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107TH CONGRESS, 1st Session | HOUSE OF REPRESENTATIVES | REPORT 107–177

# COMPREHENSIVE ENERGY RESEARCH AND TECHNOLOGY ACT OF 2001

JULY 31, 2001.—Committed to the Committee of the Whole House on the State of the Union and 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. 2460]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, to whom was referred the bill (H.R. 2460) to authorize appropriations for environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities of the Department of Energy and of the Office of Air and Radiation of the Environmental Protection Agency, and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

CONTENTS

| | | Page |
|---|---|---|
| I. | Amendment | 2 |
| II. | Purpose of the Bill | 43 |
| III. | Background and Need for Legislation | 44 |
| IV. | Summary of Hearings | 46 |
| V. | Committee Action | 49 |
| VI. | Summary of Major Provisions of the Bill | 51 |
| VII. | Section-by-Section Analysis | 67 |
| VIII. | Committee Views | 104 |
| IX. | Cost Estimate | 112 |
| X. | Congressional Budget Office Cost Estimate | 113 |

74–281

XI. Compliance With Public Law 104–4 (Unfunded Mandates) ..... 115
XII. Committee Oversight Findings and Recommendations ..... 115
XIII. Constitutional Authority Statement ..... 115
XIV. Federal Advisory Committee Statement ..... 115
XV. Congressional Accountability Act ..... 116
XVI. Statement on Preemption of State, Local, or Tribal Law ..... 116
XVII. Changes in Existing Law Made by the Bill, as Reported ..... 116
XVIII. Committee Recommendations ..... 124
XIX. Statement of General Performance Goals and Objectives ..... 124
XX. Exchange of Committee Correspondence ..... 125
XXI. Additional Views ..... 126
XXII. Proceedings of Full Committee Markup ..... 127

## 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 "Comprehensive Energy Research and Technology Act of 2001".

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

Sec. 1. Short title; table of contents.
Sec. 2. Findings.
Sec. 3. Purposes.
Sec. 4. Goals.
Sec. 5. Definitions.
Sec. 6. Authorizations.
Sec. 7. Balance of funding priorities.

TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY

Subtitle A—Alternative Fuel Vehicles

Sec. 101. Short title.
Sec. 102. Definitions.
Sec. 103. Pilot program.
Sec. 104. Reports to Congress.
Sec. 105. Authorization of appropriations.

Subtitle B—Distributed Power Hybrid Energy Systems

Sec. 121. Findings.
Sec. 122. Definitions.
Sec. 123. Strategy.
Sec. 124. High power density industry program.
Sec. 125. Micro-cogeneration energy technology.
Sec. 126. Program plan.
Sec. 127. Report.
Sec. 128. Voluntary consensus standards.

Subtitle C—Secondary Electric Vehicle Battery Use

Sec. 131. Definitions.
Sec. 132. Establishment of secondary electric vehicle battery use program.
Sec. 133. Authorization of appropriations.

Subtitle D—Green School Buses

Sec. 141. Short title.
Sec. 142. Establishment of pilot program.
Sec. 143. Fuel cell bus development and demonstration program.
Sec. 144. Authorization of appropriations.

Subtitle E—Next Generation Lighting Initiative

Sec. 151. Short title.
Sec. 152. Definition.
Sec. 153. Next Generation Lighting Initiative.
Sec. 154. Study.
Sec. 155. Grant program.

Subtitle F—Department of Energy Authorization of Appropriations

Sec. 161. Authorization of appropriations.

Subtitle G—Environmental Protection Agency Office of Air and Radiation Authorization of Appropriations

Sec. 171. Short title.
Sec. 172. Authorization of appropriations.
Sec. 173. Limits on use of funds.
Sec. 174. Cost sharing.
Sec. 175. Limitation on demonstration and commercial applications of energy technology.
Sec. 176. Reprogramming.
Sec. 177. Budget request format.
Sec. 178. Other provisions.

Subtitle H—National Building Performance Initiative

Sec. 181. National Building Performance Initiative.

TITLE II—RENEWABLE ENERGY

Subtitle A—Hydrogen

Sec. 201. Short title.
Sec. 202. Purposes.
Sec. 203. Definitions.
Sec. 204. Reports to Congress.
Sec. 205. Hydrogen research and development.
Sec. 206. Demonstrations.
Sec. 207. Technology transfer.
Sec. 208. Coordination and consultation.
Sec. 209. Advisory Committee.
Sec. 210. Authorization of appropriations.
Sec. 211. Repeal.

Subtitle B—Bioenergy

Sec. 221. Short title.
Sec. 222. Findings.
Sec. 223. Definitions.
Sec. 224. Authorization.
Sec. 225. Authorization of appropriations.

Subtitle C—Transmission Infrastructure Systems

Sec. 241. Transmission infrastructure systems research, development, demonstration, and commercial application.
Sec. 242. Program plan.
Sec. 243. Report.

Subtitle D—Department of Energy Authorization of Appropriations

Sec. 261. Authorization of appropriations.

TITLE III—NUCLEAR ENERGY

Subtitle A—University Nuclear Science and Engineering

Sec. 301. Short title.
Sec. 302. Findings.
Sec. 303. Department of Energy program.
Sec. 304. Authorization of appropriations.

Subtitle B—Advanced Fuel Recycling Technology Research and Development Program

Sec. 321. Program.

Subtitle C—Department of Energy Authorization of Appropriations

Sec. 341. Nuclear Energy Research Initiative.
Sec. 342. Nuclear Energy Plant Optimization program.
Sec. 343. Nuclear energy technologies.
Sec. 344. Authorization of appropriations.

TITLE IV—FOSSIL ENERGY

Subtitle A—Clean Coal

Sec. 401. Short title.
Sec. 402. Findings.
Sec. 403. Definition.
Sec. 404. Clean Coal Power Initiative.
Sec. 405. Authorization of appropriations.
Sec. 406. Project criteria.
Sec. 407. Clean coal centers of excellence.

Subtitle B—Oil and Gas

Sec. 421. Petroleum-oil technology.
Sec. 422. Gas.

Subtitle C—Ultra-Deepwater and Unconventional Drilling

Sec. 441. Short title.
Sec. 442. Definitions.
Sec. 443. Ultra-deepwater program.
Sec. 444. National Energy Technology Laboratory.
Sec. 445. Advisory Committee.
Sec. 446. Research Organization.
Sec. 447. Grants.
Sec. 448. Plan and funding.
Sec. 449. Audit.
Sec. 450. Fund.
Sec. 451. Sunset.

Subtitle D—Fuel Cells

Sec. 461. Fuel cells.

Subtitle E—Department of Energy Authorization of Appropriations

Sec. 481. Authorization of appropriations.

TITLE V—SCIENCE

Subtitle A—Fusion Energy Sciences

Sec. 501. Short title.
Sec. 502. Findings.
Sec. 503. Plan for fusion experiment.
Sec. 504. Plan for fusion energy sciences program.
Sec. 505. Authorization of appropriations.

Subtitle B—Spallation Neutron Source

Sec. 521. Definition.
Sec. 522. Authorization of appropriations.
Sec. 523. Report.
Sec. 524. Limitations.

Subtitle C—Facilities, Infrastructure, and User Facilities

Sec. 541. Definition.
Sec. 542. Facility and infrastructure support for nonmilitary energy laboratories.
Sec. 543. User facilities.

Subtitle D—Advisory Panel on Office of Science

Sec. 561. Establishment.
Sec. 562. Report.

Subtitle E—Department of Energy Authorization of Appropriations

Sec. 581. Authorization of appropriations.

TITLE VI—MISCELLANEOUS

Subtitle A—General Provisions for the Department of Energy

Sec. 601. Research, development, demonstration, and commercial application of energy technology programs, projects, and activities.
Sec. 602. Limits on use of funds.
Sec. 603. Cost sharing.
Sec. 604. Limitation on demonstration and commercial application of energy technology.
Sec. 605. Reprogramming.

Subtitle B—Other Miscellaneous Provisions

Sec. 611. Notice of reorganization.
Sec. 612. Limits on general plant projects.
Sec. 613. Limits on construction projects.
Sec. 614. Authority for conceptual and construction design.
Sec. 615. National Energy Policy Development Group mandated reports.
Sec. 616. Periodic reviews and assessments.

**SEC. 2. FINDINGS.**

The Congress finds that—

(1) the Nation's prosperity and way of life are sustained by energy use;

(2) the growing imbalance between domestic energy production and consumption means that the Nation is becoming increasingly reliant on imported energy, which has the potential to undermine the Nation's economy, standard of living, and national security;

(3) energy conservation and energy efficiency help maximize the use of available energy resources, reduce energy shortages, lower the Nation's reliance on energy imports, mitigate the impacts of high energy prices, and help protect the environment and public health;

(4) development of a balanced portfolio of domestic energy supplies will ensure that future generations of Americans will have access to the energy they need;

(5) energy efficiency technologies, renewable and alternative energy technologies, and advanced energy systems technologies will help diversify the Nation's energy portfolio with few adverse environmental impacts and are vital to delivering clean energy to fuel the Nation's economic growth;

(6) development of reliable, affordable, and environmentally sound energy efficiency technologies, renewable and alternative energy technologies, and advanced energy systems technologies will require maintenance of a vibrant fundamental scientific knowledge base and continued scientific and technological innovations that can be accelerated by Federal funding, whereas commercial deployment of such systems and technologies are the responsibility of the private sector;

(7) Federal funding should focus on those programs, projects, and activities that are long-term, high-risk, noncommercial, and well-managed, and that provide the potential for scientific and technological advances; and

(8) public-private partnerships should be encouraged to leverage scarce taxpayer dollars.

**SEC. 3. PURPOSES.**

The purposes of this Act are to—

(1) protect and strengthen the Nation's economy, standard of living, and national security by reducing dependence on imported energy;

(2) meet future needs for energy services at the lowest total cost to the Nation, including environmental costs, giving balanced and comprehensive consideration to technologies that improve the efficiency of energy end uses and that enhance energy supply;

(3) reduce the air, water, and other environmental impacts (including emissions of greenhouse gases) of energy production, distribution, transportation, and use through the development of environmentally sustainable energy systems;

(4) consider the comparative environmental impacts of the energy saved or produced by specific programs, projects, or activities;

(5) maintain the technological competitiveness of the United States and stimulate economic growth through the development of advanced energy systems and technologies;

(6) foster international cooperation by developing international markets for domestically produced sustainable energy technologies, and by transferring environmentally sound, advanced energy systems and technologies to developing countries to promote sustainable development;

(7) provide sufficient funding of programs, projects, and activities that are performance-based and modeled as public-private partnerships, as appropriate; and

(8) enhance the contribution of a given program, project, or activity to fundamental scientific knowledge.

**SEC. 4. GOALS.**

(a) IN GENERAL.—Subject to subsection (b), in order to achieve the purposes of this Act under section 3, the Secretary should conduct a balanced energy research, development, demonstration, and commercial application portfolio of programs guided by the following goals to meet the purposes of this Act under section 3.

(1) ENERGY CONSERVATION AND ENERGY EFFICIENCY.—

(A) For the Building Technology, State and Community Sector, the program should develop technologies, housing components, designs, and production methods that will, by 2010—

(i) reduce the monthly energy cost of new housing by 20 percent, compared to the cost as of the date of the enactment of this Act;

(ii) cut the environmental impact and energy use of new housing by 50 percent, compared to the impact and use as of the date of the enactment of this Act; and

(iii) improve durability and reduce maintenance costs by 50 percent compared to the durability and costs as of the date of the enactment of this Act.

(B) For the Industry Sector, the program should, in cooperation with the affected industries, improve the energy intensity of the major energy-consuming industries by at least 25 percent by 2010, compared to the energy intensity as of the date of the enactment of this Act.

(C) For Power Technologies, the program should, in cooperation with the affected industries—

(i) develop a microturbine (40 to 300 kilowatt) that is more than 40 percent more efficient by 2006, and more than 50 percent more efficient by 2010, compared to the efficiency as of the date of the enactment of this Act; and

(ii) develop advanced materials for combustion systems that reduce emissions of nitrogen oxides by 30 to 50 percent while increasing efficiency 5 to 10 percent by 2007, compared to such emissions as of the date of the enactment of this Act.

(D) For the Transportation Sector, the program should, in cooperation with affected industries—

(i) develop a production prototype passenger automobile that has fuel economy equivalent to 80 miles per gallon of gasoline by 2004;

(ii) develop class 7 and 8 heavy duty trucks and buses with ultra low emissions and the ability to use an alternative fuel that has an average fuel economy equivalent to—

(I) 10 miles per gallon of gasoline by 2007; and

(II) 13 miles per gallon of gasoline by 2010;

(iii) develop a production prototype of a passenger automobile with zero equivalent emissions that has an average fuel economy of 100 miles per gallon of gasoline by 2010; and

(iv) improve, by 2010, the average fuel economy of trucks—

(I) in classes 1 and 2 by 300 percent; and

(II) in classes 3 through 6 by 200 percent,

compared to the fuel economy as of the date of the enactment of this Act.

(2) RENEWABLE ENERGY.—

(A) For Hydrogen Research, to carry out the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990, as amended by subtitle A of title II of this Act.

(B) For bioenergy:

(i) The program should reduce the cost of bioenergy relative to other energy sources to enable the United States to triple bioenergy use by 2010.

(ii) For biopower systems, the program should reduce the cost of such systems to enable commercialization of integrated power-generating technologies that employ gas turbines and fuel cells integrated with bioenergy gasifiers within five years after the date of the enactment of this Act.

(iii) For biofuels, the program should accelerate research, development, and demonstration on advanced enzymatic hydrolysis technology for making ethanol from cellulosic feedstock, with the goal that between 2010 and 2015 ethanol produced from energy crops would be fully competitive in terms of price with gasoline as a neat fuel, in either internal combustion engines or fuel cell vehicles.

(C) For Geothermal Technology Development, the program should focus on advanced concepts for the long term. The first priority should be high-grade enhanced geothermal systems; the second priority should be lower grade, hot dry rock, and geopressured systems; and the third priority should be support of field demonstrations of enhanced geothermal systems technology, including sites in lower grade areas to demonstrate the benefits of reservoir concepts to different conditions.

(D) For Hydropower, the program should provide a new generation of turbine technologies that will increase generating capacity and will be less damaging to fish and aquatic ecosystems.

(E) For Concentrating Solar Power, the program should strengthen ongoing research, development, and demonstration combining high-efficiency and high-temperature receivers with advanced thermal storage and power cycles, with the goal of making solar-only power (including baseload solar power) widely competitive with fossil fuel power by 2015. The program should limit or halt its research and development on power-tower and power-trough technologies because further refinements to these concepts will not further their deployment, and should assess the market prospects for solar dish/engine technologies to determine whether continued research and development is warranted.

(F) For Photovoltaic Energy Systems, the program should pursue research, development, and demonstration that will, by 2005, increase the efficiency of thin film modules from the current 7 percent to 11 percent in multi-million watt production; reduce the direct manufacturing cost of photovoltaic modules by 30 percent from the current $2.50 per watt to $1.75 per watt by 2005; and establish greater than a 20-year lifetime of photovoltaic systems by improving the reliability and lifetime of balance-of-system components and reducing recurring cost by 40 percent. The program's top priority should be the development of sound manufacturing technologies for thin-film modules, and the program should make a concerted effort to integrate fundamental research and basic engineering research.

(G) For Solar Building Technology Research, the program should complete research and development on new polymers and manufacturing processes to reduce the cost of solar water heating by 50 percent by 2004, compared to the cost as of the date of enactment of this Act.

(H) For Wind Energy Systems, the program should reduce the cost of wind energy to three cents per kilowatt-hour at Class 6 (15 miles-per-hour annual average) wind sites by 2004, and 4 cents per kilowatt-hour in Class 4 (13 miles-per-hour annual average) wind sites by 2015, and further if required so that wind power can be widely competitive with fossil-fuel-based electricity in a restructured electric industry. Program research on advanced wind turbine technology should focus on turbulent flow studies, durable materials to extend turbine life, blade efficiency, and higher efficiency operation in low quality wind regimes.

(I) For Electric Energy Systems and Storage, including High Temperature Superconducting Research and Development, Energy Storage Systems, and

Transmission Reliability, the program should develop high capacity superconducting transmission lines and generators, highly reliable energy storage systems, and distributed generating systems to accommodate multiple types of energy sources under common interconnect standards.

(J) For the International Renewable Energy and Renewable Energy Production Incentive programs, and Renewable Program Support, the program should encourage the commercial application of renewable energy technologies by developed and developing countries, State and local governmental entities and nonprofit electric cooperatives, and by the competitive domestic market.

(3) NUCLEAR ENERGY.—

(A) For university nuclear science and engineering, the program should carry out the provisions of subtitle A of title III of this Act.

(B) For fuel cycle research, development, and demonstration, the program should carry out the provisions of subtitle B of title III of this Act.

(C) For the Nuclear Energy Research Initiative, the program should accomplish the objectives of section 341(b) of this Act.

(D) For the Nuclear Energy Plant Optimization Program, the program should accomplish the objectives of section 342(b) of this Act.

(E) For Nuclear Energy Technologies, the program should carry out the provisions of section 343 of this Act.

(F) For Advanced Radioisotope Power Systems, the program should ensure that the United States has adequate capability to power future satellite and space missions.

(4) FOSSIL ENERGY.—

(A) For core fossil energy research and development, the program should achieve the goals outlined by the Department's Vision 21 Program. This research should address fuel-flexible gasification and turbines, fuel cells, advanced-combustion systems, advanced fuels and chemicals, advanced modeling and systems analysis, materials and heat exchangers, environmental control technologies, gas-stream purification, gas-separation technology, and sequestration research and development focused on cost-effective novel concepts for capturing, reusing or storing, or otherwise mitigating carbon and other greenhouse gas emissions.

(B) For offshore oil and natural gas resources, the program should investigate and develop technologies to—

(i) extract methane hydrates in coastal waters of the United States, in accordance with the provisions of the Methane Hydrate Research and Development Act of 2000; and

(ii) develop natural gas and oil reserves in the ultra-deepwater of the Central and Western Gulf of Mexico. Research and development on ultra-deepwater resource recovery shall focus on improving the safety and efficiency of such recovery and of sub-sea production technology used for such recovery, while lowering costs.

(C) For transportation fuels, the program should support a comprehensive transportation fuels strategy to increase the price elasticity of oil supply and demand by focusing research on reducing the cost of producing transportation fuels from natural gas and indirect liquefaction of coal.

(5) SCIENCE.—The Secretary, through the Office of Science, should—

(A) develop and maintain a robust portfolio of fundamental scientific and energy research, including High Energy and Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences (including Materials Sciences, Chemical Sciences, Engineering and Geosciences, and Energy Biosciences), Advanced Scientific Computing, Energy Research and Analysis, Multiprogram Energy Laboratories-Facilities Support, Fusion Energy Sciences, and Facilities and Infrastructure;

(B) maintain, upgrade, and expand, as appropriate, and in accordance with the provisions of this Act, the scientific user facilities maintained by the Office of Science, and ensure that they are an integral part of the Department's mission for exploring the frontiers of fundamental energy sciences; and

(C) ensure that its fundamental energy sciences programs, where appropriate, help inform the applied research and development programs of the Department.

(b) REVIEW AND ASSESSMENT.—The Secretary shall perform an assessment that establishes measurable cost and performance-based goals, or that modifies the goals under subsection (a), as appropriate, for 2005, 2010, 2015, and 2020 for each of the programs authorized by this Act that would enable each such program to meet the purposes of this Act under section 3. Such assessment shall be based on the latest

scientific and technical knowledge, and shall also take into consideration, as appropriate, the comparative environmental impacts (including emissions of greenhouse gases) of the energy saved or produced by specific programs.

(c) CONSULTATION.—In establishing the measurable cost and performance-based goals under subsection (b), the Secretary shall consult with the private sector, institutions of higher learning, national laboratories, environmental organizations, professional and technical societies, and any other persons as the Secretary considers appropriate.

(d) SCHEDULE.—The Secretary shall—

(1) issue and publish in the Federal Register a set of draft measurable cost and performance-based goals for the programs authorized by this Act for public comment—

(A) in the case of a program established before the date of the enactment of this Act, not later than 120 days after the date of the enactment of this Act; and

(B) in the case of a program not established before the date of the enactment of this Act, not later than 120 days after the date of establishment of the program;

(2) not later than 60 days after the date of publication under paragraph (1), after taking into consideration any public comments received, transmit to the Congress and publish in the Federal Register the final measurable cost and performance-based goals; and

(3) update all such cost and performance-based goals on a biennial basis.

**SEC. 5. DEFINITIONS.**

For purposes of this Act, except as otherwise provided—

(1) the term "Administrator" means the Administrator of the Environmental Protection Agency;

(2) the term "appropriate congressional committees" means—

(A) the Committee on Science and the Committee on Appropriations of the House of Representatives; and

(B) the Committee on Energy and Natural Resources and the Committee on Appropriations of the Senate;

(3) the term "Department" means the Department of Energy; and

(4) the term "Secretary" means the Secretary of Energy.

**SEC. 6. AUTHORIZATIONS.**

Authorizations of appropriations under this Act are for environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities.

**SEC. 7. BALANCE OF FUNDING PRIORITIES.**

(a) SENSE OF CONGRESS.—It is the sense of the Congress that the funding of the various programs authorized by titles I through IV of this Act should remain in the same proportion to each other as provided in this Act, regardless of the total amount of funding made available for those programs.

(b) REPORT TO CONGRESS.—If for fiscal year 2002, 2003, or 2004 the amounts appropriated in general appropriations Acts for the programs authorized in titles I through IV of this Act are not in the same proportion to one another as are the authorizations for such programs in this Act, the Secretary and the Administrator shall, within 60 days after the date of the enactment of the last general appropriations Act appropriating amounts for such programs, transmit to the appropriate congressional committees a report describing the programs, projects, and activities that would have been funded if the proportions provided for in this Act had been maintained in the appropriations. The amount appropriated for the program receiving the highest percentage of its authorized funding for a fiscal year shall be used as the baseline for calculating the proportional deficiencies of appropriations for other programs in that fiscal year.

# TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY

## Subtitle A—Alternative Fuel Vehicles

**SEC. 101. SHORT TITLE.**

This subtitle may be cited as the "Alternative Fuel Vehicle Acceleration Act of 2001".

**SEC. 102. DEFINITIONS.**

For the purposes of this subtitle, the following definitions apply:

(1) ALTERNATIVE FUEL VEHICLE.—

(A) IN GENERAL.—Except as provided in subparagraph (B), the term "alternative fuel vehicle" means a motor vehicle that is powered—

(i) in whole or in part by electricity, including electricity supplied by a fuel cell;

(ii) by liquefied natural gas;

(iii) by compressed natural gas;

(iv) by liquefied petroleum gas;

(v) by hydrogen;

(vi) by methanol or ethanol at no less than 85 percent by volume; or

(vii) by propane.

(B) EXCLUSIONS.—The term "alternative fuel vehicle" does not include—

(i) any vehicle designed to operate solely on gasoline or diesel derived from fossil fuels, regardless of whether it can also be operated on an alternative fuel; or

(ii) any vehicle that the Secretary determines, by rule, does not yield substantial environmental benefits over a vehicle operating solely on gasoline or diesel derived from fossil fuels.

(2) PILOT PROGRAM.—The term "pilot program" means the competitive grant program established under section 103.

(3) ULTRA-LOW SULFUR DIESEL VEHICLE.—The term "ultra-low sulfur diesel vehicle" means a vehicle powered by a heavy-duty diesel engine that—

(A) is fueled by diesel fuel which contains sulfur at not more than 15 parts per million; and

(B) emits not more than the lesser of—

(i) for vehicles manufactured in—

(I) model years 2001 through 2003, 3.0 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter; and

(II) model years 2004 through 2006, 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 emissions of nonmethane hydrocarbons, oxides of nitrogen, and particulate matter of the best performing technology of ultra-low sulfur diesel vehicles of the same type that are commercially available.

**SEC. 103. PILOT PROGRAM.**

(a) ESTABLISHMENT.—The Secretary shall establish a competitive grant pilot program to provide not more than 15 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.—Grants under this section may be used for the following purposes:

(1) The acquisition of alternative fuel vehicles, including—

(A) passenger vehicles;

(B) buses used for public transportation or transportation to and from schools;

(C) delivery vehicles for goods or services;

(D) ground support vehicles at public airports, including vehicles to carry baggage or push airplanes away from terminal gates; and

(E) motorized two-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 ultra-low sulfur diesel vehicles.

(3) Infrastructure necessary to directly support an alternative fuel vehicle project funded by the grant, including fueling and other support equipment.

(4) Operation and maintenance of vehicles, infrastructure, and equipment acquired as part of a project funded by the grant.

(c) APPLICATIONS.—

(1) REQUIREMENTS.—The Secretary shall issue requirements for applying for grants under the pilot program. At a minimum, the Secretary shall require that applications be submitted by the head of a State or local government or a metropolitan transportation authority, or any combination thereof, and shall include—

(A) at least one project to enable passengers or goods to be transferred directly from one alternative fuel vehicle or ultra-low sulfur diesel vehicle to another in a linked transportation system;

(B) a description of the projects proposed in the application, including how they meet the requirements of this subtitle;

(C) an estimate of the ridership or degree of use of the projects proposed in the application;

(D) an estimate of the air pollution emissions reduced and fossil fuel displaced as a result of the projects proposed in the application, and a plan to collect and disseminate environmental data, related to the projects to be funded under the grant, over the life of the projects;

(E) a description of how the projects proposed in the application will be sustainable without Federal assistance after the completion of the term of the grant;

(F) a complete description of the costs of each project proposed in the application, including acquisition, construction, operation, and maintenance costs over the expected life of the project;

(G) a description of which costs of the projects proposed in the application will be supported by Federal assistance under this subtitle; and

(H) 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 projects, and a commitment by the applicant to use such fuel in carrying out the projects.

(2) PARTNERS.—An applicant under paragraph (1) may carry out projects under the pilot program in partnership with public and private entities.

(d) SELECTION CRITERIA.—In evaluating applications under the pilot program, the Secretary shall consider each applicant's previous experience with similar projects and shall give priority consideration to applications that—

(1) are most likely to maximize protection of the environment;

(2) demonstrate the greatest commitment on the part of the applicant to ensure funding for the proposed projects and the greatest likelihood that each project proposed in the application will be maintained or expanded after Federal assistance under this subtitle is completed; and

(3) exceed the minimum requirements of subsection (c)(1)(A).

(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 achieve nationwide deployment of alternative fuel vehicles through the pilot program, and shall 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 3 months 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 within 6 months of the publication of the notice.

(2) SELECTION.—Not later than 6 months after the date by which applications for grants are due, the Secretary shall select by competitive, peer review 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 percent and not more than 25 percent of the grant funding made available under this section for the acquisition of ultra-low sulfur diesel vehicles.

**SEC. 104. REPORTS TO CONGRESS.**

(a) INITIAL REPORT.—Not later than 2 months after the date grants are awarded under this subtitle, the Secretary shall transmit to the appropriate congressional committees 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 transmit to the appropriate congressional committees a report containing an evaluation of the effectiveness of the pilot program, including an assessment of the benefits to the environment derived from the projects included in the pilot program as well as an estimate of the potential benefits to the environment to be derived from widespread application of alternative fuel vehicles and ultra-low sulfur diesel vehicles.

**SEC. 105. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Secretary $200,000,000 to carry out this subtitle, to remain available until expended.

# Subtitle B—Distributed Power Hybrid Energy Systems

**SEC. 121. FINDINGS.**

The Congress makes the following findings:

(1) Our ability to take advantage of our renewable, indigenous resources in a cost-effective manner can be greatly advanced through systems that compensate for the intermittent nature of these resources through distributed power hybrid systems.

(2) Distributed power hybrid systems can—

(A) shelter consumers from temporary energy price volatility created by supply and demand mismatches;

(B) increase the reliability of energy supply; and

(C) address significant local differences in power and economic development needs and resource availability that exist throughout the United States.

(3) Realizing these benefits will require a concerted and integrated effort to remove market barriers to adopting distributed power hybrid systems by—

(A) developing the technological foundation that enables designing, testing, certifying, and operating distributed power hybrid systems; and

(B) providing the policy framework that reduces such barriers.

(4) While many of the individual distributed power hybrid systems components are either available or under development in existing private and public sector programs, the capabilities to integrate these components into workable distributed power hybrid systems that maximize benefits to consumers in a safe manner often are not coherently being addressed.

**SEC. 122. DEFINITIONS.**

For purposes of this subtitle—

(1) the term "distributed power hybrid system" means a system using 2 or more distributed power sources, operated together with associated supporting equipment, including storage equipment, and software necessary to provide electric power onsite and to an electric distribution system; and

(2) the term "distributed power source" means an independent electric energy source of usually 10 megawatts or less located close to a residential, commercial, or industrial load center, including—

(A) reciprocating engines;

(B) turbines;

(C) microturbines;

(D) fuel cells;

(E) solar electric systems;

(F) wind energy systems;

(G) biopower systems;

(H) geothermal power systems; or

(I) combined heat and power systems.

**SEC. 123. STRATEGY.**

(a) REQUIREMENT.—Not later than 1 year after the date of the enactment of this Act, the Secretary shall develop and transmit to the Congress a distributed power hybrid systems strategy showing—

(1) needs best met with distributed power hybrid systems configurations, especially systems including one or more solar or renewable power sources; and

(2) technology gaps and barriers (including barriers to efficient connection with the power grid) that hamper the use of distributed power hybrid systems.

(b) ELEMENTS.—The strategy shall provide for development of—

(1) system integration tools (including databases, computer models, software, sensors, and controls) needed to plan, design, build, and operate distributed power hybrid systems for maximum benefits;

(2) tests of distributed power hybrid systems, power parks, and microgrids, including field tests and cost-shared demonstrations with industry;

(3) design tools to characterize the benefits of distributed power hybrid systems for consumers, to reduce testing needs, to speed commercialization, and to generate data characterizing grid operations, including interconnection requirements;

(4) precise resource assessment tools to map local resources for distributed power hybrid systems; and

(5) a comprehensive research, development, demonstration, and commercial application program to ensure the reliability, efficiency, and environmental integrity of distributed energy resources, focused on filling gaps in distributed power hybrid systems technologies identified under subsection (a)(2), which may include—

(A) integration of a wide variety of advanced technologies into distributed power hybrid systems;

(B) energy storage devices;

(C) environmental control technologies;

(D) interconnection standards, protocols, and equipment; and

(E) ancillary equipment for dispatch and control.

(c) IMPLEMENTATION AND INTEGRATION.—The Secretary shall implement the strategy transmitted under subsection (a) and the research program under subsection (b)(5). Activities pursuant to the strategy shall be integrated with other activities of the Department's Office of Power Technologies.

**SEC. 124. HIGH POWER DENSITY INDUSTRY PROGRAM.**

(a) IN GENERAL.—The Secretary shall develop and implement a comprehensive research, development, demonstration, and commercial application program to improve energy efficiency, reliability, and environmental responsibility in high power density industries, such as data centers, server farms, telecommunications facilities, and heavy industry.

(b) AREAS.—In carrying out this section, the Secretary shall consider technologies that provide—

(1) significant improvement in efficiency of high power density facilities, and in data and telecommunications centers, using advanced thermal control technologies;

(2) significant improvements in air-conditioning efficiency in facilities such as data centers and telecommunications facilities;

(3) significant advances in peak load reduction; and

(4) advanced real time metering and load management and control devices.

(c) IMPLEMENTATION AND INTEGRATION.—Activities pursuant to this program shall be integrated with other activities of the Department's Office of Power Technologies.

**SEC. 125. MICRO-COGENERATION ENERGY TECHNOLOGY.**

The Secretary shall make competitive, merit-based grants to consortia of private sector entities for the development of micro-cogeneration energy technology. The consortia shall explore the creation of small-scale combined heat and power through the use of residential heating appliances. There are authorized to be appropriated to the Secretary $20,000,000 to carry out this section, to remain available until expended.

**SEC. 126. PROGRAM PLAN.**

Within 4 months after the date of enactment of this Act, the Secretary, in consultation with other appropriate Federal agencies, shall prepare and transmit to the Congress a 5-year program plan to guide activities under this subtitle. In preparing the program plan, the Secretary shall consult with appropriate representatives of the distributed energy resources, power transmission, and high power density industries to prioritize appropriate program areas. The Secretary shall also seek the advice of utilities, energy services providers, manufacturers, institutions of higher

learning, other appropriate State and local agencies, environmental organizations, professional and technical societies, and any other persons the Secretary considers appropriate.

**SEC. 127. REPORT.**

Two years after date of enactment of this Act and at two year intervals thereafter, the Secretary, jointly with other appropriate Federal agencies, shall transmit a report to Congress describing the progress made to achieve the purposes of this subtitle.

**SEC. 128. VOLUNTARY CONSENSUS STANDARDS.**

Not later than 2 years after the date of enactment of this Act, the Secretary, in consultation with the National Institute of Standards and Technology, shall work with the Institute of Electrical and Electronic Engineers and other standards development organizations toward the development of voluntary consensus standards for distributed energy systems for use in manufacturing and using equipment and systems for connection with electric distribution systems, for obtaining electricity from, or providing electricity to, such systems.

# Subtitle C—Secondary Electric Vehicle Battery Use

**SEC. 131. DEFINITIONS.**

For purposes of this subtitle, the term—

(1) "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; and

(2) "associated equipment" means equipment located at the location where the batteries will be used that is necessary to enable the use of the energy stored in the batteries.

**SEC. 132. ESTABLISHMENT OF SECONDARY ELECTRIC VEHICLE BATTERY USE PROGRAM.**

(a) PROGRAM.—The Secretary shall establish and conduct a research, development, and demonstration program for the secondary use of batteries where the original use of such batteries was in transportation applications. Such program shall be—

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

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

(3) coordinated with ongoing secondary battery use programs underway at the national laboratories and in industry.

(b) SOLICITATION.—(1) Not later than 6 months after the date of the enactment of this Act, 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.

(2)(A) Proposals submitted in response to a solicitation under this section shall include—

(i) a description of the project, including the batteries to be used in the project, the proposed locations and applications for the batteries, the number of batteries to be demonstrated, and the type, characteristics, and estimated lifecycle costs of the batteries compared to other energy storage devices currently used;

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

(iii) the type of associated equipment to be demonstrated and the type of supporting infrastructure to be demonstrated; and

(iv) any other information the Secretary considers appropriate.

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

(c) SELECTION OF PROPOSALS.—(1)(A) The Secretary shall, not later than 3 months after the closing date established by the Secretary for receipt of proposals under subsection (b), select at least 5 proposals to receive financial assistance under this section.

(B) No one project selected under this section shall receive more than 25 percent of the funds authorized under this section. No more than 3 projects selected under this section shall demonstrate the same battery type.

(2) In selecting a proposal under this section, the Secretary shall consider—

(A) the ability of the proposer to acquire the batteries and associated equipment and to successfully manage and conduct the demonstration project, including the reporting requirements set forth in paragraph (3)(B);

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

(C) the long-term technical and competitive viability of the batteries to be used in the project and of the original manufacturer of such batteries;

(D) the suitability of the batteries for their intended uses;

(E) the technical performance of the battery, including the expected additional useful life and the battery's ability to retain energy;

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

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

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

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

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

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

(A) as a part of a demonstration project, the users of the batteries provide to the proposer information regarding the operation, maintenance, performance, and use of the batteries, and the proposer provide such information to the battery manufacturer, for 3 years after the beginning of the demonstration project;

(B) the proposer provide to the Secretary such information regarding the operation, maintenance, performance, and use of the batteries as the Secretary may request during the period of the demonstration project; and

(C) the proposer provide at least 50 percent of the costs associated with the proposal.

**SEC. 133. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Secretary, from amounts authorized under section 161(a), for purposes of this subtitle—

(1) $1,000,000 for fiscal year 2002;

(2) $7,000,000 for fiscal year 2003; and

(3) $7,000,000 for fiscal year 2004.

Such appropriations may remain available until expended.

## Subtitle D—Green School Buses

**SEC. 141. SHORT TITLE.**

This subtitle may be cited as the "Clean Green School Bus Act of 2001".

**SEC. 142. ESTABLISHMENT OF PILOT PROGRAM.**

(a) ESTABLISHMENT.—The Secretary shall establish a pilot program for awarding grants on a competitive basis to eligible entities for the demonstration and commercial application of alternative fuel school buses and ultra-low sulfur diesel school buses.

(b) REQUIREMENTS.—Not later than 3 months after the date of the enactment of this Act, the Secretary 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 certification requirements to ensure compliance with this subtitle.

(c) SOLICITATION.—Not later than 6 months after the date of the enactment of this Act, the Secretary shall solicit proposals for grants under this section.

(d) ELIGIBLE RECIPIENTS.—A grant shall be awarded under this section only—

(1) to a local governmental entity responsible for providing school bus service for one or more public school systems; or

(2) jointly to an entity described in paragraph (1) and a contracting entity that provides school bus service to the public school system or systems.

(e) TYPES OF GRANTS.—

(1) IN GENERAL.—Grants under this section shall be for the demonstration and commercial application of technologies to facilitate the use of alternative fuel school buses and ultra-low sulfur diesel school buses in lieu of buses manufactured before model year 1977 and diesel-powered buses manufactured before model year 1991.

(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 Secretary shall give priority to awarding grants to applicants who can demonstrate the use of alternative fuel buses and ultra-low sulfur diesel school buses in lieu of buses manufactured before model year 1977.

(f) CONDITIONS OF GRANT.—A grant provided under this section shall include the following conditions:

(1) 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) 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 school buses, including State taxes and contract fees; and

(B) to provide—

(i) up to 10 percent of the price of the alternative fuel buses acquired, for necessary alternative fuel infrastructure if the infrastructure will only be available to the grant recipient; and

(ii) up to 15 percent of the price of the alternative fuel buses acquired, for necessary alternative fuel infrastructure if the infrastructure will be available to the grant recipient and to other bus fleets.

(3) The grant recipient shall be required to provide at least the lesser of 15 percent of the total cost of each bus received or $15,000 per bus.

(4) In the case of a grant recipient receiving a grant to demonstrate ultra-low sulfur diesel school buses, the grant recipient shall be required to provide 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 purposes of the grant, and a commitment by the applicant to use such fuel in carrying out the purposes of the grant.

(g) BUSES.—Funding under a grant made under this section may be used to demonstrate the use only of new alternative fuel school buses or ultra-low sulfur diesel school buses—

(1) with a gross vehicle weight of greater than 14,000 pounds;

(2) that are powered by a heavy duty engine;

(3) that, in the case of alternative fuel school buses, emit not more than—

(A) for buses manufactured in model years 2001 and 2002, 2.5 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter; and

(B) for buses manufactured in model years 2003 through 2006, 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

(4) that, in the case of ultra-low sulfur diesel school buses, emit not more than—

(A) for buses manufactured in model years 2001 through 2003, 3.0 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter; and

(B) for buses manufactured in model years 2004 through 2006, 2.5 grams per brake horsepower-hour of nonmethane hydrocarbons and oxides of nitrogen and .01 grams per brake horsepower-hour of particulate matter,

except that under no circumstances shall buses be acquired under this section that emit nonmethane hydrocarbons, oxides of nitrogen, or particulate matter at a rate greater than the best performing technology of ultra-low sulfur diesel school buses commercially available at the time the grant is made.

(h) DEPLOYMENT AND DISTRIBUTION.—The Secretary shall seek to the maximum extent practicable to achieve nationwide deployment of alternative fuel school buses through the program under this section, and shall 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) LIMIT ON FUNDING.—The Secretary shall provide not less than 20 percent and not more than 25 percent of the grant funding made available under this section for any fiscal year for the acquisition of ultra-low sulfur diesel school buses.

(j) DEFINITIONS.—For purposes of this section—

(1) the term "alternative fuel school bus" means a bus powered substantially by electricity (including electricity supplied by a fuel cell), or by liquefied natural gas, compressed natural gas, liquefied petroleum gas, hydrogen, propane, or methanol or ethanol at no less than 85 percent by volume; and

(2) the term "ultra-low sulfur diesel school bus" means a school bus powered by diesel fuel which contains sulfur at not more than 15 parts per million.

**SEC. 143. FUEL CELL BUS DEVELOPMENT AND DEMONSTRATION PROGRAM.**

(a) ESTABLISHMENT OF PROGRAM.—The Secretary shall establish a program for entering into cooperative agreements with private sector fuel cell bus developers for the development of fuel cell-powered school buses, and 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) FUNDING.—No more than $25,000,000 of the amounts authorized under section 144 may be used for carrying out this section for the period encompassing fiscal years 2002 through 2006.

(d) REPORTS TO CONGRESS.—Not later than 3 years after the date of the enactment of this Act, and not later than October 1, 2006, the Secretary shall transmit to the appropriate congressional committees 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.

**SEC. 144. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Secretary for carrying out this subtitle, to remain available until expended—

(1) $40,000,000 for fiscal year 2002;

(2) $50,000,000 for fiscal year 2003;

(3) $60,000,000 for fiscal year 2004;

(4) $70,000,000 for fiscal year 2005; and

(5) $80,000,000 for fiscal year 2006.

## Subtitle E—Next Generation Lighting Initiative

**SEC. 151. SHORT TITLE.**

This subtitle may be cited as "Next Generation Lighting Initiative Act".

**SEC. 152. DEFINITION.**

In this subtitle, the term "Lighting Initiative" means the "Next Generation Lighting Initiative" established under section 153(a).

**SEC. 153. NEXT GENERATION LIGHTING INITIATIVE.**

(a) ESTABLISHMENT.—The Secretary is authorized to establish a lighting initiative to be known as the "Next Generation Lighting Initiative" to research, develop, and conduct demonstration activities on advanced lighting technologies, including white light emitting diodes.

(b) RESEARCH OBJECTIVES.—The research objectives of the Lighting Initiative shall be to develop, by 2011, advanced lighting technologies that, compared to incandescent and fluorescent lighting technologies as of the date of the enactment of this Act, are—

(1) longer lasting;

(2) more energy-efficient; and

(3) cost-competitive.

**SEC. 154. STUDY.**

(a) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Secretary, in consultation with other Federal agencies, as appropriate, shall complete a study on strategies for the development and commercial application of advanced lighting technologies. The Secretary shall request a review by the National Academies of Sciences and Engineering of the study under this subsection, and shall transmit the results of the study to the appropriate congressional committees.

(b) REQUIREMENTS.—The study shall—

(1) develop a comprehensive strategy to implement the Lighting Initiative; and

(2) identify the research and development, manufacturing, deployment, and marketing barriers that must be overcome to achieve a goal of a 25 percent market penetration by advanced lighting technologies into the incandescent and fluorescent lighting market by the year 2012.

(c) IMPLEMENTATION.—As soon as practicable after the review of the study under subsection (a) is transmitted to the Secretary by the National Academies of Sciences and Engineering, the Secretary shall adapt the implementation of the Lighting Initiative taking into consideration the recommendations of the National Academies of Sciences and Engineering.

**SEC. 155. GRANT PROGRAM.**

(a) IN GENERAL.—Subject to section 603 of this Act, the Secretary may make merit-based competitive grants to firms and research organizations that conduct research, development, and demonstration projects related to advanced lighting technologies.

(b) ANNUAL REVIEW.—

(1) IN GENERAL.—An annual independent review of the grant-related activities of firms and research organizations receiving a grant under this section shall be conducted by a committee appointed by the Secretary under the Federal Advisory Committee Act (5 U.S.C. App.), or, at the request of the Secretary, a committee appointed by the National Academies of Sciences and Engineering.

(2) REQUIREMENTS.—Using clearly defined standards established by the Secretary, the review shall assess technology advances and progress toward commercialization of the grant-related activities of firms or research organizations during each fiscal year of the grant program.

(c) TECHNICAL AND FINANCIAL ASSISTANCE.—The national laboratories and other Federal agencies, as appropriate, shall cooperate with and provide technical and financial assistance to firms and research organizations conducting research, development, and demonstration projects carried out under this subtitle.

# Subtitle F—Department of Energy Authorization of Appropriations

**SEC. 161. AUTHORIZATION OF APPROPRIATIONS.**

(a) OPERATION AND MAINTENANCE.—In addition to amounts authorized to be appropriated under section 105, section 125, and section 144, there are authorized to be appropriated to the Secretary for subtitle B, subtitle C, subtitle E, and for Energy Conservation operation and maintenance (including Building Technology, State and Community Sector (Nongrants), Industry Sector, Transportation Sector, Power Technologies, and Policy and Management) $625,000,000 for fiscal year 2002, $700,000,000 for fiscal year 2003, and $800,000,000 for fiscal year 2004, to remain available until expended.

(b) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (a) may be used for—

(1) Building Technology, State and Community Sector—

(A) Residential Building Energy Codes;

(B) Commercial Building Energy Codes;

(C) Lighting and Appliance Standards;

(D) Weatherization Assistance Program; or

(E) State Energy Program; or

(2) Federal Energy Management Program.

