1.51 B for bioenergy R&D, including $750 M for a biorefinery demonstration program, $310 M for wind energy R&D, and $150 M for geothermal energy R&D, and $800 M for a photovoltaic demonstration grant program.
- Authorizes a new program of grants to States, which would use the money to award competitive grants for the demonstration of solar energy technology. (new language)

Title V—Nuclear Energy Programs:

- Authorizes $2.25 billion for fiscal years 2006–2010 for nuclear science and engineering, including R&D on advanced nuclear fuel recycling, support for nuclear science and engineering at universities, and support for improved nuclear research infrastructure and facilities. It also authorizes $1.25 B for re-

search, development, design and construction of a next generation demonstration nuclear power plant.

- Requires plans for DOE nuclear energy facilities and for the new Idaho National Laboratory. (new language)
- Authorizes and sets guidelines for the Next Generation Nuclear Plant program. (modified H.R. 6 language)

Title VI—Fossil Energy:

- Authorizes $3.1 billion for fiscal years 2006–2010 for R&D on advanced coal, oil and gas technologies, transportation fuels and fuel cells. It also includes a provision that would mandate $750 million of federal oil and gas royalty funds and authorize $250 million in appropriations to be used for ultra-deep-water and unconventional oil and gas research.
- Authorizes a new program of research on ultra-deep drilling technology with mandatory funding. (H.R. 6 language)

Title VII—Hydrogen:

- Authorizes $2.15 billion for fiscal years 2006–2010 for research, development and demonstration required under the President's Hydrogen Initiative, including R&D on fuel cell vehicles and hydrogen production. Requires additional planning for the Initiative. (H.R. 6 language)

Title VIII—Advanced Vehicles:

- Establishes a $200 M demonstration program for alternative fueled and advanced vehicles and supporting infrastructure. It also establishes a $190 M demonstration program of alternative fuel, clean diesel and fuel cell school buses, of which $55 M is for a clean diesel school bus retrofit demonstration program. (H.R. 6 language)

Title IX—Clean Coal Power Initiative:

- Authorizes $200 million per year for fiscal years 2006–2012 for R&D on advanced clean coal technology, including clean coal centers of excellence. (H.R. 6 language)

Title X—Improved Coordination and Management of Civilian Science and Technology Programs:

- Designates the head of the Office of Science as an Assistant Secretary and creates an additional assistant secretary position to enable improved management of nuclear energy issues. (modified H.R. 6 language)

SECTION-BY-SECTION ANALYSIS OF H.R. 610, ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACT OF 2005

Sec. 1. Short Title; Table of Contents

Short Title: "Energy Research, Development, Demonstration, and Commercial Application Act of 2005".

Subsection (b) contains the table of contents for the Act's 10 titles.

Sec. 2. Definitions

Defines terms used in the Act.

TITLE I—SCIENCE

Sec. 101. Office of Science Programs

Authorizes Office of Science programs in high energy physics, nuclear physics, biological and environmental research, basic energy sciences, advanced scientific computing research, and fusion energy sciences. It also provides for facilities and infrastructure support and activities in education, outreach, information, analysis and coordination. This section also requires the Secretary to construct and operate a Rare Isotope Accelerator (RIA). Total RIA construction costs are capped $1.1 billion (B) and construction must commence no later than September 30, 2008.

Sec. 102. Systems Biology Program

Authorizes a program in Systems biology including genetics, protein science, and computational biology. Directs the program to identify biological processes that could be developed for energy- and environment-related applications. Prohibits the program from conducting biomedical research or research on human cells.

Sec. 103. Catalysis Research and Development Program

Authorizes a catalysis science program, including catalyst design and synthesis using experimental approaches, as well as computational design at the nanoscale.

Sec. 104. Hydrogen

Authorizes fundamental research and development (R&D) within the Office of Science to support the hydrogen program described in Title VII.

Sec. 105. Advanced Scientific Computing Research

Authorizes an advanced scientific computing research program including activities authorized in the *Department of Energy High-End Computing Revitalization Act of 2004,* and research in applied mathematics.

Sec. 106. Fusion Energy Sciences Program

Directs DOE to develop a program and submit a fusion energy science research plan to Congress. Authorizes the Secretary to join the international fusion experiment known as ITER, and mandates that any agreement between U.S. and its international partners must meet specific requirements to protect U.S. economic and scientific interests. The restrictions on any possible agreement are enforced by prohibiting U.S. funding for ITER construction until the Secretary has submitted to Congress the research plan, the international agreement for U.S. participation in ITER, a description of ITER's management structure, and a report describing how ITER will be funded without reducing funding for other programs, including other fusion programs, in the Office of Science. Provides for a domestic magnetic fusion burning plasma experiment if the Secretary determines that construction and operation of ITER is unlikely or infeasible.

Sec. 107. Science and Technology Scholarship Program

Creates a program in which students receive scholarships in exchange for a commitment to work for DOE upon completion of their degrees. Scholarship recipients are obligated to work two years for each year of scholarship they receive.

Sec. 108. Office of Scientific and Technical Information

Requires the Secretary to maintain the Office of Scientific and Technical Information.

Sec. 109. Authorization of Appropriations

Authorizes $23.7 B for fiscal years (FY) 2006–2010 for the Office of Science. From this amount, $1.65 B is allocated for advanced scientific computing research, $1.82 B for fusion energy sciences, $8.4 million (M) for the science and technology scholarship program and $39 M for the Office of Scientific and Technical Information.

TITLE II—RESEARCH ADMINISTRATION AND OPERATIONS

Sec. 201. Cost Sharing

Requires minimum non-federal contributions of 20 percent of the cost of R&D, and 50 percent for demonstration and commercial application projects. Allows the Secretary to reduce these requirements based on either technical barriers or the nature of the research being sponsored (fundamental, inherently non-proprietary research).

Sec. 202. Reprogramming

Requires the Secretary to report to Congress 60 days after appropriations are enacted describing how appropriated funds will be distributed under this authorization. Requires 30-day Congressional review for any Departmental request that exceeds two percent or $2 million to move money between programs.

Sec. 203. Merit-Based Competition

Requires all funding under this Act be competitively awarded after an impartial merit review. The Secretary may restrict competitions to certain classes of recipients (e.g., universities, national laboratories) but must notify Congress within 30 days if a competition is run within only one class of recipients or if the Secretary waives the competition requirement for any solicitation.

Sec. 204. External Technical Review of Departmental Programs

Requires the Secretary to establish new or designate existing advisory committees to review the programs for energy efficiency R&D, renewable energy R&D, nuclear energy R&D and fossil energy R&D. For the Office of Science, it requires that the Secretary maintain existing scientific program advisory committees, report to Congress on any plans to change these committees' membership requirements, and create a new overall science advisory committee that includes members from the existing committees. Requires a National Academy of Sciences review and assessment of all the programs under this Act.

Sec. 205. Competitive Award of Management Contracts

Requires competitive award of management and operations contracts for non-defense National Laboratories unless the Secretary provides a waiver and Congress is notified two months in advance.

Sec. 206. National Laboratory Designation

Prohibits the Secretary from designating any new National Laboratories.

Sec. 207. Report on Equal Employment Opportunity Practices

Requires the Secretary to submit to Congress a comprehensive report on equal opportunity practices at the National Laboratories.

Sec. 208. User Facility Best Practices Plan

Requires the Secretary to submit a plan to Congress describing how each new user facility will provide appropriate staff to support a wide range of users; a fair method for allocating time to users; and safe and fiscally prudent operations.

Sec. 209. Support for Science and Energy Infrastructure and Facilities

Requires the Secretary to develop and implement a strategy for maintaining, closing, modifying, or constructing infrastructure and facilities at each non-military National Laboratory and Department research facility, and to transmit to Congress a summary of this strategy not later than June 1, 2007.