# Subtitle G—Environmental Protection Agency Office of Air and Radiation Authorization of Appropriations

**SEC. 171. SHORT TITLE.**

This subtitle may be cited as the "Environmental Protection Agency Office of Air and Radiation Authorization Act of 2001".

**SEC. 172. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Administrator for the Office of Air and Radiation $156,700,000 for fiscal year 2002, $163,000,000 for fiscal year 2003, and $169,400,000 for fiscal year 2004 to remain available until expended, of which—

(1) $28,300,000 for fiscal year 2002, $29,400,000 for fiscal year 2003, and $30,600,000 for fiscal year 2004 shall be for Science; and

(2) $128,400,000 for fiscal year 2002, $133,600,000 for fiscal year 2003, and $138,800,000 for fiscal year 2004 shall be for Climate Change Protection Programs, of which—

(A) $52,700,000 for fiscal year 2002, $54,800,000 for fiscal year 2003, and $57,000,000 for fiscal year 2004 shall be for Buildings;

(B) $32,400,000 for fiscal year 2002, $33,700,000 for fiscal year 2003, and $35,000,000 for fiscal year 2004 shall be for Transportation;

(C) $32,000,000 for fiscal year 2002, $33,300,000 for fiscal year 2003, and $34,600,000 for fiscal year 2004 shall be for Industry;

(D) $1,700,000 for fiscal year 2002, $1,750,000 for fiscal year 2003, and $1,800,000 for fiscal year 2004 shall be for Carbon Removal;

(E) $2,500,000 for fiscal year 2002, $2,600,000 for fiscal year 2003, and $2,700,000 for fiscal year 2004 shall be for State and Local Climate;

(F) $6,300,000 for fiscal year 2002, $6,600,000 for fiscal year 2003, and $6,800,000 for fiscal year 2004 shall be for International Capacity Building; and

(G) $800,000 for fiscal year 2002, $850,000 for fiscal year 2003, and $900,000 for fiscal year 2004 shall be for Technical Cooperation with Industrial and Developing Countries.

**SEC. 173. LIMITS ON USE OF FUNDS.**

(a) PRODUCTION OR PROVISION OF ARTICLES OR SERVICES.—None of the funds authorized to be appropriated by this subtitle may be used to produce or provide articles or services for the purpose of selling the articles or services to a person outside the Federal Government, unless the Administrator determines that comparable articles or services are not available from a commercial source in the United States.

(b) REQUESTS FOR PROPOSALS.—None of the funds authorized to be appropriated by this subtitle may be used by the Environmental Protection Agency to prepare or initiate Requests for Proposals for a program if the program has not been authorized by Congress.

**SEC. 174. COST SHARING.**

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

(b) DEMONSTRATION AND COMMERCIAL APPLICATION.—Except as otherwise provided in this subtitle, the Administrator shall require at least 50 percent of the costs directly and specifically related to any demonstration or commercial application project under this subtitle to be provided from non-Federal sources. The Administrator may reduce the non-Federal requirement under this subsection if the Administrator 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 subtitle.

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

**SEC. 175. LIMITATION ON DEMONSTRATION AND COMMERCIAL APPLICATIONS OF ENERGY TECHNOLOGY.**

The Administrator shall provide funding for scientific or energy demonstration or commercial application of energy technology programs, projects, or activities of the Office of Air and Radiation only for technologies or processes that can be reasonably expected to yield new, measurable benefits to the cost, efficiency, or performance of the technology or process.

**SEC. 176. REPROGRAMMING.**

(a) AUTHORITY.—The Administrator may use amounts appropriated under this subtitle for a program, project, or activity other than the program, project, or activity for which such amounts were appropriated only if—

(1) the Administrator has transmitted to the appropriate congressional committees a report described in subsection (b) and a period of 30 days has elapsed after such committees receive the report;

(2) amounts used for the program, project, or activity do not exceed—

(A) 105 percent of the amount authorized for the program, project, or activity; or

(B) $250,000 more than the amount authorized for the program, project, or activity,

whichever is less; and

(3) the program, project, or activity has been presented to, or requested of, the Congress by the Administrator.

(b) REPORT.—(1) The report referred to in subsection (a) is a report containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of the proposed action.

(2) In the computation of the 30-day period under subsection (a), there shall be excluded 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.

(c) LIMITATIONS.—(1) In no event may the total amount of funds obligated pursuant to this subtitle exceed the total amount authorized to be appropriated by this subtitle.

(2) Funds appropriated pursuant to this subtitle may not be used for an item for which Congress has declined to authorize funds.

**SEC. 177. BUDGET REQUEST FORMAT.**

The Administrator shall provide to the appropriate congressional committees, to be transmitted at the same time as the Environmental Protection Agency's annual budget request submission, a detailed justification for budget authorization for the programs, projects, and activities for which funds are authorized by this subtitle. Each such document shall include, for the fiscal year for which funding is being requested and for the 2 previous fiscal years—

(1) a description of, and funding requested or allocated for, each such program, project, or activity;

(2) an identification of all recipients of funds to conduct such programs, projects, and activities; and

(3) an estimate of the amounts to be expended by each recipient of funds identified under paragraph (2).

**SEC. 178. OTHER PROVISIONS.**

(a) ANNUAL OPERATING PLAN AND REPORTS.—The Administrator shall provide simultaneously to the Committee on Science of the House of Representatives—

(1) any annual operating plan or other operational funding document, including any additions or amendments thereto; and

(2) any report relating to the environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology programs, projects, or activities of the Environmental Protection Agency,

provided to any committee of Congress.

(b) NOTICE OF REORGANIZATION.—The Administrator shall provide notice to the appropriate congressional committees not later than 15 days before any reorganization of any environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Office of Air and Radiation.

# Subtitle H—National Building Performance Initiative

**SEC. 181. NATIONAL BUILDING PERFORMANCE INITIATIVE.**

(a) INTERAGENCY GROUP.—Not later than 3 months after the date of the enactment of this Act, the Director of the Office of Science and Technology Policy shall establish an Interagency Group responsible for the development and implementation of a National Building Performance Initiative to address energy conservation and research and development and related issues. The National Institute of Standards and Technology shall provide necessary administrative support for the Interagency Group.

(b) PLAN.—Not later than 9 months after the date of the enactment of this Act, the Interagency Group shall transmit to the Congress a multiyear implementation plan describing the Federal role in reducing the costs, including energy costs, of using, owning, and operating commercial, institutional, residential, and industrial buildings by 30 percent by 2020. The plan shall include—

(1) research, development, and demonstration of systems and materials for new construction and retrofit, on the building envelope and components; and

(2) the collection and dissemination in a usable form of research results and other pertinent information to the design and construction industry, government officials, and the general public.

(c) NATIONAL BUILDING PERFORMANCE ADVISORY COMMITTEE.—A National Building Performance Advisory Committee shall be established to advise on creation of the plan, review progress made under the plan, advise on any improvements that should be made to the plan, and report to the Congress on actions that have been taken to advance the Nation's capability in furtherance of the plan. The members shall include representatives of a broad cross-section of interests such as the research, technology transfer, architectural, engineering, and financial communities; materials and systems suppliers; State, county, and local governments; the residential, multifamily, and commercial sectors of the construction industry; and the insurance industry.

(d) REPORT.—The Interagency Group shall, within 90 days after the end of each fiscal year, transmit a report to the Congress describing progress achieved during the preceding fiscal year by government at all levels and by the private sector, toward implementing the plan developed under subsection (b), and including any amendments to the plan.

# TITLE II—RENEWABLE ENERGY

## Subtitle A—Hydrogen

**SEC. 201. SHORT TITLE.**

This subtitle may be cited as the "Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001".

**SEC. 202. PURPOSES.**

Section 102(b) of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

"(b) PURPOSES.—The purposes of this Act are—

"(1) to direct the Secretary to conduct research, development, and demonstration activities leading to the production, storage, transportation, and use of hydrogen for industrial, commercial, residential, transportation, and utility applications;

"(2) to direct the Secretary to develop a program of technology assessment, information dissemination, and education in which Federal, State, and local agencies, members of the energy, transportation, and other industries, and other entities may participate; and

"(3) to develop methods of hydrogen production that minimize adverse environmental impacts, with emphasis on efficient and cost-effective production from renewable energy resources.".

**SEC. 203. DEFINITIONS.**

Section 102(c) of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended—

(1) by redesignating paragraphs (1) through (3) as paragraphs (2) through (4), respectively; and

(2) by inserting before paragraph (2), as so redesignated by paragraph (1) of this section, the following new paragraph:

"(1) 'advisory committee' means the advisory committee established under section 108;".

**SEC. 204. REPORTS TO CONGRESS.**

Section 103 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

**"SEC. 103. REPORTS TO CONGRESS.**

"(a) REQUIREMENT.—Not later than 1 year after the date of the enactment of the Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001, and biennially thereafter, the Secretary shall transmit to Congress a detailed report on the status and progress of the programs and activities authorized under this Act.

"(b) CONTENTS.—A report under subsection (a) shall include, in addition to any views and recommendations of the Secretary—

"(1) an assessment of the extent to which the program is meeting the purposes specified in section 102(b);

"(2) a determination of the effectiveness of the technology assessment, information dissemination, and education program established under section 106;

"(3) an analysis of Federal, State, local, and private sector hydrogen-related research, development, and demonstration activities to identify productive areas for increased intergovernmental and private-public sector collaboration; and

"(4) recommendations of the advisory committee for any improvements needed in the programs and activities authorized by this Act.".

**SEC. 205. HYDROGEN RESEARCH AND DEVELOPMENT.**

Section 104 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

**"SEC. 104. HYDROGEN RESEARCH AND DEVELOPMENT.**

"(a) ESTABLISHMENT OF PROGRAM.—The Secretary shall conduct a hydrogen research and development program relating to production, storage, transportation, and use of hydrogen, with the goal of enabling the private sector to demonstrate the technical feasibility of using hydrogen for industrial, commercial, residential, transportation, and utility applications.

"(b) ELEMENTS.—In conducting the program authorized by this section, the Secretary shall—

"(1) give particular attention to developing an understanding and resolution of critical technical issues preventing the introduction of hydrogen as an energy carrier into the marketplace;

"(2) initiate or accelerate existing research and development in critical technical issues that will contribute to the development of more economical hydrogen production, storage, transportation, and use, including critical technical issues with respect to production (giving priority to those production techniques that use renewable energy resources as their primary source of energy for hydrogen production), liquefaction, transmission, distribution, storage, and use (including use of hydrogen in surface transportation); and

"(3) survey private sector and public sector hydrogen research and development activities worldwide, and take steps to ensure that research and development activities under this section do not—

"(A) duplicate any available research and development results; or

"(B) displace or compete with the privately funded hydrogen research and development activities of United States industry.

"(c) EVALUATION OF TECHNOLOGIES.—The Secretary shall evaluate, for the purpose of determining whether to undertake or fund research and development activities under this section, any reasonable new or improved technology that could lead or contribute to the development of economical hydrogen production, storage, transportation, and use.

"(d) RESEARCH AND DEVELOPMENT SUPPORT.—The Secretary is authorized to arrange for tests and demonstrations and to disseminate to researchers and developers information, data, and other materials necessary to support the research and development activities authorized under this section and other efforts authorized under this Act, consistent with section 106 of this Act.

"(e) COMPETITIVE PEER REVIEW.—The Secretary shall carry out or fund research and development activities under this section only on a competitive basis using peer review.

"(f) COST SHARING.—For research and development programs carried out under this section, 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.".

**SEC. 206. DEMONSTRATIONS.**

Section 105 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended—

(1) in subsection (a), by striking ", preferably in self-contained locations,";

(2) in subsection (b), by striking "at self-contained sites" and inserting ", which shall include a fuel cell bus demonstration program to address hydrogen production, storage, and use in transit bus applications"; and

(3) in subsection (c), by inserting "NON-FEDERAL FUNDING REQUIREMENT.—" after "(c)".

**SEC. 207. TECHNOLOGY TRANSFER.**

Section 106 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

**"SEC. 106. TECHNOLOGY ASSESSMENT, INFORMATION DISSEMINATION, AND EDUCATION PROGRAM.**

"(a) PROGRAM.—The Secretary shall, in consultation with the advisory committee, conduct a program designed to accelerate wider application of hydrogen production, storage, transportation, and use technologies, including application in foreign countries to increase the global market for the technologies and foster global economic development without harmful environmental effects.

"(b) INFORMATION.—The Secretary, in carrying out the program authorized by subsection (a), shall—

"(1) undertake an update of the inventory and assessment, required under section 106(b)(1) of this Act as in effect before the date of the enactment of the Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001, of hydrogen technologies and their commercial capability to economically produce, store, transport, or use hydrogen in industrial, commercial, residential, transportation, and utility sector; and

"(2) develop, with other Federal agencies as appropriate and industry, an information exchange program to improve technology transfer for hydrogen production, storage, transportation, and use, which may consist of workshops, publications, conferences, and a database for the use by the public and private sectors.".

**SEC. 208. COORDINATION AND CONSULTATION.**

Section 107 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended—

(1) by amending paragraph (1) of subsection (a) to read as follows:

"(1) shall establish a central point for the coordination of all hydrogen research, development, and demonstration activities of the Department; and"; and

(2) by amending subsection (c) to read as follows:

"(c) CONSULTATION.—The Secretary shall consult with other Federal agencies as appropriate, and the advisory committee, in carrying out the Secretary's authorities pursuant to this Act.".

**SEC. 209. ADVISORY COMMITTEE.**

Section 108 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

**"SEC. 108. ADVISORY COMMITTEE.**

"(a) ESTABLISHMENT.—The Secretary shall enter into appropriate arrangements with the National Academies of Sciences and Engineering to establish an advisory committee consisting of experts drawn from domestic industry, academia, Governmental laboratories, and financial, environmental, and other organizations, as appropriate, to review and advise on the progress made through the programs and activities authorized under this Act.

"(b) COOPERATION.—The heads of Federal agencies shall cooperate with the advisory committee in carrying out this section and shall furnish to the advisory committee such information as the advisory committee reasonably deems necessary to carry out this section.

"(c) REVIEW.—The advisory committee shall review and make any necessary recommendations to the Secretary on—

"(1) the implementation and conduct of programs and activities authorized under this Act; and

"(2) the economic, technological, and environmental consequences of the deployment of hydrogen production, storage, transportation, and use systems.

"(d) RESPONSIBILITIES OF THE SECRETARY.—The Secretary shall consider, but need not adopt, any recommendations of the advisory committee under subsection (c). The Secretary shall provide an explanation of the reasons that any such recommendations will not be implemented and include such explanation in the report to Congress under section 103(a) of this Act.".

**SEC. 210. AUTHORIZATION OF APPROPRIATIONS.**

Section 109 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

**"SEC. 109. AUTHORIZATION OF APPROPRIATIONS.**

"(a) RESEARCH AND DEVELOPMENT; ADVISORY COMMITTEE.—There are authorized to be appropriated to the Secretary to carry out sections 104 and 108—

"(1) $40,000,000 for fiscal year 2002;
"(2) $45,000,000 for fiscal year 2003;
"(3) $50,000,000 for fiscal year 2004;
"(4) $55,000,000 for fiscal year 2005; and
"(5) $60,000,000 for fiscal year 2006.

"(b) DEMONSTRATION.—There are authorized to be appropriated to the Secretary to carry out section 105—

"(1) $20,000,000 for fiscal year 2002;
"(2) $25,000,000 for fiscal year 2003;
"(3) $30,000,000 for fiscal year 2004;
"(4) $35,000,000 for fiscal year 2005; and
"(5) $40,000,000 for fiscal year 2006.".

**SEC. 211. REPEAL.**

(a) REPEAL.—Title II of the Hydrogen Future Act of 1996 is repealed.

(b) CONFORMING AMENDMENT.—Section 2 of the Hydrogen Future Act of 1996 is amended by striking "titles II and III" and inserting "title III".

# Subtitle B—Bioenergy

**SEC. 221. SHORT TITLE.**

This subtitle may be cited as the "Bioenergy Act of 2001".

**SEC. 222. FINDINGS.**

Congress finds that bioenergy has potential to help—

(1) meet the Nation's energy needs;

(2) reduce reliance on imported fuels;

(3) promote rural economic development;

(4) provide for productive utilization of agricultural residues and waste materials, and forestry residues and byproducts; and

(5) protect the environment.

**SEC. 223. DEFINITIONS.**

For purposes of this subtitle—

(1) the term "bioenergy" means energy derived from any organic matter that is available on a renewable or recurring basis, including agricultural crops and trees, wood and wood wastes and residues, plants (including aquatic plants), grasses, residues, fibers, and animal and other organic wastes;

(2) the term "biofuels" includes liquid or gaseous fuels, industrial chemicals, or both;

(3) the term "biopower" includes the generation of electricity or process steam or both; and

(4) the term "integrated bioenergy research and development" includes biopower and biofuels applications.

**SEC. 224. AUTHORIZATION.**

The Secretary is authorized to conduct environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities related to bioenergy, including biopower energy systems, biofuels energy systems, and integrated bioenergy research and development.

**SEC. 225. AUTHORIZATION OF APPROPRIATIONS.**

(a) BIOPOWER ENERGY SYSTEMS.—There are authorized to be appropriated to the Secretary for Biopower Energy Systems programs, projects, and activities—

(1) $45,700,000 for fiscal year 2002;

(2) $52,500,000 for fiscal year 2003;

(3) $60,300,000 for fiscal year 2004;

(4) $69,300,000 for fiscal year 2005; and

(5) $79,600,000 for fiscal year 2006.

(b) BIOFUELS ENERGY SYSTEMS.—There are authorized to be appropriated to the Secretary for biofuels energy systems programs, projects, and activities—

(1) $53,500,000 for fiscal year 2002;

(2) $61,400,000 for fiscal year 2003;

(3) $70,600,000 for fiscal year 2004;

(4) $81,100,000 for fiscal year 2005; and

(5) $93,200,000 for fiscal year 2006.

(c) INTEGRATED BIOENERGY RESEARCH AND DEVELOPMENT.—There are authorized to be appropriated to the Secretary for integrated bioenergy research and development programs, projects, and activities, $49,000,000 for each of the fiscal years 2002 through 2006. Activities funded under this subsection shall be coordinated with ongoing related programs of other Federal agencies, including the Plant Genome Program of the National Science Foundation.

(d) INTEGRATED APPLICATIONS.—Amounts authorized to be appropriated under this subtitle may be used to assist in the planning, design, and implementation of projects to convert rice straw and barley grain into biopower or biofuels.

# Subtitle C—Transmission Infrastructure Systems

**SEC. 241. TRANSMISSION INFRASTRUCTURE SYSTEMS RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION.**

(a) IN GENERAL.—The Secretary shall develop and implement a comprehensive research, development, demonstration, and commercial application program to ensure the reliability, efficiency, and environmental integrity of electrical transmission systems. Such program shall include advanced energy technologies and systems, high capacity superconducting transmission lines and generators, advanced grid reliability and efficiency technologies development, technologies contributing to significant load reductions, advanced metering, load management and control technologies, and technology transfer and education.

(b) TECHNOLOGY.—In carrying out this subtitle, the Secretary may include research, development, and demonstration on and commercial application of improved transmission technologies including the integration of the following technologies into improved transmission systems:

(1) High temperature superconductivity.

(2) Advanced transmission materials.

(3) Self-adjusting equipment, processes, or software for survivability, security, and failure containment.

(4) Enhancements of energy transfer over existing lines.

(5) Any other infrastructure technologies, as appropriate.

**SEC. 242. PROGRAM PLAN.**

Within 4 months after the date of the enactment of this Act, the Secretary, in consultation with other appropriate Federal agencies, shall prepare and transmit to Congress a 5-year program plan to guide activities under this subtitle. In preparing the program plan, the Secretary shall consult with appropriate representatives of the transmission infrastructure systems industry to select and prioritize appropriate program areas. The Secretary shall also seek the advice of utilities, energy services providers, manufacturers, institutions of higher learning, other appropriate State and local agencies, environmental organizations, professional and technical societies, and any other persons as the Secretary considers appropriate.

**SEC. 243. REPORT.**

Two years after the date of the enactment of this Act, and at two year intervals thereafter, the Secretary, in consultation with other appropriate Federal agencies, shall transmit a report to Congress describing the progress made to achieve the purposes of this subtitle and identifying any additional resources needed to continue the development and commercial application of transmission infrastructure technologies.

# Subtitle D—Department of Energy Authorization of Appropriations

**SEC. 261. AUTHORIZATION OF APPROPRIATIONS.**

(a) OPERATION AND MAINTENANCE.—There are authorized to be appropriated to the Secretary for Renewable Energy operation and maintenance, including activities under subtitle C, Geothermal Technology Development, Hydropower, Concentrating Solar Power, Photovoltaic Energy Systems, Solar Building Technology Research, Wind Energy Systems, High Temperature Superconducting Research and Development, Energy Storage Systems, Transmission Reliability, International Renewable Energy Program, Renewable Energy Production Incentive Program, Renewable Program Support, National Renewable Energy Laboratory, and Program Direction, and including amounts authorized under the amendment made by section 210 and amounts authorized under section 225, $535,000,000 for fiscal year 2002, $639,000,000 for fiscal year 2003, and $683,000,000 for fiscal year 2004, to remain available until expended.

(b) WAVE POWERED ELECTRIC GENERATION.—Within the amounts authorized to be appropriated to the Secretary under subsection (a), the Secretary shall carry out a research program, in conjunction with other appropriate Federal agencies, on wave powered electric generation.

(c) ASSESSMENT OF RENEWABLE ENERGY RESOURCES.—

(1) IN GENERAL.—Using funds authorized in subsection (a), of this section, the Secretary shall transmit to the Congress, within one year after the date of the enactment of this Act, an assessment of all renewable energy resources available within the United States.

(2) RESOURCE ASSESSMENT.—Such report shall include a detailed inventory describing the available amount and characteristics of solar, wind, biomass, geothermal, hydroelectric, and other renewable energy sources, and an estimate of the costs needed to develop each resource. The report shall also include such other information as the Secretary believes would be useful in siting renewable energy generation, such as appropriate terrain, population and load centers, nearby energy infrastructure, and location of energy resources.

(3) AVAILABILITY.—The information and cost estimates in this report shall be updated annually and made available to the public, along with the data used to create the report.

(4) SUNSET.—This subsection shall expire at the end of fiscal year 2004.

(d) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (a) may be used for—

(1) Departmental Energy Management Program; or

(2) Renewable Indian Energy Resources.

# TITLE III—NUCLEAR ENERGY

## Subtitle A—University Nuclear Science and Engineering

**SEC. 301. SHORT TITLE.**

This subtitle may be cited as "Department of Energy University Nuclear Science and Engineering Act".

**SEC. 302. FINDINGS.**

The Congress finds the following:

(1) United States university nuclear science and engineering programs are in a state of serious decline, with nuclear engineering enrollment at a 35-year low. Since 1980, the number of nuclear engineering university programs has declined nearly 40 percent, and over two-thirds of the faculty in these programs are 45 years of age or older. Also, since 1980, the number of university research and training reactors in the United States has declined by over 50 percent. Most of these reactors were built in the late 1950s and 1960s with 30-year to 40-year operating licenses, and many will require relicensing in the next several years.

(2) A decline in a competent nuclear workforce, and the lack of adequately trained nuclear scientists and engineers, will affect the ability of the United States to solve future nuclear waste storage issues, operate existing and design future fission reactors in the United States, respond to future nuclear events worldwide, help stem the proliferation of nuclear weapons, and design and operate naval nuclear reactors.

(3) The Department of Energy's Office of Nuclear Energy, Science and Technology, a principal Federal agency for civilian research in nuclear science and engineering, is well suited to help maintain tomorrow's human resource and training investment in the nuclear sciences and engineering.

**SEC. 303. DEPARTMENT OF ENERGY PROGRAM.**

(a) ESTABLISHMENT.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall support a program to maintain the Nation's human resource investment and infrastructure in the nuclear sciences and engineering consistent with the Department's statutory authorities related to civilian nuclear research, development, and demonstration and commercial application of energy technology.

(b) DUTIES OF THE OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY.—In carrying out the program under this subtitle, the Director of the Office of Nuclear Energy, Science and Technology shall—

(1) develop a robust graduate and undergraduate fellowship program to attract new and talented students;

(2) assist universities in recruiting and retaining new faculty in the nuclear sciences and engineering through a Junior Faculty Research Initiation Grant Program;

(3) maintain a robust investment in the fundamental nuclear sciences and engineering through the Nuclear Engineering Education Research Program;

(4) encourage collaborative nuclear research among industry, national laboratories, and universities through the Nuclear Energy Research Initiative;

(5) assist universities in maintaining reactor infrastructure; and

(6) support communication and outreach related to nuclear science and engineering.

(c) MAINTAINING UNIVERSITY RESEARCH AND TRAINING REACTORS AND ASSOCIATED INFRASTRUCTURE.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall provide for the following university research and training reactor infrastructure maintenance and research activities:

(1) Refueling of university research reactors with low enriched fuels, upgrade of operational instrumentation, and sharing of reactors among universities.

(2) In collaboration with the United States nuclear industry, assistance, where necessary, in relicensing and upgrading university training reactors as part of a student training program.

(3) A university reactor research and training award program that provides for reactor improvements as part of a focused effort that emphasizes research, training, and education.

(d) UNIVERSITY-DOE LABORATORY INTERACTIONS.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall develop—

(1) a sabbatical fellowship program for university faculty to spend extended periods of time at Department of Energy laboratories in the areas of nuclear science and technology; and

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

The Secretary may under subsection (b)(1) provide for fellowships for students to spend time at Department of Energy laboratories in the areas of nuclear science and technology under the mentorship of laboratory staff.

(e) OPERATIONS AND MAINTENANCE.—To the extent that the use of a university research reactor is funded under this subtitle, funds authorized under this subtitle may be used to supplement operation of the research reactor during the investigator's proposed effort. The host institution shall provide at least 50 percent of the cost of the reactor's operation.

(f) MERIT REVIEW REQUIRED.—All grants, contracts, cooperative agreements, or other financial assistance awards under this subtitle shall be made only after independent merit review.

(g) REPORT.—Not later than 6 months after the date of the enactment of this Act, the Secretary shall prepare and transmit to the appropriate congressional committees a 5-year plan on how the programs authorized in this subtitle will be implemented. The plan shall include a review of the projected personnel needs in the fields of nuclear science and engineering and of the scope of nuclear science and engineering education programs at the Department and other Federal agencies.

**SEC. 304. AUTHORIZATION OF APPROPRIATIONS.**

(a) TOTAL AUTHORIZATION.—The following sums are authorized to be appropriated to the Secretary, to remain available until expended, for the purposes of carrying out this subtitle:

(1) $30,200,000 for fiscal year 2002.
(2) $41,000,000 for fiscal year 2003.
(3) $47,900,000 for fiscal year 2004.
(4) $55,600,000 for fiscal year 2005.
(5) $64,100,000 for fiscal year 2006.

(b) GRADUATE AND UNDERGRADUATE FELLOWSHIPS.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(b)(1):

(1) $3,000,000 for fiscal year 2002.
(2) $3,100,000 for fiscal year 2003.
(3) $3,200,000 for fiscal year 2004.
(4) $3,200,000 for fiscal year 2005.
(5) $3,200,000 for fiscal year 2006.

(c) JUNIOR FACULTY RESEARCH INITIATION GRANT PROGRAM.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(b)(2):

(1) $5,000,000 for fiscal year 2002.
(2) $7,000,000 for fiscal year 2003.
(3) $8,000,000 for fiscal year 2004.
(4) $9,000,000 for fiscal year 2005.
(5) $10,000,000 for fiscal year 2006.

(d) NUCLEAR ENGINEERING EDUCATION RESEARCH PROGRAM.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(b)(3):

(1) $8,000,000 for fiscal year 2002.
(2) $12,000,000 for fiscal year 2003.

(3) $13,000,000 for fiscal year 2004.
(4) $15,000,000 for fiscal year 2005.
(5) $20,000,000 for fiscal year 2006.

(e) COMMUNICATION AND OUTREACH RELATED TO NUCLEAR SCIENCE AND ENGINEERING.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(b)(5):

(1) $200,000 for fiscal year 2002.
(2) $200,000 for fiscal year 2003.
(3) $300,000 for fiscal year 2004.
(4) $300,000 for fiscal year 2005.
(5) $300,000 for fiscal year 2006.

(f) REFUELING OF UNIVERSITY RESEARCH REACTORS AND INSTRUMENTATION UPGRADES.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(c)(1):

(1) $6,000,000 for fiscal year 2002.
(2) $6,500,000 for fiscal year 2003.
(3) $7,000,000 for fiscal year 2004.
(4) $7,500,000 for fiscal year 2005.
(5) $8,000,000 for fiscal year 2006.

(g) RELICENSING ASSISTANCE.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(c)(2):

(1) $1,000,000 for fiscal year 2002.
(2) $1,100,000 for fiscal year 2003.
(3) $1,200,000 for fiscal year 2004.
(4) $1,300,000 for fiscal year 2005.
(5) $1,300,000 for fiscal year 2006.

(h) REACTOR RESEARCH AND TRAINING AWARD PROGRAM.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(c)(3):

(1) $6,000,000 for fiscal year 2002.
(2) $10,000,000 for fiscal year 2003.
(3) $14,000,000 for fiscal year 2004.
(4) $18,000,000 for fiscal year 2005.
(5) $20,000,000 for fiscal year 2006.

(i) UNIVERSITY-DOE LABORATORY INTERACTIONS.—Of the funds authorized by subsection (a), the following sums are authorized to be appropriated to carry out section 303(d):

(1) $1,000,000 for fiscal year 2002.
(2) $1,100,000 for fiscal year 2003.
(3) $1,200,000 for fiscal year 2004.
(4) $1,300,000 for fiscal year 2005.
(5) $1,300,000 for fiscal year 2006.

## Subtitle B—Advanced Fuel Recycling Technology Research and Development Program

**SEC. 321. PROGRAM.**

(a) IN GENERAL.—The Secretary, through the Director of the Office of Nuclear Energy, Science and Technology, shall conduct an advanced fuel recycling technology research and development program to further the availability of proliferation-resistant fuel recycling technologies as an alternative to aqueous reprocessing in support of evaluation of alternative national strategies for spent nuclear fuel and the Generation IV advanced reactor concepts, subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

(b) REPORTS.—The Secretary shall report on the activities of the advanced fuel recycling technology research and development program, as part of the Department's annual budget submission.

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

(1) $10,000,000 for fiscal year 2002; and
(2) such sums as are necessary for fiscal year 2003 and fiscal year 2004.

# Subtitle C—Department of Energy Authorization of Appropriations

**SEC. 341. NUCLEAR ENERGY RESEARCH INITIATIVE.**

(a) PROGRAM.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall conduct a Nuclear Energy Research Initiative for grants to be competitively awarded and subject to peer review for research relating to nuclear energy.

(b) OBJECTIVES.—The program shall be directed toward accomplishing the objectives of—

(1) developing advanced concepts and scientific breakthroughs in nuclear fission and reactor technology to address and overcome the principal technical and scientific obstacles to the expanded use of nuclear energy in the United States;

(2) advancing the state of nuclear technology to maintain a competitive position in foreign markets and a future domestic market;

(3) promoting and maintaining a United States nuclear science and engineering infrastructure to meet future technical challenges;

(4) providing an effective means to collaborate on a cost-shared basis with international agencies and research organizations to address and influence nuclear technology development worldwide; and

(5) promoting United States leadership and partnerships in bilateral and multilateral nuclear energy research.

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

(1) $60,000,000 for fiscal year 2002; and

(2) such sums as are necessary for fiscal year 2003 and fiscal year 2004.

**SEC. 342. NUCLEAR ENERGY PLANT OPTIMIZATION PROGRAM.**

(a) PROGRAM.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall conduct a Nuclear Energy Plant Optimization research and development program jointly with industry and cost-shared by industry by at least 50 percent and subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

(b) OBJECTIVES.—The program shall be directed toward accomplishing the objectives of—

(1) managing long-term effects of component aging; and

(2) improving the efficiency and productivity of existing nuclear power stations.

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

(1) $15,000,000 for fiscal year 2002; and

(2) such sums as are necessary for fiscal years 2003 and 2004.

**SEC. 343. NUCLEAR ENERGY TECHNOLOGIES.**

(a) IN GENERAL.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall conduct a study of Generation IV nuclear energy systems, including development of a technology roadmap and performance of research and development necessary to make an informed technical decision regarding the most promising candidates for commercial application.

(b) REACTOR CHARACTERISTICS.—To the extent practicable, in conducting the study under subsection (a), the Secretary shall study nuclear energy systems that offer the highest probability of achieving the goals for Generation IV nuclear energy systems, including—

(1) economics competitive with any other generators;

(2) enhanced safety features, including passive safety features;

(3) substantially reduced production of high-level waste, as compared with the quantity of waste produced by reactors in operation on the date of enactment of this Act;

(4) highly proliferation-resistant fuel and waste;

(5) sustainable energy generation including optimized fuel utilization; and

(6) substantially improved thermal efficiency, as compared with the thermal efficiency of reactors in operation on the date of enactment of this Act.

(c) CONSULTATION.—In conducting the study under subsection (a), the Secretary shall consult with appropriate representatives of industry, institutions of higher education, Federal agencies, and international, professional, and technical organizations.

(d) REPORT.—

(1) IN GENERAL.—Not later than December 31, 2002, the Secretary shall transmit to the appropriate congressional committees a report describing the activities of the Secretary under this section, and plans for research and development leading to a public/private cooperative demonstration of one or more Generation IV nuclear energy systems.

(2) CONTENTS.—The report shall contain—

(A) an assessment of all available technologies;

(B) a summary of actions needed for the most promising candidates to be considered as viable commercial options within the five to ten years after the date of the report, with consideration of regulatory, economic, and technical issues;

(C) a recommendation of not more than three promising Generation IV nuclear energy system concepts for further development;

(D) an evaluation of opportunities for public/private partnerships;

(E) a recommendation for structure of a public/private partnership to share in development and construction costs;

(F) a plan leading to the selection and conceptual design, by September 30, 2004, of at least one Generation IV nuclear energy system concept recommended under subparagraph (C) for demonstration through a public/private partnership;

(G) an evaluation of opportunities for siting demonstration facilities on Department of Energy land; and

(H) a recommendation for appropriate involvement of other Federal agencies.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section and to carry out the recommendations in the report transmitted under subsection (d)—

(1) $20,000,000 for fiscal year 2002; and

(2) such sums as are necessary for fiscal year 2003 and fiscal year 2004.

**SEC. 344. AUTHORIZATION OF APPROPRIATIONS.**

(a) OPERATION AND MAINTENANCE.—There are authorized to be appropriated to the Secretary to carry out activities authorized under this title for nuclear energy operation and maintenance, including amounts authorized under sections 304(a), 321(c), 341(c), 342(c), and 343(e), and including Advanced Radioisotope Power Systems, Test Reactor Landlord, and Program Direction, $191,200,000 for fiscal year 2002, $199,000,000 for fiscal year 2003, and $207,000,000 for fiscal year 2004, to remain available until expended.

(b) CONSTRUCTION.—There are authorized to be appropriated to the Secretary—

(1) $950,000 for fiscal year 2002, $2,200,000 for fiscal year 2003, $1,246,000 for fiscal year 2004, and $1,699,000 for fiscal year 2005 for completion of construction of Project 99-E-200, Test Reactor Area Electric Utility Upgrade, Idaho National Engineering and Environmental Laboratory; and

(2) $500,000 for fiscal year 2002, $500,000 for fiscal year 2003, $500,000 for fiscal year 2004, and $500,000 for fiscal year 2005, for completion of construction of Project 95-E-201, Test Reactor Area Fire and Life Safety Improvements, Idaho National Engineering and Environmental Laboratory.

(c) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (a) may be used for—

(1) Nuclear Energy Isotope Support and Production;

(2) Argonne National Laboratory-West Operations;

(3) Fast Flux Test Facility; or

(4) Nuclear Facilities Management.

# TITLE IV—FOSSIL ENERGY

## Subtitle A—Clean Coal

**SEC. 401. SHORT TITLE.**

This subtitle may be cited as the "National Electricity and Environmental Technology Research and Development Act".

**SEC. 402. FINDINGS.**

Congress finds that—

(1) reliable, affordable, increasingly clean electricity will continue to power the growing United States economy;

(2) an increasing use of electrotechnologies, the desire for continuous environmental improvement, a more competitive electricity market, and concerns about

rising energy prices add importance to the need for reliable, affordable, increasingly clean electricity;

(3) coal, which, as of the date of enactment of this Act, accounts for more than ½ of all electricity generated in the United States, is the most abundant fossil energy resource of the United States;

(4) coal comprises more than 85 percent of all fossil resources in the United States and exists in quantities sufficient to supply the United States for 250 years at current usage rates;

(5) investments in electricity generating facility emissions control technology over the past 30 years have reduced the aggregate emissions of pollutants from coal-based generating facilities by 21 percent, even as coal use for electricity generation has nearly tripled; and

(6) continued environmental improvement in coal-based generation through continued research, development, and demonstration toward an ultimate goal of near-zero emissions is important and desirable.

**SEC. 403. DEFINITION.**

In this subtitle, the term "cost and performance-based goals" means the cost and performance-based goals established under section 4.

**SEC. 404. CLEAN COAL POWER INITIATIVE.**

(a) IN GENERAL.—The Secretary shall carry out a program of research on and development, demonstration, and commercial application of clean coal technologies under—

(1) this subtitle;

(2) the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.);

(3) the Energy Reorganization Act of 1974 (42 U.S.C. 5801 et seq.); and

(4) title XIII of the Energy Policy Act of 1992 (42 U.S.C. 13331 et seq.).

(b) CONDITIONS.—The research, development, demonstration, and commercial application program described in subsection (a) shall be designed to achieve the cost and performance-based goals.

**SEC. 405. AUTHORIZATION OF APPROPRIATIONS.**

(a) CLEAN COAL POWER INITIATIVE.—Except as provided in section 406, there are authorized to be appropriated to the Secretary to carry out the Clean Coal Power Initiative under section 404 $200,000,000 for each of the fiscal years 2002 through 2011, to remain available until expended.

(b) OTHER COAL AND RELATED TECHNOLOGIES PROGRAMS.—Except as provided in section 406, there are authorized to be appropriated to the Secretary $172,000,000 for fiscal year 2002, $179,000,000 for fiscal year 2003, and $186,000,000 for fiscal year 2004, to remain available until expended, for other coal and related technologies research and development programs, which shall include—

(1) Innovations for Existing Plants;

(2) Integrated Gasification Combined Cycle;

(3) advanced combustion systems;

(4) Turbines;

(5) Sequestration Research and Development;

(6) innovative technologies for demonstration;

(7) Transportation Fuels and Chemicals;

(8) Solid Fuels and Feedstocks;

(9) Advanced Fuels Research; and

(10) Advanced Research.

(c) LIMIT ON USE OF FUNDS.—Notwithstanding subsections (a) and (b), no funds may be used to carry out the activities authorized by this subtitle after September 30, 2002, unless the Secretary has transmitted to the appropriate congressional committees the report required by this subsection and 1 month have elapsed since that transmission. The report shall include—

(1) with respect to subsection (a), a 10-year plan containing—

(A) a detailed assessment of whether the aggregate funding levels provided under subsection (a) are the appropriate funding levels for that program;

(B) a detailed description of how proposals will be solicited and evaluated, including a list of all demonstration activities expected to be undertaken;

(C) a detailed list of technical milestones for each coal and related technology that will be pursued;

(D) recommendations for a mechanism for recoupment of Federal funding for successful commercial projects; and

(E) 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;

(2) with respect to subsection (b), a plan containing—

(A) a detailed description of how proposals will be solicited and evaluated, including a list of all demonstration activities expected to be undertaken; and

(B) a detailed list of technical milestones for each coal and related technology that will be pursued; and

(3) a description of how the programs will be carried out under subsection (a) and subsection (b) so as to complement each other and not duplicate activities.

(d) APPLICABILITY.—Subsection (c) shall not apply to any program, project, or activity begun before September 30, 2001.

**SEC. 406. PROJECT CRITERIA.**

(a) IN GENERAL.—The Secretary shall not provide funding for any research, development, demonstration, or commercial application of coal and related technologies that do not advance efficiency, environmental performance, and cost competitiveness well beyond the level of technologies that are in operation or have been demonstrated as of the date of the enactment of this Act.

(b) TECHNICAL CRITERIA FOR CLEAN COAL POWER INITIATIVE.—

(1) SEQUESTRATION AND GASIFICATION.—(A) In allocating the funds authorized under section 405(a), the Secretary shall ensure that at least 80 percent of the funds are used only for projects on carbon sequestration, or coal-based gasification technologies, including gasification combined cycle, gasification fuel cells, gasification coproduction and hybrid gasification/combustion.

(B) The Secretary shall set technical milestones specifying emissions levels that coal gasification projects must be designed to and reasonably expected to achieve. The milestones shall get more restrictive through the life of the program. The milestones shall be designed to achieve by 2020 coal gasification projects able—

(i) to remove 99 percent of sulfur dioxide;

(ii) to emit no more than .05 lbs of NOx per million BTU;

(iii) to remove 95 percent of mercury; and

(iv) to achieve a thermal efficiency of 60 percent (higher heating value).

(2) OTHER PROJECTS.—For projects not described in paragraph (1), the Secretary shall set technical milestones specifying emissions levels that the projects must be designed to and reasonably expected to achieve. The milestones shall get more restrictive through the life of the program. The milestones shall be designed to achieve by 2010 projects able—

(A) to remove 97 percent of sulfur dioxide;

(B) to emit no more than .08 lbs of NOx per million BTU;

(C) to remove 90 percent of mercury; and

(D) to achieve a thermal efficiency of 45 percent (higher heating value).

(c) FINANCIAL CRITERIA.—The Secretary shall not provide a funding award for any research, development, demonstration, or commercial application of coal and related technologies unless the recipient of the award has documented 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 for 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) FEDERAL SHARE.—The Federal share of the cost of a coal or related technology project funded by the Secretary shall not exceed 50 percent.

**SEC. 407. CLEAN COAL CENTERS OF EXCELLENCE.**

As part of the program authorized in section 405(a), the Secretary shall award competitive, merit-based grants to universities for the establishment of Centers of Excellence for Energy Systems of the Future. Such Centers shall be located at universities with a proven record of conducting research on, developing, or demonstrating clean coal technologies. The Secretary shall provide grants to universities that can show the greatest potential for demonstrating new clean coal technologies.

# Subtitle B—Oil and Gas

**SEC. 421. PETROLEUM-OIL TECHNOLOGY.**

The Secretary shall conduct a program of research, development, demonstration, and commercial application on petroleum-oil technology. The program shall address—

(1) Exploration and Production Supporting Research;
(2) Oil Technology Reservoir Management/Extension; and
(3) Effective Environmental Protection.

**SEC. 422. GAS.**

The Secretary shall conduct a program of research, development, demonstration, and commercial application on natural gas technologies. The program shall address—

(1) Exploration and Production;
(2) Infrastructure; and
(3) Effective Environmental Protection.

# Subtitle C—Ultra-Deepwater and Unconventional Drilling

**SEC. 441. SHORT TITLE.**

This subtitle may be cited as the "Natural Gas and Other Petroleum Research, Development, and Demonstration Act of 2001".

**SEC. 442. DEFINITIONS.**

For purposes of this subtitle—

(1) the term "deepwater" means water depths greater than 200 meters but less than 1,500 meters;
(2) the term "Fund" means the Ultra-Deepwater and Unconventional Gas Research Fund established under section 450;
(3) the term "institution of higher education" has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001);
(4) the term "Research Organization" means the Research Organization created pursuant to section 446(a);
(5) the term "ultra-deepwater" means water depths greater than 1,500 meters; and
(6) the term "unconventional" means located in heretofore inaccessible or uneconomic formations on land.

**SEC. 443. ULTRA-DEEPWATER PROGRAM.**

The Secretary shall establish a program of research, development, and demonstration of ultra-deepwater natural gas and other petroleum exploration and production technologies, in areas currently available for Outer Continental Shelf leasing. The program shall be carried out by the Research Organization as provided in this subtitle.

**SEC. 444. NATIONAL ENERGY TECHNOLOGY LABORATORY.**

The National Energy Technology Laboratory and the United States Geological Survey, when appropriate, shall carry out programs of long-term research into new natural gas and other petroleum exploration and production technologies and environmental mitigation technologies for production from unconventional and ultra-deepwater resources, including methane hydrates. Such Laboratory shall also conduct a program of research, development, and demonstration of new technologies for the reduction of greenhouse gas emissions from unconventional and ultra-deepwater natural gas or other petroleum exploration and production activities, including subsea floor carbon sequestration technologies.

**SEC. 445. ADVISORY COMMITTEE.**

(a) ESTABLISHMENT.—The Secretary shall, within 3 months after the date of the enactment of this Act, establish an Advisory Committee consisting of 7 members, each having extensive operational knowledge of and experience in the natural gas and other petroleum exploration and production industry who are not Federal Government employees or contractors. A minimum of 4 members shall have extensive knowledge of ultra-deepwater natural gas or other petroleum exploration and production technologies, a minimum of 2 members shall have extensive knowledge of unconventional natural gas or other petroleum exploration and production tech-

nologies, and at least 1 member shall have extensive knowledge of greenhouse gas emission reduction technologies, including carbon sequestration.

(b) FUNCTION.—The Advisory Committee shall advise the Secretary on the selection of an organization to create the Research Organization and on the implementation of this subtitle.

(c) COMPENSATION.—Members of the Advisory Committee shall serve without compensation but shall receive travel expenses, including per diem in lieu of subsistence, in accordance with applicable provisions under subchapter I of chapter 57 of title 5, United States Code.

(d) ADMINISTRATIVE COSTS.—The costs of activities carried out by the Secretary and the Advisory Committee under this subtitle shall be paid or reimbursed from the Fund.

(e) DURATION OF ADVISORY COMMITTEE.—Section 14 of the Federal Advisory Committee Act shall not apply to the Advisory Committee.

**SEC. 446. RESEARCH ORGANIZATION.**

(a) SELECTION OF RESEARCH ORGANIZATION.—The Secretary, within 6 months after the date of the enactment of this Act, shall solicit proposals from eligible entities for the creation of the Research Organization, and within 3 months after such solicitation, shall select an entity to create the Research Organization.

(b) ELIGIBLE ENTITIES.—Entities eligible to create the Research Organization shall—

(1) have been in existence as of the date of the enactment of this Act;

(2) be entities exempt from tax under section 501(c)(3) of the Internal Revenue Code of 1986; and

(3) be experienced in planning and managing programs in natural gas or other petroleum exploration and production research, development, and demonstration.

(c) PROPOSALS.—A proposal from an entity seeking to create the Research Organization shall include a detailed description of the proposed membership and structure of the Research Organization.

(d) FUNCTIONS.—The Research Organization shall—

(1) award grants on a competitive basis to qualified—

(A) research institutions;

(B) institutions of higher education;

(C) companies; and

(D) consortia formed among institutions and companies described in subparagraphs (A) through (C) for the purpose of conducting research, development, and demonstration of unconventional and ultra-deepwater natural gas or other petroleum exploration and production technologies; and

(2) review activities under those grants to ensure that they comply with the requirements of this subtitle and serve the purposes for which the grant was made.

**SEC. 447. GRANTS.**

(a) TYPES OF GRANTS.—

(1) UNCONVENTIONAL.—The Research Organization shall award grants for research, development, and demonstration of technologies to maximize the value of the Government's natural gas and other petroleum resources in unconventional reservoirs, and to develop technologies to increase the supply of natural gas and other petroleum resources by lowering the cost and improving the efficiency of exploration and production of unconventional reservoirs, while improving safety and minimizing environmental impacts.

(2) ULTRA-DEEPWATER.—The Research Organization shall award grants for research, development, and demonstration of natural gas or other petroleum exploration and production technologies to—

(A) maximize the value of the Federal Government's natural gas and other petroleum resources in the ultra-deepwater areas;

(B) increase the supply of natural gas and other petroleum resources by lowering the cost and improving the efficiency of exploration and production of ultra-deepwater reservoirs; and

(C) improve safety and minimize the environmental impacts of ultra-deepwater developments.

(3) ULTRA-DEEPWATER ARCHITECTURE.—The Research Organization shall award a grant to one or more consortia described in section 446(d)(1)(D) for the purpose of developing and demonstrating the next generation architecture for ultra-deepwater production of natural gas and other petroleum in furtherance of the purposes stated in paragraph (2)(A) through (C).

(b) CONDITIONS FOR GRANTS.—Grants provided under this section shall contain the following conditions:

(1) If the grant recipient consists of more than one entity, the recipient shall provide a signed contract agreed to by all participating members clearly defining all rights to intellectual property for existing technology and for future inventions conceived and developed using funds provided under the grant, in a manner that is consistent with applicable laws.

(2) There shall be a repayment schedule for Federal dollars provided for demonstration projects under the grant in the event of a successful commercialization of the demonstrated technology. Such repayment schedule shall provide that the payments are made to the Secretary with the express intent that these payments not impede the adoption of the demonstrated technology in the marketplace. In the event that such impedance occurs due to market forces or other factors, the Research Organization shall renegotiate the grant agreement so that the acceptance of the technology in the marketplace is enabled.

(3) Applications for grants for demonstration projects shall clearly state the intended commercial applications of the technology demonstrated.

(4) The total amount of funds made available under a grant provided under subsection (a)(3) shall not exceed 50 percent of the total cost of the activities for which the grant is provided.

(5) The total amount of funds made available under a grant provided under subsection (a)(1) or (2) shall not exceed 50 percent of the total cost of the activities covered by the grant, except that the Research Organization may elect to provide grants covering a higher percentage, not to exceed 90 percent, of total project costs in the case of grants made solely to independent producers.

(6) An appropriate amount of funds provided under a grant shall be used for the broad dissemination of technologies developed under the grant to interested institutions of higher education, industry, and appropriate Federal and State technology entities to ensure the greatest possible benefits for the public and use of government resources.

(7) Demonstrations of ultra-deepwater technologies for which funds are provided under a grant may be conducted in ultra-deepwater or deepwater locations.

(c) ALLOCATION OF FUNDS.—Funds available for grants under this subtitle shall be allocated as follows:

(1) 15 percent shall be for grants under subsection (a)(1).

(2) 15 percent shall be for grants under subsection (a)(2).

(3) 60 percent shall be for grants under subsection (a)(3).

(4) 10 percent shall be for carrying out section 444.

**SEC. 448. PLAN AND FUNDING.**

(a) TRANSMITTAL TO SECRETARY.—The Research Organization shall transmit to the Secretary an annual plan proposing projects and funding of activities under each paragraph of section 447(a).

(b) REVIEW.—The Secretary shall have 1 month to review the annual plan, and shall approve the plan, if it is consistent with this subtitle. If the Secretary approves the plan, the Secretary shall provide funding as proposed in the plan.

(c) DISAPPROVAL.—If the Secretary does not approve the plan, the Secretary shall notify the Research Organization of the reasons for disapproval and shall withhold funding until a new plan is submitted which the Secretary approves. Within 1 month after notifying the Research Organization of a disapproval, the Secretary shall notify the appropriate congressional committees of the disapproval.

**SEC. 449. AUDIT.**

The Secretary shall retain an independent, commercial auditor to determine the extent to which the funds authorized by this subtitle have been expended in a manner consistent with the purposes of this subtitle. The auditor shall transmit a report annually to the Secretary, who shall transmit the report to the appropriate congressional committees, along with a plan to remedy any deficiencies cited in the report.

**SEC. 450. FUND.**

(a) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be known as the "Ultra-Deepwater and Unconventional Gas Research Fund" which shall be available for obligation to the extent provided in advance in appropriations Acts for allocation under section 447(c).

(b) FUNDING SOURCES.—

(1) LOANS FROM TREASURY.—There are authorized to be appropriated to the Secretary $900,000,000 for the period encompassing fiscal years 2002 through 2009. Such amounts shall be deposited by the Secretary in the Fund, and shall be considered loans from the Treasury. Income received by the United States in connection with any ultra-deepwater oil and gas leases shall be deposited in the Treasury and considered as repayment for the loans under this paragraph.

(2) ADDITIONAL APPROPRIATIONS.—There are authorized to be appropriated to the Secretary such sums as may be necessary for the fiscal years 2002 through 2009, to be deposited in the Fund.

(3) OIL AND GAS LEASE INCOME.—To the extent provided in advance in appropriations Acts, not more than 7.5 percent of the income of the United States from Federal oil and gas leases may be deposited in the Fund for fiscal years 2002 through 2009.

**SEC. 451. SUNSET.**

No funds are authorized to be appropriated for carrying out this subtitle after fiscal year 2009. The Research Organization shall be terminated when it has expended all funds made available pursuant to this subtitle.

## Subtitle D—Fuel Cells

**SEC. 461. FUEL CELLS.**

(a) IN GENERAL.—The Secretary shall conduct a program of research, development, demonstration, and commercial application on fuel cells. The program shall address—

(1) Advanced Research;

(2) Systems Development;

(3) Vision 21-Hybrids; and

(4) Innovative Concepts.

(b) MANUFACTURING PRODUCTION AND PROCESSES.—In addition to the program under subsection (a), the Secretary, in consultation other Federal agencies, as appropriate, shall establish a program for the demonstration of fuel cell technologies, including fuel cell proton exchange membrane technology, for commercial, residential, and transportation applications. The program shall specifically focus on promoting the application of and improved manufacturing production and processes for fuel cell technologies.

(c) AUTHORIZATION OF APPROPRIATIONS.—Within the amounts authorized to be appropriated under section 481(a), there are authorized to be appropriated to the Secretary for the purpose of carrying out subsection (b), $28,000,000 for each of fiscal years 2002 through 2004.

## Subtitle E—Department of Energy Authorization of Appropriations

**SEC. 481. AUTHORIZATION OF APPROPRIATIONS.**

(a) OPERATION AND MAINTENANCE.—There are authorized to be appropriated to the Secretary for operation and maintenance for subtitle B and subtitle D, and for Fossil Energy Research and Development Headquarters Program Direction, Field Program Direction, Plant and Capital Equipment, Cooperative Research and Development, Import/Export Authorization, and Advanced Metallurgical Processes $282,000,000 for fiscal year 2002, $293,000,000 for fiscal year 2003, and $305,000,000 for fiscal year 2004, to remain available until expended.

(b) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (a) may be used for—

(1) Gas Hydrates.

(2) Fossil Energy Environmental Restoration; or

(3) research, development, demonstration, and commercial application on coal and related technologies, including activities under subtitle A.

# TITLE V—SCIENCE

## Subtitle A—Fusion Energy Sciences

**SEC. 501. SHORT TITLE.**

This subtitle may be cited as the "Fusion Energy Sciences Act of 2001".

**SEC. 502. FINDINGS.**

The Congress finds that—

(1) economic prosperity is closely linked to an affordable and ample energy supply;

(2) environmental quality is closely linked to energy production and use;

(3) population, worldwide economic development, energy consumption, and stress on the environment are all expected to increase substantially in the coming decades;

(4) the few energy options with the potential to meet economic and environmental needs for the long-term future should be pursued as part of a balanced national energy plan;

(5) fusion energy is an attractive long-term energy source because of the virtually inexhaustible supply of fuel, and the promise of minimal adverse environmental impact and inherent safety;

(6) the National Research Council, the President's Committee of Advisers on Science and Technology, and the Secretary of Energy Advisory Board have each recently reviewed the Fusion Energy Sciences Program and each strongly supports the fundamental science and creative innovation of the program, and has confirmed that progress toward the goal of producing practical fusion energy has been excellent, although much scientific and engineering work remains to be done;

(7) each of these reviews stressed the need for a magnetic fusion burning plasma experiment to address key scientific issues and as a necessary step in the development of fusion energy;

(8) the National Research Council has also called for a broadening of the Fusion Energy Sciences Program research base as a means to more fully integrate the fusion science community into the broader scientific community; and

(9) the Fusion Energy Sciences Program budget is inadequate to support the necessary science and innovation for the present generation of experiments, and cannot accommodate the cost of a burning plasma experiment constructed by the United States, or even the cost of key participation by the United States in an international effort.

**SEC. 503. PLAN FOR FUSION EXPERIMENT.**

(a) PLAN FOR UNITED STATES FUSION EXPERIMENT.—The Secretary, on the basis of full consultation with the Fusion Energy Sciences Advisory Committee and the Secretary of Energy Advisory Board, as appropriate, shall develop a plan for United States construction of a magnetic fusion burning plasma experiment for the purpose of accelerating scientific understanding of fusion plasmas. The Secretary shall request a review of the plan by the National Academy of Sciences, and shall transmit the plan and the review to the Congress by July 1, 2004.

(b) REQUIREMENTS OF PLAN.—The plan described in subsection (a) shall—

(1) address key burning plasma physics issues; and

(2) include specific information on the scientific capabilities of the proposed experiment, the relevance of these capabilities to the goal of practical fusion energy, and the overall design of the experiment including its estimated cost and potential construction sites.

(c) UNITED STATES PARTICIPATION IN AN INTERNATIONAL EXPERIMENT.—In addition to the plan described in subsection (a), the Secretary, on the basis of full consultation with the Fusion Energy Sciences Advisory Committee and the Secretary of Energy Advisory Board, as appropriate, may also develop a plan for United States participation in an international burning plasma experiment for the same purpose, whose construction is found by the Secretary to be highly likely and where United States participation is cost effective relative to the cost and scientific benefits of a domestic experiment described in subsection (a). If the Secretary elects to develop a plan under this subsection, he shall include the information described in subsection (b), and an estimate of the cost of United States participation in such an international experiment. The Secretary shall request a review by the National Academies of Sciences and Engineering of a plan developed under this subsection, and shall transmit the plan and the review to the Congress not later than July 1, 2004.

(d) AUTHORIZATION OF RESEARCH AND DEVELOPMENT.—The Secretary, through the Fusion Energy Sciences Program, may conduct any research and development necessary to fully develop the plans described in this section.

**SEC. 504. PLAN FOR FUSION ENERGY SCIENCES PROGRAM.**

Not later than 6 months after the date of the enactment of this Act, the Secretary, in full consultation with FESAC, shall develop and transmit to the Congress a plan for the purpose of ensuring a strong scientific base for the Fusion Energy Sciences Program and to enable the experiments described in section 503. Such plan shall include as its objectives—

(1) to ensure that existing fusion research facilities and equipment are more fully utilized with appropriate measurements and control tools;

(2) to ensure a strengthened fusion science theory and computational base;

(3) to ensure that the selection of and funding for new magnetic and inertial fusion research facilities is based on scientific innovation and cost effectiveness;

(4) to improve the communication of scientific results and methods between the fusion science community and the wider scientific community;

(5) to ensure that adequate support is provided to optimize the design of the magnetic fusion burning plasma experiments referred to in section 503;

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

(7) to develop a roadmap for a fusion-based energy source that shows the important scientific questions, the evolution of confinement configurations, the relation between these two features, and their relation to the fusion energy goal;

(8) to establish several new centers of excellence, selected through a competitive peer-review process and devoted to exploring the frontiers of fusion science;

(9) to ensure that the National Science Foundation, and other agencies, as appropriate, play a role in extending the reach of fusion science and in sponsoring general plasma science; and

(10) to ensure that there be continuing broad assessments of the outlook for fusion energy and periodic external reviews of fusion energy sciences.

**SEC. 505. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Secretary for the development and review, but not for implementation, of the plans described in this subtitle and for activities of the Fusion Energy Sciences Program $320,000,000 for fiscal year 2002 and $335,000,000 for fiscal year 2003, of which up to $15,000,000 for each of fiscal year 2002 and fiscal year 2003 may be used to establish several new centers of excellence, selected through a competitive peer-review process and devoted to exploring the frontiers of fusion science.

## Subtitle B—Spallation Neutron Source

**SEC. 521. DEFINITION.**

For the purposes of this subtitle, the term "Spallation Neutron Source" means Department Project 99–E–334, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

**SEC. 522. AUTHORIZATION OF APPROPRIATIONS.**

(a) AUTHORIZATION OF CONSTRUCTION FUNDING.—There are authorized to be appropriated to the Secretary for construction of the Spallation Neutron Source—

(1) $276,300,000 for fiscal year 2002;

(2) $210,571,000 for fiscal year 2003;

(3) $124,600,000 for fiscal year 2004;

(4) $79,800,000 for fiscal year 2005; and

(5) $41,100,000 for fiscal year 2006 for completion of construction.

(b) AUTHORIZATION OF OTHER PROJECT FUNDING.—There are authorized to be appropriated to the Secretary for other project costs (including research and development necessary to complete the project, preoperations costs, and capital equipment not related to construction) of the Spallation Neutron Source $15,353,000 for fiscal year 2002 and $103,279,000 for the period encompassing fiscal years 2003 through 2006, to remain available until expended through September 30, 2006.

**SEC. 523. REPORT.**

The Secretary shall report on the Spallation Neutron Source as part of the Department's annual budget submission, including a description of the achievement of milestones, a comparison of actual costs to estimated costs, and any changes in estimated project costs or schedule.

**SEC. 524. LIMITATIONS.**

The total amount obligated by the Department, including prior year appropriations, for the Spallation Neutron Source may not exceed—

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

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

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

# Subtitle C—Facilities, Infrastructure, and User Facilities

**SEC. 541. DEFINITION.**

For purposes of this subtitle—

(1) 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;

(J) Thomas Jefferson National Accelerator Facility; or

(K) any other facility of the Department that the Secretary, in consultation with the Director, Office of Science and the appropriate congressional committees, determines to be consistent with the mission of the Office of Science; and

(2) the term "user facility" means—

(A) an Office of Science facility at a nonmilitary energy laboratory that provides special scientific and research capabilities, including technical expertise and support as appropriate, to serve the research needs of the Nation's universities, industry, private laboratories, Federal laboratories, and others, including research institutions or individuals from other nations where reciprocal accommodations are provided to United States research institutions and individuals or where the Secretary considers such accommodation to be in the national interest; and

(B) any other Office of Science funded facility designated by the Secretary as a user facility.

**SEC. 542. FACILITY AND INFRASTRUCTURE SUPPORT FOR NONMILITARY ENERGY LABORATORIES.**

(a) FACILITY POLICY.—The Secretary shall develop and implement a least-cost nonmilitary energy laboratory facility and infrastructure strategy for—

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

(2) closing unneeded facilities;

(3) making facility modifications; and

(4) building new facilities.

(b) PLAN.—The Secretary shall prepare a comprehensive 10-year plan for conducting future facility maintenance, making repairs, modifications, and new additions, and constructing new facilities at each nonmilitary energy laboratory. Such plan shall provide for facilities work in accordance with the following priorities:

(1) Providing for the safety and health of employees, visitors, and the general public with regard to correcting existing structural, mechanical, electrical, and environmental deficiencies.

(2) Providing for the repair and rehabilitation of existing facilities to keep them in use and prevent deterioration, if feasible.

(3) Providing engineering design and construction services for those facilities that require modification or additions in order to meet the needs of new or expanded programs.

(c) REPORT.—

(1) TRANSMITTAL.—Within 1 year after the date of the enactment of this Act, the Secretary shall prepare and transmit to the appropriate congressional committees a report containing the plan prepared under subsection (b).

(2) CONTENTS.—For each nonmilitary energy laboratory, such report shall contain—

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

(B) a current ten-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 facilities and infrastructure project compared to the original baseline cost, schedule, and scope.

(3) ADDITIONAL ELEMENTS.—The report shall also—

(A) include a plan for new facilities and facility modifications at each nonmilitary energy laboratory that will be required to meet the Department's changing missions of the twenty-first century, including schedules and estimates for implementation, and including a section outlining long-term funding requirements consistent with anticipated budgets and annual authorization of appropriations;

(B) address the coordination of modernization and consolidation of facilities among the nonmilitary energy laboratories in order to meet changing mission requirements; and

(C) provide for annual reports to the appropriate congressional committees on accomplishments, conformance to schedules, commitments, and expenditures.

**SEC. 543. USER FACILITIES.**

(a) NOTICE REQUIREMENT.—When the Department makes a user facility available to universities and other potential users, or seeks input from universities and other potential users regarding significant characteristics or equipment in a user facility or a proposed user facility, the Department shall ensure broad public notice of such availability or such need for input to universities and other potential users.

(b) COMPETITION REQUIREMENT.—When the Department considers the participation of a university or other potential user in the establishment or operation of a user facility, the Department shall employ full and open competition in selecting such a participant.

(c) PROHIBITION.—The Department may not redesignate a user facility, as defined by section 541(b) as something other than a user facility for avoid the requirements of subsections (a) and (b).

# Subtitle D—Advisory Panel on Office of Science

**SEC. 561. ESTABLISHMENT.**

The Director of the Office of Science and Technology Policy, in consultation with the Secretary, shall establish an Advisory Panel on the Office of Science comprised of knowledgeable individuals to—

(1) address concerns about the current status and the future of scientific research supported by the Office;

(2) examine alternatives to the current organizational structure of the Office within the Department, taking into consideration existing structures for the support of scientific research in other Federal agencies and the private sector; and

(3) suggest actions to strengthen the scientific research supported by the Office that might be taken jointly by the Department and Congress.

**SEC. 562. REPORT.**

Within 6 months after the date of the enactment of this Act, the Advisory Panel shall transmit its findings and recommendations in a report to the Director of the Office of Science and Technology Policy and the Secretary. The Director and the Secretary shall jointly—

(1) consider each of the Panel's findings and recommendations, and comment on each as they consider appropriate; and

(2) transmit the Panel's report and the comments of the Director and the Secretary on the report to the appropriate congressional committees within 9 months after the date of the enactment of this Act.

# Subtitle E—Department of Energy Authorization of Appropriations

**SEC. 581. AUTHORIZATION OF APPROPRIATIONS.**

(a) OPERATION AND MAINTENANCE.—Including the amounts authorized to be appropriated for fiscal year 2002 under section 505 for Fusion Energy Sciences and under section 522(b) for the Spallation Neutron Source, there are authorized to be appropriated to the Secretary for the Office of Science (also including subtitle C, High Energy Physics, Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences (except for the Spallation Neutron Source), Advanced Scientific Computing Research, Energy Research Analysis, Multiprogram Energy Laboratories-Facilities Support, Facilities and Infrastructure, Safeguards and Security,

and Program Direction) operation and maintenance $3,299,558,000 for fiscal year 2002, to remain available until expended.

(b) RESEARCH REGARDING PRECIOUS METAL CATALYSIS.—Within the amounts authorized to be appropriated to the Secretary under subsection (a), $5,000,000 for fiscal year 2002 may be used to carry out research in the use of precious metals (excluding platinum, palladium, and rhodium) in catalysis, either directly though national laboratories, or through the award of grants, cooperative agreements, or contracts with public or nonprofit entities.

(c) CONSTRUCTION.—In addition to the amounts authorized to be appropriated under section 522(a) for construction of the Spallation Neutron Source, there are authorized to be appropriated to the Secretary for Science—

(1) $11,400,000 for fiscal year 2002 for completion of construction of Project 98-G-304, Neutrinos at the Main Injector, Fermi National Accelerator Laboratory;

(2) $11,405,000 for fiscal year 2002 for completion of construction of Project 01-E-300, Laboratory for Comparative and Functional Genomics, Oak Ridge National Laboratory;

(3) $4,000,000 for fiscal year 2002, $8,000,000 for fiscal year 2003, and $2,000,000 for fiscal year 2004 for completion of construction of Project 02-SC-002, Project Engineering Design (PED), Various Locations;

(4) $3,183,000 for fiscal year 2002 for completion of construction of Project 02-SC-002, Multiprogram Energy Laboratories Infrastructure Project Engineering Design (PED), Various Locations; and

(5) $18,633,000 for fiscal year 2002 and $13,029,000 for fiscal year 2003 for completion of construction of Project MEL-001, Multiprogram Energy Laboratories, Infrastructure, Various Locations.

(d) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (c) may be used for construction at any national security laboratory as defined in section 3281(1) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(1)) or at any nuclear weapons production facility as defined in section 3281(2) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(2)).

# TITLE VI—MISCELLANEOUS

## Subtitle A—General Provisions for the Department of Energy

### SEC. 601. RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION OF ENERGY TECHNOLOGY PROGRAMS, PROJECTS, AND ACTIVITIES.

(a) AUTHORIZED ACTIVITIES.—Except as otherwise provided in this Act, research, development, demonstration, and commercial application programs, projects, and activities for which appropriations are authorized under this Act may be carried out under the procedures of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.), the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), or any other Act under which the Secretary is authorized to carry out such programs, projects, and activities, but only to the extent the Secretary is authorized to carry out such activities under each such Act.

(b) AUTHORIZED AGREEMENTS.—Except as otherwise provided in this Act, in carrying out research, development, demonstration, and commercial application programs, projects, and activities for which appropriations are authorized under this Act, the Secretary may use, to the extent authorized under applicable provisions of law, contracts, cooperative agreements, cooperative research and development agreements under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), grants, joint ventures, and any other form of agreement available to the Secretary.

(c) DEFINITION.—For purposes of this section, the term "joint venture" has the meaning given that term under section 2 of the National Cooperative Research and Production Act of 1993 (15 U.S.C. 4301), except that such term may apply under this section to research, development, demonstration, and commercial application of energy technology joint ventures.

(d) PROTECTION OF INFORMATION.—Section 12(c)(7) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a(c)(7)), relating to the protection of information, shall apply to research, development, demonstration, and commercial application of energy technology programs, projects, and activities for which appropriations are authorized under this Act.

(e) INVENTIONS.—An invention conceived and developed by any person using funds provided through a grant under this Act shall be considered a subject invention for the purposes of chapter 18 of title 35, United States Code (commonly referred to as the Bayh-Dole Act).

(f) OUTREACH.—The Secretary shall ensure that each program authorized by this Act includes an outreach component to provide information, as appropriate, to manufacturers, consumers, engineers, architects, builders, energy service companies, universities, facility planners and managers, State and local governments, and other entities.

(g) GUIDELINES AND PROCEDURES.—The Secretary shall provide guidelines and procedures for the transition, where appropriate, of energy technologies from research through development and demonstration to commercial application of energy technology. Nothing in this section shall preclude the Secretary from—

(1) entering into a contract, cooperative agreement, cooperative research and development agreement under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), grant, joint venture, or any other form of agreement available to the Secretary under this section that relates to research, development, demonstration, and commercial application of energy technology; or

(2) extending a contract, cooperative agreement, cooperative research and development agreement under the Stevenson-Wydler Technology Innovation Act of 1980, grant, joint venture, or any other form of agreement available to the Secretary that relates to research, development, and demonstration to cover commercial application of energy technology.

(h) APPLICATION OF SECTION.—This section shall not apply to any contract, cooperative agreement, cooperative research and development agreement under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), grant, joint venture, or any other form of agreement available to the Secretary that is in effect as of the date of enactment of this Act.

**SEC. 602. LIMITS ON USE OF FUNDS.**

(a) MANAGEMENT AND OPERATING CONTRACTS.—

(1) COMPETITIVE PROCEDURE REQUIREMENT.—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 federally owned or operated nonmilitary energy laboratory of the Department unless such contract is awarded using competitive procedures or the Secretary grants, on a case-by-case basis, a waiver to allow for such a deviation. The Secretary may not delegate the authority to grant such a waiver.

(2) CONGRESSIONAL NOTICE.—At least 2 months before a contract award, amendment, or modification for which the Secretary intends to grant such a waiver, the Secretary shall submit to the appropriate congressional committees a report notifying the committees of the waiver and setting forth the reasons for the waiver.

(b) PRODUCTION OR PROVISION OF ARTICLES OR SERVICES.—None of the funds authorized to be appropriated to the Secretary by this Act may be used to produce or provide articles or services for the purpose of selling the articles or services to a person outside the Federal Government, unless the Secretary determines that comparable articles or services are not available from a commercial source in the United States.

(c) REQUESTS FOR PROPOSALS.—None of the funds authorized to be appropriated to the Secretary by this Act may be used by the Department to prepare or initiate Requests for Proposals for a program if the program has not been authorized by Congress.

**SEC. 603. 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 directly and specifically related to any demonstration or commercial application project 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 (a) or (b), the Secretary may include personnel, services, equipment, and other resources.

**SEC. 604. LIMITATION ON DEMONSTRATION AND COMMERCIAL APPLICATION OF ENERGY TECHNOLOGY.**

Except as otherwise provided in this Act, the Secretary shall provide funding for scientific or energy demonstration and commercial application of energy technology programs, projects, or activities only for technologies or processes that can be reasonably expected to yield new, measurable benefits to the cost, efficiency, or performance of the technology or process.

**SEC. 605. REPROGRAMMING.**

(a) AUTHORITY.—The Secretary may use amounts appropriated under this Act for a program, project, or activity other than the program, project, or activity for which such amounts were appropriated only if—

(1) the Secretary has transmitted to the appropriate congressional committees a report described in subsection (b) and a period of 30 days has elapsed after such committees receive the report;

(2) amounts used for the program, project, or activity do not exceed—

(A) 105 percent of the amount authorized for the program, project, or activity; or

(B) $250,000 more than the amount authorized for the program, project, or activity,

whichever is less; and

(3) the program, project, or activity has been presented to, or requested of, the Congress by the Secretary.

(b) REPORT.—(1) The report referred to in subsection (a) is a report containing a full and complete statement of the action proposed to be taken and the facts and circumstances relied upon in support of the proposed action.

(2) In the computation of the 30-day period under subsection (a), there shall be excluded 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.

(c) LIMITATIONS.—(1) In no event may the total amount of funds obligated by the Secretary pursuant to this Act exceed the total amount authorized to be appropriated to the Secretary by this Act.

(2) Funds appropriated to the Secretary pursuant to this Act may not be used for an item for which Congress has declined to authorize funds.

## Subtitle B—Other Miscellaneous Provisions

**SEC. 611. NOTICE OF REORGANIZATION.**

The Secretary shall provide notice to the appropriate congressional committees not later than 15 days before any reorganization of any environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Department.

**SEC. 612. LIMITS ON GENERAL PLANT PROJECTS.**

If, at any time during the construction of a civilian environmental research and development, scientific or energy research, development, or demonstration, or commercial application of energy technology project of the Department for which no specific funding level is provided by law, the estimated cost (including any revision thereof) of the project exceeds $5,000,000, the Secretary may not continue such construction unless the Secretary has furnished a complete report to the appropriate congressional committees explaining the project and the reasons for the estimate or revision.

**SEC. 613. LIMITS ON CONSTRUCTION PROJECTS.**

(a) LIMITATION.—Except as provided in subsection (b), construction on a civilian environmental research and development, scientific or energy research, development, or demonstration, or commercial application of energy technology project of the Department for which funding has been specifically provided by law may not be started, and additional obligations may not be incurred in connection with the project above the authorized funding amount, whenever the current estimated cost of the construction project exceeds by more than 10 percent the higher of—

(1) the amount authorized for the project, if the entire project has been funded by the Congress; or

(2) the amount of the total estimated cost for the project as shown in the most recent budget justification data submitted to Congress.

(b) NOTICE.—An action described in subsection (a) may be taken if—

(1) the Secretary has submitted to the appropriate congressional committees a report on the proposed actions and the circumstances making such actions necessary; and

(2) a period of 30 days has elapsed after the date on which the report is received by the committees.

(c) EXCLUSION.—In the computation of the 30-day period described in subsection (b)(2), there shall be excluded 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.

(d) EXCEPTION.—Subsections (a) and (b) shall not apply to any construction project that has a current estimated cost of less than $5,000,000.

**SEC. 614. AUTHORITY FOR CONCEPTUAL AND CONSTRUCTION DESIGN.**

(a) REQUIREMENT FOR CONCEPTUAL DESIGN.—(1) Subject to paragraph (2) and except as provided in paragraph (3), before submitting to Congress a request for funds for a construction project that is in support of a civilian environmental research and development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Department, the Secretary shall complete a conceptual design for that project.

(2) If the estimated cost of completing a conceptual design for a construction project exceeds $750,000, the Secretary shall submit to Congress a request for funds for the conceptual design before submitting a request for funds for the construction project.

(3) The requirement in paragraph (1) does not apply to a request for funds for a construction project, the total estimated cost of which is less than $5,000,000.

(b) AUTHORITY FOR CONSTRUCTION DESIGN.—(1) The Secretary may carry out construction design (including architectural and engineering services) in connection with any proposed construction project that is in support of a civilian environmental research and development, scientific or energy research, development, and demonstration, or commercial application of energy technology program, project, or activity of the Department if the total estimated cost for such design does not exceed $250,000.

(2) If the total estimated cost for construction design in connection with any construction project described in paragraph (1) exceeds $250,000, funds for such design must be specifically authorized by law.

**SEC. 615. NATIONAL ENERGY POLICY DEVELOPMENT GROUP MANDATED REPORTS.**

(a) THE SECRETARY'S REVIEW OF ENERGY EFFICIENCY RENEWABLE ENERGY, AND ALTERNATIVE ENERGY RESEARCH AND DEVELOPMENT.—Upon completion of the Secretary's review of current funding and historic performance of the Department's energy efficiency, renewable energy, and alternative energy research and development programs in response to the recommendations of the May 16, 2001, Report of the National Energy Policy Development Group, the Secretary shall transmit a report containing the results of such review to the appropriate congressional committees.

(b) REVIEW AND RECOMMENDATIONS ON USING THE NATION'S ENERGY RESOURCES MORE EFFICIENTLY.—Upon completion of the Office of Science and Technology Policy and the President's Council of Advisors on Science and Technology reviewing and making recommendations on using the Nation's energy resources more efficiently, in response to the recommendation of the May 16, 2001, Report of the National Energy Policy Development Group, the Director of the Office of Science and Technology Policy shall transmit a report containing the results of such review and recommendations to the appropriate congressional committees.

**SEC. 616. PERIODIC REVIEWS AND ASSESSMENTS.**

The Secretary shall enter into appropriate arrangements with the National Academies of Sciences and Engineering to ensure that there be periodic reviews and assessments of the programs authorized by this Act, as well as the measurable cost and performance-based goals for such programs as established under section 4, and the progress on meeting such goals. Such reviews and assessments shall be conducted at least every 5 years, or more often as the Secretary considers necessary, and the Secretary shall transmit to the appropriate congressional committees reports containing the results of such reviews and assessments.

## II. PURPOSE OF THE BILL

The purpose of H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001, is to authorize appropriations for envi-

ronmental research and development (R&D), scientific and energy research, development, and demonstration (RD&D), and commercial application of energy technology programs, projects, and activities of the Department of Energy (DOE) and of the Office of Air and Radiation (OAR) of the Environmental Protection Agency (EPA), and for other purposes.

## III. Background and Need for the Legislation

Affordable energy is essential to the Nation's continued prosperity. Volatile world oil markets, soaring natural gas and electricity prices, and energy shortages in a number of parts of the United States have replaced the relatively low energy prices enjoyed over most of the past two decades. In addition, there are increasing concerns about the environmental impacts of energy use, particularly with respect to climate change. Consequently, energy is again on the front burner of the Nation's agenda.

In his second week in office, President George W. Bush established the National Energy Policy Development (NEPD) Group, chaired by Vice President Cheney, and directed it to develop a national energy policy designed to promote dependable, affordable, environmentally sound production and distribution of energy for the future. On May 16, 2001, the NEPD Group reported its more than 100 recommendations to the President, which he adopted and began to implement.

Although the majority of the NEPD Group's recommendations are administrative in nature, a significant number of initiatives require congressional action. The President sent his legislative agenda to the Congress on June 28 stating that he was looking forward to working closely with Congress to implement critical components of a comprehensive energy plan.

The Committee on Science has a significant role in the legislative implementation of the President's National Energy Policy. Under rule X, clause 1(n)(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,* * *" [emphases added]. Similarly, under rule X, clause 1(n)(4), the Committee has jurisdiction over environmental R&D; under rule X, clause 1(n)(6), the Committee has jurisdiction over the commercial application of energy technology; and under rule X, clause 1(n)(14), the Committee has jurisdiction over scientific RD&D.

The areas encompassed by the Committee's jurisdiction are performed by a number of Federal agencies, including the Department of Commerce, DOE, Department of Transportation, the Environmental Protection Agency (EPA), the National Aeronautics and Space Administration (NASA), the National Institute of Science and Technology (NIST), the National Science Foundation, and the Office of Science and Technology Policy (OSTP).

H.R. 2460 focuses primarily on DOE and EPA. DOE supports major energy and scientific RD&D and commercial application activities, including solar and renewable energy, energy efficiency, fossil energy, and nuclear and fusion energy, and is also a major funding source for science. In addition, EPA's Office of Air and Radiation (OAR) conducts not only environmental R&D, but also scientific and energy RD&D and commercial application of energy

technology programs, particularly in the conduct of its Climate Change Protection Programs.

DOE's general authority lies in various statutes, including the Atomic Energy Act of 1954, as amended (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 two exceptions—methane hydrate R&D [1] and Renewable Indian Energy Resources [2]—none of the existing Department's civilian programs has specific authorizations for fiscal year (FY) 2002 and beyond. This circumstance, in and of itself, dictates a compelling 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.

EPA was established in the Executive Branch on December 2, 1970, as an independent agency pursuant to President Nixon's Reorganization Plan No. 3 of July 9, 1970 (5 U.S.C. app.) to "integrate environmental management activities involving pollution control into a coordinated and comprehensive program." [3]

EPA's statutory mandate for RD&D and commercial application has grown from provisions of many environmental protection laws as enacted or amended diver the years. Congress has conferred on EPA the authority to conduct basic and applied research, to develop and demonstrate new technologies, to monitor the ambient environment, and to conduct diverse special studies in two ways: (1) in the context of at least 12 different environmental protection laws; [4] and (2) in the Environmental Research, Development, and Demonstration Authorization Act (ERDDA). The Committee believes that the fact that none of the EPA OAR programs has specific authorizations for FY 2002 and beyond demonstrates the need for such legislation.

The Committee believes this bill, H.R. 2460—which authorizes appropriations for environmental R&D, scientific and energy RD&D, and commercial application of energy technology programs, projects, and activities of the DOE and the EPA OAR—meets the

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[1] Methane hydrate research and development is authorized at $7.5 million for FY 2002, $11.0 million for FY 2003, and at $12.0 million for each of FY 2004 and FY 2005 by the Methane Hydrate Research and Development Act of 2000 (Public Law 106–193).

[2] Renewable Indian Energy Resources is authorized at $30.0 million for each of FY 2000–2003 by the Energy Conservation Reauthorization Act of 1998 (P.L. 105–388).

[3] Library of Congress. Congressional Research Service. Environmental Protection: An Historical Review of Legislation and Programs of the Environmental Protection Agency, Report No. 83–34 ENR, March 3, 1983, p. 1.

[4] Library of Congress. Congressional Research Service. Environmental Laws: Summaries of Statutes Administered by the Environmental Protection Agency, RL30798, January 4, 2001, p. 107. These 12 statutes include: (1) The Clean Air Act, especially sections 103, 104, 153, and 319; (2) the Clean Water Act, especially title I, sections 104–11; (3) the Safe Drinking Water Act, especially sections 1442 and 1444; (4) the Marine Protection, Research and Sanctuaries Act (Ocean Dumping Act), especially Title II and Title IV; (5) the Solid Waste Disposal Act/Resource Conservation and Recovery Act, subtitle H, sections 8001–8007; (6) the Federal Insecticide, Fungicide, and Rodenticide Act, section 20; (7) the Pesticide Research Act; (8) the Toxic Substances Control Act, especially section 10; (9) the Noise Control Act, section 14; (10) the National Environmental Policy Act, section 204(5); (11) the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund), section 311 as amended by the Superfund Amendments and Reauthorization Act of 1986 section 209; and (12) the Acid Precipitation Act of 1980.

Committee's responsibilities to set priorities for a balanced energy and science portfolio and fundamental science that is vital to the Nation's future.

## IV. Summary of Hearings

The Full Committee on Science held 3 hearings and the Subcommittee on Energy held 7 hearings relevant to H.R. 2460.

The Full Committee hearings included:

1. February 28, 2001 hearing on The Nation's Energy Future: Role of Renewable Energy and Energy Efficiency to address three questions:

—What are the current and projected near- and mid-term contributions of renewable energy and energy efficiency to the Nation's energy mix?

—Have renewable energy and energy efficiency performed as expected, and if not, why not?

—What programs and/or policies are needed to ensure that renewable energy and energy efficiency achieve their potential?

Witnesses were: (1) Mary J. Hutzler, Director, Office of Integrated Analysis and Forecasting, Energy Information Administration, DOE; (2) Professor John P. Holdren, Harvard University, Chair, President's Committee of Advisors on Science and Technology Energy Research and Development Panel; (3) Kenneth K. Humphreys, Senior Staff Engineer, Energy, Science and Technology Division, Pacific Northwest National Laboratory; and (4) Joel Darmstadter, Senior Fellow, Energy and Natural Resources Division, Resources for the Future.

2. May 23, 2001 hearing on the National Energy Policy—Report of the National Energy Policy Development Group. Witnesses were: (1) The Honorable William F. Martin, Chairman of Washington Policy and Analysis, Inc., on behalf of the Alliance for Energy and Economic Growth; (2) Katherine H. Hamilton, Co-Director of the American Bioenergy Association; and (3) David G. Hawkins, Director of the Natural Resources Defense Council Climate Center.

3. June 21, 2001 hearing on the National Energy Policy—Report of the National Energy Policy Development Group: Administration View to receive testimony from The Honorable Spencer Abraham, Secretary of Energy.

The Subcommittee on Energy hearings included the following:

1. March 22, 2001 hearing on H.R. 723: Civil Penalties for Nuclear Safety Violations by Nonprofit Department of Energy Contractors Under the Atomic Energy Act of 1954 to address proposed legislation that would amend the Atomic Energy Act of 1954 to remove the exemption of nonprofit DOE contractors from civil penalties for violating DOE rules regulations, and orders relating to nuclear safety. Witnesses were: (1) Eric J. Fygi, DOE Acting General Counsel; (2) Gary L. Jones, Associate Director, Energy, Resources, and Science Issues, U.S. General Accounting Office; (3) Guy Cunningham, Associate General Counsel, Battelle Memorial Institute; and (4) Robert L. Van Ness, Assistant Vice President for Laboratory Administration, University of California. In addition, the Subcommittee received testimony for the record from Representative Joe Barton of Texas, Chairman of the House Energy and Commerce Subcommittee on Energy and Air Quality, and the author of H.R. 723.

2. April 26, 2001 hearing on the Department of Energy Fiscal Year 2002 Budget Request to consider the Administration's Fiscal Year (FY) 2002 request for the DOE. Administration witnesses were: (1) Dr. James F. Decker, Acting Director, DOE Office of Science; (2) John Sullivan, DOE Acting Deputy Assistant Secretary for Planning, Budget and Management on behalf of Dr. Abraham E. Haspel, Acting Director, DOE Office of Energy Efficiency and Renewable Energy; (3) Robert S. Kripowicz, DOE Acting Assistant Secretary for Fossil Energy, Office of Fossil; (4) Dr. Gail Marcus, Principal Deputy Director, DOE Office of Nuclear Energy, Science and Technology, on behalf of William D. Magwood, IV, Director, DOE Office of Nuclear Energy, Science and Technology; (5) Steven V. Cary, Acting Assistant Secretary, DOE Office of Environment, Safety and Health; and (6) James M. Owendoff, Deputy Assistant Secretary, DOE Office of Environmental Management. Outside witnesses were: (1) Dr. George H. Trilling, President, American Physical Society; (2) Dr. Scott W. Tinker, Director, Bureau of Economic Geology, University of Texas at Austin; (3) Dr. James A. Lake, President, American Nuclear Society; and (4) Michael L. Marvin, President, Business Council for Sustainable Energy.

3. May 3, 2001 hearing on Energy Realities: Rates of Consumption, Energy Reserves, and Future Options to examine what advanced technology options may be available to provide energy in the future. Witnesses were: (1) Dr. Albert A. Bartlett, Professor Emeritus of Physics, University of Colorado at Boulder; (2) Dr. Suzanne D. Weedman, Program Coordinator, Energy Resources Programs, U.S. Geological Survey; (3) Dr. W. David Montgomery, Vice President, Charles River Associates; (4) Howard S. Geller, Executive Director Emeritus, American Council for an Energy Efficient Economy; (5) Henry A. Courtright, Vice President, Power Generation and Distributed Resources, Electric Power Research Institute; and, (6) Dr. Alexandra von Meier, Director, Environmental Technology Center, Sonoma State University.

4. May 17, 2001 hearing on the Department of Energy Office of Science—Issues and Opportunities to receive testimony on the current status of the DOE's Office of Science programs, future opportunities, and major issues that confront the Office. Witnesses included: (1) Professor Frederick J. Gilman (Department of Physics Carnegie Mellon University), chair, DOE High Energy Physics Advisory Panel; (2) Dr. T. James Symons (Nuclear Sciences Division, Lawrence Berkeley National Laboratory), chair, DOE/NSF Nuclear Science Advisory Committee; (3) Dr. Geraldine L. Richmond (Department of Chemistry, University of Oregon), Chair, DOE Basic Energy Sciences Advisory Committee; (4) Dr. Keith O. Hodgson (Director, Stanford Synchrotron Radiation Laboratory Department of Chemistry, Stanford University), Chair, DOE Biological and Environmental Research Advisory Committee; (5) Professor Richard D. Hazeltine (University of Texas at Austin, Institute for Fusion Studies), Chair, DOE Fusion Energy Sciences Advisory Committee; (6) Dr. Margaret H. Wright (Bell Laboratories/Lucent Technologies), Chair, DOE Advanced Scientific Computing Advisory Committee; (7) Dr. Robert C. Richardson, Vice Provost for Research, Cornell University, and recipient of the 1996 Nobel Prize in Physics; (8) Dr. Charles V. Shank, Director, Lawrence Berkeley

National Laboratory; and (9) Professor James F. Drake, Institute for Plasma Research, University of Maryland.