Sec. 210. Coordination Plan

Requires the Secretary to develop a plan to improve coordination and collaboration for all research, development, demonstration and commercial application activities among the Office and Science and the applied programs at the Department.

Sec. 211. Availability of Funds

Requires that if funds appropriated for activities under this title remain unused after three years, the funds must be returned to the Treasury.

TITLE III—ENERGY EFFICIENCY

Subtitle A—Vehicles, Buildings and Industries

Sec. 301. Programs

Authorizes energy efficiency R&D programs related to vehicles, buildings, and industrial energy use. Requires the Secretary to transmit to Congress a report containing quantifiable five-year cost and performance goals for these programs, and annual reports describing progress in achieving these goals.

Sec. 302. Vehicles

Authorizes R&D programs on advanced technologies to improve the energy efficiency and environmental performance of light-duty and heavy-duty vehicles.

Sec. 303. Buildings

Authorizes a program of R&D to improve the energy efficiency of buildings. The program is required to use a whole-buildings approach, integrating work on elements including advanced controls, building envelope, building systems components and on-site generation of renewable energy. It also authorizes a Next Generation Lighting Initiative and to establish a pilot grant program for the demonstration of advanced energy efficiency technologies for buildings.

Sec. 304. Industries

Authorizes R&D programs to improve the energy efficiency, environmental performance and process efficiency of major energy-consuming industries, including advanced control technologies for electric motors. Reauthorizes the *Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988.*

Sec. 305. Demonstration and Commercial Application

Requires the Secretary to promote demonstration and commercial application of innovative, cost-effective energy efficiency technologies, including through grants to non-profit institutions, State and local governments, universities, or consortia for Advanced Energy Technology Transfer Centers. The Secretary is required to report to Congress on the results of these activities.

Sec. 306. Secondary Electric Vehicle Battery Use Program

Authorizes an R&D program to facilitate the reuse of batteries from electric vehicles for other purposes, such as bulk power and commercial power storage.

Sec. 307. Definitions

Defines "cost-effective" for the purposes of this title.

Sec. 308. Authorization of Appropriations

Authorizes $4.0 B for the energy efficiency R&D programs under this subtitle for FY 2006–2010. Of this amount, $1.36 B is allocated for Vehicles; $830 M for Buildings, including $50 M for the Energy Efficient Building Pilot Grant Program; $715 M is for Industrial Technologies, including $6 M for an Electric Motor Control Technology Program; $50 M is for Demonstration and Commercial Application; and $32 M is for a Secondary Electric Vehicle Battery Program.

Sec. 309. Limitation on Use of Funds

Prohibits the use of any of the funds authorized under this subtitle for programs funded under other authorities.

Subtitle B—Distributed Energy and Electric Energy Systems

Sec. 321. Distributed Energy

Authorizes an R&D program to improve grid reliability technologies, and on systems to improve the reliability and efficiency of distributed energy resources. Requires the Secretary to make competitive merit-based grants to consortia for the development of residential combined heat and power technologies.

Sec. 322. Electricity Transmission and Distribution and Energy Assurance

Authorizes an R&D program on advanced control devices to improve the energy efficiency and reliability of the electric transmission and distribution systems.

Sec. 323. Authorization of Appropriations

Authorizes $1.25 B for the Distributed Energy and Electric Energy Systems programs for FY 2006–2010, including $40 M for Micro-cogeneration and $745 M for Electricity Transmission and Distribution and Energy Assurance.

TITLE IV—RENEWABLE ENERGY

Sec. 401. Findings

This Section contains the findings of Congress with respect to the relationship between United States investment in renewable energy and competitiveness in the world market, job impacts, energy Security and reliability, and environmental impacts.

Sec. 402. Definitions

Defines "biobased product" and "cellulosic biomass" for the purposes of this title.

Sec. 403. Programs

Authorizes renewable energy R&D programs with the objectives of increased conversion efficiency, decreased generation and delivery costs, promotion of energy supply diversity, improved United States energy security and environmental sustainability. Requires the Secretary to transmit to Congress a report containing quantifiable five-year cost and performance goals for these programs, and thereafter annual reports describing progress in achieving these goals.

Sec. 404. Solar

Authorizes R&D programs for solar energy, including for photovoltaics, heating, and concentrating solar power. Requires the programs to focus on the integration of photovoltaic technologies into buildings and manufacturing techniques for the production of low-cost, high-quality solar systems.

Sec. 405. Bioenergy Programs

Authorizes R&D programs for cellulosic biomass, including for the production of heat, electricity, fuels and biobased products. Establishes, in partnership with industry, a biomass integrated refinery demonstration program consisting of at least five integrated biorefineries.

Sec. 406. Wind

Authorizes R&D programs for wind energy, including offshore wind energy, low speed wind energy, testing and verification, and distributed wind energy generation. Requires the Secretary to construct a wind turbine test facility.

Sec. 407. Geothermal

Authorizes an R&D program for geothermal energy, focusing on developing improved and low-cost technologies for geothermal installations.

Sec. 408. Photovoltaic Demonstration Program

Establishes a grant program to States for the demonstration of advanced photovoltaic solar energy technology. All states that meet the requirements of the program are eligible to receive funding. States are required to award funds in a competitive allocation to eligible recipients and to require a contribution of at least 60 percent per award from non-federal sources. No award may be more than $1 million, and unexpended funds will be returned to the Treasury after three years. The Secretary is required to report to Congress on the costs and results of this program after five years.

Sec. 409. Additional Programs

Authorizes R&D programs for ocean energy (including wave energy), kinetic hydro turbines, and the combined use of renewable energy technologies with other energy technologies. Requires the Secretary to commission a National Academy of Sciences study on renewable generation of ocean energy including wave, tidal, current and thermal energy.

Sec. 410. Analysis and Evaluation

Requires the Secretary to conduct analysis and evaluation in support of renewable energy programs under this title for guiding budget and program decisions.

Sec. 411. Authorization of Appropriations

Authorizes $3.91 B for FY 2006–2010 to carry out all activities under this title. Of these funds, $990 M is allocated for the solar programs in section 404, $1.51 B is for the bioenergy program is section 405, including $750 M for the biorefinery demonstration program, $310 M is for the wind program in section 406, including $41 M for the wind facility, $150 M is for the geothermal program in section 407, and $800 M is for the photovoltaic demonstration program in section 408.

TITLE V—NUCLEAR ENERGY PROGRAMS

Sec. 501. Definition

Defines "junior faculty" for the purposes of this title.

Sec. 502. Programs

Authorizes civilian nuclear energy research, development, demonstration and commercial application programs with the objectives of promoting the viability of nuclear energy, reducing the likelihood of nuclear proliferation, maintaining excellence in nuclear research at universities and the National Labs, maintaining state-of-the-art nuclear research facilities and infrastructure, supporting industry and reducing environmental impacts. Requires the Secretary to transmit to Congress a report containing quantifiable five-year cost and performance goals for these programs, and thereafter annual reports describing progress in achieving these goals.

Subtitle A—Nuclear Energy Research Programs

Sec. 511. Advanced Fuel Recycling Program

Authorizes a R&D program on nuclear fuel recycling technologies that would reduce the risk of nuclear proliferation, and minimize environmental and public health and safety impacts.

Sec. 512. University Nuclear Science and Engineering Support

Requires the Secretary to support new and existing programs to promote university research and education in nuclear engineering, including supporting university research reactors.

Sec. 513. University-National Laboratory Interactions

Establishes a fellowship program for professors to spend time at the National Labs in the areas of nuclear science and technology and for National Lab staff to spend time in related departments at universities.