5. May 24, 2001 hearing on Energy Conservation Potential of Extended and Double Daylight Saving Time to examine the potential energy savings that may result from extending the months during which Daylight Saving Time (DST) is in effect and from "double daylight saving time" (DDST)—advancing clocks by two hours in months with long periods of daylight. Witnesses included: (1) The Honorable Brad Sherman, Member of Congress representing the Twenty-Fourth District of California; (2) Linda Lawson, Acting Deputy Assistant Secretary for Policy, U.S. Department of Transportation; and (3) James C. Benfield of Bracy Williams & Co. In addition, the California Energy Commission and William R. Harris, an attorney and consultant on energy and DST, submitted testimony for the record.

6. June 12, 2001 hearing on the President's National Energy Policy: Clean Coal Technology and Oil and Gas R&D to examine the current status of coal and oil and gas technologies and R&D efforts, and the extent to which technologies derived from this R&D will extend the life of these resources. Witnesses included: (1) Robert S. Kripowicz, Acting DOE Assistant Secretary for Fossil Energy; (2) Ben Yamagata, Executive Director of the Coal Utilization Research Council; (3) James E. Wells, Director of Natural Resources and Environment, U.S. General Accounting Office; (4) Katherine Abend, Global Warming Associate, U.S. Public Interest Research Group; (5) John S. Mead, Director of the Coal Research Center, Southern Illinois University-Carbondale; (6) Virginia B. Lazenby, Chairman and CEO of Bretagne, GP, Nashville, Tennessee, on behalf of the Independent Petroleum Association of America; (7) Paul Cuneo, Vice President and Chief Information Officer of Equiva Services, LLC, Houston, Texas; (8) Dr. Craig W. Van Kirk, Professor of Petroleum Engineering and Head of the Department of Petroleum Engineering at the Colorado School of Mines, Golden, Colorado; and (9) Dr. Alan R. Huffman, Manager of Conoco's Seismic Imaging Technology Center, Houston, Texas.

7. June 14, 2001 hearing on the President's National Energy Policy: Hydrogen and Nuclear Energy R&D Legislation to receive testimony regarding legislation: (1) to reauthorize the Spark A. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990/Hydrogen Future Act of 1996; and (2) on nuclear energy R&D provisions contained in H.R. 1679, the Electricity Supply Assurance Act of 2001, introduced by Representative Lindsey Graham of South Carolina and in H.R. 2126, the Department of Energy University Nuclear Science and Engineering Act, introduced by Representative Judy Biggert of Illinois. Witnesses included: (1) The Honorable David K. Garman, DOE Assistant Secretary for Energy Efficiency and Renewable Energy; (2) Dr. H.M. Hubbard, Chair, Committee on Programmatic Review of the U.S. Department of Energy's Office of Power Technologies, National Research Council; (3) Arthur T. Katsaros, Group Vice President-Engineered Systems and Development, Air Products and Chemicals, Inc., Lehigh Valley, Pennsylvania, on behalf of the National Hydrogen Association; (4) David P. Haberman, Chairman, DCH Technology, Inc., Valencia, California; and (5) Dr. Peter Lehman, Director, Schatz Energy Research Center, Humboldt State University, Arcata, California; (6)

The Honorable Lindsey Graham, Member of Congress representing the Third District of South Carolina; (7) the Honorable Judy Biggert, Member of Congress representing the Thirteenth District of Illinois; (8) William D. Magwood, IV, Director, DOE Office of Nuclear Energy, Science and Technology; (9) Joe Colvin, President, Nuclear Energy Institute; (10) John Kotek, Argonne National Laboratory-West, Idaho Falls, Idaho, and Co-Chair, Public Policy Committee, American Nuclear Society; and (11) Anna Aurilio, Legislative Director, U.S. Public Interest Research Group.

## V. Committee Action

As summarized above, the Full Committee on Science heard testimony relevant to the programs authorized in H.R. 2460 at hearings held on February 28, May 23, and June 21, 2001, and the Subcommittee on Energy heard testimony relevant to the programs authorized in H.R. 2460 at hearings held on March 22, April 26, May 3, May 17, May 24, June 12, and June 14, 2001.

On July 11, 2001, Chairman Sherwood L. Boehlert of the Committee on Science introduced H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001, a bill to authorize appropriations for environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities of the Department of Energy and of the Office of Air and Radiation of the Environmental Protection Agency, and for other purposes.

The Subcommittee on Energy was discharged from further consideration of H.R. 2460 on July 17, 2001.

The Committee on Science met to consider H.R. 2460 on Wednesday, July 18, 2001, and entertained the following amendments.

*Amendment 1.*—Mr. Boehlert, Chairman of the Committee on Science, asked and received unanimous consent to offer en bloc amendments on behalf of himself and Mr. Hall of Texas, Ranking Minority Member of the Committee on Science. The en bloc amendments, which were adopted by voice vote: (1) amended section 4 (Goals) to set specific technology goals for programs and clarified that reports on the setting of goals for new programs are due within 120 days of the program beginning operation; (2) amended section 7 (Balance of Funding Priorities) to make clear that the Committee expects the ratios among the spending levels for the programs in the bill to be maintained and requires a report if that does not happen; (3) amended title I, subtitle A (Alternative Fuel Vehicles) to add ethanol, propane, and ultra low-sulfur diesel vehicles to the alternative fuel vehicle competitive grant pilot program; (4) amended title I, subtitle B (Distributed Energy Resources) to promote research on distributed power hybrid energy systems; (5) added four new subtitles to title I to authorize research on the reuse of the batteries that power electric vehicles, to create an Interagency Group to address energy conservation and research and development and related issues on building technologies, to demonstrate cleaner technologies for school buses, and to establish a next generation lighting initiative; (6) modified bill language on cost-sharing requirements to conform with existing law; (7) added definitions for bioenergy programs; (8) added a new subtitle to title II for RD&D and commercial application of transmission infrastructure systems; (9) added new sections in title II (Renewable Energy)

to require research on wave powered electric generation and an assessment of renewable energy resources; (10) added a reporting requirement to the programs on nuclear science and engineering authorized under, title III, subtitle A; (11) added language to title IV, subtitle A (Clean Coal) to ensure that the clean coal program funds environmental improvements and to establish Clean Coal Centers of Excellence; (12) added a new subtitle C to title IV to authorize RD&D of ultra-deepwater natural gas and other petroleum exploration and production technologies; (13) expanded current fuel cell RD&D programs to include demonstration of manufacturing production and processes; (14) authorized $5.0 million for FY 2002 for research in title V (Science) in the use of precious metals in catalysis; and (15) made other clarifying and technical amendments.

*Amendment 2.*—Ms. Woolsey offered and withdrew an amendment to the en bloc amendments to strike section 322 of H.R. 2460, which authorizes an advanced fuel recycling technology research and development program.

*Amendment 3.*—Ms. Woolsey offered an amendment to the en bloc amendments to reduce the FY 2002 authorization for Nuclear Energy Technologies in section 343(e) from $20.0 million to $4.5 million, and to reduce the FY 2002 authorization for nuclear energy operation and maintenance in section 344(a) from $191.2 million to $175.7 million. The amendment was rejected by a recorded vote of 18 ayes to 20 noes.

*Amendment 4.*—Ms. Woolsey offered and withdrew an amendment to H.R. 2460 to add "Subtitle E—Advanced Aeronautical Systems" to Title I to authorize appropriations of $50.0 million in FY 2002, $55.0 million in FY 2003, $60.0 million in FY 2004, $65.0 million in FY 2005, and $70.0 million in FY 2006 to the Administrator of the National Aeronautics and Space Administration (NASA) and to direct NASA to develop: (1) technologies that would enable a 50 percent increase in aircraft engine efficiencies by 2010; and (2) air transportation management operation concepts and procedures that would enable a 25 percent increase in the energy efficiency of the overall air transport system, as compared to the efficiency as of the date of enactment of the Act.

*Amendment 5.*—Ms. Jackson-Lee offered and withdrew an amendment to H.R. 2460 to add "Subtitle E—Energy Pipeline Research and Development" to Title IV to direct the Secretary of Transportation, in coordination with the Secretary of Energy and the Director of the National Science Foundation to develop and implement an accelerated cooperative program of research, development, and demonstration to ensure the integrity, reliability, safety, and security of natural gas and hazardous liquid pipelines.

*Amendment 6.*—Mr. Hoeffel discussed, but did not offer, an amendment to H.R. 2460 to add "Subtitle F—Nanoscale Science and Engineering" to Title V, to authorize a multiyear nanoscale science and engineering program to be administered by the DOE Office of Science.

*Amendment 7.*—Ms. Lofgren offered an amendment to the en bloc amendments to H.R. 2460 to insert language clarifying that only areas currently available for Outer Continental Shelf leasing may be used for ultra-deepwater natural gas and other petroleum exploration and production technology research, development and demonstration. The amendment was adopted by voice vote.

*Amendments 8 and 9.*—Mr. Nethercutt asked for and received unanimous consent to offer two amendments to the en bloc amendments to H.R. 2460. Amendment 8 clarified language in section 124 relating to the High Power Density Industry Program, and Amendment 9 clarified language in sections 241(a) and (b) relating to transmission infrastructure systems research, development, demonstration, and commercial application. The amendments were adopted by voice vote.

With a quorum present, Mr. Costello moved that the Committee favorably report the bill, H.R. 2460, 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 asked and received unanimous consent 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. 2460 or a similar Senate bill.

## VI. Summary of Major Provisions of the Bill

Section 4 (Goals) sets specific technology goals for programs and clarifies that reports on the setting of goals for new programs are due within 120 days of the program beginning operation.

Section 7 (Balance of Funding Priorities) makes clear that the Committee expects the ratios among the spending levels for the programs in the bill to be maintained and requires a report if that does not happen.

Title I (Energy Conservation and Energy Efficiency) authorizes $3,134,100,000 for FY 2002–FY 2006 in six subtitles, as follows:

1. A—Alternative Fuel Vehicles: $200.0 million for FY 2002 for not more than 15 grants (with a maximum grant size of $20.0 million) to State and local governments, or metropolitan transit authorities for the demonstration and commercial application of alternative fuel and ultra-low sulfur diesel vehicles.

2. B—Distributed Power Hybrid Energy Systems: Section 125 authorizes $20.0 million for FY 2002 for competitive, merit-based grants for the development of micro-generation energy technology.

3. C—Secondary Electric Vehicle Battery Use: $1.0 million for FY 2002, and $7.0 million for each of FY 2003 and FY 2004 for an RD&D program.

4. D—Green School Buses: $40.0 million for FY 2002, $50.0 million for FY 2003, $60.0 million for FY 2004, $70.0 million for FY 2005, and $70.0 million for FY 2006 for competitive grants for the demonstration and commercial application of alternative fuel and ultra-low sulfur diesel school buses.

5. E—Next Generation Lighting Initiative: Authorizes the Secretary of Energy (Secretary) to research, develop, and conduct demonstration activities on advanced lighting technologies, including white light emitting diodes.

6. F—DOE Authorization of Appropriations: In addition to the amounts authorized under subtitle A, section 125 of subtitle B, and

subtitle D, authorizes $625.0 million for FY 2002, $700.0 million for FY 2003, and $800.0 million for FY 2004 for subtitles B, C, E, and the Energy Conservation operation and maintenance (including Building Technology, State and Community Sector (Nongrants), Industry Sector, Transportation Sector, Power Technologies, and Policy and Management).

7. G—EPA OAR Authorization of Appropriations: $156.7 million for FY 2002, $163.0 million for FY 2003, and $169.4 million for FY 2004.

In addition, subtitle H (National Building Performance Initiative) requires the Director of OSTP to establish and Interagency Group responsible for the development and implementation of a National Building Performance Initiative to address energy conservation and R&D and related issues.

Title II (Renewable Energy) authorizes $2,468,200,000 for FY 2002–FY 2006 in four subtitles, as follows:

1. A—Hydrogen: $60.0 million for FY 2002, $70.0 million for FY 2003, $80.0 million for FY 2004, $90.0 million for FY 2005, and $100.0 million for FY 2006.

2. B—Bioenergy: $148.2 million for FY 2002, $162.9 million for FY 2003, $179.9 million for FY 2004, $199.4 million for FY 2005, and $221.8 million for FY 2006.

3. C—Transmission Infrastructure Systems: Directs the Secretary to develop and implement a comprehensive RD&D and commercial application program to ensure the reliability, efficiency, and environmental integrity of electrical transmission systems.

4. D—DOE Authorization of Appropriations: $535.0 million for FY 2002, $639.0 million for FY 2003, and $683.0 million for FY 2004, $70.0 million for FY 2005, and $70.0 million for FY 2006, including the amounts authorized under subtitle A and subtitle B and for Renewable Energy operation and maintenance, including subtitle C, Geothermal Technology Development, Hydropower, Concentrating Solar Power, Photovoltaic Energy Systems, Solar Building Technology Research, Wind Energy Systems, High Temperature Superconducting Research and Development, Energy Storage Systems, Transmission Reliability, International Renewable Energy Program, Renewable Energy Production Incentive Program, Renewable Program Support, National Renewable Energy Laboratory, and Program Direction.

Title III (Nuclear Energy) authorizes $724,995,000 for FY 2002–FY 2006 in three subtitles, as follows:

1. A—University Nuclear Science and Energy: $30.2 million for FY 2002, $41.0 million for FY 2003, $47.9 million for FY 2004, $55.6 million for FY 2004, and $61.4 million for FY 2005.

2. B—Advanced Fuel Recycling Technology R&D Program: $10.0 million for FY 2002, and such sums as are necessary for each of FY 2003 and FY 2004.

3. C—DOE Authorization of Appropriations: $191.2 million for FY 2002, $199.0 million for FY 2003, and $207.0 million for FY 2004 for nuclear energy operation and maintenance, including subtitle A, the Nuclear Energy Research Initiative ($60.0 million for FY 2002, and such sums as are necessary for each of FY 2003 and FY 2004), the Nuclear Energy Plant Optimization Program ($15.0 million for FY 2002, and such sums as are necessary for each of FY 2003 and FY 2004), Nuclear Energy Technologies ($20.0 million

for FY 2002, and such sums as are necessary for each of FY 2003 and FY 2004), Advanced Radioisotope Power Systems, Test Reactor Landlord, and Program Direction. In addition, funds are authorized to complete two construction projects.

Title IV (Fossil Energy) authorizes $7,933,000,000 for FY 2002–FY 2011 in five subtitles, as follows:

1. A—Clean Coal: $200.0 million for each of FY 2002–FY 2011 for the Clean Coal Power Initiative, including the Clean Coal Centers of Excellence; and $172.0 million for FY 2002, $179.0 million for FY 2003, and $186.0 million for FY 2004 for other coal and related technologies programs. Also includes provisions to ensure that the clean coal program funds environmental improvements.

2. B—Oil and Gas: Authorizes RD&D and commercial application programs on petroleum-oil technology and natural gas technologies.

3. C—Ultra-Deepwater and Unconventional Drilling: $4,516.0 million for the period FY 2002–FY 2009 for RD&D of ultra-deepwater natural gas and other petroleum exploration and production technologies.

4. D—Fuel Cells: Authorizes an RD&D program on fuel cells, including $28.0 million for each of FY 2002–FY 2004 for the demonstration of manufacturing production and processes.

5. E—DOE Authorization of Appropriations: $282.0 million for FY 2002, $293.0 million for FY 2003, and $305.0 million for subtitle B, subtitle D, and for Fossil Energy R&D Headquarters Program Direction, Field Program Direction, Plant and Capital Equipment, Cooperative Research and Development, Import/Export Authorization, and Advanced Metallurgical Processes.

Title V (Science) authorizes $4,541,858,000 for FY 2002–FY 2006 in four subtitles, as follows:

1. A—Fusion Energy Sciences: $320.0 million for FY 2002 and $335.0 million for FY 2003.

2. B—Spallation Neutron Source (SNS): $276.3 million for FY 2002, $201,571 million for FY 2003, $124.6 million for FY 2004, $79.8 million for FY 2005, and $41.1 million for FY 2006 for completion of construction, and $15.353 million for FY 2002 and $103.279 million for FY 2003–FY 2006 for other project costs. Caps the project at $1,192.7 million for costs of construction, $219.0 million for other project costs, and $1,411.7 million for total project cost.

3. C—Facilities, Infrastructure, and User Facilities: Requires the Secretary to develop and implement a least-cost nonmilitary energy laboratory facility and infrastructure strategy, and requires full and open competition for universities and other entities in the establishment or operation of a DOE user facility.

4. E—DOE Authorization of Appropriations: $3,299,558,000 for FY 2002 for Office of Science operation and maintenance (also including Fusion Energy Sciences, Spallation Neutron Source (SNS), subtitle C, High Energy Physics, Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences (except for the Spallation Neutron Source), Advanced Scientific Computing Research, Energy Research Analysis, Multiprogram Energy Laboratories-Facilities Support, Facilities and Infrastructure, Safeguards and Security, and Program Direction), and including $5.0 million for FY 2002 for research in the use of precious metals in catalysts.

Also authorizes funds to complete a number of construction projects.

In addition, subtitle D (Advisory Panel on Office of Science) requires the Director of OSTP to establish an Advisory Panel on the DOE Office of Science.

Title VI (Miscellaneous) contains two subtitles. Subtitle A (General Provisions for the Department of Energy), identifies current statutes that should be used for procedures and guidelines to carry out the Act, limits use of funds, and establishes cost-sharing requirements and reprogramming guidelines. Subtitle B (Other Miscellaneous Provisions) establishes limits on general plant projects and construction projects, provides authority for conceptual and construction design activities, requires that certain reports prepared pursuant to the NEPD Group recommendations be transmitted to specific congressional committees, and requires periodic reviews and assessments of the programs authorized by the Act.

As shown in Table I below, H.R. 2460 authorizes a total of $18,802,153,000 for the period FY 2002–2011 for programs, projects, and activities in five titles in the bill. Table 2 summarizes and Table 3 details the bill's authorizations for FY 2002–FY 2004.

**Table 1. H.R. 2460, Comprehensive Energy Research and Technology Act of 2001, Summary: Fiscal Years 2002-2011**
**(Dollars in Thousands)**

| FISCAL YEAR | TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY | TITLE II—RENEWABLE ENERGY | TITLE III—NUCLEAR ENERGY | TITLE IV—FOSSIL ENERGY | TITLE V—SCIENCE | TOTAL |
|---|---|---|---|---|---|---|
| 2002 | 1,041,700 | 535,000 | 192,650 | 1,363,500 | 3,624,479 | **6,757,329** |
| 2003 | 913,000 | 639,000 | 201,700 | 1,288,500 | 669,879 | **3,712,079** |
| 2004 | 1,029,400 | 683,000 | 208,746 | 1,254,500 | 126,600 | **3,302,246** |
| 2005 | 70,000 | 289,400 | 57,799 | 741,500 | 79,800 | **1,238,499** |
| 2006 | 80,000 | 321,800 | 64,100 | 708,500 | 41,100 | **1,215,500** |
| 2007 | | | | 724,500 | | **724,500** |
| 2008 | | | | 738,500 | | **738,500** |
| 2009 | | | | 713,500 | | **713,500** |
| 2010 | | | | 200,000 | | **200,000** |
| 2011 | | | | 200,000 | | **200,000** |
| **TOTAL** | **3,134,100** | **2,468,200** | **724,995** | **7,933,000** | **4,541,858** | **18,802,153** |

**Table 2. H.R. 2460, Comprehensive Energy Research and Technology Act of 2001, Summary: Fiscal Years 2002-2004**
**(Dollars in Thousands)**

| TITLE | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY | | | | | | | | | |
| Department of Energy (DOE) | 578,605 | 419,388 | 885,000 | +306,395 | +465,612 | 750,000 | -135,000 | 860,000 | +110,000 |
| Environmental Protection Agency (EPA) | 151,969 | 150,717 | 156,700 | +4,731 | +5,983 | 163,000 | +6,300 | 169,400 | +6,400 |
| Total, TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY | 730,574 | 570,105 | 1,041,700 | +311,126 | +471,595 | 913,000 | -128,700 | 1,029,400 | +116,400 |
| TITLE II—RENEWABLE ENERGY | 364,610 | 275,653 | 535,000 | +170,390 | +259,347 | 639,000 | +104,000 | 683,000 | +44,000 |
| TITLE III—NUCLEAR ENERGY | 120,489 | 101,942 | 192,650 | +72,161 | +90,708 | 201,700 | +9,050 | 208,746 | +7,046 |
| TITLE IV—FOSSIL ENERGY | 519,547 | 434,750 | 1,363,500 | +843,953 | +928,750 | 1,288,500 | -75,000 | 1,254,500 | +19,000 |
| Subtotal, Budget Authorization | 1,735,220 | 1,382,450 | 3,132,850 | +1,397,630 | +1,750,400 | 3,042,200 | -90,650 | 3,175,646 | +186,446 |
| TITLE V—SCIENCE | 3,155,454 | 3,159,890 | 3,624,479 | +469,025 | +464,589 | 669,879 | -2,954,600 | 126,600 | -543,279 |
| **Total, Budget Authorization** | **4,890,674** | **4,542,340** | **6,757,329** | **+1,866,655** | **+2,214,989** | **3,712,079** | **-3,045,250** | **3,302,246** | **-356,833** |
| Gas Hydrates Budget Authority/Authorization (P.L. 106-193) | 9,938 | 4,750 | 7,500 | -2,438 | +2,750 | 11,000 | +3,500 | 12,000 | +1,000 |
| **Total, Budget Authority** | **4,900,612** | **4,547,090** | **6,764,829** | **+1,864,217** | **+2,217,739** | **3,723,079** | **-3,041,750** | **3,314,246** | **-355,833** |

**Table 3. H.R. 2460, Comprehensive Energy Research and Technology Act of 2001: Fiscal Years 2002-2004**
**(Dollars in Thousands)**

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| **TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY** | | | | | | | | | |
| **Subtitle A—Alternative Fuel Vehicles (Section 105)** | 0 | 0 | 200,000 | +200,000 | +200,000 | 0 | -200,000 | 0 | 0 |
| **Subtitle B—Distributed Power Hybrid Energy Systems (Section 125. Micro-Cogeneration Energy Technology)** | 0 | 0 | 20,000 | +20,000 | +20,000 | 0 | -20,000 | 0 | 0 |
| **Subtitle D—Green School Buses (Section 144)** | 0 | 0 | 40,000 | +40,000 | +40,000 | 50,000 | +10,000 | 60,000 | +10,000 |
| **Subtitle F—Department of Energy Authorization of Appropriations** | | | | | | | | | |
| Subtitle B—Distributed Power Hybrid Energy Systems (Except Section 125) | 0 | 0 | | | | | | | |
| Subtitle C—Secondary Electric Vehicle Battery Use (Section 133 | 0 | 0 | 1,000 | +1,000 | +1,000 | 7,000 | +6,000 | 7,000 | 0 |
| Subtitle E—Next Generation Lighting Initiative | 0 | 0 | | | | | | | |
| Building Technology, State and Community Sector (Nongrants) | | | | | | | | | |
| Building Research | | | | | | | | | |
| Technology Roadmaps and Competitive R&D | 6,870 | 857 | | | | | | | |
| Commercial Buildings Integration | 11,536 | 6,888 | | | | | | | |
| Commercial Buildings Integration | 3,891 | 1,969 | | | | | | | |
| Equipment, Materials and Tools | 31,276 | 17,121 | | | | | | | |
| Total, Building Research | 53,573 | 26,835 | | | | | | | |
| Building Technology Assistance (Nongrants) | | | | | | | | | |
| Community Partnerships | 18,095 | 8,488 | | | | | | | |
| Energy Star Program | 2,204 | 2,000 | | | | | | | |
| Total, Building Technology Assistance (Nongrants) | 20,299 | 10,488 | | | | | | | |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| Cooperative Programs with States | 1,996 | 0 | | | | | | | |
| Energy Efficiency Science Initiative | 3,891 | 0 | | | | | | | |
| Management and Planning | 14,133 | 15,090 | | | | | | | |
| Total, Building Technology, State and Community Sector (Nongrants) | 93,892 | 52,413 | | | | | | | |
| Industry Sector | | | | | | | | | |
| Industries of the Future (Specific) | 72,390 | 46,424 | | | | | | | |
| Industries of the Future (Crosscutting) | 61,719 | 31,900 | | | | | | | |
| Cooperative Programs with States | 1,996 | 0 | | | | | | | |
| Energy Efficiency Science Initiative | 3,891 | 0 | | | | | | | |
| Management and Planning | 8,626 | 9,400 | | | | | | | |
| Total, Industry Sector | 148,622 | 87,724 | | | | | | | |
| Transportation Sector | | | | | | | | | |
| Vehicle Technologies R&D | 159,610 | 126,422 | | | | | | | |
| Fuels Utilization R&D | 23,509 | 20,908 | | | | | | | |
| Materials Technologies | 42,223 | 30,293 | | | | | | | |
| Technology Deployment | 5,090 | 3,300 | | | | | | | |
| Cooperative Programs with States | 1,996 | 0 | | | | | | | |
| Energy Efficiency Science Initiative | 3,891 | 0 | | | | | | | |
| Management and Planning | 9,152 | 10,232 | | | | | | | |
| Total, Transportation Sector Total | 245,471 | 191,155 | | | | | | | |
| Power Technologies | | | | | | | | | |
| Distributed Generation Technologies Development | 45,899 | 45,896 | | | | | | | |
| Management and Planning | 1,447 | 1,450 | | | | | | | |
| Total, Power Technologies | 47,346 | 47,346 | | | | | | | |
| Policy and Management | 43,274 | 40,750 | | | | | | | |
| **Total, Subtitle C—DOE Authorization of Appropriations** | **578,605** | **419,388** | **625,000** | **+46,395** | **+205,612** | **700,000** | **+75,000** | **800,000** | **+100,000** |
| **Total, Title I—DOE** | **578,605** | **419,388** | **885,000** | **+306,395** | **+465,612** | **750,000** | **-135,000** | **860,000** | **+110,000** |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| **Subtitle D—EPA Office of Air and Radiation Authorization of Appropriations** | | | | | | | | | |
| Science | 28,313 | 26,941 | 28,300 | -13 | +1,359 | 29,400 | +1,100 | 30,600 | +1,200 |
| Climate Change Protection Programs | | | | | | | | | |
| Buildings | 52,535 | 52,731 | 52,700 | +165 | -31 | 54,800 | +2,100 | 57,000 | +2,200 |
| Transportation | 29,435 | 32,441 | 32,400 | +2,965 | -41 | 33,700 | +1,300 | 35,000 | +1,300 |
| Industry | 31,930 | 27,295 | 32,000 | +70 | +4,705 | 33,300 | +1,300 | 34,600 | +1,300 |
| Carbon Removal | 998 | 1,700 | 1,700 | +702 | 0 | 1,750 | +50 | 1,800 | +50 |
| State and Local Climate Change Program | 2,494 | 2,500 | 2,500 | +6 | 0 | 2,600 | +100 | 2,700 | +100 |
| International Capacity Building | 5,502 | 6,315 | 6,300 | +798 | -15 | 6,600 | +300 | 6,800 | +200 |
| Technical Cooperation with Industrial and Developing Countries | 762 | 794 | 800 | +38 | +6 | 850 | +50 | 900 | +50 |
| Total, Climate Change Protection Programs | 123,656 | 123,776 | 128,400 | +4,744 | +4,624 | 133,600 | +5,200 | 138,800 | +5,200 |
| **Total, Subtitle D—EPA Office of Air and Radiation Authorization of Appropriations** | 151,969 | 150,717 | 156,700 | +4,731 | +5,983 | 163,000 | +6,300 | 169,400 | +6,400 |
| **Total, TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY** | **730,574** | **570,105** | **1,041,700** | **+311,126** | **+471,595** | **913,000** | **-128,700** | **1,029,400** | **+116,400** |
| **TITLE II—RENEWABLE ENERGY** | | | | | | | | | |
| **Subtitle D—DOE Authorization of Appropriations** | | | | | | | | | |
| Renewable Energy Technologies | | | | | | | | | |
| Subtitle A—Hydrogen | 26,881 | 26,881 | 60,000 | +33,119 | +33,119 | 70,000 | +10,000 | 80,000 | +10,000 |
| Subtitle B—Bioenergy | | | | | | | | | |
| Biopower | 39,742 | 37,754 | 45,700 | +5,958 | +7,946 | 52,500 | +6,800 | 60,300 | +7,800 |
| Biofuels | 46,526 | 44,201 | 53,500 | +6,974 | +9,299 | 61,400 | +7,900 | 70,600 | +9,200 |
| Integrated Bioenergy R&D | 0 | 0 | 49,000 | +49,000 | +49,000 | 49,000 | 0 | 49,000 | 0 |
| Total, Subtitle B—Bioenergy | 86,268 | 81,955 | 148,200 | +61,932 | +66,245 | 162,900 | +14,700 | 179,900 | +17,000 |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| Subtitle C—Transmission Infrastructure Systems | 0 | 0 | | | | | | | |
| Geothermal Technology Development | 26,911 | 13,900 | | | | | | | |
| Hydropower | 4,989 | 4,989 | | | | | | | |
| Solar | | | | | | | | | |
| Concentrating Solar Power | 13,710 | 1,932 | | | | | | | |
| Photovoltaic Energy Systems | 75,060 | 39,000 | | | | | | | |
| Solar Building Technology Research | 3,911 | 2,000 | | | | | | | |
| Total, Solar Energy | 92,681 | 42,932 | | | | | | | |
| Wind Energy Systems | 39,553 | 20,500 | | | | | | | |
| Total, Renewable Energy Technologies | 277,283 | 191,157 | | | | | | | |
| Electric Energy Systems and Storage | | | | | | | | | |
| High Temperature Superconducting R&D | 36,819 | 36,819 | | | | | | | |
| Energy Storage Systems | 5,987 | 5,987 | | | | | | | |
| Transmission Reliability | 8,940 | 8,940 | | | | | | | |
| Total, Electric Energy Systems and Storage | 51,746 | 51,746 | | | | | | | |
| Renewable Support and Implementation | | | | | | | | | |
| International Renewable Energy Program | 4,949 | 2,500 | | | | | | | |
| Renewable Energy Production Incentive Program | 3,991 | 3,991 | | | | | | | |
| Renewable Program Support | 3,991 | 2,059 | | | | | | | |
| Total, Renewable Support and Implementation | 12,931 | 8,550 | | | | | | | |
| National Renewable Energy Laboratory | 3,991 | 5,000 | | | | | | | |
| Program Direction | 18,659 | 19,200 | | | | | | | |
| Wave Power Electric Generation | 0 | 0 | | | | | | | |
| Total, Subtitle C—DOE Authorization of Appropriations | **364,610** | **275,653** | **535,000** | **+170,390** | **+259,347** | **639,000** | **+104,000** | **683,000** | **+44,000** |
| **Total, TITLE II—RENEWABLE ENERGY** | **364,610** | **275,653** | **535,000** | **+170,390** | **+259,347** | **639,000** | **+104,000** | **683,000** | **+44,000** |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| **TITLE III—NUCLEAR ENERGY** | | | | | | | | | |
| **Subtitle C—DOE Authorization of Appropriations** | | | | | | | | | |
| Operation and Maintenance | | | | | | | | | |
| Subtitle A— University Nuclear Research and Engineering | | | | | | | | | |
| Graduate and Undergraduate Fellowships | 1,374 | 1,374 | 3,000 | +1,626 | +1,626 | 3,100 | +100 | 3,200 | +100 |
| Junior Faculty Research Initiative Grant Program | 0 | 0 | 5,000 | +5,000 | +5,000 | 7,000 | +2,000 | 8,000 | +1,000 |
| Nuclear Engineering Education Research Program | 5,000 | 5,000 | 8,000 | +3,000 | +3,000 | 12,000 | +4,000 | 13,000 | +1,000 |
| Communication and Outreach Related to Nuclear Science and Engineering | 0 | 0 | 200 | +200 | +200 | 200 | 0 | 300 | +100 |
| Refueling of Research Reactors and Instrumentation Upgrades | 3,700 | 3,700 | 6,000 | +2,300 | +2,300 | 6,500 | +500 | 7,000 | +500 |
| Re-Licensing Assistance | 0 | 0 | 1,000 | +1,000 | +1,000 | 1,100 | +100 | 1,200 | +100 |
| Reactor Research and Training Award Program | 1,900 | 1,900 | 6,000 | +4,100 | +4,100 | 10,000 | +4,000 | 14,000 | +4,000 |
| University-DOE Laboratory Interactions | 0 | 0 | 1,000 | +1,000 | +1,000 | 1,100 | +100 | 1,200 | +100 |
| Total, Subtitle A— University Nuclear Research and Engineering | 11,974 | 11,974 | 30,200 | +18,226 | +18,226 | 41,000 | +10,800 | 47,900 | +6,900 |
| Subtitle B---Advanced Fuel Recycling Technology Research and Development Program | 0 | 0 | 10,000 | +10,000 | +10,000 | | | | |
| Nuclear Energy Research Initiative (Section 341) | 34,826 | 18,079 | 60,000 | +25,174 | +41,921 | | | | |
| Nuclear Energy Plant Optimization Program (Section 342) | 4,989 | 4,500 | 15,000 | +10,011 | +10,500 | | | | |
| Nuclear Energy Technologies (Section 343) | 7,483 | 4,500 | 20,000 | +12,517 | +15,500 | | | | |
| Advanced Radioisotope Power Systems | 31,794 | 29,094 | | | | | | | |
| Test Reactor Area | 7,399 | 7,283 | | | | | | | |
| Program Direction | 23,042 | 25,062 | | | | | | | |
| Subtotal, Operation and Maintenance | 121,507 | 100,492 | 191,200 | +69,693 | +90,708 | 199,000 | +7,800 | 207,000 | +8,000 |
| Offset from Nuclear Energy Activities | -2,352 | 0 | 0 | +2,352 | 0 | 0 | 0 | 0 | 0 |
| Total, Operation and Maintenance | 119,155 | 100,492 | 191,200 | +72,045 | +90,708 | 199,000 | +7,800 | 207,000 | +8,000 |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| Construction | | | | | | | | | |
| Project 99-E-200, Test Reactor Area Electric Utility Upgrade, Idaho National Engineering and Environmental Laboratory | 877 | 950 | 950 | +73 | 0 | 2,200 | +1,250 | 1,246 | -954 |
| Project 95-E-201, Test Reactor Area Fire and Life Safety Improvements, Idaho National Engineering and Environmental Laboratory | 457 | 500 | 500 | +43 | 0 | 500 | 0 | 500 | 0 |
| Total, Construction | 1,334 | 1,450 | 1,450 | +116 | 0 | 2,700 | +1,250 | 1,746 | -954 |
| **Total, Subtitle C—DOE Authorization of Appropriations** | **120,489** | **101,942** | **192,650** | **+72,161** | **+90,708** | **201,700** | **+9,050** | **208,746** | **+7,046** |
| **Total, TITLE III—NUCLEAR ENERGY** | **120,489** | **101,942** | **192,650** | **+72,161** | **+90,708** | **201,700** | **+9,050** | **208,746** | **+7,046** |
| **TITLE IV—FOSSIL ENERGY** | | | | | | | | | |
| **Subtitle A—Clean Coal** | | | | | | | | | |
| Clean Coal Power Initiative (including Clean Coal Centers of Excellence (Sections 405(a) and 407) | 0 | 150,000 | 200,000 | +200,000 | 0 | 200,000 | 0 | 200,000 | 0 |
| Other Coal and Related Technologies Programs (Section 405(b)) | 269,441 | 114,677 | 172,000 | -97,441 | +57,323 | 179,000 | +7,000 | 186,000 | +7,000 |
| **Total, Subtitle A—Clean Coal** | **269,441** | **264,677** | **372,000** | **+102,559** | **+107,323** | **379,000** | **+7,000** | **386,000** | **+7,000** |
| **Subtitle C—Unconventional and Ultra-Deep Natural Gas and Petroleum*** | **0** | **0** | **709,500** | **+709,500** | **+709,500** | **616,500** | **-93,000** | **563,500** | **-53,000** |

*Congressional Budget Office estimates for FY 2002, FY 2003, and FY 2004.

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| **Subtitle D—Authorization of Appropriations** | | | | | | | | | |
| Operation and Maintenance | | | | | | | | | |
| **Subtitle B—Oil and Gas** | | | | | | | | | |
| Petroleum-Oil Technology (Section 421) | | | | | | | | | |
| Exploration and Production | 28,844 | 20,350 | | | | | | | |
| Reservoir Life Extension/Management | 14,662 | 4,849 | | | | | | | |
| Effective Environmental Protection | 10,796 | 5,300 | | | | | | | |
| Emerging Processing Technology Applications | 2,594 | 0 | | | | | | | |
| Ultra Clean Fuels | 9,978 | 0 | | | | | | | |
| Total, Petroleum-Oil Technology (Section 421) | 66,874 | 30,499 | | | | | | | |
| Gas (Section 422) | | | | | | | | | |
| Exploration and Production | 14,221 | 9,350 | | | | | | | |
| Infrastructure | 8,110 | 5,050 | | | | | | | |
| Emerging Processing Technology | 10,146 | 250 | | | | | | | |
| Effective Environmental Protection | 2,614 | 1,600 | | | | | | | |
| Total, Gas (Section 422) | 35,091 | 16,250 | | | | | | | |
| Total, Subtitle B—Oil and Gas | 101,965 | 46,749 | | | | | | | |
| Subtitle D—Fuel Cells | | | | | | | | | |
| Advance Research | 2,794 | 1,000 | | | | | | | |
| Systems Development | 30,932 | 11,500 | | | | | | | |
| Vision 21-Hybrids | 14,967 | 11,500 | | | | | | | |
| Innovative Concepts | 3,891 | 21,124 | | | | | | | |
| Manufacturing Production and Processes (Section 461(b)) | 0 | 0 | 28,000 | +28,000 | +28,000 | 28,000 | 0 | 28,000 | 0 |
| Total, Subtitle D—Fuel Cells | 52,584 | 45,124 | | | | | | | |
| Headquarters Program Direction | 16,930 | 14,700 | | | | | | | |
| Field Program Direction | 63,156 | 55,300 | | | | | | | |
| Plant and Capital Equipment | 3,891 | 2,000 | | | | | | | |
| Cooperative Research and Development | 8,071 | 0 | | | | | | | |
| Import/Export Authorization | 2,295 | 1,000 | | | | | | | |
| Advanced Metallurgical Processes | 5,214 | 5,200 | | | | | | | |
| **Total, Subtitle D—Authorization of Appropriations** | **254,106** | **170,073** | **282,000** | **+27,894** | **+111,927** | **293,000** | **+11,000** | **305,000** | **+12,000** |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| Subtotal, TITLE IV—FOSSIL ENERGY | 523,547 | 434,750 | 1,363,500 | +839,953 | +928,750 | 1,288,500 | -75,000 | 1,254,500 | +19,000 |
| Use of Prior Year Balances | -4,000 | 0 | 0 | +4,000 | 0 | 0 | 0 | 0 | 0 |
| **Total, TITLE IV—FOSSIL ENERGY** | **519,547** | **434,750** | **1,363,500** | **+843,953** | **+928,750** | **1,288,500** | **-75,000** | **1,254,500** | **+19,000** |
| **TITLE V—SCIENCE** | | | | | | | | | |
| **Subtitle D—Advisory Panel on Office of Science** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | |
| **Subtitle E—DOE Authorization of Appropriations** | | | | | | | | | |
| Operation and Maintenance | | | | | | | | | |
| Subtitle C—Facilities, Infrastructure, and User Facilities | 0 | 0 | | | | | | | |
| High Energy Physics | | | | | | | | | |
| Research and Technology | 242,836 | 247,870 | | | | | | | |
| High Energy Physics Facilities | 436,836 | 456,830 | | | | | | | |
| Total, High Energy Physics | 679,672 | 704,700 | | | | | | | |
| Nuclear Physics | 360,508 | 360,510 | | | | | | | |
| Biological and Environmental Research | 480,025 | 432,970 | | | | | | | |
| Basic Energy Sciences | | | | | | | | | |
| Spallation Neutron Source Other Project Costs (Section 522(b) | 19,179 | 15,353 | 15,353 | -3,826 | 0 | 103,279 | +87,926 | 0 | -103,279 |
| Materials Sciences (Non-Spallation Neutron Source) | 424,063 | 419,000 | | | | | | | |
| Chemical Sciences | 216,526 | 218,714 | | | | | | | |
| Engineering and Geosciences | 39,766 | 38,938 | | | | | | | |
| Energy Biosciences | 33,216 | 32,400 | | | | | | | |
| Total, Basic Energy Sciences | 732,750 | 724,405 | 15,353 | -717,397 | -709,052 | 103,279 | +87,926 | 0 | -103,279 |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| Advanced Scientific Computing Research | 165,750 | 163,050 | | | | | | | |
| Energy Research Analysis | 976 | 1,000 | | | | | | | |
| Multiprogram Energy Laboratories - Facilities Support | | | | | | | | | |
| Infrastructure Support | 1,020 | 1,020 | | | | | | | |
| Oak Ridge Landlord | 7,359 | 7,359 | | | | | | | |
| Total, Multiprogram Energy Laboratories - Facilities Support | 8,379 | 8,379 | | | | | | | |
| Subtitle A—Fusion Energy Sciences | 248,493 | 248,495 | 320,000 | +71,507 | +71,505 | 335,000 | +15,000 | | |
| Facilities and Infrastructure | 0 | 0 | | | | | | | |
| Safeguards and Security | 41,569 | 55,412 | | | | | | | |
| Program Direction | | | | | | | | | |
| Field Operations | 61,366 | 64,400 | | | | | | | |
| Program Direction | 61,080 | 73,525 | | | | | | | |
| Science Education | 4,460 | 4,460 | | | | | | | |
| Total, Program Direction | 126,906 | 142,385 | | | | | | | |
| Precious Metal Catalysis Research (Section 581(b) | 0 | 0 | 5,000 | +5,000 | 0 | 0 | -5,000 | 0 | 0 |
| Subtotal, Operation and Maintenance | 2,845,028 | 2,841,306 | 3,304,470 | +459,442 | +463,164 | 438,279 | -2,866,191 | 0 | -438,279 |
| Less Security Charge for Reimbursable Work | -5,122 | -4,912 | -4,912 | +210 | 0 | 0 | +4,912 | 0 | 0 |
| Total, Operation and Maintenance | 2,839,906 | 2,836,394 | 3,299,558 | +459,652 | +463,164 | 438,279 | -2,861,279 | 0 | -438,279 |
| Construction | | | | | | | | | |
| High Energy Physics | | | | | | | | | |
| Project 00-G-307 Research Office Building, Stanford Linear Acceleration Center | 5,189 | 0 | 0 | -5,189 | 0 | 0 | 0 | 0 | 0 |
| Project 99-G-306 Wilson Hall Safety Improvements Project, Fermi National Accelerator Laboratory | 4,191 | 0 | 0 | -4,191 | 0 | 0 | 0 | 0 | 0 |
| Project 98-G-304 Neutrinos at the Main Injector (NuMI), Fermi National Accelerator Laboratory | 22,949 | 11,400 | 11,400 | -11,549 | 0 | 11,400 | 0 | 11,400 | 0 |
| Total, High Energy Physics | 32,329 | 11,400 | 11,400 | -20,929 | 0 | 11,400 | 0 | 11,400 | 0 |

| Title/Subtitle/Section/Program/Project/Activity | FY 2001 Comparable Appropriation | FY 2002 Request | FY 2002 Recommendation | FY 2002 Recommendation Compared With (+ or -) FY 2001 Comparable Appropriation | FY 2002 Recommendation Compared With (+ or -) FY 2002 Request | FY 2003 Recommendation | FY 2003 Recommendation Compared With (+ or -) FY 2002 Recommendation | FY 2004 Recommendation | FY 2004 Recommendation Compared With (+ or -) FY 2003 Recommendation |
|---|---|---|---|---|---|---|---|---|---|
| Biological and Environmental Research: Project 01-E-300 Laboratory for Comparative and Functional Genomics, Oak Ridge National Laboratory | 2,495 | 10,000 | 11,405 | +8,910 | +1,405 | 0 | -11,405 | 0 | 0 |
| Basic Energy Sciences | | | | | | | | | |
| Spallation Neutron Source, Oak Ridge National Laboratory (Section 522(a)) | 258,929 | 276,300 | 276,300 | +17,371 | 0 | 210,571 | -65,729 | 124,600 | -85,971 |
| Project 02-SC-002: Project Engineering Design (PED), Various Locations | 0 | 4,000 | 4,000 | +4,000 | 0 | 8,000 | +4,000 | 2,000 | -6,000 |
| Total, Basic Energy Sciences | 258,929 | 280,300 | 280,300 | +21,371 | 0 | 218,571 | -61,729 | 126,600 | -91,971 |
| Multiprogram Energy Laboratories - Facilities Support | | | | | | | | | |
| Project 02-SC-002, Multiprogram Energy Laboratories Infrastructure Project Engineering Design (PED), Various Locations | 0 | 3,183 | 3,183 | +3,183 | 0 | 0 | -3,183 | 0 | 0 |
| Project MEL-001, Multiprogram Energy Laboratories, Infrastructure, Various Locations | 21,795 | 18,613 | 18,633 | -3,162 | +20 | 13,029 | -5,604 | 0 | -13,029 |
| Total, Multiprogram Energy Laboratories - Facilities Support | 21,795 | 21,796 | 21,816 | +21 | +20 | 13,029 | -8,787 | 0 | -13,029 |
| Total, Construction | 315,548 | 323,496 | 324,921 | +9,373 | +1,425 | 231,600 | -93,321 | 126,600 | -105,000 |
| **Total, Title V, SCIENCE** | **3,155,454** | **3,159,890** | **3,624,479** | **+469,025** | **+464,589** | **669,879** | **-2,954,600** | **126,600** | **-543,279** |

## VII. Section-by-Section Analysis

*Section 1. Short title, table of contents*

Subsection 1(a) cites the Act as the "Comprehensive Energy Research and Technology Act of 2001," and subsection 1(b) contains the bill's table of contents.