Sec. 514. Nuclear Power 2010 Program

Requires the Secretary to carry out a Nuclear Program 2010 Program to encourage industry to license and deploy a new power plant by 2010.

Sec. 515. Generation IV Nuclear Energy Systems Initiative

Requires the Secretary to carry out a Generation IV Nuclear Energy Systems Initiative, an R&D program for passively safe, proliferation-resistant nuclear plant designs.

Sec. 516. Civilian Infrastructure and Facilities

Requires the Secretary to operate and maintain infrastructure and facilities to support nuclear energy research, development, demonstration and commercial application.

Sec. 517. Nuclear Energy Research and Development Infrastructure Plan

Requires the Secretary to develop a plan for facilities improvements and investments that will be required to establish the programs under this title as among the best in the world in nuclear research.

Sec. 518. Idaho National Laboratory Facilities Plan

Requires the Secretary to develop a plan for the facilities at the Idaho National Laboratory, taking into account resources at other National Laboratories.

Sec. 519. Authorization of Appropriations

Authorizes $2.25 B for FY 2006–2019 to carry out the activities under this subtitle. Of those funds, $244 M is allocated for university support described in section 512.

Subtitle B—Next Generation Nuclear Plant Program

Sec. 531. Definitions

Defines "demonstration plant," "construction," and "operation" for the purposes of this subtitle.

Sec. 532. Next Generation Nuclear Power Plant

Authorizes a program of research, development, demonstration and commercial application of advanced nuclear reactor technology. The objective is to design and demonstrate the next generation of nuclear fission power plant.

Sec. 533. Advisory Committee

Requires the Secretary to appoint an advisory committee for the Next Generation Nuclear Power Plant program.

Sec. 534. Program Requirements

Describes the requirements for the program under this subtitle, including the requirements for program elements, partnerships, plans for construction and operation, international collaboration and program plan.

Sec. 535. Authorization of appropriations

This section authorizes $750 M for FY 2006–2010 to carry out the activities under this subtitle, in addition to such sums as necessary with a limit of $500 M for construction activities.

TITLE VI—FOSSIL ENERGY

Subtitle A—Research Programs

Sec. 601. Enhanced Fossil Energy Research and Development Programs

Authorizes programs, to be run in conjunction with industry, of fossil energy research, development, demonstration and commercial application programs, including for coal, oil, natural gas, transportation fuels and fuel cells. The objectives of these programs shall include increasing the conversion efficiency of all forms of fossil energy, decreasing costs, promoting diversity of energy supply, improving U.S. energy security and reducing environmental impacts. Requires the Secretary to transmit to Congress a report containing quantifiable five-year cost and performance goals for these programs, and thereafter annual reports describing progress in achieving these goals.

Sec. 602. Fossil Research and Development

Authorizes a program of fossil energy research, development, demonstration and commercial application to reduce emissions from fossil fuel, including from coal-based products, through the development of advanced technologies by 2015.

Sec. 603. Oil and Gas Research and Development

Authorizes a program of oil and gas research, development, demonstration and commercial application to advance the science and technology available to domestic petroleum producers.

Sec. 604. Transportation Fuels

Authorizes a program of transportation fuel research, development, demonstration and commercial application to increase the price elasticity of oil supply and demand.

Sec. 605. Fuel Cells

Authorizes R&D programs on fuel cells for low-cost, high-efficiency fuel-flexible, modular power systems. Requires a demonstration of fuel cell proton exchange membrane technology for various applications.

Sec. 606. Authorization of Appropriations

Authorizes $3.1 B for FY 2006–2010 to carry out the fossil energy programs described in this subtitle.

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

Sec. 611. Program Authority

Authorizes programs on ultra-deepwater and unconventional natural gas and other petroleum resource exploration, production and environmental mitigation. Limits the programs to work in areas currently eligible to be leased for exploration and requires consultation with the Secretary of the Interior. Requires a study to determine if methane hydrates research should be carried out under this Act.

Sec. 612. Ultra-Deepwater Program

Describes how the ultra-deepwater program should be carried out, assigning responsibilities to the Secretary and a private consortium that may be selected by the Secretary to help manage the program. Establishes procedures to address conflicts of interest.

Sec. 613. Unconventional Natural Gas And Other Petroleum Resources Program

Requires the Secretary to establish a separate R&D program for onshore unconventional oil and gas exploration for resources in economically inaccessible areas.

Sec. 614. Additional Requirements for Awards

Establishes requirements for applicants to the ultra-deepwater program to describe the intended commercial use of any technology to be demonstrated under the Act, and provides flexibility concerning the location of demonstration projects in deepwater depths of less than 1,500 meters and allows reduction of cost sharing for independent producers.

Sec. 615. Advisory Committees

Requires the Secretary to establish two separate advisory committees for ultra-deepwater and unconventional resource programs and specifies their duties and compensation levels for their members.

Sec. 616. Limits on Participation

Limits participation in the program to U.S. companies or foreign companies that are based in countries that allow reciprocity.

Sec. 617. Sunset

Terminates the ultra-deepwater and unconventional research programs on September 30, 2015.

Sec. 618. Definitions

Defines "deepwater," "independent producer of oil and gas," "program consortium," "remote or inconsequential," "small producer," "ultra-deepwater," "ultra-deepwater architecture," "ultra-deepwater technology," and "unconventional natural gas and other petroleum resources" for the purposes of this subtitle.

Sec. 619. Funding

Establishes in the Treasury an Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Resources Fund, including a mandatory provision that requires, after other obligations, $750 million of federal oil and gas royalty funds, and authorizes appropriations of $250 million to be used for ultra-deepwater and unconventional oil and gas research.

TITLE VII—HYDROGEN

Sec. 701. Definitions

Defines "advisory committee," "fuel cell," "infrastructure," and "light duty vehicle" for the purposes of this title.

Sec. 702. Plan

Requires the Secretary to submit a detailed plan to Congress describing the program's research agenda, the technical milestones used to evaluate the performance of the program, and the role that national laboratories, universities, small businesses and other partners will play.

Sec. 703. Programs

Authorizes a research, development, demonstration, and commercial application program for hydrogen-powered fuel cell vehicles and the refueling infrastructure to support them, with the goal of enabling the automotive industry to make a decision to bring such vehicles to market by 2015. Specifies activities related to hydrogen production, delivery, and storage and the development of fuel cell technologies and the necessary codes and standards. Establishes project selection criteria for a hydrogen demonstration program. Requires a competitive merit review process and specifies cost sharing requirements.

Sec. 704. Interagency Task Force

Establishes an interagency task forced, chaired by the Secretary, to assist in the implementation of the hydrogen program.

Sec. 705. Advisory Committee

Establishes an advisory committee, comprising representatives from domestic industry, academia, professional societies, government agencies and other organizations, to provide advice to the Secretary.

Sec. 706. External Review

Requires a competitively selected non-governmental body, such as the National Academy of Sciences, to review the program's research plan and conduct a biennial review of the progress made by the program.

Sec. 707. Miscellaneous Provisions

Requires the Secretary to avoid unnecessary duplication when carrying out the activities under this Act, authorizes the Secretary to enter into cost-sharing agreements with other governments, authorizes the Secretary to represent the United States, and provides that nothing in the Act alters the Department's regulatory authority.

Sec. 708. Savings Clause

Clarifies that nothing in this title shall be construed to affect the authority of the Secretary of Transportation with respect to vehicles or transportation regulations of any type, or research activities supported by the Department of Transportation.

Sec. 709. Authorization of Appropriations

Authorizes $2.15 B for the program for FY 2006–2010.

TITLE VIII—ADVANCED VEHICLES

Subtitle A—Pilot Program

Sec. 801. Definitions

Defines "alternative fueled vehicle," "fuel cell vehicle," "hybrid vehicle," "neighborhood electric vehicle," "ultra-low sulfur diesel vehicles," and "pilot program" for the purposes of this subtitle.