*Sec. 2. Findings*

Section 2 contains the eight findings.

*Sec. 3. Purposes*

Section 3 contains the eight purposes of the Act.

*Sec. 4. Goals*

Subsection 4(a) states that, subject to subsection 4(b), the Secretary should conduct a balanced energy RD&D and commercial application portfolio of programs guided by the specific goals listed for each of (1) Energy Conservation and Energy Efficiency, (2) Renewable Energy, (3) Nuclear Energy, (4) Fossil Energy and (5) Science.

Subsection 4(b) requires the Secretary of Energy, in consultation with others, to perform an assessment that establishes measurable cost and performance-based goals, or that modifies the goals under subsection (a), for 2005, 2010, 2015, and 2020, for each of the programs authorized by this Act, that would enable each such program to meet the purposes under section 3. The assessment is to be based on the latest scientific and technical knowledge, and shall also take into consideration, as appropriate, the comparative environmental impacts (including emissions of greenhouse gases) of the energy saved or produced by specific programs.

In establishing the measurable cost and performance-based goals under subsection (b), subsection 4(c) requires the Secretary to consult with the private sector, institutions of higher learning, national laboratories, environmental organizations, professional and technical societies, and any other persons the Secretary considers appropriate.

Subsection 4(d) requires the Secretary, within 120 days of the date of enactment of this Act, to issue and publish in the Federal Register a set of draft measurable cost and performance-based goals for public comment for those programs established before the date of enactment of this Act. (In the case of a program not established before the date of the enactment of this Act, then not later than 120 days after the date of establishment of the program). Not later than 60 days after the date of publication, after taking into consideration any public comments received, the Secretary is to transmit to the Congress and publish in the Federal Register the final measurable cost and performance-based goals. Such goals must be updated on a biennial basis.

*Sec. 5. Definitions*

Section 5 defines the terms: (1) "Administrator" to mean the Administration of the Environmental Protection Agency (EPA); (2) "appropriate congressional committees" to mean (A) the Committee on Science and the Committee on Appropriations of the House of Representatives; and (B) the Committee on Energy and Natural

Resources and the Committee on Appropriations of the Senate; (3) the "Department" to mean the Department of Energy; and (4) the "Secretary" to mean the Secretary of Energy.

*Sec. 6. Authorizations*

Section 6 states that authorizations of appropriations under this Act are for environmental R&D, scientific and energy RD&D and commercial application of energy technology programs, projects, and activities. This is consistent with the Science Committee's jurisdiction under rule X, clause 1(n) of the Rules of the House.

*Sec. 7. Balance of funding priorities*

Subsection 7(a) expresses the sense of the Congress that the funding of the various programs authorized by titles I through IV of this Act should remain in the same proportion to each other as provided in this Act, regardless of the total amount of funding made available for those programs.

If the amounts appropriated in general appropriations Acts for FY 2002, FY 2003, or FY 2004 for the programs authorized in titles I through IV of this Act are not in the same proportion to one another as are the authorizations for such programs in this Act, subsection 7(b) requires the Secretary and the Administrator, within 60 days after the date of the enactment of the last general appropriations Act appropriating amounts for such programs, to transmit to the appropriate congressional committees a report describing the programs, projects, and activities that would have been funded if the proportions provided for in this Act had been maintained in the appropriations. The amount appropriated for the program receiving the highest percentage of its authorized funding for a fiscal year shall be used as the baseline for calculating the proportional deficiencies of appropriations for other programs in that fiscal year.

## Title I—Energy Conservation and Energy Efficiency

### SUBTITLE A—ALTERNATIVE FUEL VEHICLES

*Sec. 101. Short title*

Subsection 101 cites the subtitle as the "Alternative Fuel Vehicles Acceleration Act of 2001."

*Sec. 102. Definitions*

Section 102 defines the terms "alternative fuel vehicle," "pilot program," and "ultra-low sulfur diesel vehicle."

*Sec. 103. Pilot program*

Subsection 103(a) directs the Secretary to establish an alternative fuel and ultra-low sulfur diesel vehicle energy demonstration and commercial application competitive grant pilot program to provide not more than 15 grants to State governments, local governments, or metropolitan transportation authorities to carry out a project or projects for the purposes described in subsection (b).

Subsection 103(b) defines the purposes for which the grants may be used.

Subsections 103(c), (d), and (e) set out the grant application requirements, selection criteria, and pilot project requirements, respectively.

Subsection 103(e) limits: (1) the amount of an award to any one applicant to not more than $20.0 million; (2) the Federal cost share to not more than 50 percent; and (3) the length of the funding period to not more than five years. It also directs the Secretary to assure nationwide deployment of alternative fuel vehicles through broad geographic distribution of project sites; and to establish mechanisms that ensure the dissemination of information gained by the pilot program participants to all interested parties including all other applicants.

Subsection 103(f) directs the Secretary to publish in the Federal Register, Commerce Business Daily, and elsewhere requests for project grant applications under the pilot program, which shall be due within six months after the notice publication. The Secretary shall select from among the project grant applications by a competitive, peer review process to award grants under the pilot program.

Section 103(g) mandates that the Secretary shall provide not less than 20 percent and not more than 25 percent of the grant funding for the acquisition of ultra-low sulfur diesel vehicles.

*Sec. 104. Reports to Congress*

Section 104 requires the Secretary to transmit an initial report to the appropriate congressional committees within two months after the grants are awarded detailing the successful applicants' projects, a listing of the applicants and a description of the information dissemination mechanism under 103(e)(5). Not later than three years after the date of enactment, and annually thereafter until the program ends, the Secretary is required to transmit a report containing an evaluation of the pilot program's effectiveness to the same committees. This evaluation report is to include an assessment of the benefits to the environment derived from the projects included in the pilot program as well as an estimate of the potential benefits to the environment to be derived from widespread application of alternative fuel vehicles and ultra-low sulfur diesel vehicles.

*Sec. 104. Authorization of appropriations*

Section 105 authorizes $200.0 million for FY 2002 for the pilot program, to remain available until expended.

SUBTITLE B—DISTRIBUTED POWER HYBRID ENERGY SYSTEMS

*Sec. 121. Findings*

Section 121 lists 4 findings.

*Sec. 122. Definitions*

Section 122 defines the terms "distributed power hybrid system" and "distributed power source."

*Sec. 123. Strategy*

Under subsection 123(a), not later than one year after the date of the enactment of this Act, the Secretary shall develop and transmit to the Congress a distributed power hybrid systems strategy showing: (1) needs best met with distributed power hybrid systems configurations, especially systems including one or more solar or

renewable power sources; and (2) technology gaps and barriers (including barriers to efficient connection with the power grid) that impede the use of distributed power hybrid systems.

Subsection 123(b) specifies five elements the strategy should address, including a comprehensive RD&D and commercial application program to ensure the reliability, efficiency, and environmental integrity of distributed energy resources.

Subsection 123(c) requires the Secretary to implement the strategy transmitted under subsection 123(a) and the research program under subsection 123(b). Activities pursuant to the strategy are to be integrated with other activities of the DOE's Office of Power Technologies.

*Sec. 124. High Power Density Industry Program*

Subsection 124(a) requires the Secretary to develop and implement a comprehensive RD&D and commercial application program to improve energy efficiency, reliability, and environmental responsibility in high power density industries, such as data centers, server farms, telecommunications facilities, and heavy industry.

Subsection 124(b) provides that in carrying out this section, the Secretary shall consider technologies that provide: (1) significant improvement in efficiency of high power density facilities, and in data and telecommunications centers, using advanced thermal control technologies; (2) significant improvements in air-conditioning efficiency in facilities such as data centers and telecommunications facilities; (3) significant advances in peak load reduction; and (4) advanced real time metering and load management and control devices.

Subsection 124(c) requires that activities pursuant to this program be integrated with other activities of the DOE's Office of Power Technologies.

*Sec. 125. Micro-cogeneration energy technology*

Section 125 requires the Secretary to make competitive, merit-based grants to consortia of private sector entities for the development of micro-cogeneration energy technology. The consortia shall explore the creation of small-scale combined heat and power through the use of residential heating appliances. The section also authorizes $20.0 million, to remain available until expended.

*Sec. 126. Program plan*

Section 126 directs the Secretary to consult with appropriate representatives of the distributed energy resources, power transmission, and high power density industries, other appropriate entities, and Federal, State and local agencies, within four months of enactment, to present to Congress a five-year program plan to guide activities under this subtitle.

*Sec. 127. Report*

Section 127 instructs the Secretary, jointly with other appropriate Federal agencies, to report to Congress within two years of enactment and every two years thereafter for the duration of the program on the program's progress made to achieve the purposes of this subtitle.

*Sec. 128. Voluntary consensus standards*

Under this section, not later than two years after the date of enactment of this Act, the Secretary, in consultation with the NIST, shall work with the Institute of Electrical and Electronic Engineers and other standards development organizations toward the development of voluntary consensus standards for distributed energy systems for use in manufacturing and using equipment and systems for connection with electric distribution systems, for obtaining electricity from, or providing electricity to, such systems.

SUBTITLE C—SECONDARY ELECTRIC VEHICLE BATTERY USE

*Sec. 131. Definitions*

Section 131 defines the terms "battery" and "associated equipment."

*Sec. 132. Establishment of Secondary Electric Vehicle Battery Use Program*

Subsection 132(a) directs the Secretary to establish and carry out a RD&D program for the secondary use of batteries originally used in transportation applications. The program should demonstrate the use of batteries in secondary application, including utility and commercial power storage and power quality and should be structured to evaluate the performance, including longevity of useful service life and costs, of such batteries in field operations, and evaluate the necessary supporting infrastructure, including disposal and reuse of batteries. The Secretary is directed to coordinate with ongoing secondary battery use programs underway at the national laboratories and in industry.

Subsection 132(b) directs the Secretary, no later than six months after the date of the enactment of this Act, to solicit proposals to demonstrate the secondary use of batteries and associated equipment and supporting infrastructure in geographic locations through out 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. Proposals submitted in response to a solicitation under this section shall include: (1) a description of the project, including the batteries to be used in the project; the proposed locations and applications for the batteries; the number of batteries to be demonstrated; and the type, characteristics, and estimated life-cycle costs of the batteries compared to other energy storage devices currently in use; (2) the contribution, if any, of State or local governments and other persons to the demonstration project; (3) the type of associated equipment to be demonstrated and the type of supporting infrastructure to be demonstrated; and (4) any other information the Secretary considers appropriate. If the proposal includes a lease arrangement, the proposal shall indicate the terms of such lease arrangement for the batteries and associated equipment.

Subsection 132(c) directs the Secretary, no later than three months after the closing date established by the Secretary for receipt of proposals under subsection 132(b), to select at least five proposals to receive financial assistance under this subsection. No one project selected is permitted to receive more than 25 percent of the funds authorized under this section, and no more than three

projects selected under this section shall demonstrate the same battery type.

In selecting a proposal under subsection 132(c), the Secretary must consider:

(1) the ability of the proposer to acquire the batteries and associated equipment and to successfully manage and conduct the demonstration project, including the reporting requirements;

(2) the geographic and climatic diversity of the projects selected;

(3) the long-term technical and competitive viability of the batteries to be used in the project and of the original manufacturer of such batteries;

(4) the suitability of the batteries for their intended uses;

(5) the technical performance of the battery, including the expected additional useful life and the battery's ability to retain energy;

(6) the environmental effects of the use of and disposal of the batteries proposed to be used in the project selected;

(7) the extent of involvement of State or local government and other persons in the demonstration project and whether such involvement will permit a reduction of the Federal cost share per project or otherwise be used to allow the Federal contribution to be provided to demonstrate a greater number of batteries; and

(8) such other criteria as the Secretary considers appropriate.

The Secretary must require that as a part of a demonstration project, the users of the batteries provide to the proposer information regarding the operation, maintenance, performance, and use of the batteries, and the proposer provide such information to the battery manufacturer, for three years after the beginning of the demonstration project. The Secretary must also require the proposer to provide to the Secretary information regarding the operation, maintenance, performance, and use of the batteries that the Secretary may request during the period of the demonstration project. The proposer must provide at least 50 percent of the costs associated with the proposal.

*Sec. 133. Authorization of appropriations*

Section 133 authorizes (from amounts authorized under section 161(a)) for purposes of this subtitle $1.0 million for FY 2002, $7.0 million for FY 2003 and $7.0 million for FY 2004, to remain available until expended.

SUBTITLE D—GREEN SCHOOL BUSES

*Sec. 141. Short title*

Section 141 cites the subtitle as the "Clean Green School Bus Act of 2001."

*Sec. 142. Establishment of pilot*

Subsection 142(a) directs the Secretary to establish a pilot program for awarding grants on a competitive basis to eligible entities

for the demonstration and commercial application of alternative fuel school buses and ultra-low sulfur diesel school buses.

Subsection 142(b) requires the Secretary, no later than three months after the date of enactment of this Act, to establish and publish in the Federal Register grant requirements on eligibility for assistance, and on implementation of the program established under subsection (a), including certification requirements to ensure compliance with this subtitle.

Subsection 142(c) requires the Secretary, no later than six months after the date of enactment of this Act, to solicit proposals for grants under this section.

Subsection 142(d) requires that a grant be awarded, under this section only, to a local governmental entity responsible for providing school bus service for one or more public school systems or, jointly with a contracting entity that provides school bus service to the public school system or systems.

Subsection 142(e) requires that grants under this section shall be for the demonstration and commercial application of technologies to facilitate the use of alternative fuel school buses and ultra-low sulfur diesel school buses in lieu of buses manufactured before model year 1977 and diesel-powered buses manufactured before model year 1991. 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. When awarding grants, the Secretary shall give priority to applicants who can demonstrate the use of alternative fuel buses and ultra-low sulfur diesel school buses in lieu of buses manufactured before model year 1977.

Subsection 142(f) requires that a grant provided under this section shall include the following conditions:

(1) 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 five years;

(2) funds provided under the grant may only be used to pay the cost, except as provided in the following paragraph (3), of new alternative fuel school buses or ultra-low sulfur diesel school buses, including State taxes and contract fees to provide—

(i) up to 10 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 15 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) the grant recipient shall be required to provide at least the lesser of 15 percent of the total cost of each bus received or $15,000 per bus;

(4) in case of a grant recipient receiving a grant to demonstrate ultra-low sulfur diesel school buses, the grant recipient shall be required to provide documentation to the satisfaction of the Secretary that diesel fuel containing sulfur at not more than 15 parts per million (PPM) 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.

Subsection 142(g) requires that funding under a grant made under this section may be used to demonstrate the use only of new alternative fuel school buses or ultra-low sulfur diesel school buses:

(1) with a gross vehicle weight of greater than 14,000 pounds;

(2) that are powered by a heavy duty engine;

(3) that, in the case of alternative fuel school buses, emit not more than—

(A) 2.5 grams per brake horsepower-hour of non-methane hydrocarbons and oxides of nitrogen and 0.01 grams per brake horsepower-hour of particulate matter for buses manufactured in model years 2001 and 2002; and

(B) 1.8 grams per brake horsepower-hour of non-methane hydrocarbons of oxides of nitrogen and 0.01 grams per brake horsepower-hour of particulate matter for buses manufactured in model years 2003 through 2006; and

(4) that, in the case of ultra-low sulfur diesel school buses, emit not more than—

(A) 3.0 grams per brake horsepower-hour of non-methane hydrocarbons and oxides of nitrogen and 0.01 grams per brake horsepower-hour of particulate matter for buses manufactured in model years 2001 through 2003; and

(B) 2.5 grams per brake horsepower-hour of non-methane hydrocarbons and oxides of nitrogen and 0.01 grams per brake horsepower-hour of particulate matter for buses manufactured in model years 2004 through 2006, except that under no circumstances shall buses be acquired under this section that emit non-methane hydrocarbons, oxides of nitrogen, or particulate matter at a rate greater than the best performing technology of ultra-low sulfur diesel school buses commercially available at the time the grant is made.

Subsection 142(h) requires the Secretary, to the maximum extent practicable, to achieve nationwide deployment of alternative fuel school buses through the program under this section, and to 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.

Subsection 142(i) requires the Secretary to provide not less than 20 percent and not more than 25 percent of the grant funding made available under this section for any fiscal year for the acquisition of ultra-low sulfur diesel school buses.

Subsection 142(j) defines the term "alternative fuel school bus" to mean a bus powered substantially by electricity (including electricity supplied by a fuel cell), or by liquefied natural gas, compressed natural gas, liquefied petroleum gas, hydrogen, propane, or methanol or ethanol at no less than 85 percent by volume. It also defines the term "ultra-low sulfur diesel school bus" to mean a school bus powered by diesel fuel which contains not more than 15 PPM sulfur.

*Sec. 143. Fuel Cell Development and Demonstration Program*

Subsection 143(a) requires the Secretary to establish a program for entering into cooperative agreements with private-sector fuel cell bus developers for the development of fuel-cell-powered school

buses, and subsequently with not less than two 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.

Subsection 143(b) requires the non-Federal contribution for activities funded under this section to be no less than 20 percent for fuel infrastructure development activities and no less than 50 percent for demonstration activities and for non-fuel infrastructure development activities.

Subsection 143(c) limits the amount authorized under section 144 that may be used for carrying out this section for the period encompassing FY 2002 through FY 2006 to no more than $25.0 million.

Subsection 143(d) requires the Secretary, no later than three years after the date of enactment of this Act, and, again, no later than October 1, 2006, to transmit to Congress a report that evaluates the process of converting natural gas infrastructure to accommodate fuel-cell-powered school buses and assesses the results of the development and demonstration program under this section.

*Sec. 144. Authorization of appropriations*

Section 144 authorizes $40.0 million for FY 2002, $50.0 million for FY 2003, $60.0 million for FY 2004, $70.0 million for FY 2005, and $80.0 million for FY 2006, to remain available until expended, to carry out this subtitle.

SUBTITLE E—NEXT GENERATION LIGHTING

*Sec. 151. Short title*

Section 151 cites the subtitle as "Next Generation Lighting Initiative Act."

*Sec. 152. Definition*

Section 152 defines the term "Lighting Initiative" to mean the "Next Generation Lighting Initiative" established under section 153(a).

*Sec. 153. Next generation lighting initiative*

Subsection 153(a) authorizes the Secretary to establish a Lighting Initiative to be known as the "Next Generation Lighting Initiative" to research, develop, and conduct demonstration activities on advanced lighting technologies, including white light emitting diodes.

Subsection 153(b) states the research objectives of the Lighting Initiative to develop, by 2011, advanced lighting technologies that, compared to incandescent and fluorescent lighting technologies as of the date of the enactment of this Act, are longer lasting, more energy-efficient and cost-competitive.

*Sec. 154. Study*

Subsection 154(a) requires the Secretary, in consultation with other Federal agencies, as appropriate, no later than six months after the date of enactment of this Act, to complete a study on strategies for the development and commercial application of advanced lighting technologies. The Secretary shall request a review by the National Academies of Sciences and Engineering of the

study under this subsection, and shall transmit the results of the study to the appropriate congressional committees.

Subsection 154(b) requires that the study include the development of a comprehensive strategy to implement the Lighting Initiative and identifying the research and development, manufacturing, deployment, and marketing barriers that must be overcome to achieve a goal of a 25 percent market penetration by advanced lighting technologies into the incandescent and fluorescent lighting market by the year 2012.

Subsection 154(c) requires the Secretary to modify the implementation of the Lighting Initiative, if necessary, to take into consideration the recommendations of the National Academies of Sciences and Engineering, as soon as practicable after the review of the study under subsection 154(a) is transmitted to the Secretary by the National Academies of Sciences and Engineering.

*Sec. 155. Grant program*

Subsection 155(a) permits the Secretary to make merit-based competitive grants to firms and research organizations that conduct RD&D projects related to advanced lighting technologies, subject to section 603 of this Act.

Subsection 155(b) requires an annual independent review of the grant-related activities of firms and research organizations receiving a grant under this section to be conducted by a committee appointed by the Secretary under the Federal Advisory Committee Act (5 U.S.C. App.), or, at the request of the Secretary, a committee appointed by the National Academies of Sciences and Engineering. Using clearly defined standards established by the Secretary, the review shall assess technology advances and progress toward commercialization of the grant-related activities of firms or research organizations during each fiscal year of the grant program.

Subsection 155(c) requires the national laboratories and other Federal agencies, as appropriate, to cooperate with and provide technical and financial assistance to firms and research organizations.

SUBTITLE F—DEPARTMENT OF ENERGY AUTHORIZATION OF APPROPRIATIONS

*Sec. 161. Authorization of appropriations*

Subsection 161(a) authorizes $625.0 million for FY 2002, $700.0 million for FY 2003; and (3) $800 million for FY 2004 for Energy Conservation operation and maintenance (including Building Technology, State and Community Sector, Industry Sector, Transportation Sector, Power Technologies, and Policy and Management), to remain available until expended. These amounts are in addition to: (1) $200.0 million authorized for FY 2002 under section 105 for alternative fuel and ultra-low sulfur diesel vehicles; (2) $20.0 million for FY 2002 authorized under section 125 for micro-cogeneration energy technology; and (3) $40.0 million for FY 2002, $50.0 million for FY 2003, and $60.0 million for FY 2004 authorized under section 144 for green school buses.

Subsection 161(b) provides that none of the funds authorized to be appropriated in subsection 131(a) may be used for: "(1) Building Technology, State and Community Sector—(A) Residential Building

Energy Codes; (B) Commercial Building Energy Codes; (C) Lighting and Appliance Standards; (D) Weatherization Assistance Program; (E) State Energy Program; or (2) Federal Energy Management Program." These limitations are included to preserve the Science Committee's sole jurisdiction over the bill since the jurisdiction of programs under this subsection 131(b) either resides with the Committee on Energy and Commerce or is shared with that Committee.

SUBTITLE G—ENVIRONMENTAL PROTECTION AGENCY OFFICE OF AIR AND RADIATION AUTHORIZATION OF APPROPRIATIONS

*Sec. 171. Short title*

Section 171 cites the subtitle as the "Environmental Protection Agency Office of Air and Radiation Authorization Act of 2001."

*Sec. 172. Authorization of appropriations*

Section 172 authorizes to be appropriated to the Administrator for the Office of Air and Radiation a total of $156.7 million for FY 2002, $163.0 million for FY 2003, and $169.4 million for FY 2004, to remain available until expended. Of these amounts, $28.3 million for FY 2002, $29.4 million for FY 2003, and $30.6 million for FY 2004 shall be for Science; and $128.4 million for FY 2002, $133.6 million for FY 2003, and $138.8 million for FY 2004 shall be for Climate Change Protection Programs, including:

(A) $52.7 million for FY 2002, $54.8 million for FY 2003, and $57.0 million for FY 2004 for Buildings;

(B) $32.4 million for FY 2002, $33.7 million for FY 2003, and $35.0 million for FY 2004 for Transportation;

(C) $32.0 million for FY 2002, $33.3 million for FY 2003, and $34.6 million for FY 2004 for Industry;

(D) $1.7 million for FY 2002, $1.750 million for FY 2003, and $1.8 million for FY 2004 for Carbon Removal;

(E) $2.5 million for FY 2002, $2.6 million for FY 2003, and $2.7 million for FY 2004 for State and Local Climate;

(F) $6.3 million for FY 2002, $6.6 million for FY 2003, and $6.8 million for FY 2004 for International Capacity Building; and

(G) $0.8 million for FY 2002, $0.85 million for FY 2003, and $0.9 million for FY 2004 for Technical Cooperation with Industrial and Developing Countries.

*Sec. 173. Limits on use of funds*

Subsection 173(a) prohibits EPA from using funds to produce or provide articles or services for the purpose of selling the articles or services to a person outside the Federal Government, unless the Administrator determines that comparable articles or services are not available from a commercial source in the United States.

Subsection 173(b) prohibits EPA from using funds to prepare or initiate Requests for Proposals for a program if Congress has not authorized the program.

*Sec. 174. Cost sharing*

Except as otherwise provided in this subtitle, subsection 174(a) mandates that for R&D programs carried out under this subtitle, the Administrator shall require a commitment from non-Federal

sources of at least 20 percent of the cost of the project. The Administrator may reduce or eliminate the non-Federal requirements under this subsection if the Administrator determines that the R&D is of a basic or fundamental nature.

Similarly, under subsection 174(b) the Administrator shall require at least 50 percent of the costs directly and specifically related to any demonstration or commercial application project under this subtitle to be provided from non-Federal sources. The Administrator may reduce the non-Federal requirement under this subsection if the Administrator 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 subtitle.

In calculating the amount of the non-Federal commitment under subsection (a) or (b), subsection 174(c) permits the Administrator to include personnel, services, equipment, and other resources.

*Sec. 175. Limitations on demonstrations and commercial application of energy technology*

Section 175 requires the Administrator to provide funding only for scientific or energy demonstration or commercial application programs, projects or activities for technologies or processes that can reasonably be expected to yield new, measurable benefits to the cost, efficiency, or performance of the technology or process.

*Sec. 176. Reprogramming*

Section 176 prohibits the reprogramming of funds in excess of 105 percent of the amount authorized for a program, project, or activity, or in excess of $0.25 million above the amount authorized for the program, project, or activity until the Administrator submits a report to the appropriate congressional committees and a period of 30 days has elapsed after the date on which the report is received. Such reprogramming of funds is limited to no more than the total amount authorized to be appropriated by this subtitle and such funds may not be reprogrammed or used for a program, project, or activity for which Congress has not authorized appropriation.

*Sec. 177. Budget request format*

Section 177 requires the Administrator to provide to the appropriate congressional committees, to be transmitted at the same time as the EPA's annual budget request submission, a detailed justification for budget authorization for the programs, projects, and activities for which funds are authorized by this subtitle.

Each such document shall include, for the fiscal year for which funding is being requested and for the two previous fiscal years: (1) a description of, and funding requested or allocated for, each such program, project, or activity; (2) an identification of all recipients of funds to conduct such programs, projects, and activities; and (3) an estimate of the amounts to be expended by each recipient of funds under (2).

*Sec. 178. Other provisions*

Subsection 178(a) requires the Administrator to provide simultaneously to the Committee on Science: (1) any annual operating plan or other operational funding document, including any addi-

tions or amendments thereto; and (2) any report relating to the environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology programs, projects, or activities of the EPA, provided to any committee of Congress.

Subsection 178(b) requires the Administrator to provide notice to the appropriate congressional committees not later than 15 days before any reorganization of any environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Office of Air and Radiation.

SUBTITLE H—NATIONAL BUILDING PERFORMANCE INITIATIVE

Not later than three months after the date of the enactment of this Act, subsection 181(a) requires the Director of the OSTP to establish an Interagency Group responsible for the development and implementation of a National Building Performance Initiative to address energy conservation and R&D and related issues. The NIST shall provide necessary administrative support for the Interagency Group.

Under subsection 181(b), not later than nine months after the date of the enactment of this Act, the Interagency Group shall transmit to the Congress a multiyear implementation plan describing the Federal role in reducing the costs, including energy costs, of using, owning, and operating commercial, institutional, residential, and industrial buildings by 30 percent by 2020. The plan shall include: (1) R&D of systems and materials for new construction and retrofit, on the building envelope and components; and (2) the collection and dissemination, in a usable form, of research results and other pertinent information to the design and construction industry, government officials, and the general public.

Subsection 181(c) requires the establishment of a National Building Performance Advisory Committee to advise on creation of the plan, review progress made under the plan, advise on any improvements that should be made to the plan, and report to the Congress on actions that have been taken to advance the Nation's capability in furtherance of the plan. The members shall include representatives of a broad cross-section of interests such as the research, technology transfer, architectural, engineering, and financial communities; materials and systems suppliers; State, county, and local governments; the residential, multi-family, and commercial sectors of the construction industry; and the insurance industry.

Subsection 181(d) requires the Interagency Group, within 90 days after the end of each fiscal year, to transmit a report to the Congress describing progress achieved during the preceding fiscal year by government at all levels and by the private sector, toward implementing the plan developed under subsection (b), and including any amendments to the plan.

## Title II—Renewable Energy

### SUBTITLE A—HYDROGEN

*Sec. 201. Short title*

Section 201 cites the subtitle as the "Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001."

*Sec. 202. Purposes*

Section 202 amends section 102(b) the Spark M. Matsunaga Hydrogen R&D Act of 1990 (1990 Act) to include R&D activities leading to the use of hydrogen for commercial applications, information dissemination and education, and development of a hydrogen production methodology that minimizes adverse environmental impacts, including efficient and cost-effective production from renewable and nonrenewable resources.

*Sec. 203. Definitions*

Section 203 amends section 102(c) of the 1990 Act to include the definition of "advisory committee."

*Sec 204. Reports to Congress*

Section 204 amends section 103 of the 1990 Act by requiring the Secretary to submit to Congress a detailed report on the status and progress of the programs and activities authorized under the Act within one year of its enactment, and biennially thereafter.

*Sec. 205. Hydrogen research and development*

Section 205 amends section 104 of the 1990 Act by streamlining the text. Also, for the R&D programs carried out under this section, 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 R&D is of a basic or fundamental nature.

*Sec. 206. Demonstrations*

Section 206 amends section 105 of the 1990 Act by eliminating the requirement that demonstration of critical technologies and small-scale demonstrations be conducted in or at "self-contained locations." In addition, the small-scale demonstrations are to include a fuel cell bus demonstration program to address hydrogen production, storage, and use in transit bus applications.

*Sec. 207. Technology transfer*

Section 207 amends section 106 of the 1990 Act by requiring the Secretary to conduct a hydrogen technology transfer program designed to accelerate wider application of hydrogen production, storage, transportation and use technologies, including application in foreign countries to increase the global market for hydrogen technologies and foster global economic development without harmful environmental effects.

*Sec. 208. Coordination and consultation*

Section 208 amends section 107 of the 1990 Act by requiring the Secretary to establish a central point for coordination of all DOE hydrogen RD&D activities. It also requires the Secretary to consult with other Federal agencies, as appropriate, and the advisory committee established under section 209.

*Sec. 209. Advisory committee*

Section 209 amends section 108 of the 1990 Act by requiring the Secretary to enter into arrangements with the National Academies of Sciences and Engineering to establish an advisory committee to replace the current Hydrogen Technical Advisory Panel.

*Sec. 210. Authorization of appropriations*

Subsections 210 amends section 109 of the 1990 Act to provide authorization of appropriations for the five-year period, FY 2002 through FY 2006.

Subsection 210(a) authorizes $40.0 million for FY 2002, $45.0 million for FY 2003, $50.0 million for FY 2004, $55.0 million for FY 2005, and $60.0 million for FY 2006 for hydrogen R&D activities and the advisory committee.

Subsection 210(b) authorizes $20.0 million for FY 2002, $25.0 million for FY 2003, $30.0 million for FY 2004, $35.0 million for FY 2005, and $40.0 million for FY 2006 for hydrogen demonstration activities.

*Sec. 211. Repeal*

Section 211 amends the Hydrogen Future Act of 1996 to repeal title II containing the program relating to the integration of fuel cells with hydrogen production systems.

SUBTITLE B—BIOENERGY

*Sec. 221. Short title*

Section 221 cites the subtitle as the "Bioenergy Act of 2001."

*Sec. 222. Findings*

Section 222 lists five findings.

*Sec. 223. Definitions*

Section 223 defines the terms "bioenergy," "biofuels," "biopower," and "integrated bioenergy research and development."

*Sec. 224. Authorizations*

Section 224 authorizes the Secretary to conduct bioenergy-related RD&D and commercial application programs, projects, and activities, including: (1) biopower energy systems, (2) biofuels energy systems, and (3) integrated bioenergy R&D.

*Sec. 225. Authorization of appropriations*

As shown in the following table, subsections 225(a), 225(b), and 225(c) authorizes a total of $912.2 million for Biopower Energy Systems, Biofuels Energy Systems, and Integrated Bioenergy R&D for the five-year period, FY 2002 through FY 2006.

BIOENERGY ACT OF 2001 AUTHORIZATIONS: FY 2002–FY 2006

[In thousands of dollars]

| Program (Subsection) | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | Total (FY 2002–FY 2006) |
|---|---|---|---|---|---|---|
| Biopower (225(a)) | 45,700 | 52,500 | 60,300 | 69,300 | 79,600 | 307,400 |
| Biofuels (225(b)) | 53,500 | 61,400 | 70,600 | 81,100 | 93,200 | 359,800 |
| Integrated Bioenergy R&D (225(c)) | 49,000 | 49,000 | 49,000 | 49,000 | 49,000 | 245,000 |
| Total | 148,200 | 162,900 | 179,900 | 199,400 | 221,800 | 912,200 |

Also, Integrated Bioenergy R&D activities funded under subsection 225(c) are to be coordinated with ongoing related programs of other Federal agencies, including the NSF Plant Genome Program.

Subsection 225(d) authorizes amounts under this subtitle to be used to assist in the planning, design, and implementation of projects to convert rice straw and barley grain into biopower or biofuels.

SUBTITLE C—TRANSMISSION INFRASTRUCTURE SYSTEMS

*Sec. 241. Transmission infrastructure systems RD&D and commercial application*

Subsection 241(a) requires the Secretary to develop and implement a comprehensive RD&D and commercial application program to ensure the reliability, efficiency, and environmental integrity of electrical transmission systems. Such program shall include advanced energy technologies and systems, high capacity superconducting transmission lines and generators, advanced grid reliability and efficiency technologies development, technologies contributing to significant load reductions, advanced metering, load management and control technologies, and technology transfer and education.

In carrying out this subtitle, subsection 241(b) allows the Secretary to include RD&D on and commercial application of improved transmission technologies including the integration of the following technologies into improved transmission systems: (1) high temperature superconductivity; (2) advanced transmission materials; (3) self-adjusting equipment, processes, or software for survivability, security, and failure containment; (4) enhancements of energy transfer over existing lines; and (5) any other infrastructure technologies, as appropriate.

*Sec. 242. Program plan*

Section 242 requires the Secretary, within four months after the date of the enactment of this Act and in consultation with other appropriate Federal agencies, to prepare and transmit to Congress a five-year program plan to guide activities under this subtitle. In preparing the program plan, the Secretary shall consult with appropriate representatives of the transmission infrastructure systems industry to select and prioritize appropriate program areas. The Secretary shall also seek the advice of utilities, energy services providers, manufacturers, institutions of higher learning, other appropriate State and local agencies, environmental organizations,

professional and technical societies, and any other persons as the Secretary considers appropriate.

*Sec. 243. Report*

Under section 243, two years after the date of the enactment of this Act, and at two year intervals thereafter, the Secretary, in consultation with other appropriate Federal agencies, shall transmit a report to Congress describing the progress made to achieve the purposes of this subtitle and identifying any additional resources needed to continue the development and commercial application of transmission infrastructure technologies.

SUBTITLE D—AUTHORIZATION OF APPROPRIATIONS

*Sec. 261. Authorization of appropriations*

Including the amounts authorized for hydrogen R&D under section 210 and for bioenergy R&D under section 225, subsection 261(a) authorizes $535.0 million for FY 2002, $639.0 million for FY 2003, and $683.0 million for FY 2004 for Renewable Energy operation and maintenance, including subtitle C (Transmission Infrastructure Systems), Geothermal Technology Development, Hydropower, Concentrating Solar Power, Photovoltaic Energy Systems, Solar Building Technology Research, Wind Energy Systems, High Temperature Superconducting Research and Development, Energy Storage Systems, Transmission Reliability, International Renewable Energy Program, Renewable Energy Production Incentive Program, Renewable Program Support, National Renewable Energy Laboratory, and Program Direction, to remain available until expended.

Subsection 281(b) requires the Secretary to carry out a research program, in conjunction with other appropriate Federal agencies, on wave powered electric generation within the amounts authorized under subsection 281(a).

Using funds authorized in subsection 281(a), subsection 281(c) requires the Secretary to transmit to the Congress, within one year after the date of the enactment of this Act, an assessment of all renewable energy resources available within the United States. The report shall include a detailed inventory describing the available amount and characteristics of solar, wind, biomass, geothermal, hydroelectric, and other renewable energy sources, and an estimate of the costs needed to develop each resource. The report shall also include such other information as the Secretary believes would be useful in siting renewable energy generation, such as appropriate terrain, population and load centers, nearby infrastructure, and location of energy resources. The information and cost estimates in this report shall be updated annually and made available to the public, along with the data used to create the report. This subsection shall expire at the end of FY 2004.

Subsection 261(d) provides that none of the funds authorized to be appropriated in subsection 241(a) may be used for: "(1) Departmental Energy Management Program; or (2) Renewable Indian Energy Resources." These limitations are included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of these programs either resides with the Committee on Energy and Commerce, or is shared with that Committee.

## Title III—Nuclear Energy

### SUBTITLE A—UNIVERSITY NUCLEAR SCIENCE AND ENGINEERING

*Sec. 301. Short title*

Section 301 cites the subtitle as the "Department of Energy University Nuclear Science and Engineering Act."

*Sec. 302. Findings*

Section 302 lists three findings.

*Sec. 303. Department of Energy Program*

Subsection 303(a) directs the Secretary, through the Office of Nuclear Energy, Science and Technology (Office) to maintain the Nation's human resource investment and infrastructure related to civilian nuclear R&D.

Subsection 303(b) requires the Director of the Office to: (1) develop to robust graduate and undergraduate program to attract new students; (2) develop a Junior Faculty Research Initiation Grant to recruit and maintain new faculty; (3) maintain investment in the Nuclear Engineering Education Research Program; (4) encourage collaborative nuclear research between industry, national labs and universities through Nuclear Energy Research Initiative (NERI); (5) support public outreach regarding nuclear science and engineering; and (6) support communication and outreach related to nuclear science and engineering.

Subsection 303(c) directs the Office to provide for: (1) university research reactor refueling with low enriched fuels, operational instrumentation upgrading, and reactor sharing among universities; (2) assistance in relicensing and upgrading university training reactors as part of a student training program in collaboration with the U.S. nuclear industry; and (3) awards for reactor improvements for research, training and education.

Subsection 303(d) directs the Secretary to develop as program in the Office for: nuclear science and technology sabbatical fellowships for university professors at the Department labs and for student fellowships at Department labs; and a visiting scientist program for Department lab staff to visit universities' nuclear science programs to work with faculty and staff.

Subsection 303(e) requires the host institution to provide at least 50 percent of the cost of a university research reactor's operation when funds authorized under this subtitle are used to supplement operation of such research reactor.

Subsection 303(f) requires that all grants, contracts, cooperative agreements or other financial assistance awards under this Act be made based on independent merit review.

Subsection 303(g) requires the Secretary to prepare a report within six months of enactment of this Act, laying out a five-year plan on the programs authorized in this section. This report is to be delivered to the appropriate congressional committees.

*Sec. 304. Authorization of appropriations*

Subsection 304(a) authorizes total appropriation of funds to carry out the purposes of this subtitle and for all funds to remain available until expended: $30.2 million for FY 2002; $41.0 million for FY

2003; $47.9 million for FY 2004; $55.6 million for FY 2005; and $64.1 million for FY 2006.

For the Graduate and Undergraduate Fellowships to carry out subsection 303(b)(1) from the funds authorized in subsection 304(a), subsection 304(b) authorizes $3.0 million for FY 2002, $3.1 million for FY 2003, $3.2 million for FY 2004, $3.2 million for FY 2005, and $3.2 million for FY 2006.

For the Junior Faculty Research Initiation Grant Program to carry out subsection 303(b)(2) from the funds authorized in subsection 304(a), subsection 304(c) authorizes $5.0 million for FY 2002, $7.0 million for FY 2003, $8.0 million for FY 2004, $9.0 million for FY 2005, and $10.0 million for FY 2006.

For the Nuclear Engineering and Education Research Program to carry out subsection 303(b)(3) from the funds authorized in subsection 304(a), subsection 304(d) authorizes $8.0 million for FY 2002, $12.0 million for FY 2003, $13.0 million for FY 2004, $15.0 million for FY 2005, and $20.0 million for FY 2006.

For Communication and Outreach Related to Nuclear Science and Engineering to carry out subsection 303(b)(5) from the funds authorized in subsection 304(a), subsection 304(e) authorizes $0.2 million for each of FY 2002 and FY 2003, and $0.3 million for each of FY 2004 through FY 2006.

For Refueling of Research Reactors and Instrumentation Upgrades to carry out section 303(c)(1) from the funds authorized in subsection 304(a), subsection 304(f) authorizes $6.0 million for FY 2002, $6.5 million for FY 2003, $7.0 million for FY 2004, $7.5 million for FY 2005, and $8.0 million for FY 2006.

For Relicensing Assistance to carry out subsection 303(c)(2) from the funds authorized in subsection 304(a), subsection 304(g) authorizes $1.0 million for FY 2002, $1.1 million for FY 2003, $1.2 million for FY 2004, and $1.3 million for each of FY 2005 and FY 2006.

For the Reactor Research and Training Award Program to carry out subsection 303(c)(3) from the funds authorized in subsection 304(a), subsection 304(h) authorizes $6.0 million for FY 2002, $10.0 million for FY 2003, $14.0 million for FY 2004, $18.0 million for FY 2005, and $20.0 million for FY 2006.

For University-Department Laboratory Interactions to carry out subsection 303(d) from the funds authorized in subsection 304(a), subsection 304(i) authorizes $1.0 million for FY 2002, $1.1 million for FY 2003, $1.2 million for FY 2004, and $1.3 million for each of FY 2005 and FY 2006.

## SUBTITLE B—ADVANCED FUEL RECYCLING TECHNOLOGY RESEARCH AND DEVELOPMENT PROGRAM

### *Sec. 321. Program*

Subsection 321(a) requires the Secretary, through the Director of the Office, to conduct an advanced fuel recycling technology R&D program to further the availability of proliferation-resistant fuel recycling technologies as an alternative to aqueous reprocessing in support of evaluation of alternative national strategies for spent nuclear fuel and the Generation IV advanced reactor concepts, subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

Subsection 321(b) requires the Secretary to report on the activities of the advanced fuel recycling technology R&D program as part of the Department's annual budget submission.

Subsection 321(c) authorizes: (1) $10.0 million for FY 2002, and (2) such sums as are necessary for FY 2003 and FY 2004.

SUBTITLE C—DEPARTMENT OF ENERGY AUTHORIZATION OF APPROPRIATIONS

*Sec. 341. Nuclear energy research initiative*

Subsection 341(a) requires the Secretary, through the Office, to conduct a Nuclear Energy Research Initiative for grants to be competitively awarded and subject to peer review for research relating to nuclear energy.

Subsection 341(b) mandates that the program be directed toward accomplishing the objectives of: (1) developing advanced concepts and scientific breakthroughs in nuclear fission and reactor technology to address and overcome the principal technical and scientific obstacles to the expanded use of nuclear energy in the United States; (2) advancing the state of nuclear technology to maintain a competitive position in foreign markets and a future domestic market; (3) promoting and maintaining a United States nuclear science and engineering infrastructure to meet future technical challenges; (4) providing an effective means to collaborate on a cost-shared basis with international agencies and research organizations to address and influence nuclear technology development worldwide; and (5) promoting United States leadership and partnerships in bilateral and multilateral nuclear energy research.