Sec. 802. Pilot Program

Establishes a competitive grant program to provide not more than 15 geographically dispersed demonstration projects for state and local governments or metropolitan transportation authorities. Grants can be utilized for the demonstration of alternative fueled vehicles, fuel cell vehicles, hybrid vehicles, ultra-low sulfur diesel vehicles and infrastructure associated with alternative fueled, fuel cell and hybrid vehicle projects. Establishes additional requirements for grants.

Sec. 803. Reports to Congress

Requires the Secretary to issue a report to Congress on the grants in Sec. 802 as well as evaluations of the effectiveness of the program.

Sec. 804. Authorization of Appropriations

Authorizes $200 M to carry out subtitle A, to remain available until expended.

Subtitle B—Clean School Buses

Sec. 811. Definitions

Defines "Administrator," "alternative fuel," "alternative fuel school bus," "emissions control retrofit technology," "idling," "ultra-low sulfur diesel fuel" and "ultra-low sulfur diesel fuel school bus" for the purposes of this subtitle.

Sec. 812. Program for Replacement of Certain School Buses with Clean School Buses

Establishs a program for awarding grants to eligible recipients for the demonstration and commercial application of alternative fuel school buses and ultra-low sulfur diesel fuel school buses. Use of funds for alternative fuel infrastructure is limited to 25 percent of the price of the alternative fuel school buses acquired. To carry out this section, $110 M is authorized for FY 2006–2007.

Sec. 813. Diesel Retrofit Program

Requires the Secretary and the Administrator of the Environmental Protection Agency to establish a pilot program for awarding grants to eligible recipients for the demonstration and commercial application of retrofit technologies for ultra-low sulfur diesel school buses. To carry out this section, $55 M is authorized for FY 2006–2007.

Sec. 814. Fuel Cell School Buses

Requires the Secretary to establish a program to enter into cooperative agreements for the development and demonstration of fuel cell-powered buses. Cost shar-

ing under this provision is specified with regard to infrastructure and demonstration activities. To carry out this section, $25 M is authorized for FY 2006–2008.

Subtitle C—Fuel Cell Transit Bus Demonstration

Sec. 821. Fuel Cell Transit Bus Demonstration

Requires the Secretary to establish a transit bus demonstration program to demonstrate not more than 12 fuel cell transit buses (and necessary infrastructure) in three geographically dispersed localities. To carry out this section, $50 M is authorized for FY 2006–2010.

TITLE IX—CLEAN COAL

Sec. 901. Authorization of Appropriations

Authorizes $1.4 B for a Clean Coal Power Initiative at the Department for FY 2006–2012. Requires the Secretary to transmit a report, including a ten-year research plan, to Congress regarding certain implementation activities.

Sec. 902. Project Criteria

Establishes technical criteria that are to be required for projects funded under the Clean Coal Power Initiative. Requires that the Secretary, in consultation with certain parties, set technical milestones specifying the emissions levels that projects must be designed to and reasonably expected to achieve. Establishes financial assistance criteria applicable to projects, and limits the federal share of a project to not more than 50 percent of the cost of a project. Provides for environmental criteria by clarifying the manner in which technology used at, or emissions reduction levels achieved by, facilities receiving assistance under title V are treated under sections 111, 169, and 171 of the Clean Air Act.

Sec. 903. Report

Requires the Secretary, in consultation with other appropriate agencies, to transmit a report to Congress on the technical milestones and the status of projects funded under title IX no later than one year after the date of the enactment of the title, and once every two years thereafter through 2012.

Sec. 904. Clean Coal Centers of Excellence

Requires the Secretary to award competitive, merit-based grants to universities for the establishment of Centers of Excellence for Energy Systems of the Future. Requires that the Secretary provide grants to universities that can show the greatest potential for advancing new clean coal technologies.

TITLE X—IMPROVED COORDINATION AND MANAGEMENT OF CIVILIAN SCIENCE AND TECHNOLOGY PROGRAMS

Sec. 1001. Improved Coordination and Management of Civilian Science and Technology Programs

Amends the Department of Energy Organization Act to elevate the position of Director of the Office of Science to an Assistant Secretary. Increases the overall number of Assistant Secretaries in the Department from six to eight, and expresses the Sense of Congress that leadership for departmental missions in nuclear energy should be at the Assistant Secretary level.

H.R. 610 Five-Year Funding Table

HR 610 Authorizations versus FY05 Approps and FY06 Request ($ in millions)	FY05 Approps	FY06 Request (1)	FY06	FY07	FY08	FY09	FY10	Five-year total Author-ization
Science	3,600	3,463	3,785	4,153	4,628	5,300	5,800	23,666
Energy Efficiency	388	378	620	700	800	925	1,000	4,045
DER and Elec. Energy Systems	179	152	210	230	250	270	290	1,250
Renewable Energy	299	276	465	605	775	940	1,125	3,910
Nuclear Energy	375	390	407	427	449	471	495	2,249
Fossil Energy (2)	572	491	583	611	626	641	657	3,118
Alt. Fuel & Adv. Veh. (3)	0	0	300	110	10	10	10	440
Hydrogen (4)	254	283	274	375	450	500	550	2,149
Clean Coal Power Init (4)	*	*	200	200	200	200	200	1,000
Ultra Deep	**	**	200	200	200	200	200	1,000
Nuclear Demo (NGNP)	**	**	650	150	150	150	150	1,250
Total	**5,668**	**5,434**	**7,194**	**7,261**	**8,038**	**9,107**	**9,977**	**44,076**

(1) Adjusted to reflect distributions in the bill
(2) Not including Clean Coal Technology Accounts. Some clean coal activities are carried out in this account in FY05 and proposed FY06.
(3) Not including funding for pilot program in EPA.
(4) Hydrogen and Clean Coal do not correlate exactly with accounts in appropriations; Clean Coal Power Initiative activities are in the Fossil Energy program in FY 05 and FY 06 Request columns
* The current version Clean Coal Technology accounts are not used to fund actual programs
** These are new programs in H.R. 610

H.R. 6 Conference Report for Comparison

HR6	FY04	FY05	FY06	FY07	FY08	5 yr total
Energy Efficiency	616	695	772	865	920	3868
DER and Elec. Energy Systems	190	200	220	240	260	1110
Renewable Energy	480	550	610	659	710	3009
Nuclear Energy	273	355	430	455	545	2058
Fossil Energy	530	556	583	611	626	2906
Science	3785	4153	4618	5310	5800	23666
Clean School Bus	65	100	135			300
Alt. Fuel & Adv. Veh.	200					200
Hydrogen	274	375	450	500	550	2149
Clean Coal Power Init	200	200	200	200	200	1000
Ultra Deep	200	200	200	200	200	1000
Nuclear Demo (NGNP)	535	150	150	150	150	1135
Total	7,348	7,534	8,368	9,190	9,961	42400

COMMITTEE ON SCIENCE

FULL COMMITTEE MARKUP

February 10, 2005

AMENDMENT ROSTER

H.R. 610, Energy Research, Development, Demonstration, and Commercial Application Act of 2005
--Motion to adopt the bill as amended: agreed to by a voice vote.
--Motion to report the bill as amended: agreed to by a voice vote.

No.	Sponsor	Description	Results
1.	Mrs. Biggert	En Bloc Amendment	Adopted by a voice vote.
2.	Mr. Costello Mr. Calvert	External Regulations Amendment	Withdrawn.

EN BLOC AMENDMENTS TO H.R. 610
OFFERED BY MRS. BIGGERT OF ILLINOIS

Page 8, line 17, strike "and nuclear physics" and insert ", nuclear physics".