Subsection 341(c) authorizes to be appropriated to the Secretary to carry out this section: (1) $60.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

*Sec. 342. Nuclear Energy Plant Optimization Program*

Subsection 342(a) requires the Secretary to conduct a Nuclear Energy Plant Optimization R&D program jointly with industry and cost-shared by industry by at least 50 percent and subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

Subsection 342(b) states the program shall be directed toward accomplishing the following technical objectives: (1) managing long-term effects of component aging; and (2) improving efficiency and productivity of existing nuclear power stations.

Subsection 342(c) authorizes to be appropriated to the Secretary to carry out this section: (1) $15.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

*Sec. 343. Nuclear energy technologies*

Subsection 343(a) requires the Secretary to conduct a study of Generation IV nuclear energy systems, including development of a technology roadmap and performance of R&D necessary to make an informed technical decision regarding the most promising candidates for commercial application.

Under subsection 343(b), to the extent practicable, in conducting the study under subsection 343(a), the Secretary shall study nuclear energy systems that offer the highest probability of achieving

the goals for Generation IV nuclear energy systems, including: (1) economics competitive with any other generators; (2) enhanced safety features, including passive safety features; (3) substantially reduced production of high-level waste, as compared with the quantity of waste produced by reactors in operation on the date of enactment of this Act; (4) highly proliferation-resistant fuel and waste; (5) sustainable energy generation including optimized fuel utilization; and (6) substantially improved thermal efficiency, as compared with the thermal efficiency of reactors in operation on the date of enactment of this Act.

In preparing the study under subsection 343(b), subsection 343(c) requires the Secretary to consult with appropriate representatives of industry, institutions of higher education, Federal agencies, and international, professional and technical organizations.

Subsection 343(d) requires that, not later than December 31, 2002, the Secretary shall transmit to the appropriate congressional committees a report describing the activities of the Secretary under this section, and plans for R&D leading to a public/private cooperative demonstration of one or more Generation IV nuclear energy systems. The report shall contain: (A) an assessment of all available technologies; (B) a summary of actions needed for the most promising candidates to be considered as viable commercial options within the five to ten years after the date of the report, with consideration of regulatory, economic, and technical issues; (C) a recommendation of not more than three promising Generation IV nuclear energy system concepts for further development; (D) an evaluation of opportunities for public/private partnerships; (E) a recommendation for the structure of a public/private partnership to share in development and construction costs; (F) a plan leading to the selection and conceptual design, by September 30, 2004, of at least one Generation IV nuclear energy system concept recommended under subparagraph (C) for demonstration through a public/private partnership; (G) an evaluation of opportunities for siting demonstration facilities on DOE land; and (H) a recommendation for appropriate involvement of other Federal agencies.

Subsection 343(e) authorizes to be appropriated to the Secretary to carry out this section: (1) $20.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

*Sec. 344. Authorization of appropriations*

Subsection 344(a) authorizes activities under this title for nuclear energy operation and maintenance, including amounts authorized under sections 304(a) (University Nuclear Science and Engineering), 321(c) (Advanced Fuel Recycling Technology R&D Program), 341(c) (Nuclear Energy Research Initiative), 342(c) (Nuclear Energy Plant Optimization Program), and 343(e) (Nuclear Energy Technologies), and including Advanced Radioisotope Power Systems, Test Reactor Landlord, and Program Direction, $191.2 million for FY 2002, $199.0 million for FY 2003, and $207.0 million for FY 2004, to remain available until expended.

Subsection 344(b) authorizes:

(1) $0.95 million for FY 2002, $2.2 million for FY 2003, $1,246 million for FY 2004, and $1.699 million for FY 2005 for completion of construction of Project 99–E–200, Test Reactor

Area (TRA) Electric Utility Upgrade, Idaho National Engineering and Environmental Laboratory (INEEL); and

(2) $0.5 million for each of FY 2002 through FY 2005 for completion of construction of Project 95–E–201, TRA Fire and Life Safety Improvements, INEEL.

Subsection 344(c) provides that none of the funds authorized to be appropriated in subsection 481(a) may be used for: "(1) Nuclear Energy Isotope Support and Production; (2) Argonne National Laboratory-West Operations; (3) Fast Flux Test Facility; or (4) Nuclear Facilities Management." These limitations are included to preserve the Science Committee's sole jurisdiction over the bill since the jurisdiction of programs under this subsection either resides with the Committee on Energy and Commerce or is shared with that Committee.

## Title IV—Fossil Energy

### SUBTITLE A—CLEAN COAL

*Sec. 401. Short title*

Section 401 cites the subtitle as the "National Electricity and Environmental Technology Research and Development Act."

*Sec. 402. Findings*

Section 402 lists six findings.

*Sec. 403. Definition*

Section 403 defines the term "cost and performance-based goals" to mean the cost and performance-based goals established under section 4.

*Sec. 404. Clean coal power initiative*

Subsection 404(a) requires the Secretary to carry out a program of research on and development, demonstration, and commercial application of clean coal technologies under: (1) this subtitle; (2) the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.); (3) the Energy Reorganization Act of 1974 (42 U.S.C. 5801 et seq.); and (4) title XIII of the Energy Policy Act of 1992 (42 U.S.C. 13331 et seq.)

Subsection 404(b) mandates that the RD&D and commercial application program described in subsection (a) be designed to achieve the cost and performance-based goals.

*Sec. 405. Authorization of appropriations*

Except as provided in section 406, subsection 405(a) authorizes to be appropriated to the Secretary to carry out the Clean Coal Power Initiative under section 404 $200.0 million for each of the fiscal years 2002 through 2011, to remain available until expended.

Also, except as provided in section 406, subsection 405(b) authorizes to be appropriated to the Secretary $172.0 million for FY 2002, $179.0 million for FY 2003, and $186.0 million for FY 2004, to remain available until expended, for other coal and related technologies programs, which shall include: (1) Innovations for Existing Plants; (2) Integrated Gasification Combined Cycle; (3) advanced combustion systems; (4) Turbines; (5) Sequestration Research and Development; (6) innovative technologies for demonstration; (7)

Transportation Fuels and Chemicals; (8) Solid Fuels and Feedstocks; (9) Advanced Fuels Research; and (10) Advanced Research.

Notwithstanding subsections 405(a) and 405(b), subsection 405(c) prohibits the use of funds to carry out the activities authorized by this subtitle after September 30, 2002, unless the Secretary has transmitted to the appropriate congressional committees the report required by this subsection and one month has elapsed since that transmission. With respect to the Clean Coal Power Initiative under subsection 405(a), the report must include a ten-year plan addressing five specific items: (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 demonstration activities expected to be undertaken; (3) a detailed list of technical milestones for each coal and related technology that will be pursued; (4) recommendations for a mechanism for recoupment of Federal funding for successful commercial projects; and (5) 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. In the case of other coal and related technologies programs under subsection 405(b), the report must include a plan containing: (1) a detailed description of how proposals will be solicited and evaluated, including a list of all demonstration activities expected to be undertaken; and (2) a detailed list of technical milestones for each coal and related technology that will be pursued. In addition, the report must include a description of how the programs will be carried out under subsection 405(a) (the Clean Coal Power Initiative) and subsection 405(b) (other coal and related technologies programs) so as to complement each other and not duplicate activities.

Subsection 405(d) provides that subsection 405(c) shall not apply to any program, project, or activity begun before September 30, 2001.

*Sec. 406. Project criteria*

Subsection 406(a) prohibits the Secretary from providing funding for any RD&D, or commercial application of coal and related technologies that do not advance efficiency, environmental performance, and cost competitiveness well beyond the level of technologies that are in operation or have been demonstrated as of the date of the enactment of this Act.

Subsection 406(b) contains the technical criteria for the Clean Coal Power Initiative.

Under subsection 406(b)(1)(A), in allocating the funds authorized under section 405(a), the Secretary shall ensure that at least 80 percent of the funds are used only for projects on carbon sequestration, or coal-based gasification technologies, including gasification combined cycle, gasification fuel cells, gasification coproduction and hybrid gasification/combustion.

Subsection 406(b)(1)(B) requires the Secretary to set technical milestones specifying emissions levels that coal gasification projects must be designed to and reasonably expected to achieve. The milestones shall get more restrictive through the life of the program,

and such milestones shall be designed to achieve by 2020 coal gasification projects able to: (1) remove 99 percent of sulfur dioxide; (2) emit no more than 0.05 pounds (lbs) of nitrous oxides ($NO_X$) per million British Thermal Unit (BTU); (3) remove 95 percent of mercury; and (4) achieve a thermal efficiency of 60 percent (higher heating value).

For projects not described in subsection 406(b)(1)(A) or subsection 406(b)(1)(B), subsection 406(b)(2) requires the Secretary to set technical milestones specifying emissions levels that the projects must be designed to and reasonably expected to achieve. The milestones shall get more restrictive through the life of the program, and such milestones shall be designed to achieve by 2010 projects able to: (1) remove 97 percent of sulfur dioxide; (2) emit no more than 0.08 lbs of $NO_X$ per million BTU; (3) remove 90 percent of mercury; and (4) achieve a thermal efficiency of 45 percent (higher heating value).

Subsection 406(c) prohibits the Secretary from providing a funding award for any RD&D or commercial application of coal and related technologies unless the recipient of the award has documented 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 for 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.

Subsection 406(d) limits the Federal share of the cost of a coal or related technology project funded by the Secretary to not more than 50 percent.

*Sec. 407. Clean Coal Centers of Excellence*

As part of the program authorized in subsection 405(a), section 107 requires the Secretary to award competitive, merit-based grants to universities for the establishment of Centers of Excellence for Energy Systems of the Future. Such centers shall be located at universities with a proven record of conducting research on, developing, or demonstrating clean coal technologies. The Secretary shall provide grants to universities that can show the greatest potential for demonstrating new clean coal technologies.

SUBTITLE B—OIL AND GAS

*Sec. 421. Petroleum-oil technology*

Section 421 directs the Secretary to conduct a RD&D and commercial application program on petroleum-oil technology. The program shall address: (1) Exploration and Production Supporting Research; (2) Oil Technology Reservoir Management/Extension; and (3) Effective Environmental Protection.

*Sec. 422. Gas*

Section 422 directs the Secretary to conduct a program of RD&D and commercial application on natural gas technologies. The program shall address: (1) Exploration and Production; (2) Infrastructure; and (3) Effective Environmental Protection.

SUBTITLE C—ULTRA-DEEPWATER AND UNCONVENTIONAL DRILLING

*Sec. 441. Short title*

Section 441 cites the subtitle as the "Natural Gas and Other Petroleum Research, Development, and Demonstration Act of 2001."

*Sec. 442. Definitions*

Section 442 defines six terms, including the terms "deepwater" to mean water depths greater than 200 meters but less than 1,500 meters, "ultra-deepwater" to mean water depths greater than 1,500 meters, and "unconventional" to mean located in heretofore inaccessible or uneconomic formations on land.

*Sec. 443. Ultra-deepwater program*

Section 443 requires the Secretary to establish a program of RD&D of ultra-deepwater natural gas and other petroleum exploration and production technologies, in areas currently available for Outer Continental Shelf leasing. The program shall be carried out by the Research Organization as provided in this subtitle.

*Sec. 444. National Energy Technology Laboratory*

The National Energy Technology Laboratory (NETL) and the U.S. Geological Survey (USGS), when appropriate, shall carry out programs of long-term research into new natural gas and other petroleum exploration and production technologies and environmental mitigation technologies for production from unconventional and ultra-deepwater resources, including methane hydrates. NETL shall conduct a program of RD&D of new technologies for the reduction of greenhouse gas emissions from unconventional and ultra-deepwater natural gas or other petroleum exploration and production activities, including sub-sea floor carbon sequestration technologies.

*Sec. 445. Advisory committee*

Within six months after the date of the enactment of this Act, subsection 445(a) requires the Secretary to establish an Advisory Committee consisting of seven members, each having extensive operational knowledge of and experience in the natural gas and other petroleum exploration and production industry who are not Federal Government employees or contractors. A minimum of four members shall have extensive knowledge of ultra-deepwater natural gas or other petroleum exploration and production technologies, a minimum of two members shall have extensive knowledge of unconventional natural gas or other petroleum exploration and production technologies, and at least one member shall have extensive knowledge of greenhouse gas emission reduction technologies, including carbon sequestration.

Subsection 445(b) defines the function of the Advisory Committee to be to advise the Secretary on the selection of an organization to create the Research Organization and on the implementation of this subtitle.

Under subsection 445(c), members of the Advisory Committee shall serve without compensation but shall receive travel expenses, including per diem in lieu of subsistence, in accordance with appli-

cable provisions under subchapter I of chapter 57 of title 5, United States Code.

Subsection 445(d) provides that the costs of activities carried out by the Secretary and the Advisory Committee under this subtitle shall be paid or reimbursed from the Fund established in section 450.

Under subsection 455(e), Section 14 of the Federal Advisory Committee Act shall not apply to the Advisory Committee.

*Sec. 446. Research organization*

Subsection 446(a) requires the Secretary, within six months after the date of the enactment of this Act, to solicit proposals from eligible entities for the creation of the Research Organization, and within three months after such solicitation, to select an entity to create the Research Organization.

Under subsection 446(b), entities eligible to create the Research Organization shall: (1) have been in existence as of the date of the enactment of this Act; (2) be entities exempt from tax under section 501(c)(3) of the Internal Revenue Code of 1986; and (3) be experienced in planning and managing programs in natural gas or other petroleum exploration and production RD&D.

Subsection 446(c) requires that a proposal from an entity seeking to create the Research Organization shall include a detailed description of the proposed membership and structure of the Research Organization.

The functions of the Research Organization, as defined in subsection 446(c) are to: (1) award grants on a competitive basis to qualified research institutions, institutions of higher education, companies, and consortia of same for the purpose of conducting RD&D of unconventional and ultra-deepwater natural gas or other petroleum exploration and production technologies; and (2) review activities under those grants to ensure that they comply with the requirements of this subtitle and serve the purposes for which the grants were made.

*Sec. 447. Grants*

Subsection 447(a) provides for three types of grants: (1) unconventional, for RD&D of technologies aimed at unconventional reservoirs; (2) ultra-deepwater, for R&D of technologies aimed at ultra-deepwater areas; and (3) ultra-deepwater architecture. In the case of ultra-deepwater architecture, the Research Organization shall award a grant to one or more consortia for the purpose of developing and demonstrating the next generation architecture for ultra-deepwater production of natural gas and other petroleum.

Subsection 447(b) provides that grants under this section shall contain seven specific conditions:

1. If the grant recipient consists of more than one entity, the recipient shall provide a signed contract agreed to by all participating members clearly defining all rights to intellectual property for existing technology and for future inventions conceived and developed using funds provided under the grant, in a manner that is consistent with applicable laws.

2. There shall be a repayment schedule for Federal dollars provided for demonstration projects under the grant in the event of a successful commercialization of the demonstrated technology. Such

repayment schedule shall provide that the payments are made to the Secretary with the express intent that these payments not impede the adoption of the demonstrated technology in the marketplace. In the event that such impedance occurs due to market forces or other factors, the Research Organization shall renegotiate the grant agreement so that the acceptance of the technology in the marketplace is enabled.

3. Applications for grants for demonstration projects shall clearly state the intended commercial applications of the technology demonstrated.

4. The total amount of funds made available under a grant provided under subsection (a)(3) for ultra-deepwater architecture shall not exceed 50 percent of the total cost of the activities for which the grant is provided.

5. The total amount of funds made available under a grant provided either under subsection (a)(1) for unconventional reservoirs or under subsection (a)(2) for ultra-deepwater areas shall not exceed 50 percent of the total cost of the activities covered by the grant, except that the Research Organization may elect to provide grants covering a higher percentage, not to exceed 90 percent, of total projects costs in the case of grants made solely to independent producers.

6. An appropriate amount of funds provided under a grant shall be used for the broad dissemination of technologies developed under the grant to interested institutions of higher education, industry, and appropriate Federal and State technology entities to ensure the greatest possible benefits for the public and use of government resources.

7. Demonstrations of ultra-deepwater technologies for which funds are provided under a grant may be conducted in ultra-deepwater or deepwater locations.

Subsection 447(c) requires that funds available for grants under this subtitle be allocated as follows: (1) 15 percent shall be for grants under subsection 447(a)(1) for unconventional reservoirs; (2) 15 percent shall be for grants under subsection 447(a)(2) for ultra-deepwater areas; (3) 60 percent shall be for grants under subsection 447(a)(3) for ultra-deepwater architecture; and (4) 10 percent be for the NETL and the USGS, when appropriate, for carrying out section 444.

*Sec. 448. Plan and funding*

Subsection 448(a) requires the Research Organization to transmit to the Secretary an annual plan proposing projects and funding of activities under each paragraph of section 447(a).

Under subsection 448(b), the Secretary shall have one month to review the annual plan, and shall approve the plan, if it is consistent with this subtitle. If the Secretary approves the plan, the Secretary shall provide funding as proposed in the plan. If the Secretary does not approve the plan, subsection 448(c) provides that the Secretary shall notify the Research Organization of the reasons for disapproval and shall withhold funding until a new plan is submitted which the Secretary approves. Within one month after notifying the Research Organization of a disapproval, the Secretary shall notify the appropriate congressional committees of the disapproval.

*Sec. 449. Audit*

Section 449 requires the Secretary to retain an independent, commercial auditor to determine the extent to which the funds authorized by this subtitle have been expended in a manner consistent with the purposes of this subtitle. The auditor must transmit a report annually to the Secretary, who shall transmit the report to the appropriate congressional committees, along with a plan to remedy any deficiencies cited in the report.

*Sec. 450. Fund*

Subsection 450(a) establishes a fund to be known as the "Ultra-Deepwater and Unconventional Gas Research Fund" (Fund) in the United States Treasury (Treasury), which shall be available for obligation to the extent provided in advance in appropriations Acts for allocation under section 447(c) above.

Subsection 450(b) specifies the Fund's three funding sources:

1. Loans from the Treasury—Subsection 450(b)(1) authorizes to be appropriated to the Secretary $900.0 million for the period encompassing FY 2002 through FY 2009. Such amounts shall be deposited by the Secretary in the Fund, and shall be considered loans from the Treasury. Income received by the United States in connection with any ultra-deepwater oil and gas leases shall be deposited in the Treasury and considered as repayment for the loans under this paragraph.

2. Additional Appropriations—Subsection 450(b)(2) authorizes to be appropriated to the Secretary such sums as may be necessary for FY 2002 through FY 2009, to be deposited in the Fund.

3. Oil and Gas Lease Income—To the extent provided in advance in appropriations Acts, not more than 7.5 percent of the income of the United States from Federal oil and gas leases may be deposited in the Fund for FY 2002 through FY 2009. The Congressional Budget Office estimates these amounts to total $3.616 billion.

*Sec. 451. Sunset*

Under section 451, no funds are authorized to be appropriated for carrying out this subtitle after FY 2009, and the Research Organization is terminated when it has expended all funds made available pursuant to this subtitle.

SUBTITLE D—FUEL CELLS

*Sec. 461. Fuel cells*

Section 461(a) requires the Secretary to conduct a program of research, development, RD&D and commercial application on fuel cells. The program shall address: (1) Advanced Research; (2) Systems Development; (3) Vision 21–Hybrids; and (4) Innovative Concepts.

In addition to the program under subsection (a), subsection 461(b) requires the Secretary, in consultation with other Federal agencies, as appropriate, to establish a program for the demonstration of fuel cell technologies, including fuel cell proton exchange membrane technology, for commercial, residential, and transportation applications. The program shall specifically focus on promoting the application of improved manufacturing production and processes for fuel cell technologies.

Under subsection 461(c), within the amounts authorized to be appropriated under subsection 481(a), there are authorized to be appropriated to the Secretary for the purpose of carrying out subsection (b) $28.0 million for each of FY 2002, 2003, and 2004.

SUBTITLE E—DOE AUTHORIZATION OF APPROPRIATIONS

*Sec. 481. Authorization of appropriations*

Subsection 481(a) authorizes appropriations for subtitle B (Oil and Gas) and subtitle D (Fuel Cells), and for Fossil Energy Research and Development Headquarters Program Direction, Field Program Direction, Plant and Capital Equipment, Cooperative Research and Development, Import/Export Authorization, and Advanced Metallurgical Processes $282.0 million for FY 2002, $293.0 million for FY 2003, and $305.0 million for FY 2004.

Subsection 481(b) provides that none of the funds authorized to be appropriated in subsection 481(a) may be used for: "(1) Gas Hydrates; (2) Fossil Energy Environmental Restoration; or (3) RD&D and commercial application on coal and related technologies, including activities under subtitle A. The first limitation is imposed because the Methane Hydrate Act of 2000 has been recently enacted and has its own separate authorization. The second limitation is included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of Fossil Energy Environmental Restoration is shared with the Committee on Energy and Commerce. The third limitation is imposed to limit the amount of coal funding to that contained in subtitle A.

Title V—Science

SUBTITLE A—FUSION ENERGY SCIENCES

*Sec. 501. Short title*

Section 501 cites the subtitle as the "Fusion Energy Sciences Act of 2001."

*Sec. 502. Findings*

Section 502 lists nine findings.

*Sec. 503. Plan for fusion experiment*

Subsection 503(a) requires the Secretary, in full consultation with the Fusion Energy Sciences Advisory Committee and the Secretary of Energy Advisory Board as appropriate, to develop a plan for construction in the United States of a magnetic fusion burning plasma experiment for the purpose of accelerating scientific understanding of fusion plasmas. The Secretary shall request a review of the plan by the National Academy of Sciences (NAS), and shall transmit the Department plan and the NAS review to the Congress by July 1, 2004.

Subsection 503(b) requires the plan to: (1) address key burning plasma physics issues; and (2) include specific information on the scientific capabilities of the proposed experiment, the relevance of these capabilities to the goal of practical fusion energy, and the overall design of the experiment including its estimated cost and identifying potential construction sites.

Subsection 503(c) authorizes the Secretary, in full consultation with the Fusion Energy Sciences Advisory Committee and the Secretary of Energy Advisory Board as appropriate, to develop a plan for the United States participation in an international burning plasma experiment for the purpose of accelerating scientific understanding of fusion plasmas, whose construction is found by the Secretary to be highly likely and where the United States participation is cost effective relative to the cost and scientific benefits of a domestic experiment described in subsection 503(a). If the Secretary elects to develop a plan under this subsection, the Secretary shall include the information described in subsection 503(b), and an estimate of the cost of United States participation in such an international experiment. The Secretary shall request a review by the NAS of any such plan, shall transmit the plan and the review to the Congress by July 1, 2004.

Subsection 503(d) authorizes the Secretary, through the Department's Fusion Energy Sciences Program, to conduct any RD&D necessary to fully develop the plans described in this section.

*Sec. 504. Plan for Fusion Energy Sciences Program*

Section 504 requires that within six months after the enactment of this Act, the Secretary, in full consultation with the Fusion Energy Sciences Advisory Committee, to develop and transmit to the Congress a plan for the purpose of ensuring a strong scientific base for the Fusion Energy Sciences Program and to enable the burning plasma experiment described in section 503. Such plan shall ensure: (1) that existing fusion research facilities and equipment are more fully utilized with appropriate measurements and control tools; (2) a strengthened fusion science theory and computational base; (3) that the selection of and funding for new magnetic and inertial fusion research facilities is based on scientific innovation and cost effectiveness; (4) improvement in the communication of scientific results and methods between the fusion science community and the wider scientific community; (5) that adequate support is provided to optimize the design of the magnetic fusion burning plasma experiment referred to in section 503; (6) that inertial confinement fusion facilities are utilized to the extent practicable for the purpose of inertial fusion energy R&D; (7) the development of a roadmap for a fusion-based energy source that shows the important scientific questions, the evolution of confinement configurations, the relation between these two features, and their relation to the fusion energy goal; (8) the establishment of several new centers of excellence, selected through a competitive peer-review process and devoted to exploring the frontiers of fusion science; (9) that the NSF, and other agencies, as appropriate, play a role in extending the reach of fusion science and in sponsoring general plasma science; and (10) that there be continuing broad assessments of the outlook for fusion energy and periodic external reviews of fusion energy sciences.

*Sec. 505. Authorization of appropriations*

Section 505 authorizes—for ongoing activities in Department's Fusion Energy Sciences Program and for the purpose of planning activities under section 503, but not for implementation of such plans—$320.0 million for FY 2002 and $335.0 million for FY 2003

of which up to $15 million for each of FY 2002 and FY 2003 may be used to establish several new centers of excellence under section 504(8).

SUBTITLE B—SPALLATION NEUTRON SOURCE

*Sec. 521. Definition*

Section 521 defines the term "Spallation Neutron Source" to mean Department Project 99–E–334, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

*Sec. 522. Authorization of appropriations*

Subsection 522(a) authorizes to be appropriated to the Secretary for construction of the Spallation Neutron Source (SNS): (1) $276.3 million for FY 2002, (2) $210.471 million for FY 2003, (3) $124.6 million for FY 2004, (4) $79.8 million for FY 2005, and (5) $41.1 million for FY 2006 for completion of construction.

Subsection 522(b) authorizes appropriation for other SNS project costs (including R&D necessary to complete the project, preoperations costs, and capital equipment not related to construction) $15.353 million for FY 2002 and $103.279 million for FY 2003 through 2006, to remain available until expended through September 30, 2006.

*Sec. 523. Report*

Section 523 requires the Secretary to report on the SNS as part of Department's annual budget submission, including a description of the achievement of milestones, a comparison of actual costs to estimated costs, and any changes in estimated project costs or schedule.

*Sec. 524. Limitations*

Section 524 limits the total amount obligated for the SNS by the Department, including prior year appropriations, to not more than: (1) $1,192.7 million for costs of construction; (2) $219.0 million for other project costs; and (3) $1,411.7 million for total project cost.

SUBTITLE C—FACILITIES, INFRASTRUCTURE, AND USER FACILITIES

*Sec. 541. Definitions*

Subsection 541(1) defines the term "nonmilitary energy laboratory" to mean: (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; (J) Thomas Jefferson National Accelerator Facility; or (K) any other facility of the Department that the Secretary, in consultation with the Director, Office of Science and the appropriate congressional committees, determines to be consistent with the mission of the Office of Science.

Subsection 541(2) defines the term "user facility" to mean: (A) an Office of Science facility at a nonmilitary energy laboratory that provides special scientific and research capabilities, including technical expertise and support as appropriate, to serve the research needs of the Nation's universities, industry, private laboratories,

Federal laboratories, and others, including research institutions or individuals from other nations where reciprocal accommodations are provided to United States research institutions and individuals or where the Secretary considers such accommodation to be in the national interest; and (B) any other Office of Science funded facility designated by the Secretary as a user facility.

*Sec. 542. Facility and infrastructure support for nonmilitary energy laboratories*

Subsection 542(a) requires the Secretary to develop and implement a least-cost nonmilitary energy laboratory facility and infrastructure strategy for: (1) maintaining existing facilities and infrastructure, as needed; (2) closing unneeded facilities; (3) making facility modifications; and (4) building new facilities.

Subsection 542(b) requires the Secretary to prepare a comprehensive ten-year plan for conducting future facility maintenance, making repairs, modifications, and new additions, and constructing new facilities at each nonmilitary energy laboratory. Such plan is to provide for facilities work in accordance with the following priorities: (1) providing for the safety and health of employees, visitors, and the general public with regard to correcting existing structural, mechanical, electrical, and environmental deficiencies; (2) providing for the repair and rehabilitation of existing facilities to keep them in use and prevent deterioration, if feasible; and (3) providing engineering design and construction services for those facilities that require modification or additions in order to meet the needs of new or expanded programs.

Subsection 542(c) requires the Secretary to prepare and transmit to the appropriate congressional committees a report containing the plan prepared under subsection 542(b) within one year after the date of the enactment of this Act. For each nonmilitary energy laboratory, the report is to contain: (1) the current priority list of proposed facilities and infrastructure projects, including cost and schedule requirements; (2) a current ten-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; (3) the total current budget for all facilities and infrastructure funding; and (4) the current status of each facilities and infrastructure project compared to the original baseline cost, schedule, and scope.

The report shall also: (1) include a plan for new facilities and facility modifications at each nonmilitary energy laboratory that will be required to meet the Department's changing missions for the twenty-first century, including schedules and estimates for implementation, and including a section outlining long-term funding requirements consistent with anticipated budgets and annual authorization of appropriations; (2) address the coordination of modernization and consolidation of facilities among the nonmilitary energy laboratories in order to meet changing mission requirements; and (3) provide for annual reports to the appropriate congressional committees on accomplishments, conformance to schedules, commitments, and expenditures.

*Sec. 543. User facilities*

Under subsection 543(a), when the Department makes a user facility available to universities and other potential users, or seeks input from universities and other potential users regarding significant characteristics or equipment in a user facility or a proposed user facility, the Department shall ensure broad public notice of such availability or such need for input to universities and other potential users.

Subsection 543(b) requires the Department to employ full and open competition in selecting participants when the Department considers the participation of a university or other potential user in the establishment or operation of a user facility.

Section 543(c) prohibits the Department from redesignating a user facility, as defined by section 541(b) as something other than a user facility to avoid the requirements of subsections (a) and (b).

SUBTITLE D—ADVISORY PANEL ON OFFICE OF SCIENCE

*Sec. 561. Establishment*

Section 561 requires the Director of the Office of Science and Technology Policy, in consultation with the Secretary, to establish an Advisory Panel on the Office of Science comprised of knowledgeable individuals to: (1) address concerns about the current status and the future of scientific research supported by the Office; (2) examine alternatives to the current organizational structure of the Office within the Department, taking into consideration existing structures for the support of scientific research in other Federal agencies and private sector; and (3) suggest actions to strengthen the scientific research supported by the Office that might be taken jointly by the Department and Congress.

*Sec. 562. Report*

Under section 562, within six months after the date of the enactment of this Act, the Advisory Panel shall transmit its findings and recommendations in a report to the Director of the Office of Science and Technology Policy and the Secretary. The Director and the Secretary shall jointly: (1) consider each of the Panel's findings and recommendations, and comment on each as they consider appropriate; and (2) transmit the Panel's report and the comments of the Director and the Secretary on the report to the appropriate congressional committees within nine months after the date of the enactment of this Act.

SUBTITLE E—DEPARTMENT OF ENERGY AUTHORIZATION OF APPROPRIATIONS

*Sec. 581. Authorization of appropriations*

Including the amounts authorized to be appropriated for FY 2002 under section 505 for Fusion Energy Sciences and under subsection 522(b) for the SNS, subsection 581(a) authorizes to be appropriated to the Secretary for the Office of Science (also including subtitle C—Facilities, Infrastructure, and User Facilities, High Energy Physics, Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences (except for the SNS authorization under subsection 522(b)), Advanced Scientific Computing Research, En-

ergy Research Analysis, Multiprogram Energy Laboratories-Facilities Support, Facilities and Infrastructure, Safeguards and Security, and Program Direction) operation and maintenance $3,399.558 million for FY 2002, to remain available until expended.

Subsection 581(b) provides that within the amounts authorized under subsection (a), $5.0 million for FY 2002 may be used to carry out research in the use of precious metals (excluding platinum, palladium, and rhodium) in catalysis, either directly though national laboratories, or through the award of grants, cooperative agreements, or contracts with public or nonprofit entities.

Subsection 581(c) provides that in addition to the amounts authorized under subsection 522(a) for SNS construction, subsection 581(b) authorizes:

(1) $11.4 million for FY 2002 for completion of construction of Project 98–G–304, Neutrinos at the Main Injector, Fermi National Accelerator Laboratory;

(2) $11.405 million for FY 2002 for completion of construction of Project 01–E–300, Laboratory for Comparative and Functional Genomics, Oak Ridge National Laboratory;

(3) $4.0 million for FY 2002, $8.0 million for FY 2003, and $2.0 million for FY 2004 for completion of construction of Project 02–SC–002, Project Engineering Design (PED), Various Locations;

(4) $3.183 million for FY 2002 for completion of construction of Project 02–SC–002, Multiprogram Energy Laboratories Infrastructure Project Engineering Design (PED), Various Locations; and

(5) $18.633 million for FY 2002 and $13.029 million for FY 2003 for completion of construction of Project MEL–001, Multiprogram Energy Laboratories, Infrastructure, Various Locations.

Subsection 581(d) provides that none of the funds authorized to be appropriated in subsection 581(b) may be used for construction at any national security laboratory as defined in section 3281(1) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(1)) or at any nuclear weapons production facility as defined in section 3281(2) of the National Defense Authorization Act for 2000 (50 U.S.C. 2471(2)). This limitation is included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of these laboratories and facilities reside with the Committee on Armed Services.

## Title VI—Miscellaneous

### SUBTITLE A—GENERAL PROVISIONS FOR THE DEPARTMENT OF ENERGY

*Sec. 601. Research, development, demonstration and commercial application of energy technology programs, projects, and activities*

Subsection 601(a) requires that RD&D and commercial application programs, projects, and activities authorized under this Act be carried out under the procedures of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.), the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), or any other Act under which the Secretary is authorized to carry out such programs, projects, and activities, only to the extent the Secretary is

authorized to carry out such activities under each Act and except as otherwise provided in this Act.

Subsection 601(b) authorizes the Secretary to use grants, joint ventures, and any other form of agreement available to the Secretary to the extent authorized under applicable provisions of law, contracts, cooperative agreements, cooperative R&D agreements under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), except as otherwise provided in this Act, to carry out RD&D and commercial application programs, projects, and activities.

Subsection 601(c) defines the term "joint venture" for the purpose of this section to have the meaning given that term under section 2 of the National Cooperative Research and Production Act of 1993 (15 U.S.C. 4301), except that such term applies to RD&D and commercial application of energy technology joint ventures.

Subsection 601(d) requires that section 12(c)(7) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a(c)(7)), relating to the protection of information, will apply to RD&D and commercial application of energy technology programs, projects, and activities under this Act.

Under subsection 601(e), an invention conceived and developed by any person using funds provided through a grant under this Act shall be considered a subject invention for the purposes of chapter 18 of title 35, United States Code (commonly referred to as the Bayh-Dole Act).

Subsection 601(f) requires the Secretary to ensure that each program authorized by this Act includes an outreach component to provide information, as appropriate, to manufacturers, consumers, engineers, architects, builders, energy service companies, universities, facility planners and managers, State and local governments, and other entities.

Subsection 601(g) requires the Secretary to provide guidelines and procedures for the transition of energy technologies from research through development and demonstration to commercial application of energy technology where appropriate. Nothing in this section precludes the Secretary from: (1) entering into a contract, cooperative agreement, cooperative R&D agreement under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), grant, joint venture, or any other form of agreement available to the Secretary under this section that relates to RD&D and commercial application of energy technology; or (2) extending a contract, cooperative agreement, cooperative R&D agreement under the Stevenson-Wydler Technology Innovation Act of 1980, grant, joint venture, or any other form of agreement available to the Secretary that relates to RD&D to cover commercial application of energy technology.

Subsection 601(h) states that this section shall not apply to any contract, cooperative agreement, cooperative R&D agreement under the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701 et seq.), grant, joint venture, or any other form of agreement available to the Secretary that is in effect as of the date of enactment of this Act.

*Sec. 602. Limits on use of funds*

Subsection 602(a) prohibits the use of funds authorized by this Act to award a management and operating contract for a federally owned or operated nonmilitary energy laboratory of the Department unless such contract is awarded using competitive procedures or the Secretary grants, on a case-by-case basis, a waiver to allow for such a deviation. The Secretary may not delegate the authority to grant such a waiver. At least 60 days before a contract award, amendment, or modification for which the Secretary intends to grant such a waiver, the Secretary shall submit to the appropriate congressional committees a report notifying the committees of the waiver and setting forth the reasons for the waiver.

Subsection 602(b) prohibits the Secretary from using funds to produce or provide articles or services for the purpose of selling the articles or services to a person outside the Federal Government, unless the Secretary determines that comparable articles or services are not available from a commercial source in the United States.

Subsection 602(c) prohibits the Secretary from using funds to prepare or initiate Requests for Proposals for a program if Congress has not authorized the program.

*Sec. 603. Cost sharing*

Except as otherwise provided in this subtitle, subsection 603(a) mandates that for R&D programs carried out under this subtitle, 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 R&D is of a basic or fundamental nature.

Similarly, under subsection 603(b) the Secretary shall require at least 50 percent of the costs directly and specifically related to any demonstration or commercial application project under this subtitle 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 subtitle.

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

*Sec. 604. Limitations on demonstrations and commercial application of energy technology*

Section 604 requires the Secretary to provide funding only for scientific or energy demonstration and commercial application of energy technology programs, projects or activities for technologies or processes that can reasonably be expected to yield new, measurable benefits to the cost, efficiency, or performance of the technology or process.

*Sec. 605. Reprogramming*

Section 605 prohibits the reprogramming of funds in excess of 105 percent of the amount authorized for a program, project, or activity, or in excess of $0.25 million above the amount authorized for

the program, project, or activity until the Secretary submits a report to the appropriate congressional committees and a period of 30 days has elapsed after the date on which the report is received. The report shall be a full and complete statement of the proposed reprogramming and the facts and circumstances in support of the proposed reprogramming. This section prohibits the Secretary from obligating funds in excess of the total amount authorized to be appropriated to the Secretary by this Act and prohibits the Secretary from using funds for any use for which Congress has declined to authorize funds.

SUBTITLE B—OTHER MISCELLANEOUS PROVISIONS

*Sec. 611. Notice of reorganization*

Section 611 requires the Secretary to provide notice to the appropriate congressional committees not later than 15 days before any reorganization of environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Department.

*Sec. 612. Limits on general plant projects*

Section 612 requires the Secretary to halt the construction of a civilian environmental research, development, or demonstration, or commercial application of energy technology "general plant project" if the estimated cost of the project (including any revisions) exceeds $5.0 million unless the Secretary has furnished a complete report to the appropriate congressional committees explaining the project and the reasons for the estimate or revision.

*Sec. 613. Limits on construction projects*

Section 613 prohibits construction on a civilian environmental R&D, scientific or energy RD&D, or commercial application of energy technology project for which funding has been specifically authorized by law to be initiated and continued if the estimated cost for the project exceeds 110 percent of the higher of: (1) the amount authorized of the project; or (2) the most recent total estimated cost presented to Congress as budget justification for such project. To exceed such limits, the Secretary must report in detail to the appropriate congressional committees on the related circumstances and the report must be before the appropriate congressional committees for 30 legislative days (excluding any day on which either House of Congress is not in session because of an adjournment of more than three days to a day certain). This section shall not apply to any construction project that has a current estimated cost of less than $5.0 million.

*Sec. 614. Authority for conceptual and construction design*

Section 614 limits the Secretary's authority to request construction funding in excess of $5.0 million for a civilian environmental R&D, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity until the Secretary has completed a conceptual design for that project. Furthermore, if the estimated cost of completing a conceptual design for the construction project exceeds $0.75 million,

the Secretary must submit a request to Congress for funds for the conceptual design before submitting a request for the construction project. In addition, the subsection allows the Secretary to carry out construction design (including architectural and engineering services) in connection with any proposed construction project that is in support of a civilian environmental R&D, scientific or energy research, development, and demonstration, or commercial application of energy technology program, project, or activity of the Department if the total estimated cost for such design does not exceed $0.25 million; if the total estimated cost for construction design exceeds $0.25 million, funds for such design must be specifically authorized by law.

*Sec. 615. National Energy Policy Group mandated reports*

Subsection 615(a) requires that upon completion of the Secretary's review of current funding and historic performances in the Department's energy efficiency, renewable energy, and alternative energy R&D programs in response to the recommendations of the May 16, 2001, Report of the National Energy Policy Development Group, the Secretary shall transmit a report containing the results of such review to the appropriate congressional committees.

Subsection 615(b) requires that upon completion of the Office of Science and Technology Policy and the President's Council on Advisors on Science and Technology reviewing and making recommendations on using the Nation's energy resources more efficiency, in response to the recommendations of the May 16, 2001, Report of the National Policy Development Group, the Director of the Office of Science and Technology Policy shall transmit a report containing the results of such review and recommendations to the appropriate congressional committees.

*Sec. 616. Independent reviews and assessments*

Section 616 requires the Secretary to enter into appropriate arrangements with the National Academies of Sciences and Engineering to ensure that there be periodic reviews and assessments of the programs authorized by this Act, as well as the goals for such programs as established under section 4. Such reviews and assessments shall be conducted at least every five years, and the Secretary shall transmit to the appropriate congressional committees reports containing the results of these reviews and assessments.

## VIII. COMMITTEE VIEWS

*Sec. 4. Goals*

The cost and performance-based goals in section 4 guide and unify the RD&D and commercial application programs authorized in this Act. The Secretary must refine and update measurable cost and performance-based goals in furtherance of the Act's purposes in section 3 on a biennial basis. As provided in section 616, the Secretary must enter into arrangements with the National Academies of Sciences and Engineering for periodic reviews and assessments of the programs in the Act and the goals established under section 4.

## Title I—Energy Conservation and Energy Efficiency

### SUBTITLE A—ALTERNATIVE FUEL VEHICLES

In selecting applicants and project sites, the Secretary should, consistent with subsection 103(d)(1), give special consideration to proposals that address environmental needs in actual and potential 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.

The Committee considers the United States Postal Service (USPS) a "partner" or entity eligible for funding under the alternative fuel vehicle program. The Committee commends the USPS for taking a leadership role in the conversion of its aging fleet to more environmentally sound electric vehicles. Over the next five years, some 6,000 Long-Life Vehicles will replace an aging fleet of trucks in southern California, New York, and the Washington, DC metropolitan area. It is estimated that over three million gallons of fuel will be saved, and 170,000 tons of carbon dioxide will be removed from the environment as a result of the effort. The Committee encourages the USPS to continue this important procurement and, in doing so, show leadership to other governmental entities considering the advancement and deployment of alternative fuel vehicles.

### SUBTITLE B—DISTRIBUTED POWER HYBRID ENERGY SYSTEMS

The Committee notes that the National Renewable Energy Laboratory (NREL) currently performs certain duties of this subtitle, especially with regard to performing and integrating RD&D activities related to distributed power hybrid systems, and expects NREL to continue and expand these activities.

The Committee encourages the Secretary to solicit proposals from institutions of higher education for sharing costs of acquisitions, installation, instrumentation, data acquisition, and data analysis and reporting for building cooling/heating and power systems, district energy systems, and other distributed energy resources. In this regard, the Secretary should consider proposals emphasizing installations using emerging technologies, developed with the support of the Department, that offer energy efficiency and/or environmental benefits. The Committee also encourages the Department to require performance reports back from recipients of these awards detailing steps taken, efficiency gains achieved, and educational benefits realized. These reports would constitute "case studies" demonstrating the viability of these systems. Should the Secretary require such reports, funding for the reporting should be included in the grant or contract.

*Sec. 123. Strategy, Sec. 124. High Power Density Industry Program*

Subsection 123(b)(5) describes a RD&D and commercial application program to be implemented as part of the Distributed Power Hybrid Systems Strategy. Subsection 124(b) identifies areas that should be considered in carrying out the program to improve energy efficiency, reliability, and environmental responsibility in high power density industries. Existing programs are already researching real-time performance monitoring, conserving and optimizing energy systems, simulation and analysis of power systems, and uti-

lization of power generation byproducts in an environmentally friendly manner. This work can become a base for implementing the Distributed Power Hybrid Systems Strategy and the High Power Density Industry Program. The Secretary should rely on research and technology development work already begun at State Centers of Excellence such as the Center for Electric Power at Tennessee Technological University to accelerate implementation of sections 123 and 124.

*Sec. 125. Micro-cogeneration energy technology*

Section 125 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 byproduct 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.

SUBTITLE D—GREEN SCHOOL BUSES

The Committee directs the Secretary to ensure that grants under this subtitle will demonstrate the use of alternative fuel school buses and, as a result, lead to the replacement of pre-1977 (model year) diesel and gas buses and pre-1991 (model year) diesel buses and, in limited situations (such as in low income areas), the expansion of existing fleets using conventional fuel buses with new, alternative fuel buses. In providing grants under this subtitle, the Secretary shall ensure that recipients of assistance certify that replaced buses are crushed or otherwise appropriately disposed of in accordance with law.

*Coordination of alternative fuel bus programs*

H.R. 2460 contains various authorities relating to alternative fuel buses, such as subtitle A (Alternative Fuel Vehicles), Subtitle D (Green School Buses), section 206(2) (fuel cell bus demonstrations under the Spark M. Matsunaga Hydrogen RD&D Act of 1990), and relating to transportation applications for fuel cells (subsection 461(b)). The Committee intends that the Secretary will coordinate implementation of the various provisions to maximize their integration and effectiveness.

SUBTITLE F—DOE AUTHORIZATION OF APPROPRIATIONS

The Committee directs the Department to continue RD&D on Smart Window technologies including electro-chromics and other advanced technologies in energy-efficient windows, doors, and skylights.