Page 8, line 19, strike "and computing" and insert "computing".

Page 9, line 9, insert "in Federal funds" after "$1,100,000,000".

Page 11, line 6, strike "109" and insert "110".

Page 20, line 11, strike "full-time student" and insert "full-time graduate student".

Page 25, after line 25, insert the following new section:

1 **SEC. 109. SCIENCE AND ENGINEERING PILOT PROGRAM.**

2 (a) ESTABLISHMENT OF CONSORTIUM.—Notwith-
3 standing section 203, the Secretary shall award a grant
4 to Oak Ridge Associated Universities to establish a univer-
5 sity consortium to carry out a regional pilot program for
6 enhancing scientific, technological, engineering, and math-
7 ematical literacy, creativity, and decisionmaking. The con-
8 sortium shall include leading research universities, one or

1 more universities that train substantial numbers of ele-
2 mentary and secondary school teachers, and, where appro-
3 priate, National Laboratories.

4 (b) PROGRAM ELEMENTS.—The program shall
5 include—

6 (1) expanding strategic, formal partnerships
7 among universities with strength in research, univer-
8 sities that train substantial numbers of elementary
9 and secondary school teachers, and the private sec-
10 tor;

11 (2) combining Department expertise with one or
12 more National Aeronautics and Space Administra-
13 tion Educator Resource Centers;

14 (3) developing programs to permit current and
15 future teachers to participate in ongoing research
16 projects at National Laboratories and research uni-
17 versities and to adapt lessons learned to the class-
18 room;

19 (4) designing and implementing course work;

20 (5) designing and implementing a strategy for
21 measuring and assessing progress under the pro-
22 gram; and

23 (6) developing models for transferring knowl-
24 edge gained under the pilot program to other insti-
25 tutions and areas of the country.

1 (c) REPORT.—Not later than 2 years after appropria-
2 tions are first available for the program, the Secretary
3 shall transmit to Congress a report outlining lessons
4 learned and containing a plan for expanding the program
5 nationwide. The Secretary may begin implementation of
6 such plan for expansion of the program on October 1,
7 2008. The expansion of the program shall be subject to
8 section 203.

Page 26, line 1, redesignate section 109 as section 110.

Page 27, after line 3, insert the following new paragraph:

9 (6) PILOT PROGRAM.—For activities under sec-
10 tion 109, $4,000,000.

Page 27, after line 18, insert the following new paragraph:

11 (6) PILOT PROGRAM.—For activities under sec-
12 tion 109, $4,000,000.

Page 28, after line 8, insert the following new paragraph:

13 (6) PILOT PROGRAM.—For activities under sec-
14 tion 109, $4,000,000.

Page 28, after line 23, insert the following new paragraph:

1 (6) PILOT PROGRAM.—For activities under sec-
2 tion 109, $8,000,000.

Page 29, after line 15, insert the following new paragraph:

3 (6) PILOT PROGRAM.—For activities under sec-
4 tion 109, $8,000,000.

Page 35, line 1, strike "Secretary" and insert "Director of the Office of Science".

Page 35, line 3, strike "Secretary" and insert "Director of the Office of Science".

Page 35, line 7, strike "Secretary" and insert "Director of the Office of Science".

Page 35, line 12, strike "Secretary" and insert "Director of the Office of Science".

Page 35, line 20, strike "at least one third" and insert ", to the extent practicable, members".

Page 38, lines 13 and 14, strike "designate any new or existing facility as a user facility" and insert "allow any Department facility to begin functioning as a user facility after the date of enactment of this Act".

Page 46, lines 1 and 2, strike ", including the Next Generation Lighting Initiative described in subsection (b)".

Page 46, lines 11 through 24, strike subsection (b).

Page 47, line 1, redesignate subsection (c) as subsection (b).

Page 50, after line 3, insert the following new subsection:

1 (d) STANDARDIZATION REPORT AND PROGRAM.—
2 (1) REPORT.—The Secretary shall enter into an
3 arrangement with the National Institute of Building
4 Sciences to—
5 (A) conduct a comprehensive assessment of
6 how well current voluntary consensus standards
7 related to buildings match state-of-the-art
8 knowledge on the design, construction, oper-
9 ation, repair, and renovation of high-perform-
10 ance buildings; and
11 (B) recommend steps for the Secretary to
12 take to accelerate the development and promul-
13 gation of voluntary consensus standards for
14 high-performance buildings that would address
15 all major high-performance building attributes,
16 including energy efficiency, sustainability, safe-
17 ty and security, life-cycle cost, and productivity.
18 (2) PROGRAM.—After receiving the report
19 under paragraph (1), the Secretary shall establish a

1 program of technical assistance and grants to sup-
2 port standards development organizations in—
3 (A) the revision of existing standards, to
4 reflect current knowledge of high-performance
5 buildings; and
6 (B) the development and promulgation of
7 new standards in areas important to high-per-
8 formance buildings where there is no existing
9 standard or where an existing standard cannot
10 easily be modified.

Page 51, line 1, through page 52, line 20, strike subsection (c).

Page 59, after line 22, insert the following new section:

11 **SEC. 307. NEXT GENERATION LIGHTING INITIATIVE.**

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

18 (b) OBJECTIVES.—The objectives of the initiative
19 shall be to develop advanced solid-state organic and inor-
20 ganic lighting technologies based on white light emitting
21 diodes that, compared to incandescent and fluorescent

1 lighting technologies, are longer lasting; more energy-effi-
2 cient; and cost-competitive, and have less environmental
3 impact.

4 (c) INDUSTRY ALLIANCE.—The Secretary shall, not
5 later than 3 months after the date of enactment of this
6 section, competitively select an Industry Alliance to rep-
7 resent participants that are private, for-profit firms which,
8 as a group, are broadly representative of United States
9 solid state lighting research, development, infrastructure,
10 and manufacturing expertise as a whole.

11 (d) RESEARCH.—

12 (1) IN GENERAL.—The Secretary shall carry
13 out the research activities of the Next Generation
14 Lighting Initiative through competitively awarded
15 grants to researchers, including Industry Alliance
16 participants, National Laboratories, and institutions
17 of higher education.

18 (2) ASSISTANCE FROM THE INDUSTRY ALLI-
19 ANCE.—The Secretary shall annually solicit from the
20 Industry Alliance—

21 (A) comments to identify solid-state light-
22 ing technology needs;

23 (B) assessment of the progress of the Ini-
24 tiative's research activities; and

1 (C) assistance in annually updating solid-
2 state lighting technology roadmaps.
3 (3) AVAILABILITY OF INFORMATION AND ROAD-
4 MAPS.—The information and roadmaps under para-
5 graph (2) shall be available to the public and public
6 response shall be solicited by the Secretary.
7 (e) DEVELOPMENT, DEMONSTRATION, AND COMMER-
8 CIAL APPLICATION.—The Secretary shall carry out a de-
9 velopment, demonstration, and commercial application
10 program for the Next Generation Lighting Initiative
11 through competitively selected awards. The Secretary may
12 give preference to participants of the Industry Alliance se-
13 lected pursuant to subsection (c).
14 (f) INTELLECTUAL PROPERTY.—The Secretary may
15 require, in accordance with the authorities provided in sec-
16 tion 202(a)(ii) of title 35, United States Code, section 152
17 of the Atomic Energy Act of 1954 (42 U.S.C. 2182), and
18 section 9 of the Federal Nonnuclear Energy Research and
19 Development Act of 1974 (42 U.S.C. 5908), that—
20 (1) for any new invention resulting from activi-
21 ties under subsection (d)—
22 (A) the Industry Alliance members that
23 are active participants in research, development,
24 and demonstration activities related to the ad-
25 vanced solid-state lighting technologies that are