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 the energy efficiency of electric motors. Such technology could have tremendous impact on the heating, ventila-

tion, and air conditioning industry, among others. In FY 2001, the DOE, through the Office of Industrial Technologies, invested in several promising energy efficient technologies, including the development of an optical programming system for intelligent control of electric air conditioning motors. The Committee strongly encourages the Department to further increase its investment in optical/graphical programming technologies.

The Committee is aware of various engine technologies, including an axial piston OX2 engine, which have numerous potential advantages over the design of conventional internal combustion engines. The Secretary should, where appropriate, support efforts by universities and the private sector to continue, and expand, development and testing of technologies that provide environmental advantages over current conventional engines, such as improved power-to-weight rations, improved fuel efficiencies, and reduced air emissions.

SUBTITLE G—EPA OFFICE OF AIR AND RADIATION AUTHORIZATION OF APPROPRIATIONS

*Sec. 175. Limitation on demonstration and commercial applications of energy technology*

The phrase "measurable benefits to the cost, efficiency, or performance of the technology or process" in section 175 includes environmental considerations. The Committee does not intend for this provision to curtail the demonstration or commercial application of energy technologies that are efficient, effective, and environmentally beneficial. The Committee believes this interpretation regarding EPA technologies should also apply to section 604, relating to DOE technologies.

## Title II—Renewable Energy

SUBTITLE A—HYDROGEN

Section 206 amends the Spark M. Matsunaga Hydrogen RD&D Act of 1990 to establish a fuel cell bus demonstration program to address hydrogen production, storage, and use in transit bus applications. The Committee recognizes that fuel cell technology could significantly contribute to improving the cost effectiveness and environmental impact of mass transit options, particularly in municipal buses and in shuttle buses such as those operating at large airports. However, more research needs to be done to address a number of issues related to this technology. This demonstration program should specifically address all aspects of the introduction of this new technology, including the following components:

(1) Development, installation, and operation of a hydrogen delivery system located on-site at transit bus terminals.

(2) Development, installation, and operation of on-site storage associated with the hydrogen delivery systems as well as storage tank systems incorporated into the bus itself.

(3) Demonstration of use of hydrogen as a practical, safe, renewable energy source in a highly efficient, zero-emission power system for buses.

(4) Development of a hydrogen proton exchange membrane fuel cell power system that is confirmed and verified as being compatible with transit bus application requirements.

(5) Durability testing of the fuel cell bus.

(6) Identification and implementation of necessary codes and standards for the safe use of hydrogen as a fuel suitable for bus application, including the fuel cell power system and related operational facilities.

(7) Identification and implementation of maintenance and overhaul requirements for hydrogen proton exchange membrane fuel cell transit buses.

(8) 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 the hydrogen proton exchange membrane fuel cell bus under 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 integrating this fuel cell demonstration with existing BRT initiatives where there is local support to do so.

SUBTITLE B—BIOENERGY

*Sec. 225. Authorization of appropriations*

Subsection 225(b) authorizes funds for biofuels energy systems. The Committee is aware of a proposal to establish a biofuels processing facility in New York to convert cellulose materials into levulinic acid for multiple applications. As part of the proposal, the State University of New York College of Environmental Science and Forestry would also develop 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.

Subsection 225(d) 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.

SUBTITLE D—DOE AUTHORIZATION OF APPROPRIATIONS

*Sec. 261. Authorization of appropriations*

As pointed out in a recent National Research Council review, geothermal energy research at the DOE may be undervalued in light of the significant U.S. and international resource base.

DOE should consider establishing a national geothermal research center with the resources necessary to lead an expanded multi-laboratory geothermal research effort in the years ahead. DOE should also continue to build upon its past efforts to involve industry, university researchers and the national laboratories in strategic plan-

ning for the geothermal energy program as it moves this program forward.

The Committee is aware of the promise of emerging geothermal energy systems. Within the Department's budget for geothermal research, the committee urges on-going support for university research on enhanced geothermal systems. University research programs, such as the Energy & Geoscience Institute (EGI) at the University of Utah and the "Geothermal of the West" program, offer the promise of tapping into underutilized geothermal resources. This program has specific relevance for electrical power in the West, including the Great Basin, Northern California Coast and Cascade Range. Continued investment by DOE in the research into these promising geothermal systems may dramatically reduce dependence on other energy sources and improve the sustainability of existing geothermal energy systems.

The Committee is aware of the capabilities of Texas Southern University's (TSU) Photovoltaic Laboratory, which has experience in demonstrating the potential of using commercially available photovoltaic equipment to generate electric power for electrically isolated applications in the small commercial sector. The Committee urges the Department to consider using the capabilities of the TSU laboratory in testing and demonstrating components in the RD&D phase as well as those already commercialized.

Subsection 261(b) directs the Secretary to carry out a research program, in conjunction with "other appropriate Federal agencies" on wave powered electric generation. The Committee intends the term "other appropriate Federal agencies" to mean the Office of Naval Research.

## Title III—Nuclear Energy

### SUBTITLE A—UNIVERSITY NUCLEAR SCIENCE AND ENGINEERING

*Sec. 303. Department of Energy Program*

The Committee is aware of concerns within the university nuclear research reactor community that DOE may be considering downscaling its support for numerous university reactors. The Committee's authorization of Nuclear Education Programs stands as a strong signal of our desire to see the Department continue to maintain, and even expand, its support of the existing research reactor infrastructure. Institutions such as the University of Utah Nuclear Engineering Program run robust nuclear research reactor centers. Without their involvement, and the maintenance of their reactor infrastructure, necessary expertise on nuclear safety and storage would be lost to the Western region, at the exact time that nuclear waste products may arrive within the region. The Committee believes that a balanced approach to nuclear power must include on-going support for nuclear research reactors throughout the various regions of the United States.

## Title IV—Fossil Energy

### SUBTITLE A—CLEAN COAL

Subtitle C of H.R. 2460, the National Electricity and Environmental Technology Research and Development Act, funds coal programs at the level requested by the Administration, most notably

providing $2 billion over 10 years for the Clean Coal Power Initiative. 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. Such improvements 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 governmental investments were 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, H.R. 2460 places a number of requirements and restrictions on coal programs, particularly on the Clean Coal Power Initiative.

First, the Committee is requiring a detailed report on how the Initiative will be organized and implemented. The Committee is disturbed that at Committee hearings, the Administration could neither explain how the $2 billion figure was arrived at nor how the money would be spent. Given the priority the Administration has placed on the Initiative, the Committee will allow the Initiative to begin. However, no new projects can be started as of October 1, 2003, unless the Administration has submitted the detailed report required by this Act and it has been before the Congress for 30 days.

The report must be specific in explaining how the $2 billion figure was developed, the scope of the Initiative, how the Initiative will operate, what technical milestones will be established and how they will be achieved, and how the Initiative can be guided or informed by the successes and failures of past clean coal efforts. The report must also include recommendations for recoupment of federal funds for successful projects. Moreover, the Act requires a more limited review of the Department's other coal programs, which the Act limits to research and development activities.

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 80 percent of the funding must be devoted to projects related to gasification and/or sequestration, technologies that are furthest from development and promise the greatest environmental benefit among economically viable technologies, and, therefore, 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 406. 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 Initiative 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 the Initiative. 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 406(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 Academies of Science and Engineering (who will eventually be reviewing the Initiative, pursuant to section 616 of this Act) and the General Accounting Office. The Committee also recommends that, in writing the report and carrying out the program, the Secretary consult with environmental groups and other environmental experts (as a primary goal of the program is making coal a more environmentally benign fuel), the coal industry, the utility industry, and the coal equipment manufacturing industry.

The Committee is aware of a proposed dry coal cleaning technology demonstration involving a pulverizer and dry separator operating together to remove impurities from coal and other minerals. The Committee encourages the Secretary to provide assistance for demonstration of such innovative magnetic separator technologies.

*Sec. 407. Clean Coal Centers of Excellence*

Section 407 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 recipients Southern Illinois University, the University of Pittsburgh, Carnegie-Mellon University, and the Center for Electric Power at Tennessee Technological University.

SUBTITLE C—ULTRA-DEEPWATER AND UNCONVENTIONAL DRILLING

Subtitle C of H.R. 2460, the Natural Gas and Other Petroleum Research, Development, and Demonstration Act of 2001, authorizes a new, ten-year program at the Department for research, development and demonstration of ultra-deepwater natural gas and other petroleum exploration technologies. For purposes of this program, ultra-deepwater is defined to be in excess of 1,500 meters, or approximately 5,000 feet, 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 middle and western Gulf of Mexico and other areas already open to drilling.

The Department is to carry out the program through a non-profit research organization. The Committee based this model 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 the Research Organization. It is the Secretary's responsibility to ensure that the public interest is being served by the Research Organization's projects, that the projects are making the desired technical progress, and the public's money is being properly

spent. The Act requires that the Secretary receive and review a specific research plan from the Research Organization each year, and allows the Secretary to withhold the Research Organization's funding for the year until the research plan is satisfactory. The Act also requires annual audits by an independent, outside auditing firm. Such audits were also required of SEMATECH.

The Act provides specific allocations for each of the types of activities enumerated. However, in running the program, the Secretary may find that these allocations are preventing the most efficient and effective expenditure of funds. The Secretary should notify the Committee if the allocations prove problematic.

The Act 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 Research Organization.

This program of RD&D would only be applicable in certain areas. Section 443 prohibits activities through the RD&D provisions of this Act or through any new technologies developed under this section (or any other part of subtitle C) in any offshore areas that are currently under federal moratoria, such as areas off the coasts of California or North Carolina.

### SUBTITLE D—FUEL CELLS

The Committee notes that the three separate sections of the bill authorize fuel cell RD&D and commercial application: section 143(c) pertaining to fuel-cell school buses, section 206(2) pertaining to fuel cell bus demonstration programs, and section 461 pertaining to fuel cells. The Committee intends that the Secretary will coordinate implementations of these three provisions to maximize their integration and effectiveness.

The Committee also recognizes that local organizations, such as the Houston-Galveston Area Council, 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 V—Science

### SUBTITLE E—DOE AUTHORIZATION OF APPROPRIATIONS

The Committee is concerned about practices employed by the Department to enforce security at DOE scientific laboratories funded under this section. The Committee notes that the perception of racial profiling may have fostered a hostile work environment and may be discouraging certain employees and potential employees from working at DOE facilities. The Committee is concerned that such loss of talent at DOE would endanger DOE's missions to remain technologically competitive and to protect national security.

## 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 timely 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 timely 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 charges 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. 2460 does not contain any new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 2460 does authorize 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

U.S. Congress,
Congressional Budget Office,
*Washington, DC, July 25, 2001.*

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. 2460, the Comprehensive Energy Research and Technology Act of 2001.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contacts are Melissa Zimmerman, Lisa Cash Driskill, and Kathleen Gramp.

Sincerely,

Barry B. Anderson
(For Dan L. Crippen, Director).

Enclosure.

*H.R. 2460—Comprehensive Energy Research and Technology Act of 2001*

Summary: H.R. 2460 would authorize the appropriation of about $18.5 billion over the 2002–2011 period to the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the Office of Science and Technology Policy (OSTP) in the Executive Office of the President for a variety of energy research, development, and demonstration programs and to promote the commercial application of energy technologies.

Assuming appropriation of the authorized amounts, CBO estimates that implementing H.R. 2460 would cost $14.8 billion over the 2002–2006 period and an additional $3.4 billion over the 2007–2011 period. The bill would not affect direct spending or receipts; therefore, pay-as-you-go procedures would not apply.

H.R. 2460 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA). Any costs incurred by state, local, or tribal governments as a result of this legislation would result from complying with conditions of aid.

Estimated cost to the Federal Government: The estimated budgetary impact of H.R. 2460 is shown in the following table. The costs of this legislation fall in budget functions 250 (general science, space, and technology), 270 (energy), and 300 (natural resources and the environment).

| | By fiscal year, in millions of dollars— | | | | | |
|---|---|---|---|---|---|---|
| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| SPENDING SUBJECT TO APPROPRIATION | | | | | | |
| Spending under current law: | | | | | | |
| Budget authority [1] | 5,276 | 0 | 0 | 0 | 0 | 0 |
| Estimated outlays | 4,849 | 2,883 | 341 | 92 | 0 | 0 |
| Proposed Changes: | | | | | | |
| Estimated authorization level | 0 | 6,776 | 3,307 | 3,335 | 1,271 | 1,248 |
| Estimated outlays | 0 | 3,016 | 4,568 | 3,213 | 2,432 | 1,550 |
| Spending Under H.R. 2460: | | | | | | |
| Estimated authorization level [1] | 5,276 | 6,776 | 3,307 | 3,335 | 1,271 | 1,248 |
| Estimated outlays | 4,849 | 5,899 | 4,909 | 3,505 | 2,432 | 1,550 |

[1] The 2001 level is the estimated amount appropriated for that year to DOE for programs related to energy research, development, and demonstration and to EPA for science and climate change projects.

Basis of estimate: Title I would authorize the appropriation of funds to conduct energy conservation activities, including programs to encourage the use of alternative fuel vehicles, research and climate change projects that would be administered by the Office of Air and Radiation in EPA, an initiative to reduce energy use in buildings that would be administered by OSTP, and a variety of energy conservation grants and projects that would be administered by DOE. Title II would authorize funds to be appropriated to DOE for renewable energy research activities, and title III would authorize the appropriation of funds for nuclear energy research. Title IV would authorize appropriations to DOE for oil, gas, and coal research and development, fuel cell research, and other energy technology research programs. Title IV also would authorize the appropriation of funds for research and demonstration projects involving drilling for hydrocarbons in ultra-deep water regions. Title V would authorize appropriations for fusion energy research, for construction and operation of the Spallation Neutron Source in Tennessee,

and for the management of various research facilities administered by DOE.

For this estimate, CBO assumes that the amounts authorized by H.R. 2460 will be appropriated for each year and that spending will follow historical patterns for ongoing or similar activities.

Pay-as-you-go considerations: None.

Intergovernmental and private-sector impact: H.R. 2460 contains no intergovernmental or private-sector mandates as defined in UMRA. Any costs incurred by state, local, or tribal governments as a result of this legislation would result from complying with conditions of aid. The bill would benefit state and local governments, including local school districts and public universities, by authorizing appropriations for energy-related pilot programs and studies. However, it would require these governments to match some of those federal funds. Any such expenditures would be voluntary.

Estimate prepared by: Federal costs: Melissa Zimmerman, Lisa Cash Driskill, and Kathleen Gramp; impact on State, local, and tribal governments: Elyse Goldman; impact on the private sector: Lauren Marks.

Estimate approved by: Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

## XI. Compliance With Public Law 104–4

H.R. 2460 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. 2460.

## XIV. Federal Advisory Committee Statement

H.R. 2460 creates four advisory committees within the meaning of section 5(b) of the Federal Advisory Committee Act:

1. Section 181 requires the Director of the OSTP to establish an Interagency Group responsible for the development and implementation of a National Building Performance Initiative to address energy conservation and R&D and related issues.

2. Section 209 amends section 108 the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 by replacing the existing Hydrogen Technical Advisory Panel with an advisory committee consisting of experts drawn from domestic in-

dustry, academia, Governmental laboratories, and financial, environmental, and other organizations, as appropriate, to review and advise on the progress made through the programs and activities authorized under the Act.

3. Section 445 requires the Secretary of Energy to establish an Advisory Committee consisting of 7 members, each having extensive operational knowledge of and experience in the natural gas and other petroleum exploration and production industry who are not Federal Government employees or contractors, to advise the Secretary on the implementation of title IV, subtitle C—Ultra-Deepwater and Unconventional Drilling, and other related matters.

4. Section 561 requires the Director of the OSTP, in consultation with the Secretary of Energy, to establish an Advisory Panel on the DOE Office of Science comprised of knowledgeable individuals to—(1) address concerns about the current status and the future of scientific research supported by the Office; (2) examine alternatives to the current organizational structure of the Office within the Department, taking into consideration existing structures for the support of scientific research in other Federal agencies and the private sector; and (3) suggest actions to strengthen the scientific research supported by the Office that might be taken jointly by the Department and Congress.

The functions of these entities as defined in H.R. 2460 are not currently being performed nor could they be performed by one or more agencies or by an advisory committee already in existence, or by enlarging the mandate or an existing advisory committee.

## XV. Congressional Accountability Act

The Committee finds that H.R. 2460 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. 2460 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):

### SPARK M. MATSUNAGA HYDROGEN RESEARCH, DEVELOPMENT, AND DEMONSTRATION ACT OF 1990

* * * * * * *

**SEC. 102. FINDING, PURPOSES, AND DEFINITION.**

(a) * * *

**[**(b) Purposes.—The purposes of this Act are—

**[**(1) to direct the Secretary of Energy to conduct a research, development, and demonstration program leading to the production,

storage, transport, and use of hydrogen for industrial, residential, transportation, and utility applications;

[(2) to direct the Secretary to develop a technology assessment and information transfer program among the Federal agencies and aerospace, transportation, energy, and other entities; and

[(3) to develop renewable energy resources as a primary source of energy for the production of hydrogen.]

*(b) PURPOSES.—The purposes of this Act are—*

*(1) to direct the Secretary to conduct research, development, and demonstration activities leading to the production, storage, transportation, and use of hydrogen for industrial, commercial, residential, transportation, and utility applications;*

*(2) to direct the Secretary to develop a program of technology assessment, information dissemination, and education in which Federal, State, and local agencies, members of the energy, transportation, and other industries, and other entities may participate; and*

*(3) to develop methods of hydrogen production that minimize adverse environmental impacts, with emphasis on efficient and cost-effective production from renewable energy resources.*

(c) DEFINITION.—As used in this Act, the term:

*(1) "advisory committee" means the advisory committee established under section 108;*

[(1)] *(2)* "critical technology" (or "critical technical issue") means a technology (or issue) that, in the opinion of the Secretary, requires understanding and development in order to take the next needed step in the development of hydrogen as an economic fuel or storage medium;

[(2)] *(3)* "Department" means the Department of Energy; and

[(3)] *(4)* "Secretary" means the Secretary of Energy.

**[§ 103. Report to Congress**

[(a) Not later than January 1, 1999, the Secretary shall transmit to Congress a detailed report on the status and progress of the programs authorized under this Act.

[(b) A report under subsection (a) shall include, in addition to any views and recommendations of the Secretary—

[(1) an analysis of the effectiveness of the programs authorized under this chapter, to be prepared and submitted to the Secretary by the Hydrogen Technical Advisory Panel established under section 108 of this Act; and

[(2) recommendations of the Hydrogen Technical Advisory Panel for any improvements in the program that are needed, including recommendations for additional legislation.

**[§ 104. Hydrogen research and development**

[(a) The Secretary shall conduct a hydrogen research and development program relating to production, storage, transportation, and use of hydrogen, with the goal of enabling the private sector to demonstrate the technical feasibility of using hydrogen for industrial, residential, transportation, and utility applications.

[(b) In conducting the program authorized by this section, the Secretary shall—

[(1) give particular attention to developing an understanding and resolution of critical technical issues preventing the introduction of hydrogen into the marketplace;

[(2) initiate or accelerate existing research in critical technical issues that will contribute to the development of more economic hydrogen production and use, including, but not limited to, critical technical issues with respect to production (giving priority to those production techniques that use renewable energy resources as their primary source of energy for hydrogen production), liquefaction, transmission, distribution, storage, and use (including use of hydrogen in surface transportation); and

[(3) survey private sector hydrogen activities and take steps to ensure that research and development activities under this section do not displace or compete with the privately funded hydrogen research and development activities of United States industry.

[(c) The Secretary is authorized to evaluate any reasonable new or improved technology, including basic research on highly innovative energy technologies, that could lead or contribute to the development of economic hydrogen production, storage, and utilization.

[(d) The Secretary is authorized to evaluate any reasonable new or improved technology that could lead or contribute to, or demonstrate the use of, advanced renewable energy systems or hybrid systems for use in isolated communities that currently import diesel fuel as the primary fuel for electric power production.

[(e) The Secretary is authorized to arrange for tests and demonstrations and to disseminate to researchers and developers information, data, and other materials necessary to support the research and development activities authorized under this section and other efforts authorized under this chapter, consistent with section 106 of this Act.

[(f) The Secretary shall carry out the research and development activities authorized under this section only through the funding of research and development proposals submitted by interested persons according to such procedures as the Secretary may require and evaluate on a competitive basis using peer review. Such funding shall be in the form of a grant agreement, procurement contract, or cooperative agreement (as those terms are used in chapter 63 of title 31, United States Code).

[(g) The Secretary shall not consider a proposal submitted by a person from industry unless the proposal contains a certification that reasonable efforts to obtain non-Federal funding for the entire cost of the project have been made, and that such non-Federal funding could not be reasonably obtained. As appropriate, the Secretary shall require a commitment from non-Federal sources of at least 50 percent of the cost of the development portion of such a proposal.

[(h) The Secretary shall not carry out any activities under this section that unnecessarily duplicate activities carried out elsewhere by the Federal Government or industry.

[(i) The Secretary shall establish, after consultation with other Federal agencies, terms and conditions under which Federal funding will be provided under this chapter that are consistent with the Agreement on Subsidies and Countervailing Measures referred to

in section 101(d)(12) of the Uruguay Round Agreement Act (19 U.S.C. 3511(d)(12)).]

***SEC. 103. REPORTS TO CONGRESS.***

*(a) REQUIREMENT.—Not later than 1 year after the date of the enactment of the Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001, and biennially thereafter, the Secretary shall transmit to Congress a detailed report on the status and progress of the programs and activities authorized under this Act.*

*(b) CONTENTS.—A report under subsection (a) shall include, in addition to any views and recommendations of the Secretary—*

*(1) an assessment of the extent to which the program is meeting the purposes specified in section 102(b);*

*(2) a determination of the effectiveness of the technology assessment, information dissemination, and education program established under section 106;*

*(3) an analysis of Federal, State, local, and private sector hydrogen-related research, development, and demonstration activities to identify productive areas for increased intergovernmental and private-public sector collaboration; and*

*(4) recommendations of the advisory committee for any improvements needed in the programs and activities authorized by this Act.*

***SEC. 104. HYDROGEN RESEARCH AND DEVELOPMENT.***

*(a) ESTABLISHMENT OF PROGRAM.—The Secretary shall conduct a hydrogen research and development program relating to production, storage, transportation, and use of hydrogen, with the goal of enabling the private sector to demonstrate the technical feasibility of using hydrogen for industrial, commercial, residential, transportation, and utility applications.*

*(b) ELEMENTS.—In conducting the program authorized by this section, the Secretary shall—*

*(1) give particular attention to developing an understanding and resolution of critical technical issues preventing the introduction of hydrogen as an energy carrier into the marketplace;*

*(2) initiate or accelerate existing research and development in critical technical issues that will contribute to the development of more economical hydrogen production, storage, transportation, and use, including critical technical issues with respect to production (giving priority to those production techniques that use renewable energy resources as their primary source of energy for hydrogen production), liquefaction, transmission, distribution, storage, and use (including use of hydrogen in surface transportation); and*

*(3) survey private sector and public sector hydrogen research and development activities worldwide, and take steps to ensure that research and development activities under this section do not—*

*(A) duplicate any available research and development results; or*

*(B) displace or compete with the privately funded hydrogen research and development activities of United States industry.*

*(c) EVALUATION OF TECHNOLOGIES.—The Secretary shall evaluate, for the purpose of determining whether to undertake or fund re-*

*search and development activities under this section, any reasonable new or improved technology that could lead or contribute to the development of economical hydrogen production, storage, transportation, and use.*

*(d) RESEARCH AND DEVELOPMENT SUPPORT.—The Secretary is authorized to arrange for tests and demonstrations and to disseminate to researchers and developers information, data, and other materials necessary to support the research and development activities authorized under this section and other efforts authorized under this Act, consistent with section 106 of this Act.*

*(e) COMPETITIVE PEER REVIEW.—The Secretary shall carry out or fund research and development activities under this section only on a competitive basis using peer review.*

*(f) COST SHARING.—For research and development programs carried out under this section, 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.*

**SEC. 105. DEMONSTRATIONS.**

(a) REQUIREMENT.—The Secretary shall conduct demonstrations of critical technologies[, preferably in self-contained locations,] so that technical and non-technical parameters can be evaluated to best determine commercial applicability of the technology.

(b) SMALL-SCALE DEMONSTRATIONS.—Concurrently with activities conducted pursuant to section 104, the Secretary shall conduct small-scale demonstrations of hydrogen technology [at self-contained sites] , *which shall include a fuel cell bus demonstration program to address hydrogen production, storage, and use in transit bus applications*.

(c) *NON-FEDERAL FUNDING REQUIREMENT.*—The Secretary shall require a commitment from non-Federal sources of at least 50 percent of the cost of any demonstration conducted under this section.

**[SEC. 106. TECHNOLOGY TRANSFER PROGRAM.**

[(a) PROGRAM.—The Secretary shall conduct a program designed to accelerate wider application of hydrogen production, storage, utilization, and other technologies available in near term as a result of aerospace experience as well as other research progress by transferring critical technologies to the private sector. The Secretary shall direct the program with the advice and assistance of the Hydrogen Technical Advisory Panel established under section 108. The objective in seeking this advice is to increase participation of private industry in the demonstration of near commercial applications through cooperative research and development arrangements, joint ventures or other appropriate arrangements involving the private sector.

[(b) INFORMATION.—The Secretary, in carrying out the program authorized by subsection (a), shall—

[(1) undertake an inventory and assessment of hydrogen technologies and their commercial capability to economically produce, store, or utilize hydrogen in aerospace, transportation, electric utilities, petrochemical, chemical, merchant hydrogen, and other industrial sectors; and

[(2) develop a National Aeronautics Space Administration, Department of Energy, and industry information exchange program to improve technology transfer for—

[(A) application of aerospace experience by industry;

[(B) application of research progress by industry and aerospace;

[(C) application of commercial capability of industry by aerospace; and

[(D) expression of industrial needs to research organizations.

The information exchange program may consist of workshops, publications, conferences, and a data base for the use by the public and private sectors. The Secretary shall also foster the exchange of generic, nonproprietary information and technology, developed pursuant to this chapter, among industry, academia, and the Federal Government, to help the United States economy attain the economic benefits of this information and technology.]

***SEC. 106. TECHNOLOGY ASSESSMENT, INFORMATION DISSEMINATION, AND EDUCATION PROGRAM.***

*(a) PROGRAM.—The Secretary shall, in consultation with the advisory committee, conduct a program designed to accelerate wider application of hydrogen production, storage, transportation, and use technologies, including application in foreign countries to increase the global market for the technologies and foster global economic development without harmful environmental effects.*

*(b) INFORMATION.—The Secretary, in carrying out the program authorized by subsection (a), shall—*

*(1) undertake an update of the inventory and assessment, required under section 106(b)(1) of this Act as in effect before the date of the enactment of the Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001, of hydrogen technologies and their commercial capability to economically produce, store, transport, or use hydrogen in industrial, commercial, residential, transportation, and utility sector; and*

*(2) develop, with other Federal agencies as appropriate and industry, an information exchange program to improve technology transfer for hydrogen production, storage, transportation, and use, which may consist of workshops, publications, conferences, and a database for the use by the public and private sectors.*

**SEC. 107. COORDINATION AND CONSULTATION.**

(a) SECRETARY'S RESPONSIBILITY.—The Secretary shall have overall management responsibility for carrying out programs under this Act. In carrying out such programs, the Secretary, consistent with such overall management responsibility—

[(1) shall use the expertise of the National Aeronautics and Space Administration and the Department of Transportation; and]

*(1) shall establish a central point for the coordination of all hydrogen research, development, and demonstration activities of the Department; and*

* * * * * * *

[(c) CONSULTATION.—The Secretary shall consult with the Administrator of the National Aeronautics and Space Administration,

the Administrator of the Environmental Protection Agency, the Secretary of Transportation, and the Hydrogen Technical Advisory Panel established under section 108 in carrying out his authorities pursuant to this Act.]

*(c) CONSULTATION.—The Secretary shall consult with other Federal agencies as appropriate, and the advisory committee, in carrying out the Secretary's authorities pursuant to this Act.*

**[SEC. 108. TECHNICAL PANEL.**

[(a) ESTABLISHMENT.—There is hereby established the Hydrogen Technical Advisory Panel (the "technical panel"), to advise the Secretary on the programs under this Act.

[(b) MEMBERSHIP.—The technical panel shall be appointed by the Secretary and shall be comprised of such representatives from domestic industry, universities, professional societies, Government laboratories, financial, environmental, and other organizations as the Secretary deems appropriate based on his assessment of the technical and other qualifications of such representatives. Appointments to the technical panel shall be made within 90 days after the enactment of this Act. The technical panel shall have a chairman, who shall be elected by the members from among their number.

[(c) COOPERATION.—The heads of the departments, agencies, and instrumentalities of the Executive branch of the Federal Government shall cooperate with the technical panel in carrying out the requirements of this section and shall furnish to the technical panel such information as the technical panel deems necessary to carry out this section.

[(d) REVIEW.—The technical panel shall review and make any necessary recommendations to the Secretary on the following items—

[(1) the implementation and conduct of programs under this Act; and

[(2) the economic, technological, and environmental consequences of the deployment of hydrogen production and use systems.

[(e) SUPPORT.—The Secretary shall provide such staff, funds and other support as may be necessary to enable the technical panel to carry out the functions described in this section.

**[SEC. 109. AUTHORIZATION OF APPROPRIATIONS.**

[There is hereby authorized to be appropriated to carry out the purposes of this Act (in addition to any amounts made available for such purposes under other Acts)—

[(1) $3,000,000 for the fiscal year 1992;
[(2) $7,000,000 for the fiscal year 1993;
[(3) $10,000,000 for the fiscal year 1994;
[(4) $14,500,000 for fiscal year 1996;
[(5) $20,000,000 for fiscal year 1997;
[(6) $25,000,000 for fiscal year 1998;
[(7) $30,000,000 for fiscal year 1999;
[(8) $35,000,000 for fiscal year 2000; and
[(9) $40,000,000 for fiscal year 2001.]

***SEC. 108. ADVISORY COMMITTEE.***

*(a) ESTABLISHMENT.—The Secretary shall enter into appropriate arrangements with the National Academies of Sciences and Engineering to establish an advisory committee consisting of experts*

*drawn from domestic industry, academia, Governmental laboratories, and financial, environmental, and other organizations, as appropriate, to review and advise on the progress made through the programs and activities authorized under this Act.*

*(b) COOPERATION.—The heads of Federal agencies shall cooperate with the advisory committee in carrying out this section and shall furnish to the advisory committee such information as the advisory committee reasonably deems necessary to carry out this section.*

*(c) REVIEW.—The advisory committee shall review and make any necessary recommendations to the Secretary on—*

*(1) the implementation and conduct of programs and activities authorized under this Act; and*

*(2) the economic, technological, and environmental consequences of the deployment of hydrogen production, storage, transportation, and use systems.*

*(d) RESPONSIBILITIES OF THE SECRETARY.—The Secretary shall consider, but need not adopt, any recommendations of the advisory committee under subsection (c). The Secretary shall provide an explanation of the reasons that any such recommendations will not be implemented and include such explanation in the report to Congress under section 103(a) of this Act.*

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

*(a) RESEARCH AND DEVELOPMENT; ADVISORY COMMITTEE.—There are authorized to be appropriated to the Secretary to carry out sections 104 and 108—*

*(1) $40,000,000 for fiscal year 2002;*
*(2) $45,000,000 for fiscal year 2003;*
*(3) $50,000,000 for fiscal year 2004;*
*(4) $55,000,000 for fiscal year 2005; and*
*(5) $60,000,000 for fiscal year 2006.*

*(b) DEMONSTRATION.—There are authorized to be appropriated to the Secretary to carry out section 105—*

*(1) $20,000,000 for fiscal year 2002;*
*(2) $25,000,000 for fiscal year 2003;*
*(3) $30,000,000 for fiscal year 2004;*
*(4) $35,000,000 for fiscal year 2005; and*
*(5) $40,000,000 for fiscal year 2006.*

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## HYDROGEN FUTURE ACT OF 1996

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**SEC. 2. DEFINITIONS.**

For purposes of [titles II and III] *title III—*

(1) the term "Department" means the Department of Energy; and

(2) the term "Secretary" means the Secretary of Energy.

* * * * * * *

## [TITLE II—FUEL CELLS

**[SEC. 201. INTEGRATION OF FUEL CELLS WITH HYDROGEN PRODUCTION SYSTEMS.**

[(a) Not later than 180 days after the date of enactment of this section, and subject to the availability of appropriations made specifically for this section, the Secretary of Energy shall solicit proposals for projects to prove the feasibility of integrating fuel cells with—

[(1) photovoltaic systems for hydrogen production; or

[(2) systems for hydrogen production from solid waste via gasification or steam reforming.

[(b) Each proposal submitted in response to the solicitation under this section shall be evaluated on a competitive gas is using peer review. The Secretary is not required to make an award under this section in the absence of a meritorious proposals.

[(c) The Secretary shall give preference, in making an award under this section, to proposals that—

[(1) are submitted jointly from consortia including academic institutions, industry, State or local governments, and Federal laboratories; and

[(2) reflect proven experience and capability with technologies relevant to the systems described in subsections (a)(1) and (a)(2).

[(d) In the case of a proposal involving development or demonstration, the Secretary shall require a commitment from non-Federal sources of at least 50 percent of the cost of the development or demonstration portion of the proposal.

[(e) The Secretary shall establish, after consultation with other Federal agencies, terms and conditions under which Federal funding will be provided under this title that are consistent with the Agreement on Subsidies and Countervailing Measures referred to in section 101(d)(12) of the Uruguay Round Agreement Act (19 U.S.C. 3511(d)(12)).

**[SEC. 202. AUTHORIZATION OF APPROPRIATIONS.**

[There are authorized to be appropriated, for activities under this section, a total of $50,000,000 for fiscal years 1997 and 1998, to remain available until September 30, 1999.]

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## XVIII. Committee Recommendations

On July 18, 2001, a quorum being present, the Committee favorably reported H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001, 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. 2460, as enumerated in Section 4, are to be used to guide the conduct of a balanced energy research, development, demonstration, and commercial application portfolio of programs in order to meet the purposes of H.R. 2460 under Section 3.

## XX. Exchange of Committee Correspondence

House of Representatives,
Committee on Energy and Commerce,
*Washington, DC, June 25, 2001.*

Hon. Sherwood L. Boehlert,
*Chairman, Committee on Science, House of Representatives, Rayburn House Office Building, Washington, DC.*

Dear Chairman Boehlert: I am writing with regard to H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001.

In light of the House Leadership's desire to bring comprehensive energy legislation to the House floor, I will not exercise the Committee's right to a referral. By agreeing to waive its consideration of the bill, however, the Energy and Commerce Committee does not waive its jurisdiction over H.R. 2460 or similar legislation. In addition, the Energy and Commerce Committee reserves its authority to seek conferees on any provisions of this or similar legislation that are within its jurisdiction during any House-Senate conference that may be convened. I ask for your commitment to support any request by the Energy and Commerce Committee for conferees on H.R. 2460 or similar legislation.

I request that you include this letter as a part of the Committee's report on H.R. 2460. Thank you for your attention to these matters, and I look forward to working with you as we bring comprehensive energy legislation to the Floor.

Sincerely,

W.J. "Billy" Tauzin,
*Chairman.*

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House of Representatives,
Committee on Science,
*Washington, DC, July 27, 2001.*

Hon. W.J. "Billy" Tauzin,
*Chairman, Committee on Energy and Commerce,*
*House of Representatives, Washington, DC.*

Dear Chairman Tauzin: Thank you for your July 25th letter regarding H.R. 2460, the "Comprehensive Energy Research and Technology Act of 2001." H.R. 2460 was introduced on July 11, 2001 and referred exclusively to the Committee on Science. The Committee on Science held a mark-up session of H.R. 2460 on July 18, 2001 and ordered the bill reported.

If, during deliberations of H.R. 2460, the bill is altered to include subject matter falling within the Energy and Commerce Committee's jurisdiction, we will work with your Committee to address those issues of concern, including the honoring of your request for conferees should any version contain a provision that falls within your jurisdiction.

I will include the exchange of letters between our Committees as part of the record. Thank you for your cooperation in this matter.

Sincerely,

Sherwood L. Boehlert,
*Chairman.*

## XXI. ADDITIONAL VIEWS

Overall this bill represents a solid statement by the Science Committee that reflects a bipartisan consensus of its priorities for our nation's energy future. The Chairman is to be commended for his efforts to produce a bipartisan bill that incorporates many of the initiatives important to Committee Members from both parties. This bill was strengthened by a clarifying amendment accepted by the Committee that clearly states R&D for the Ultra-Deepwater natural gas and petroleum provision does not apply to areas currently protected by a federal moratorium from offshore drilling.

In particular, the bill authorizes aggressive funding levels for bioenergy and hydrogen renewable energy R&D. It also includes an additional $177 million over three years for the Department of Energy to step up R&D on other renewable energy initiatives, including solar, wind and geothermal. These increased levels are key for an energy future that relies more on energy sources that are renewable and minimizes impacts on our environment.

Of disagreement, however, are provisions in the bill that authorize new commitments in the nuclear energy field. Explicitly, the bill includes language authorizing R&D for pyroprocessing as well as authorizes new funding for the Nuclear Energy Technology account for a study on Generation IV nuclear reactor technologies.

As written, the pyroprocessing program established in the bill funds R&D over three years at approximately $30 million. The research for advanced fuel cycle technologies comes with no conditions on whether that technology is cheaper, safer, or more proliferation resistant that our current reactors. This initiative also goes against a longstanding U.S. policy to not engage in this type of nuclear waste "recycling." The Committee's authorization does not limit the activities of the program to paper studies and roadmaps, but rather makes this a full-fledged R&D program. Certainly resolving the nuclear waste issue is of great concern to many Members. However, while pyroprocessing may reduce the volume and radioactivity of the waste material, the process remains dangerously waste-intensive, and continues to call for reprocessed waste to be eliminated or otherwise dealt with by some method of permanent disposal resulting in high volumes of spent fuel that requires requiring storage both before and after reprocessing—in more than one repository. There is also the continuing uncertainty that these technologies both produce more plutonium and reduce the United States' international standing in efforts to stop other countries from exploring pyroprocessing techniques or breeder reactors. Developing dangerous and costly technologies, reversing a U.S. policy that has been in place for almost a quarter century, with no solid Committee record, apparent justification or quantifiable payoff, is unjustified.

Concerning the Nuclear Energy Technology account, the bill authorizes approximately $60 million over three years for a study on the next generation of nuclear reactors. The President's FY02 budget request for the Department of Energy is absolutely crystal clear that the Nuclear Energy Technology account needs just $4.5 million to complete its technology roadmap study on Generation IV nuclear reactor technologies. Not the $50 million as was in the base bill or the $20 million as is in the bill as amended. According to the budget request, the study is the final step for this account. Future work and requests are contingent, presumably, upon what the plan proposes.

Considering this, there is no justifiable reason for this bill to authorize $15.5 million more than the President, or the House Appropriations Committee, states this account needs in FY 2002. The prudent procedure is to give the Department the money they need to finish their report, but no more than that. After the report is delivered, the Committee can assess further needs. For an issue this complex and far reaching as to how to proceed with Generation IV nuclear reactor efforts, the Committee should have a full Committee record on the merits of this initiative, which this program certainly does not. More perplexing are the out-year funds for 2003 and 2004. The language of the bill is quite explicit that the Committee is only authorizing a study. Despite a comment by Majority staff to the contrary, the language of the bill authorizes a study and specifies what kinds of information should be included in that report. However, that report is due December 31, 2001. As a consequence, we remain skeptical that the Department can productively utilize the total $60 million authorization and perplexed at the Committee's intentions.

Aside from disagreement on these two subjects, this bill otherwise represents the hard work of all involved to find common ground on the breadth and depth of our interests.

LYNN WOOLSEY.
LYNN N. RIVERS.
JOE HOEFFEL.
MICHAEL HONDA.
MARK UDALL.

## XXII. PROCEEDINGS OF FULL COMMITTEE MARKUP

### H.R. 2460, COMPREHENSIVE ENERGY RESEARCH AND TECHNOLOGY ACT OF 2001, JULY 18, 2001

Chairman BOEHLERT. We will now consider H.R. 2460.

I want to welcome everyone here for the Markup of the Science Committee's piece of the House comprehensive energy package. I think we have done what we set out to do. We have come up with a bill that is balanced, comprehensive and bipartisan. And let me stress all three. It is a balanced approach, it is comprehensive, and it carries a bipartisan effort. With just about every single Member of the Full Committee contributing in one way or another to the final package we present here for your consideration today.

The bill truly emphasizes conservation and renewable energy sources, while also creating a stringent clean coal program and authorizing oil, gas and nuclear research. The bill recognizes that en-

vironmental considerations, including those related to climate change, must be an integral part of any energy strategy. And the bill is bipartisan, reflecting lengthy negotiations that have gone well into the night and concluded only shortly before this markup.

I want to thank all the Members on both sides of the aisle for their spirited participation in crafting this bill, which reflects the ideas of many Members on and off this Committee. The bipartisan managers' amendment, which I will offer with Mr. Hall, is the vehicle for including many of those ideas.

I also want to thank Tim Brown, of the Legislative Counsel's office, for his hard work on this over many days and into the night, especially since he was also working on the Energy and Commerce bill at the same time. I'm sure he appreciates our bill more, but he is not at liberty to say that.

Let me also say that the professional staff, once again, on both sides, rose to the occasion and proved what Capitol Hill is, its people are some of the most capable and professional and dedicated staff people in any institution in any place in this country. They worked long and hard to bring us to this point, and they deserve our congratulations.

Congratulations.

[Statement of Congressman Boehlert follows:]

OPENING STATEMENT OF HON. SHERWOOD BOEHLERT

I want to welcome everyone here today for the mark-up of the Science Committee's piece of the House comprehensive energy package. I think we have done what we set out to do. We have come up with a bill that is balanced, comprehensive and bipartisan.

The bill truly emphasizes conservation and renewable energy sources, while also creating a stringent clean coal program and authorizing oil, gas and nuclear research. The bill recognizes that environmental considerations, including those related to climate change, must be an integral part of any energy strategy. And the bill is bipartisan, reflecting lengthy negotiations that have gone well into the night and concluded only shortly before this markup.

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I also want to thank Tim Brown of the Legislative Counsel's office for his hard work on this over many days and into the night, especially since he was also working on the Energy and Commerce bill at the same time. I'm sure he appreciates our bill more, but he's not at liberty to say.

Chairman BOEHLERT. We will now consider the Bill H.R. 2460.

I yield the remainder of my time to the Chair of the Subcommittee on Energy, Mr. Bartlett, to explain the details. Mr. Bartlett?

Mr. BARTLETT. Thank you, Chairman Boehlert. Today we are marking up H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001, as introduced.

I would like to thank my colleagues for their interest in this important legislative effort and look forward to a very fruitful markup.

Special thanks to Congressman Boehlert and my Ranking Member, and very special thanks to the staff for their hard work in the negotiations on section 4, which is the clean coal technology. And thanks to Mr. Costello, whose original bill this was, for helping to

make sure that this was a bipartisan bill that will advance the use of coal, while still protecting our environment.

We are marking up H.R. 2460 as part of a Congress-wide effort to advance this Nation's energy security both now and in the future. As I have said repeatedly, the future of this country depends heavily on the availability of cheap, abundant, and sustainable energy. It is incumbent upon this Committee to assure that our energy security and that the bulk of our sources of energy be made environmentally sound and sustainable as rapidly as possible.

I am pleased that the legislation we consider today moves us down the road towards sustainability and environmental soundness, while maintaining balance with traditional sources of energy. I will briefly describe each title of the bill before we proceed with today's action.

Title I provides for energy conservation and energy efficiency. Subtitle A, authored by Mr. Boehlert and co-sponsored in its original form by Mr. Udall and Mr. Grucci, provides funding to accelerate the use of vehicles running on alternative fuels.

This pilot program will demonstrate the feasibility of more widespread adoption of transportation fuels and systems that begin to draw on our country's vast supply of cleaner fuels, such as natural gas and renewable forms of energy.

Subtitle B provides funding for research into distributed energy resources. Distributed energy can offer greater reliability for consumers and will be heavily derived from sustainable sources of energy.

Subtitle C makes funds available for Energy Conservation operations and maintenance at the Department of Energy. Subtitle D authorizes funding for the Office of Air and Radiation at EPA for energy efficiency technology programs. These programs are designed to move technologies into the marketplace that are not only energy efficient, but also reduce emissions.

Title II provides for another critical piece of the energy puzzle: renewable energy. Subtitle A, authored by Mr. Calvert and cosponsored by Ms. Woolsey, provides for the acceleration of research, development and demonstration of promising hydrogen technologies. Much work remains to be done before we can move toward greater use of hydrogen. This funding authority may bring that date closer.