1 the subject of this section shall be granted first
2 option to negotiate with the invention owner
3 nonexclusive licenses and royalties for uses of
4 the invention related to solid-state lighting on
5 terms that are reasonable under the cir-
6 cumstances; and
7 (B)(i) for 1 year after a United States pat-
8 ent is issued for the invention, the patent hold-
9 er shall not negotiate any license or royalty
10 with any entity that is not a participant in the
11 Industry Alliance described in subparagraph
12 (A); and
13 (ii) during the year described in clause (i),
14 the invention owner shall negotiate nonexclusive
15 licenses and royalties in good faith with any in-
16 terested participant in the Industry Alliance de-
17 scribed in subparagraph (A); and
18 (2) such other terms as the Secretary deter-
19 mines are required to promote accelerated commer-
20 cialization of inventions made under the Initiative.
21 (g) NATIONAL ACADEMY REVIEW.—The Secretary
22 shall enter into an arrangement with the National Acad-
23 emy of Sciences to conduct periodic reviews of the Next
24 Generation Lighting Initiative. The Academy shall review
25 the research priorities, technical milestones, and plans for

1 technology transfer and progress towards achieving them.
2 The Secretary shall consider the results of such reviews
3 in evaluating the information obtained under subsection
4 (d)(2).

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

6 (1) ADVANCED SOLID-STATE LIGHTING.—The
7 term "advanced solid-state lighting" means a
8 semiconducting device package and delivery system
9 that produces white light using externally applied
10 voltage.

11 (2) RESEARCH.—The term "research" includes
12 research on the technologies, materials, and manu-
13 facturing processes required for white light emitting
14 diodes.

15 (3) INDUSTRY ALLIANCE.—The term "Industry
16 Alliance" means an entity selected by the Secretary
17 under subsection (c).

18 (4) WHITE LIGHT EMITTING DIODE.—The term
19 "white light emitting diode" means a
20 semiconducting package, utilizing either organic or
21 inorganic materials, that produces white light using
22 externally applied voltage.

Page 60, strike lines 1 through 4 and insert the following:

1 **SEC. 308. DEFINITIONS.**

2 For the purposes of this subtitle—

3 (1) the term "cost-effective" means resulting in
4 a simple payback of costs in 10 years or less; and

5 (2) the term "whole-buildings approach" in-
6 cludes, on a life-cycle basis, the energy use, cost of
7 operations, and ease of repair or upgrade of a build-
8 ing.

Page 60, line 5, redesignate section 308 as section 309.

Page 60, lines 6 through 9, strike "In addition to the sums authorized in the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988, as amended in section 304 of this Act, the" and insert "The".

Page 60, line 19, strike "303(c)" and insert "303(b)".

Page 61, line 3, strike "and".

Page 61, line 6, strike the period and insert "; and".

Page 61, after line 6, insert the following new subparagraph:

1 (G) $20,000,000 for carrying out the Next
2 Generation Lighting Initiative under section
3 307.

Page 61, line 14, strike "303(c)" and insert "303(b)".

Page 61, line 22, strike "and".

Page 61, line 25, strike the period and insert "; and".

Page 61, after line 25, insert the following new subparagraph:

4 (G) $30,000,000 for carrying out the Next
5 Generation Lighting Initiative under section
6 307.

Page 62, line 8, strike "303(c)" and insert "303(b)".

Page 62, line 16, strike "and".

Page 62, line 19, strike the period and insert "; and".

Page 62, after line 19, insert the following new subparagraph:

1 (G) $50,000,000 for carrying out the Next
2 Generation Lighting Initiative under section
3 307.

Page 63, line 2, strike "303(c)" and insert "303(b)".

Page 63, line 7, strike "and".

Page 63, line 10, strike the period and insert "; and".

Page 63, after line 10, insert the following new subparagraph:

4 (F) $50,000,000 for carrying out the Next
5 Generation Lighting Initiative under section
6 307.

Page 63, line 18, strike "303(c)" and insert "303(b)".

Page 63, line 23, strike "and".

Page 64, line 3, strike the period and insert "; and".

Page 64, after line 3, insert the following new subparagraph:

7 (F) $50,000,000 for carrying out the Next
8 Generation Lighting Initiative under section
9 307.

Page 64, line 4, redesignate section 309 as section 310.

Page 69, after line 17, insert the following new subsection:

1 (c) HIGH VOLTAGE TRANSMISSION LINES.—As part
2 of the program described in subsection (a), the Secretary
3 shall award a grant to a university research program to
4 design and test, in consultation with the Tennessee Valley
5 Authority, state-of-the-art optimization techniques for
6 power flow through existing high voltage transmission
7 lines.

Page 69, line 22, strike "$210,000,000" and insert "$220,000,000".

Page 69, line 23, strike "$230,000,000" and insert "$240,000,000".

Page 69, line 24, strike "$250,000,000" and insert "$250,000,000".

Page 69, line 25, strike "$270,000,000" and insert "$265,000,000".

Page 70, line 1, strike "$290,000,000" and insert "$275,000,000".

Page 70, line 10, strike "$120,000,000" and insert "$130,000,000, of which $2,000,000 shall be for the program under section 322(c)".

Page 70, line 11, strike "$130,000,000" and insert "$140,000,000".

Page 70, line 12, strike "$155,000,000" and insert "$150,000,000".

Page 70, line 13, strike "$165,000,000" and insert "$160,000,000".

Page 70, line 14, strike "$175,000,000" and insert "$165,000,000".

Page 85, after line 17, insert the following new subsection:

1 (c) RENEWABLE ENERGY IN PUBLIC BUILDINGS.—
2 (1) DEMONSTRATION AND TECHNOLOGY TRANS-
3 FER PROGRAM.—The Secretary shall establish a pro-
4 gram for the demonstration of innovative tech-
5 nologies for solar and other renewable energy
6 sources in buildings owned or operated by a State or
7 local government, and for the dissemination of infor-
8 mation resulting from such demonstration to inter-
9 ested parties.

1 (2) LIMIT ON FEDERAL FUNDING.—The Sec-
2 retary shall provide under this subsection no more
3 than 40 percent of the incremental costs of the solar
4 or other renewable energy source project funded.
5 (3) REQUIREMENT.—As part of the application
6 for awards under this subsection, the Secretary shall
7 require all applicants—
8 (A) to demonstrate a continuing commit-
9 ment to the use of solar and other renewable
10 energy sources in buildings they own or operate;
11 and
12 (B) to state how they expect any award to
13 further their transition to the significant use of
14 renewable energy.

Page 111, after line 20, insert the following new section:

15 **SEC. 606. CARBON DIOXIDE CAPTURE RESEARCH AND DE-**
16 **VELOPMENT.**

17 (a) PROGRAM.—The Secretary of Energy shall sup-
18 port a 10-year program of research and development
19 aimed at developing carbon dioxide capture technologies
20 for pulverized coal combustion units. The program shall
21 focus on—
22 (1) developing add-on carbon dioxide capture
23 technologies, such as adsorption and absorption

1 techniques and chemical processes, to remove carbon
2 dioxide from flue gas, producing concentrated
3 streams of carbon dioxide potentially amenable to se-
4 questration;
5 (2) combustion technologies that would directly
6 produce concentrated streams of carbon dioxide po-
7 tentially amenable to sequestration; and
8 (3) increasing the efficiency of the overall com-
9 bustion system in order to reduce the amount of car-
10 bon dioxide emissions released from the system per
11 megawatt generated.
12 (b) CARBON SEQUESTRATION.—In conjunction with
13 the program under subsection (a), the Secretary shall con-
14 tinue pursuing a robust carbon sequestration program
15 with the private sector, through regional carbon sequestra-
16 tion partnerships.

Page 111, line 21, redesignate section 606 as section 607.

Page 111, line 22, insert "(a) IN GENERAL.—" before "The following sums".

Page 112, after line 3, insert the following new subsection:

1 (b) ALLOCATION.—From amounts authorized under
2 subsection (a), there are authorized to be appropriated for
3 carrying out the program under section 606—
4 (1) $20,000,000 for fiscal year 2006;
5 (2) $25,000,000 for fiscal year 2007;
6 (3) $30,000,000 for fiscal year 2008;
7 (4) $35,000,000 for fiscal year 2009; and
8 (5) $40,000,000 for fiscal year 2010.

Amend the table of contents accordingly.

AMENDMENT TO H.R. 610
OFFERED BY MR. COSTELLO OF ILLINOIS

Page 42, after line 10, insert the following new section:

1 **SEC. 212. EXTERNAL REGULATION OF DEPARTMENT.**

2 (a) ELIMINATION OF DEPARTMENT AUTHORITY.—
3 Effective 2 years after the date of enactment of this Act,
4 the Department shall have no regulatory or enforcement
5 authority with respect to nuclear safety and occupational
6 safety and health responsibilities assumed by the Nuclear
7 Regulatory Commission under subsection (b) or by the Oc-
8 cupational Safety and Health Administration under sub-
9 section (c) at any nonmilitary energy laboratory owned or
10 operated by the Department.

11 (b) NUCLEAR REGULATORY COMMISSION AUTHOR-
12 ITY.—

13 (1) NUCLEAR SAFETY REGULATORY AND EN-
14 FORCEMENT RESPONSIBILITIES.—Effective 2 years
15 after the date of enactment of this Act, the Nuclear
16 Regulatory Commission shall assume the nuclear
17 safety regulatory and enforcement responsibilities of
18 the Department under the Atomic Energy Act of

1954 with regard to nonmilitary energy laboratories owned or operated by the Department.

(2) LICENSED ENTITIES.—For the purposes of carrying out at nonmilitary energy laboratories owned or operated by the Department regulatory and enforcement responsibilities described in paragraph (1), the Nuclear Regulatory Commission may regulate, through licensing, certification, or other appropriate means, the Department's contractors.

(3) DECOMMISSIONING.—A contractor operating a nonmilitary energy laboratory owned by the Department shall not be responsible for the costs of decommissioning that facility. No enforcement action may be taken against such contractor for any violation of Nuclear Regulatory Commission decommissioning requirements, if such violation is the result of a failure of the Department to authorize or fund decommissioning activities. The Nuclear Regulatory Commission and the Department shall, not later than 1 year after the date of enactment of this Act, enter into a memorandum of understanding establishing decommissioning procedures and requirements for nonmilitary energy laboratories owned or operated by the Department.

1 (4) ACCELERATORS.—Notwithstanding the pro-
2 visions of the Atomic Energy Act of 1954 (42
3 U.S.C. 2011 et. seq.), effective 2 years after the
4 date of enactment of this Act, the Nuclear Regu-
5 latory Commission shall have exclusive regulatory
6 authority over accelerators, other electronic sources
7 of radiation not assigned to the Commission as of
8 the date of enactment of this Act, accelerator-pro-
9 duced radioisotopes, and naturally occurring radio-
10 active materials at nonmilitary energy laboratories,
11 consistent with the authorities granted the Nuclear
12 Regulatory Commission in the Atomic Energy Act of
13 1954. Until such time as the Commission has com-
14 pleted a rulemaking for the foregoing equipment and
15 radioisotopes, nonmilitary energy laboratories shall
16 be required to meet the requirements stipulated in a
17 license for the facility.
18 (5) ADMINISTRATION.—The responsibilities as-
19 sumed by the Nuclear Regulatory Commission under
20 this subsection shall be administered by the Nuclear
21 Regulatory Commission, not by States.
22 (6) JUDICIAL REVIEW.—Section 189 b. of the
23 Atomic Energy Act of 1954 (42 U.S.C. 2239(b)) is
24 amended by adding the following paragraph after
25 paragraph (4):

1 "(5) Any final order or regulation of the Com-
2 mission establishing standards to govern nonmilitary
3 energy laboratories owned or operated by the De-
4 partment of Energy that is issued to implement the
5 Commission's responsibilities under the Act which
6 enacted this paragraph, and any final determination
7 of the Commission relating to whether a nonmilitary
8 energy laboratory owned or operated by the Depart-
9 ment is in compliance with such standards and all
10 applicable Commission regulations or orders.".
11 (7) EMPLOYEE PROTECTION.—Any Department
12 contractor operating a nonmilitary energy laboratory
13 that is regulated by the Nuclear Regulatory Com-
14 mission under this section shall be subject to section
15 211 of the Energy Reorganization Act of 1974 (42
16 U.S.C. 5851) to the same extent as any other em-
17 ployer subject to such section 211.
18 (8) CONFLICT OF INTEREST.—Section 170A of
19 the Atomic Energy Act of 1954 (42 U.S.C. 2210a)
20 applies to contracts, agreements, or other arrange-
21 ments of the Nuclear Regulatory Commission pro-
22 posed or entered into pursuant to its responsibilities
23 assumed under this subsection.
24 (c) OCCUPATIONAL SAFETY AND HEALTH.—

1 (1) OSHA JURISDICTION.—Notwithstanding
2 section 4(b)(1) of the Occupational Safety and
3 Health Act of 1970 (29 U.S.C. 653(b)(1)), effective
4 2 years after the date of enactment of this Act, the
5 Occupational Safety and Health Administration shall
6 assume the exclusive regulatory and enforcement re-
7 sponsibilities of the Department relating to matters
8 covered by the Occupational Safety and Health Act
9 of 1970 with regard to all nonmilitary energy lab-
10 oratories owned or operated by the Department, ex-
11 cept as provided in paragraph (2). The responsibil-
12 ities assumed by the Occupational Safety and Health
13 Administration under this subsection shall be admin-
14 istered by the Occupational Safety and Health Ad-
15 ministration, not by States. Any Department con-
16 tractor operating such a laboratory shall, with re-
17 spect to matters relating to occupational safety and
18 health, be considered to be an employer for purposes
19 of the Occupational Safety and Health Act of 1970.
20 (2) REGULATION OF HAZARDS CONTAINING RA-
21 DIOLOGICAL AND NON-RADIOLOGICAL COMPO-
22 NENT.—If a hazard at a nonmilitary energy labora-
23 tory owned or operated by the Department presents
24 a risk of occupational exposure and contains both a
25 radiological and non-radiological component, the Oc-

1 cupational Safety and Health Administration and
2 the Nuclear Regulatory Commission shall, effective 2
3 years after the date of enactment of this Act, share
4 regulatory and enforcement responsibilities with re-
5 spect to the hazard in accordance with the memo-
6 randum of understanding entered into pursuant to
7 subsection (d).

8 (d) MEMORANDUM OF UNDERSTANDING.—The Nu-
9 clear Regulatory Commission and the Occupational Safety
10 and Health Administration shall, not later than 1 year
11 after the date of enactment of this Act, enter into and
12 transmit to the Congress a memorandum of under-
13 standing to govern the exercise of their respective authori-
14 ties over nuclear safety and occupational safety and health
15 at nonmilitary energy laboratories owned or operated by
16 the Department.

17 (e) CIVIL PENALTIES.—The Department's contractor
18 operating a nonmilitary energy laboratory owned or oper-
19 ated by the Department shall not be liable for civil pen-
20 alties under the Atomic Energy Act of 1954 or the Occu-
21 pational Safety and Health Act of 1970 for any actions
22 taken before the date of transfer of regulatory authority
23 under this section, pursuant to the instructions of a Fed-
24 eral agency in preparation for the transfer of regulatory
25 and enforcement responsibilities required by this section.

1 (f) INDEMNIFICATION.—The Secretary shall continue
2 to indemnify nonmilitary energy laboratories owned or op-
3 erated by the Department in accordance with the provi-
4 sions of section 170 d. of the Atomic Energy Act of 1954.
5 (g) DEPARTMENT REPORTING REQUIREMENT.—Not
6 later than 18 months after the date of enactment of this
7 Act, the Secretary shall transmit to the Congress a plan
8 for the termination of the Department's regulatory and
9 enforcement responsibilities for nonmilitary energy labora-
10 tories owned or operated by the Department required by
11 this section. The report shall include—
12 (1) a detailed transition plan, drafted in coordi-
13 nation with the Nuclear Regulatory Commission and
14 the Occupational Safety and Health Administration,
15 giving the schedule for termination of self-regulation
16 authority as outlined in subsection (a), including the
17 activities to be coordinated with the Nuclear Regu-
18 latory Commission and the Occupational Safety and
19 Health Administration;
20 (2) a description of any issues remaining to be
21 resolved with the Nuclear Regulatory Commission,
22 the Occupational Safety and Health Administration,
23 or other external regulators, and a timetable for re-
24 solving such issues by the authority transfer date es-
25 tablished under this section; and

1 (3) an estimate of—

2 (A) the annual cost of administering and
3 implementing self-regulation of the nuclear
4 safety and occupational safety and health re-
5 sponsibilities described in subsections (b) and
6 (c) at nonmilitary energy laboratories owned or
7 operated by the Department;

8 (B) the number of Federal and contractor
9 employees administering and implementing such
10 self-regulation; and

11 (C) the extent and schedule by which the
12 Department and the staffs at its nonmilitary
13 energy laboratories will be reduced as a result
14 of implementation of this section.

15 (h) GENERAL ACCOUNTING OFFICE REPORTING RE-
16 QUIREMENT.—The Comptroller General of the United
17 States shall periodically report to the Congress on the
18 progress made in implementing this section. The Comp-
19 troller General shall provide a report not later than 20
20 months after the date of enactment of this Act on the De-
21 partment's transition plan, and not later than 26 months
22 after the date of enactment of this Act on the implementa-
23 tion of Nuclear Regulatory Commission and Occupational
24 Safety and Health Administration regulations in the non-
25 military energy laboratories.

1 (i) DEFINITION.—For purposes of this section, the
2 term "nonmilitary energy laboratory" means—
3 (1) Ames Laboratory;
4 (2) Argonne National Laboratory;
5 (3) Brookhaven National Laboratory;
6 (4) Fermi National Accelerator Laboratory;
7 (5) Lawrence Berkeley National Laboratory;
8 (6) Oak Ridge National Laboratory;
9 (7) Pacific Northwest National Laboratory;
10 (8) Princeton Plasma Physics Laboratory;
11 (9) Stanford Linear Accelerator Center; or
12 (10) Thomas Jefferson National Accelerator
13 Facility.

DESCRIPTION OF EN BLOC AMENDMENT OFFERED BY MRS. BIGGERT TO H.R. 610, THE ENERGY RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACT OF 2005

The first four cut and bite amendments are technical corrections to the base bill.

Amendment to **"Sec. 107. Science and Technology Scholarship Program."**

This amendment clarifies that the scholarship program is for graduate students.

Amendment to Sec. 109 **"Science and Engineering Pilot Program."**

This amendment sets up a pilot program at Oak Ridge National Laboratory, run by a university consortium, to help science teachers. The program can be expanded nationwide, on a competitive basis in fiscal year 2008. Authorizes $4 million per year for fiscal years 2006 through 2008, and $8 million per year for fiscal years 2009 and 2010.

The next six cut and bite amendments are technical corrections to the base bill.

Amendment to Sec. 303 **"Next Generation Lighting Initiative."**

The next amendment strikes the solid-state lighting initiative language in H.R. 610; Next Generation Lighting language from the H.R. 6 conference report is inserted later in the bill.

Amendment to Sec. 303 **"Standardization Report and Program."**

This amendment sets up a program to see if building codes can be changed to improve the energy efficiency and other qualities of buildings. Under the program, the National Institute of Building Sciences (NIBS) would conduct research evaluating current voluntary consensus standards for high-performance buildings. Based on that evaluation, Department of Energy (DOE) would provide grants and technical assistance to codewriting organizations that wanted to improve the ability of their codes to result in higher performing buildings.

Amendment to Sec. 303 **"strike subsection (c)" Reauthorization of the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988.**

This amendment strikes the reauthorization of the *Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988.*

Amendment to Sec. 307 **"Next Generation Lighting Initiative."**

This section puts the Next Generation Lighting language from the H.R. 6 conference report back in the bill. In the program, the Secretary would select an industry alliance to provide direction to the research, to make sure the research is useful for commercial products. Members of the industry alliance would also have the first shot at licensing any patents that result from the research. Authorizes $20 million in fiscal year 2006, $30 million in fiscal year 2007, and $50 million in fiscal years 2008 through 2010.

The next two cut and bite amendments are technical corrections to the base bill, including technical corrections to definitions of terms used in the Act.

Amendment to Sec. 308, **"strike 'In addition to the sums authorized in the Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988...'"**

This amendment strikes the authorizations of appropriations for the activities described by the previously stricken reauthorization of the *Steel and Aluminum Energy Conservation and Technology Competitiveness Act of 1988.* It also inserts authorizations of appropriations for the previously inserted Next Generation Lighting Initiative.

Amendment to Sec. 322 **"(c) High Voltage Transmission Lines."**

This amendment requires the Secretary to award a grant to a university research program to design and test techniques for optimizing power flow through existing high voltage transmission lines.

The next cut and bite amendment authorizes an additional $2 million in fiscal year 2006 for the high voltage transmission line grant program described above.

The next ten cut and bite amendments are technical corrections to the base bill.

Amendment to **"Sec. 409. Additional Programs."**

This amendment inserts a program to encourage the demonstration of renewable energy in State and local government buildings. This program was included in the H.R. 6 conference report.

Amendment to Title VI, Subtitle A, Fossil Energy Research Programs, **"Sec. 606. Carbon Dioxide Capture Research and Development."**

This amendment authorizes research and development aimed at developing carbon dioxide capture technologies that could be used on existing coal-fired power plants.

The next amendment is technical in nature and the last two cut and bite amendments authorize $150 million for the Carbon Dioxide Capture Research and Development described above for fiscal years 2006–2010.

DESCRIPTION OF AMENDMENT OFFERED BY MR. COSTELLO AND MR. CALVERT TO H.R. 610, ENERGY RESEARCH DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION ACT OF 2005

External Regulation of Department of Energy (DOE) nonmilitary energy laboratories.

"Sec. 212. External Regulation of Department."

This amendment would eliminate DOE's regulatory and enforcement authority with respect to nuclear safety, and occupational safety and health responsibilities at nonmilitary energy laboratories owned or operated by DOE, effective two years after the date of enactment of the Act. At that time, nuclear safety regulatory and enforcement responsibilities at those laboratories would be assumed by the Nuclear Regulatory Commission (NRC), while the Occupational Safety and Health Administration (OSHA) would assume regulatory and enforcement responsibility at those laboratories for matters related to the *Occupational Safety and Health Act of 1970.* The amendment gives both NRC and OSHA authority to regulate DOE contractors, while exempting contractors from costs and other liabilities associated with decommissioning a nuclear facility at a DOE owned or operated nonmilitary energy laboratory. The amendment provides for a two-year transition period during which OSHA and NRC will develop a memorandum of understanding to clearly delineate their responsibilities. The amendment requires the Government Accountability Office to periodically report to Congress on DOE's progress in implementing these requirements.

○