Subtitle B, authored by myself and co-sponsored by Chairman Boehlert, Ms. Morella, Mr. Udall, and Ms. Jackson Lee in its original form, authorizes funding for bioenergy. Bioenergy and biofuels are derived from renewable agricultural waste and other sources of biomass. It solves two problems at the same time, making use of our Nation's bountiful biomass and providing a new source of renewable energy as well as producing biochemicals that could replace petrochemicals in the future.

Subtitle B makes available funding for biopower and biofuels energy systems programs, projects, and activities. This subtitle further authorizes funding for integrated bioenergy research and development.

Subtitle C provides for numerous renewable energy programs, including the National Renewable Energy Lab.

Title III covers nuclear energy. Subtitle A, authored by Ms. Biggert and co-sponsored by myself, Mr. Costello, Mr. Ehlers and

Mr. Calvert, moves to bolster nuclear science and engineering education at our nation's universities.

Subtitle B, authored by Mr. Graham and co-sponsored by Ms. Biggert and Ms. Hart, provides for research and development on advanced fuel recycling technologies.

Subtitle C, also by Mr. Graham, provides authorization for the Nuclear Energy Research Initiative, NERI, and the Nuclear Energy Plant Optimization, NEPO, programs as well as for research into new nuclear technologies. NEPO will help us make our existing nuclear plants operate more efficiently for longer periods of time and with greater safety. NERI bolsters our position in nuclear engineering and helps maintain our U.S. nuclear science and engineering infrastructure.

Title IV covers research and development for fossil energy resources. Subtitle A, authored primarily by Mr. Costello, covers clean coal technology. Coal is our most abundant fossil fuel resource. Improving the efficiency and reducing hazardous emissions from coal, particularly plentiful, low-quality coal will help ensure that coal will be an important component of our electricity generation in the future. Clean coal also holds promise for transportation fuel and as a feedstock for the chemical industry. This subtitle authorizes the President's Clean Coal Initiative. Subtitle B provides funding for research on oil and gas. As we heard in testimony before the Energy Subcommittee, oil and gas research can extend domestic production and has already characterized significant new reserves.

Subtitle C, by Mr. Larson, provides for the DOE to perform additional research and development on fuel cell systems and innovative concepts.

Subtitle D authorizes funds for other programs within DOE's fossil energy research not authorized elsewhere in this section.

Title V authorizes funding for programs within DOE's Office of Science.

Subtitle A, authored by my colleague, Ms. Lofgren, and co-sponsored by a number of Members of this committee, strengthens our fusion energy research program. Fusion holds great potential for the future, but to get to that future, we need to continue to invest heavily today. This bill directs the energy for the Fusion Energy Sciences Program at DOE to initiate a magnetic fusion burning plasma experiment, capable of producing substantial fusion power output and providing key information for the advancement of fusion science.

Subtitle B authorizes the Spallation Neutron Source at Oak Ridge National Lab. This authorized level matches the Administration request and sets an expenditure cap for the total project cost. I believe that this is a prudent way to provide a needed science facility, while setting strict spending caps to protect the taxpayer.

Subtitle C requires the Secretary of Energy to develop and implement a facility and infrastructure plan for non-military facilities within the DOE lab structure.

Subtitle D requires the establishment of an Advisory Panel to report on the activities of the Office of Science and how they may be improved.

Subtitle E authorizes funding for various programs within the Office of Science.

I believe that today's markup will refine and clarify the contents of H.R. 2460. This has truly been a bipartisan effort, and I believe that at the end of the day we will have a strong bill to report to the floor of the House.

Finally, I would like to thank the Chair for yielding this time to me, and thank the Chair and the committee Members, many of them authored portions of this bill, and for participating in today's markup.

[Statement of Roscoe Bartlett follows:]

STATEMENT OF HON. ROSCOE BARTLETT

Thank you, Chairman Boehlert. Today we are marking up H.R. 2460, The Comprehensive Energy Research and Technology Act of 2001, as introduced. I would like to thank my colleagues for their interest in this important legislative effort and look forward to a very fruitful markup. We are marking up H.R. 2460 as part of a Congress-wide effort to advance this Nation's energy security both now and in the future. As I have said repeatedly, the future of this country depends heavily on the availability of cheap, abundant, and sustainable energy. It is incumbent upon this Committee to assure our energy security and that the bulk of our sources of energy be made environmentally sound and sustainable as rapidly as possible.

I am pleased that the legislation we consider today moves us down the road toward sustainability and environmental soundness, while maintaining balance with traditional sources of energy. I will briefly describe each title of the bill before we proceed with today's action.

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Subtitle B, provides funding for research into distributed energy resources. Distributed energy can offer greater reliability for consumers and will be heavily derived from sustainable sources of energy. Subtitle C makes funds available for Energy Conservation operations and maintenance at the Department of Energy. Subtitle D authorizes funding for the Office of Air and Radiation at EPA for energy efficiency technology programs. These programs are designed to move technologies into the marketplace that are not only energy efficient, but also reduce emissions.

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Subtitle C provides for numerous renewable energy programs, including the National Renewable Energy Lab.

Title III covers nuclear energy. Subtitle A, authored by Ms. Biggert and cosponsored by myself, Mr. Costello, Mr. Ehlers and Mr. Calvert, moves to bolster nuclear science and engineering education at our nation's universities. Subtitle B, authored by Mr. Graham and cosponsored by Mr. Biggert and Ms. Hart, provides for research and development on advanced fuel recycling technologies. Subtitle C, also by Mr. Graham, provides authorization for the Nuclear Energy Research Initiative (NERI) and the Nuclear Energy Plant Optimization (NEPO) programs as well as for research into new nuclear technologies. NEPO will help us make our existing nuclear plants operate more efficiently for longer periods of time and with greater safety.

NERI bolsters our position in nuclear engineering and helps maintain our U.S. nuclear science and engineering infrastructure.

Title IV covers research and development for fossil energy resources. Subtitle A authored primarily by Mr. Costello, covers clean coal technology. Coal is our most abundant fossil fuel resource. Improving the efficiency and reducing hazardous emissions from coal, particularly plentiful, low-quality coal will help assure that coal will be an important component of our electricity generation in the future. Clean coal also holds promise for transportation fuel and as a feedstock for the chemical industry. This Subtitle authorizes the President's Clean Coal Initiative. Subtitle B provides funding for research on oil and gas. As we heard in testimony before the Energy Subcommittee, oil and gas research can extend domestic production and has already characterized significant new reserves. Subtitle C by Mr. Larson provides for the DOE to perform additional research and development on fuel cell systems and innovative concepts. Subtitle D authorizes funds for other programs within DOE's fossil energy research not authorized elsewhere in this section.

Title V authorizes funding for programs within DOE's Office of Science. Subtitle A, authored by my colleague Ms. Lofgren and cosponsored by a number of members of this committee, strengthens our fusion energy research program. Fusion holds great potential for the future, but to get to that future, we need to continue to invest heavily today. The bill directs the Fusion Energy Sciences Program at DOE to initiate a magnetic fusion burning plasma experiment, capable of producing substantial fusion power output and providing key information for the advancement of fusion science.

Subtitle B authorizes for the Spallation Neutron Source at Oak Ridge National Lab. The authorized level matches the Administration request and sets an expenditure cap for the total project cost. I believe that this is a prudent way to provide a needed science facility while setting strict spending caps to protect the taxpayer. Subtitle C requires the Secretary of Energy to develop and implement a facility and infrastructure plan for nonmilitary facilities within the DOE lab structure. Subtitle D requires the establishment of an Advisory Panel to report on the activities of the Office of Science and how they may be improved. Subtitle E authorizes funding for various programs within the Office of Science.

I believe that today's markup will refine and clarify the contents of H.R. 2460. This has truly been a bipartisan effort and I believe that at the end of the day we will have a strong bill to report to the floor of the House. Finally, I would like to thank the Chair for yielding this time to me and thank the Chair and the committee members for participating in today's markup. I yield back my time.

Mr. BARTLETT. I yield back my time.

Chairman BOEHLERT. The Chair now recognizes Mr. Hall.

Mr. HALL. Mr. Chairman, I thank you, and I thank you and your staff and others that have worked with us to ensure that this will go a long way. I want to take this opportunity also to thank natural gas, resources, huge quantities of natural gas, increasing demand for natural gas sharply, we don't have any choice. I would yield back my time. I'd like to yield back the balance of my time to Mrs. Woolsey for any remarks that she may have, and I will yield back the last 30 minutes of my time.

Chairman BOEHLERT. The gentlewoman from California is recognized for the balance of Mr. Hall's time.

Ms. WOOLSEY. Thank you, Mr. Chairman. Today we are addressing the future direction of our country, and the future direction of DOE's research and development program. Every one of us has a different vision of what we want our energy future to look like. But it is very clear from what we have come up with that this committee is obviously together in, one, our own districts, and two, this Nation. And I thank you for making this bill positive, and I thank Chairman Barlett for working so well with me on this. And I thank the staff. You were all terrific, and thank you very, very much.

As a Californian, and a Member of one of the most environmentally conscious districts in the country, my time in Congress has focused on an energy future that relies increasingly on the en-

ergy resources that are both renewable and minimize impact on our environment. That is why I introduced H.R. 2324, which is the Fuel Energy and Energy Emissions Act. This bill sets a goal that 20% of our energy in the U.S. be generated of non-hydro renewable energy sources by the year 2020.

I have been concerned about the base bill and about the President's bill in this regard, but I want to compliment the committee for working together. We are very close to reaching the goals of H.R. 2324, and I look forward to discussing it further. With the amendment, I think you should approve it, overall. Thank you.

Chairman BOEHLERT. Thank you very much, and without objection, all members may place opening statements in the record at this point.

OPENING STATEMENT OF HON. RALPH M. HALL

Mr. Chairman and Members of the Committee, today is a day that comes around infrequently in this committee—that is, a day in which we will report an authorization bill for the research and development programs for the Department of Energy. Many times we have reported energy authorization bills, only to see them flounder along the way.

This year is different. The leadership is pushing the committees to report their bills as soon as possible. While I wish we had more time to work on these bills, this is the schedule we have to meet, and I believe we've done the best we could in the time allowed.

I want to thank you, Mr. Chairman and your staff, for working with our side to ensure the consensus that I believe we have here today.

I also want to take this opportunity to thank you for working with us on the development of the provision in the bill that I believe is especially important—the establishment of the ultra-deepwater natural gas research and development program. Extraordinary times demand extraordinary measures to achieve their objectives. This crash program, I believe, will develop and demonstrate the technologies necessarily to drill and produce the huge quantities of natural gas that are below some of the deepest waters in the Gulf of Mexico in the fastest, most efficient way possible. With increasing demand for natural gas and sharply lower production in the U.S., we have no choice but to go after these supplies as possible.

With that, Mr. Chairman I yield back the balance of my time.

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OPENING STATEMENT OF HON. CONSTANCE MORELLA

Mr. Chairman, we have before us today two important pieces of legislation, a voting technology bill and the Science Committee's portion of the national energy policy. I want to thank you for moving this legislation to the top of the Science Committee's agenda.

With all that happened at last year's presidential election, electoral reform needs to be addressed. However, despite the obvious problems, there are no obvious solutions. We have neglected our electoral system for far too long, but we cannot simply replace our neglect with knee-jerk regulation and one-size-fits-all policies. A haphazard guess is not a policy vehicle.

Recent studies have highlighted the difficulties of our current practices as well as warned us of potential future problems if we act too rashly. This bill addresses these concerns. It calls for objective standards and creates a mechanism for a formal review of our electoral process and our voting equipment. Under the auspices of NIST, our premier developer of measurements and standards, we will soon have the prescriptions for our voting ills.

As for energy, the administration has laid out a broad plan and this bill represents the piece we have jurisdiction over. We have augmented the president's proposal with important research and development efforts to environmentally friendly areas such as hydrogen, biomass, and other renewable technologies. It has been a difficult struggle to bring together the various competing interests, but we have forged a bill that fairly balances the concerns of the environment with our all-to-real energy needs. I believe that the final product deserves our support.

I strongly urge my colleagues to pass both of these measures.

OPENING STATEMENT OF HON. NICK SMITH

Mr. Chairman, I rise in support of this bill, as amended by Chairman Boehlert and the Ranking Minority Member Mr. Hall.

America has a serious energy problem. After many years of being accustomed to abundant and very affordable energy, we have been caught short.

Skyrocketing prices for gasoline, natural gas, and electricity, rolling blackouts in California, and predictions of shortages and outages in other parts of the country have focused the minds of consumers, manufacturers, farmers, and small businesses on something we once took for granted—affordable and reliable energy.

As a member of the Presidential Oil Policy Commission during the Arab oil crisis of the early 1970s, I have seen how supply disruptions and high prices can take an economic toll on the country. I played a role in the decision to implement price controls and some other policy decisions that clearly did not work. I am determined that the mistakes of the past are not repeated again.

Modern economies depend on energy to sustain growth. For example, much of the economic growth in the past decade has been driven by information and networking technologies. But this equipment requires tremendous amounts of electric power. Without adequate generating capacity, we will be unable to capitalize fully on these new technologies that improve our lives in countless ways.

The fact is, future energy demand is going to significantly outstrip supply unless we take action now to produce more energy domestically. This will be critically important for Michigan, which ranks ninth in the country in energy consumption. The Science Committee has a critical role to play by authorizing the research and development programs that create the technologies necessary to improve the efficiency, environmental footprint, and economics of a broad range of energy options.

For too long, the country has been without an energy policy. The President's Energy Policy came at a crucial time and recognized that there are not quick fixes to America's energy shortage. Critics of the President's plan say that Americans already use too much energy and believe conservation can solve the problem. Conservation will be an integral part of the solution, but it cannot do it alone, and it cannot be done without research and development.

President Bush's comprehensive energy plan incorporates conservation, R&D into new technologies, regulatory reform, and other measures to ensure that Americans have access to reliable, affordable, and clean energy. With this legislation, we take the first steps toward implementing the President's plan. Research and development into alternate energy sources and new technologies will play a significant role in making our energy supplies cleaner, cheaper, and more efficient and in enabling a variety of energy options for the future. There is no reason why we cannot increase our supplies of energy through new technologies that conserve energy and protect the environment. Through a coordinated program of R&D, outlined in this legislation, we can achieve these goals without sacrificing economic growth.

Currently, alternate and renewable sources of energy account for about 7 percent of energy use in the United States, and about 4 to 5 percent in Michigan. Michigan is also home to over 18,000 alternative-fueled vehicles. The research included in the Chairman's bill will advance these energy options and make them more competitive. Some of the promising avenues of research include biofuels and biodiesel, photovoltaics, wind energy, and fuel cells, each of which has tremendous future potential.

As Chairman of the Science Committee's Research Subcommittee, I have been looking at ways to unleash the best scientific minds to realize the full potential of alternate technologies. For example, I believe that crop plants can play a greater role in meeting the Nation's energy needs by providing increased supplies of clean, renewable fuels and offering new opportunities for America's farmers. That is why I am very pleased that this legislation supports increases for the science and enabling technologies that will advance this important energy option and that it also recognizes the important role that plant genomics can play in making bioenergy work.

Research authorized in this legislation will also continue to improve the efficiency and reduce the environmental impact of existing technologies. In my home state of Michigan, 80 percent of our electricity needs are currently supplied by coal. Coal has many benefits, but it also has environmental drawbacks. I am particularly pleased that the chairman's bill contains a ten-year authorization for clean coal technologies. America has abundant reserves of coal—enough for hundreds of years. We need to figure out how to tap into this resource in the way that protects the environment and keeps energy affordable.

Nuclear power—which accounts for 20 percent of the nation's electricity generation—is an important energy source that produces nearly zero greenhouse gas emis-

sions but generates waste that constitutes a serious, long-term, environmental and health concern. Research, such as that supported in this legislation, may significantly reduce this concern and help us to achieve the full potential of nuclear power. I am concerned that the U.S. is in danger of losing international leadership in nuclear technologies and the research capabilities needed to regain that leadership. As of 2001, the supply of four-year trained nuclear scientists is at a 35 year low, with only 28 U.S. universities operating research and training reactors. Within the next five years, 25 to 30 percent of the Nation's nuclear workforce are eligible to retire (76% at the National Labs), and half of those 28 research reactors' licenses will expire. That is why I am very please to note the strong support in this legislation for nuclear R&D and for the education and training of the next generation of nuclear scientists and engineers.

This legislation supports the President's vision for a broad portfolio of energy options for the future by making traditional sources of energy more efficient and less polluting, by making renewable sources of energy more competitive, and by educating and training the next generations of scientists and engineers who will keep us moving forward.

I am pleased to have contributed to this legislation, I am pleased to support this legislation, and I urge my colleagues to support it as well.

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OPENING STATEMENT OF HON. JUDY BIGGERT

Thank you, Mr. Chairman. I appreciate this opportunity to help shape a very important portion of much-needed comprehensive energy legislation. H.R. 2460, the Comprehensive Energy Research and Technology Act is certainly a step in the right direction.

This committee's consideration of this legislation is quite timely. Just yesterday, the news media in Chicago and around the nation was questioning the need for a national energy policy in light of declining gas prices nationwide and fewer rolling blackouts in California.

Fortunately, I had an opportunity to address that and many other energy issues this week at a townhall meeting in my district that was attended by Energy Secretary Spencer Abraham.

Our answer? A National Energy Policy is still urgently needed.

Our energy demand has increased 47% over the past 30 years, and yet we have half as many oil refineries, static pipeline capacity, and 12 different blends of gasoline in Illinois alone. We haven't built a large refinery in about 20 years and our current refineries are operating at 95 percent capacity. Fifty-two percent of the oil consumed in America has to be imported. Ninety-seven percent of the power plants currently under construction use the same fuel—natural gas.

Unless we begin to address some of these fundamental problems, we're going to experience high and volatile energy prices every year into perpetuity.

That's why we need a national energy policy, and that's why we need to pass this bill.

I also want to thank you, Chairman Boehlert, the sponsor of this bill, for including in this comprehensive legislation provisions of my bill, H.R. 2126, the DOE University Nuclear Science and Engineering Act.

Regardless of what you think about nuclear power, no one can say that we don't need nuclear scientists and engineers. For too long the perception has been that nuclear scientists and engineers are only needed to operate power plants. That couldn't be further from the truth.

Nuclear science and engineering is a discipline vital not only to nuclear power generation, but to the nuclear navy, nonproliferation and national security, and the medical, biological, and industrial applications of radiation.

The legislation I introduced takes a number of different approaches recommended by reports from the National Research Council, the Department of Energy, and its Nuclear Energy Research Advisory Committee. It strengthens four components essential to strong nuclear science and engineering programs—students, faculty, facilities and equipment, and research. Most importantly, this bill is bipartisan and bicameral, and similar to legislation introduced in the Senate by the Chairman of the Energy and Natural Resources Committee, Senator Jeff Bingaman.

As a strong supporter of the DOE Office of Science, I also am very pleased that this bill contains a significant increase in the authorization for this important office. The DOE Office of Science is the nation's primary supporter of the physical sciences, providing an important partner and key user facilities in the areas of biological sciences, physics, chemistry, basic energy sciences, environmental science, mathematics, computing, and engineering. This federal R&D funding goes to scientists

and students not just at our national labs, but at our colleges and universities as well.

I've been coordinating a letter of support to appropriators in support of the DOE Office of Science. Many of you on this committee have signed, and those of you who haven't, you still have time. Our hope is to increase funding for the DOE Office of Science in fiscal year 2002 closer to levels authorized in this legislation, which help us make the case.

In closing, I want to again thank the chairman for providing me the opportunity to shape the nation's long-term energy policy.

Thank you, Mr. Chairman. I yield back my time.

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OPENING STATEMENT OF HON. J. RANDY FORBES

Mr. Chairman, I would like to express my support for both bills before out Committee today—the Comprehensive Energy Research and Technology Act and the Voting Technology Standards Act.

Given the events of last November in certain areas of Florida, there's hardly a state in the nation that is not looking for ways to ensure that their voting technologies are up-to-date and their voters know how to use them. The Voting Technology Standards Act would give the states some independent and expert guidance during this exercise. That guidance will come from a commission that draws on the experiences of state and local election officials as well as the expertise of those involved with the emerging voting technologies. Most important, perhaps, is that the decision on what to do with this advice and guidance is left to the states, so that they may fit the standards to the needs of their voters.

The same commission would also develop technical testing specifications for labs to use in certifying that voting systems meet the standards. A recent study by a team of scientists from the Massachusetts Institute of Technology (MIT) and the California Institute of Technology (Caltech) determined that there are a variety of technical problems that continue to plague many of our voting systems. And, as more and more states rely upon computer-based systems or other advanced systems for voting, it becomes increasingly important that we stay out in front of the technologies to ensure that we can meet problems head-on before, or at least as, they occur.

I also want to express my support for the Comprehensive Energy Research and Technology Act. Though energy literally makes the engines of our economy run and literally ensures our national security, we have been for far too long without a comprehensive and long-term national energy policy. Earlier this year, the Vice President and a panel from the President's Cabinet released a thorough package of recommendations to establish a national energy policy.

The plan's list of 105 recommendations includes a sensible balance of proposals to improve conservation, to increase our domestic supply of energy, and to strengthen our international energy sources. It is a fair and responsible proposal, and I am pleased that this Committee could be a part of it by passing the Comprehensive Energy Research and Technology Act.

This bill includes provisions to improve our research efforts on a variety of fronts, including renewables, clean coal, biomass, and nuclear power. It also helps localities to purchase alternative fuel vehicles and encourages conservation programs. It is a sound bill that leaves no stone unturned in our national search for a comprehensive energy policy.

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OPENING STATEMENT OF HON. LYNN WOOLSEY

Mr. Chairman, today we have an opportunity to address the future energy needs of our country, and determine the direction of DOE's research, development and demonstration programs must take. Those around this dais have varying visions of what they want our energy future to look like.

As a Californian, and a Member from one of the most environmentally conscious districts in the country, my time in Congress has focused on an energy future that relies increasingly on energy sources that are renewable and minimize impacts on our environment.

That's why I introduced H.R. 2324, the Renewable Energy and Energy Efficiency Act. H.R. 2324 lays out the goal that DOE R&D programs enable 20 percent of the energy in the U.S. to be generated from non-hydro renewable energy sources by 2020.

My concern with President Bush's budget, and the base bill we're marking up today, is that they did not adequately fund renewable programs as aggressively as

we need to in order to meet this 20/20 goal. Also, I've expressed concern about the funding balance between renewable sources because it's important that we make new investments in all renewables. And, because you and I—as well as Subcommittee Chairman Bartlett—have long agreed on the crucial role of renewables in our energy future, I'm very pleased that our discussions were able to result on the higher funding levels that are a part of this Manager's amendment.

Also, Mr. Chairman, your interest and support—again, as well as Chairman Bartlett's—is much appreciated toward making the funding priorities for energy efficiency and conservation measures a reality. One area I wish we had been able to reach agreement on is the area of aeronautic R&D on energy efficiency. However, my amendment will lay out my concerns about this. But please know I am excited that the Manager's amendment does include the initiative for the next generation of advanced lighting technologies. This represents a great opportunity to lower our energy consumption.

However, Mr. Chairman, I must state for the record that I have an overarching concern about the increased level of funding in today's bill for nuclear R&D. I'm concerned about this Committee making an industry many believe we should move away from a priority. While the industry claims that nuclear power is safe, the fact remains that people are skeptical—especially if it's in their backyard, or transported through their community. Despite massive financial and scientific investments—not to mention a new PR campaign—the facts about nuclear power are unchanged. It's dangerous, expensive and has not delivered on decades-old promises of energy security and independence.

The time has come to move away from nuclear power for many reasons: the danger of radioactive contamination; the unsolved problem of nuclear waste; the threat of an accident; the threat of air and water pollution; resource depletion; and nuclear proliferation. The two amendments I have at the desk further address my concerns about the pyroprocessing provision and the funding for Generation Four nuclear technologies in the bill.

Mr. Chairman, despite my disagreement on this bill's funding levels for nuclear energy, overall I commend you for working with our Democratic Members on the Committee to find common ground on the breadth and depth of our interests. That's why I support this Manager's Amendment and favorably reporting this bill out of Committee. I urge my colleagues to as well.

With that, thank you. I yield back the balance of my time.

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## OPENING STATEMENT OF HON. ZOE LOFGREN

Chairman Boehlert and Ranking Member Hall, I commend you for your bipartisan teamwork that has brought our committee to today's markup of the Comprehensive Energy Research and Technology Act (H.R. 2460).

This legislation addresses the nation's short-term and long-term energy research and development needs.

H.R. 2460 reflects our view that there is no single solution to providing safe, affordable energy that is benign to the environment. This bill seeks to advance conservation and renewable energy as well as to make fossil fuels more efficient.

With the energy challenges in California and the West, it is my hope that this legislation will lead to some future relief for my constituents who currently worry about rolling blackouts and have little confidence in the reliability of the electric grid.

I am particularly grateful to Chairman Boehlert and Representative Hall for their support and inclusion of the Fusion Energy Sciences Act (H.R. 1781) into the legislation that we are making up.

Rep. George Nethercutt and I introduced this bipartisan bill in May. Forty-seven House Members, including 15 Science Committee Members have cosponsored our bill.

This legislation will provide the Department of Energy's Fusion Energy Sciences program with the resources it needs to continue the advancement of fusion from the laboratory to the electric powerhouse.

This process will take several decades, but our bill expedites fusion research and development and is goal-oriented by requiring the Energy Secretary to draft a plan for a "burning plasma experiment."

The Secretary's Energy Advisory Board (SEAB), Fusion Energy Sciences Advisory Committee (FESAC) and National Research Council have been active in making recommendations to promote fusion research. Our legislation adopts several of these recommendations—including making a greater federal investment in fusion and broadening fusion's scientific base.

In another matter, I have reviewed the Managers' amendment as it applies to offshore drilling.

It is my understanding that the language applies to offshore drilling technology only and does not open up any new drilling sites off the U.S. Coast.

While that may be the author's intent, I will offer an amendment to clarify the language so there will be no mistake that it applies to drilling technology only and does not open new offshore drilling sites beyond what is now permitted.

It is my hope that all Members will support my clarifying amendment. I look forward to this markup and to a favorable outcome that provides adequate support and direction for energy research and development.

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OPENING STATEMENT OF HON. BOB ETHERIDGE

Mr. Chairman, I have an amendment to offer.

I want to offer this amendment to raise an issue of great concern to the people of my district, indeed to all the people of North Carolina—oil and gas exploration off the coast of my state.

When the Cheney Task Force issued its report, Chapter Five included a recommendation that the Bush Administration re-examine the "current federal legal policy regime" to determine if changes are needed regarding energy-related activities and the siting of energy facilities in the coastal zone and on the Outer Continental Shelf (OCS)."

To the people of North Carolina, this sounded like a proposal to consider drilling off the coast of North Carolina.

Last month in this very room, I asked Energy Secretary Spencer Abraham to clear up any confusion regarding the Administration's intentions for oil and gas exploration off North Carolina's coast.

I was pleased by his statement that the Administration would not risk fouling the pristine beaches of the Outer Banks by lifting the moratorium on oil and gas drilling in the Atlantic.

Today we have a bill to promote energy research, a laudable goal. The bill includes a section dealing with research in oil and natural gas exploration and production, again a laudable goal.

However, my amendment would prohibit any funds under this bill from being used toward the goal of drilling for oil or gas off the coast of North Carolina.

The people of North Carolina do not want drilling. We want to avoid that at all costs. We don't want to wake up to oil lapping up on the beaches in the shadow of the Cape Hatteras Lighthouse.

This amendment seeks to prevent that disaster.

I understand the Chairman and Ranking Member would prefer to address this issue on a more appropriate legislative vehicle, and I respect that.

For that reason, Mr. Chairman, I will agree to your request and ask unanimous consent to withdraw my amendment.

I thank the Chairman for his indulgence and yield back the balance of my time.

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OPENING STATEMENT OF HON. MARK UDALL

Mr. Chairman, I rise in support of the manager's amendment and this legislation.

After all the sharp rhetoric we've been hearing on the topic of energy in recent months, I am glad that we have this opportunity today to rise above recrimination and get to the heart of the problem.

We all know part of the problem involves an over-dependence on a single energy source—fossil fuels—to the detriment of our environment, our national security, and our economy. If there is a silver lining to the "crisis" we're experiencing, it is that we are being forced to think about balancing our energy portfolio and increasing the contributions of alternative energy sources.

As the chairman knows, clean energy is something that is important to me, and it is the reason I took on the responsibilities of lead co-chair of the House Renewable Energy and Energy Efficiency Caucus in this Congress.

So I am very pleased with the generous authorization levels included in the manager's amendment for renewable energy and energy efficiency R&D. I hope we will all work hard to retain these funding levels as the bill makes its way through the House.

Mr. Chairman, I want to commend you for the way you and your staff worked with me and other Democratic Members to shape the bill and this manager's amendment. Like you, I believe that working in a bipartisan manner is critical to the development of good public policy.

It was in this bipartisan spirit, Mr. Chairman, that you and I drafted H.R. 2518, the Clean Green School Bus Act. I am very glad that it is included as part of this manager's amendment.

There are nearly half a million school buses in this country. Most of them are aging diesel vehicles. And studies show that children riding inside those buses risk inhaling too much toxic diesel exhaust.

The health of our children should be our overriding concern. But our school districts have a problem because money needed for new and cleaner buses is also needed for school programs. Schools shouldn't be forced to choose between a quality education and the health of our children.

That's why I support authorizing a federal investment in these alternative fuel buses. This provision of the manager's amendment authorizes grants to help school districts replace aging diesel vehicles with clean, alternative fuel buses. This program will not only benefit school districts, but even more importantly, it will benefit the health of our children and the environment.

I am also pleased that the manager's amendment includes my bill, the Distributed Power Hybrid Energy Act and adds to it good provisions developed by Chairman Boehlert, Mr. Nethercutt, and Mr. Wu.

My bill would direct the Secretary of Energy to develop and implement a strategy for research, development, demonstration, and commercial application of distributed power hybrid energy systems.

Distributed power can avoid the need for and cost of additional transmission lines and pipelines, reduce associated delivery losses, and increase energy efficiency. In addition, distributed power can provide insurance against energy disruptions and expand the available energy service choices for consumers.

"Hybrid" distributed power systems—systems that combine two or more renewable source or a renewable and a fossil source—enable us to offset the weaknesses of our technology with the strengths of another. For example, in a hybrid system, the intermittence of wind power can be offset by the reliability and affordability of power generated by a microturbine. The additional benefit of such a combination is cleaner generating capacity. So two or more systems working together can provide synergistic benefits that one system alone cannot.

Distributed generation represents the most significant technological change in the electric industry in decades. Knowing this, it makes sense to focus our R&D priorities on distributed power hybrid systems that can both help improve power reliability and affordability and bring more efficiency and cleaner energy resources into the mix.

So again, I thank the Chairman, the Committee staff, and my colleagues who contributed provisions to this amendment for working with me to include this important distributed energy subtitle.

I'll conclude by noting that this bill isn't perfect. No bill can be perfect for everyone. I have strong reservations about some provisions in the bill, such as those related to new nuclear research and clean coal. But on balance, I believe this bill is a good product that deserves the support of the Committee.

Thank you, Mr. Chairman.

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OPENING STATEMENT OF HON. DAVID WU

Mr. Chairman, I would like to commend both you and Ms. Woolsey on working together to bring this bipartisan bill this far. Both you and Chairman Boehlert have been incredibly accommodating during the process and helpful in accepting many of our ideas. This committee can address a technical, but very important energy problem. While this committee has worked on important issues such as renewable energy research and how best to promote energy efficiency, this issue is a technical but important one.

When a power generator or a power marketer wants to place power on or take power off of any of the national energy systems, it can be difficult because there is no national standard on the equipment used to connect to the grid. In essence, this is like the maker of every nut and bolt in America choosing their own pitch angle—no two sets of nuts and bolts would work with each other. Imagine the chaos, and costs. The IEEE (Institute of Electrical and Electronics Engineers) has been working for two years on creating a national standard. While its close, the time is now for the National Institute for Standards and Technology to act.

My amendment, which has been accepted by the Chairman, instructs NIST to consult with the IEEE to create a national equipment standard in the next two years. By standardizing the equipment used, we can increase efficiency, thus lowering the cost of energy generation and transmission and give another incentive for

independent energy generators. The lack of an equipment standard is just one piece of the problem.

I would also like to urge my colleagues on the Energy and Commerce Committee, who have jurisdiction over the Federal Energy Regulatory Commission to encourage FERC to establish a national contractual standard on how to connect to the grid. Once both of these pieces are dealt with, our national systems will be more efficient and more productive.

Again, thank you, Mr. Chairman, for including my amendment in the manager's amendment and I yield back the balance of my time.

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OPENING STATEMENT OF HON. JIM MATHESON

Mr. Chairman, I want to commend this committee for the excellent bipartisan bill that we are considering today. This is an example of the sort of balanced, bipartisan approach we must take on all aspects of energy policy, and I am glad to have been a part of this process.

The legislation we are considering today fills a critical role in national energy policy. No approach to energy policy would be forward-thinking if it failed to focus on energy research and development. No energy policy can meet the long-term demands that will be faced across the nation without making investments today in research. Perhaps even more notably, we cannot meet those long-term demands with a narrowly focused or skewed approach.

This bill continues research in fossil fuels—it encourages the development of cleaner, safer, and more efficient technologies. It focuses on renewable energy sources, with new, rigorous goals and increased funding. It also furthers research into potential fuel sources and methods for energy distribution that may hold promise in the future. It provides for demonstration projects and greater commercial application of energy efficiency technologies. And, it includes research into the development of distributed energy generation.

I am particularly pleased that this amendment includes my provision to enhance research and development in transmission technologies and efficiency. No matter what energy source we depend upon in the future, our ability to transmit the energy produced to consumers in an efficient and responsible manner will be critical. Increased efficiency can decrease the line loss associated with our current transmission system. Improvements in transmission technology, transmission efficiency, and transmission infrastructures will be essential to a comprehensive national energy policy.

Again, I want to applaud the efforts of this committee to craft energy legislation focused on the essential role of research and development and balanced between multiple sources and technologies.

Chairman BOEHLERT. The bill is now open for discussion.

I ask unanimous consent that the bill be considered as read and open to amendment at any point. I ask the members to proceed with the amendments in the order of the roster.

The bill is now open for amendments.

The first amendment on the roster is an amendment offered by Mr. Hall. I ask unanimous consent that the amendment be considered en bloc.

The Clerk will report the amendment.

The CLERK. The en bloc amendment to H.R. 2460, offered by Mr. Boehlert and Mr. Hall of Texas.

[En Bloc Amendment to H.R. 2460 follows:]

## EN BLOC AMENDMENTS TO H.R. 2460 OFFERED BY MR. BOEHLERT AND MR. HALL OF TEXAS

Page 8, after line 10, insert the following:

1 (a) IN GENERAL.—Subject to subsection (b), in order
2 to achieve the purposes of this Act under section 3, the
3 Secretary should conduct a balanced energy research, de-
4 velopment, demonstration, and commercial application
5 portfolio of programs guided by the following goals to meet
6 the purposes of this Act under section 3.
7 (1) ENERGY EFFICIENCY AND ENERGY CON-
8 SERVATION.—
9 (A) For the Building Technology, State
10 and Community Sector, the program should de-
11 velop technologies, housing components, de-
12 signs, and production methods that will, by
13 2010—
14 (i) reduce the monthly energy cost of
15 new housing by 20 percent, compared to
16 the cost as of the date of the enactment of
17 this Act;

(ii) cut the environmental impact and energy use of new housing by 50 percent, compared to the impact and use as of the date of the enactment of this Act; and

(iii) improve durability and reduce maintenance costs by 50 percent compared to the durability and costs as of the date of the enactment of this Act.

(B) For the Industry Sector, the program should, in cooperation with the affected industries, improve the energy intensity of the major energy-consuming industries by at least 25 percent by 2010, compared to the energy intensity as of the date of the enactment of this Act.

(C) For Power Technologies, the program should, in cooperation with the affected industries—

(i) develop a microturbine (40 to 300 kilowatt) that is more than 40 percent more efficient by 2006, and more than 50 percent more efficient by 2010, compared to the efficiency as of the date of the enactment of this Act; and

(ii) develop advanced materials for combustion systems that reduce emissions

1 of nitrogen oxides by 30 to 50 percent
2 while increasing efficiency 5 to 10 percent
3 by 2007, compared to such emissions as of
4 the date of the enactment of this Act.
5 (D) For the Transportation Sector, the
6 program should, in cooperation with affected
7 industries—
8 (i) develop a production prototype
9 passenger automobile that has fuel econ-
10 omy equivalent to 80 miles per gallon of
11 gasoline by 2004;
12 (ii) develop class 7 and 8 heavy duty
13 trucks and buses with ultra low emissions
14 and the ability to use an alternative fuel
15 that has an average fuel economy equiva-
16 lent to—
17 (I) 10 miles per gallon of gaso-
18 line by 2007; and
19 (II) 13 miles per gallon of gaso-
20 line by 2010;
21 (iii) develop a production prototype of
22 a passenger automobile with zero equiva-
23 lent emissions that has an average fuel
24 economy of 100 miles per gallon of gaso-
25 line by 2010; and

(iv) improve, by 2010, the average fuel economy of trucks—

(I) in classes 1 and 2 by 300 percent; and

(II) in classes 3 through 6 by 200 percent,

compared to the fuel economy as of the date of the enactment of this Act.

(2) RENEWABLE ENERGY.—

(A) For hydrogen, to carry out the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990, as amended by subtitle A of title II of this Act.

(B) For bioenergy:

(i) The program should reduce the cost of bioenergy relative to other energy sources to enable the United States to triple bioenergy use by 2010.

(ii) For biopower systems, the program should reduce the cost of such systems to enable commercialization of integrated power-generating technologies that employ gas turbines and fuel cells integrated with bioenergy gasifiers within five

1 years after the date of the enactment of
2 this Act.
3 (iii) For biofuels, the program should
4 accelerate research, development, and dem-
5 onstration on advanced enzymatic hydrol-
6 ysis technology for making ethanol from
7 cellulosic feedstock, with the goal that be-
8 tween 2010 and 2015 ethanol produced
9 from energy crops would be fully competi-
10 tive in terms of price with gasoline as a
11 neat fuel, in either internal combustion en-
12 gines or fuel cell vehicles.
13 (C) For geothermal technology develop-
14 ment, the program should focus on advanced
15 concepts for the long term. The first priority
16 should be high-grade enhanced geothermal sys-
17 tems; the second priority should be lower grade,
18 hot dry rock, and geopressured systems; and
19 the third priority should be support of field
20 demonstrations of enhanced geothermal systems
21 technology, including sites in lower grade areas
22 to demonstrate the benefits of reservoir con-
23 cepts to different conditions.
24 (D) For hydropower, the program should
25 provide a new generation of turbine tech-

1 nologies that will increase generating capacity
2 and will be less damaging to fish and aquatic
3 ecosystems.
4 (E) For concentrating solar power, the
5 program should strengthen ongoing research,
6 development, and demonstration combining
7 high-efficiency and high-temperature receivers
8 with advanced thermal storage and power cy-
9 cles, with the goal of making solar-only power
10 (including baseload solar power) widely com-
11 petitive with fossil fuel power by 2015. The pro-
12 gram should limit or halt its research and de-
13 velopment on power-tower and power-trough
14 technologies because further refinements to
15 these concepts will not further their deploy-
16 ment, and should assess the market prospects
17 for solar dish/engine technologies to determine
18 whether continued research and development is
19 warranted.
20 (F) For photovoltaic energy systems, the
21 program should pursue research, development,
22 and demonstration that will, by 2005, increase
23 the efficiency of thin film modules from the cur-
24 rent 7 percent to 11 percent in multi-million
25 watt production; reduce the direct manufac-

1 turing cost of photovoltaic modules by 30 per-
2 cent from the current $2.50 per watt to $1.75
3 per watt by 2005; and establish greater than a
4 20-year lifetime of photovoltaic systems by im-
5 proving the reliability and lifetime of balance-
6 of-system components and reducing recurring
7 cost by 40 percent. The program's top priority
8 should be the development of sound manufac-
9 turing technologies for thin-film modules, and
10 should make a concerted effort to integrate fun-
11 damental research and basic engineering re-
12 search.
13 (G) For solar building technology research,
14 the program should complete research and de-
15 velopment on new polymers and manufacturing
16 processes to reduce the cost of solar water heat-
17 ing by 50 percent by 2004, compared to the
18 cost as of the date of enactment of this Act.
19 (H) For wind energy systems, the program
20 should reduce the cost of wind energy to
21 achieve a cost of wind energy of three cents per
22 kilowatt-hour at Class 6 (15 miles-per-hour an-
23 nual average) wind sites by 2004, and 4 cents
24 per kilowatt-hour in Class 4 (13 miles-per-hour
25 annual average) wind sites by 2015, and fur-

1 ther if required so that wind power can be wide-
2 ly competitive with fossil-fuel-based electricity
3 in a restructured electric industry. Program re-
4 search on advanced wind turbine technology
5 should focus on turbulent flow studies, durable
6 materials to extend turbine life, blade efficiency,
7 and higher efficiency operation in low quality
8 wind regimes.

9 (I) For electric energy and storage, includ-
10 ing high temperature superconducting research
11 and development, energy storage systems, and
12 transmission reliability, the program should de-
13 velop high capacity superconducting trans-
14 mission lines and generators, highly reliable en-
15 ergy storage systems, and distributed gener-
16 ating systems to accommodate multiple types of
17 energy sources under common interconnect
18 standards.

19 (J) For the international renewable energy
20 and renewable energy production incentive pro-
21 grams, and renewable program support, the
22 program should encourage the commercial ap-
23 plication of renewable energy technologies by
24 developed and developing countries, state and
25 local governmental entities and nonprofit elec-

1 tric cooperatives, and by the competitive domes-
2 tic market.
3 (3) NUCLEAR ENERGY.—
4 (A) For university nuclear science and en-
5 gineering, the program should carry out the
6 provisions of subtitle A of title III of this Act.
7 (B) For spent nuclear fuel and fuel cycle
8 research, development, and demonstration, the
9 program should carry out the provisions of sub-
10 title B of title III of this Act.
11 (C) For the Nuclear Energy Research Ini-
12 tiative, the program should accomplish the ob-
13 jectives of section 341(b) of this Act.
14 (D) For the Nuclear Energy Plant Optimi-
15 zation Program, the program should accomplish
16 the objectives of section 342(b) of this Act.
17 (E) For nuclear energy technologies, the
18 program should carry out the provisions of sec-
19 tion 343 of this Act.
20 (F) For Advanced Radioisotope Power
21 Systems, the program should ensure that the
22 United States has adequate capability for power
23 future satellite and space missions.
24 (4) FOSSIL ENERGY.—

1 (A) For core fossil energy research and de-
2 velopment, the program should achieve the
3 goals outlined by the Department's Vision 21
4 Program. This research should address fuel-
5 flexible gasification and turbines, fuel cells, ad-
6 vanced-combustion systems, advanced fuels and
7 chemicals, advanced modeling and systems
8 analysis, materials and heat exchangers, envi-
9 ronmental control technologies, gas-stream pu-
10 rification, gas-separation technology, and se-
11 questration research and development focused
12 on cost-effective novel concepts for capturing,
13 reusing or storing, or otherwise mitigating car-
14 bon and other greenhouse gas emissions.
15 (B) For offshore oil and natural gas re-
16 sources, the program should investigate and de-
17 velop technologies to—
18 (i) extract methane hydrates in coast-
19 al waters of the United States, in accord-
20 ance with the provision of the Methane
21 Hydrate Research and Development Act of
22 2000; and
23 (ii) develop natural gas and oil re-
24 serves in the ultra-deepwater of the Cen-
25 tral and Western Gulf of Mexico. Research

1 and development on ultra-deepwater re-
2 source recovery shall focus on improving
3 the safety and efficiency of such recovery
4 and of sub-sea production technology used
5 for such recovery, while lowering costs.
6 (C) For transportation fuels, the program
7 should support a comprehensive transportation
8 fuels strategy to increase the price elasticity of
9 oil supply and demand by focusing research on
10 reducing the cost of producing transportation
11 fuels from natural gas and indirect liquefaction
12 of coal.
13 (5) SCIENCE.—The Secretary, through the Of-
14 fice of Science, should—
15 (A) develop and maintain a robust port-
16 folio of fundamental scientific and energy re-
17 search, including high energy and nuclear phys-
18 ics, biological and environmental research, basic
19 energy sciences (including materials sciences,
20 chemical sciences, engineering and geosciences,
21 and energy biosciences), advanced scientific
22 computing, energy research and analysis, multi-
23 program energy laboratories-facilities support,
24 fusion energy sciences, and facilities and infra-
25 structure;

1 (B) maintain, upgrade, and expand, as ap-
2 propriate, and in accordance with the provisions
3 of this Act, the scientific user facilities main-
4 tained by the Office of Science, and ensure that
5 they are an integral part of the Department's
6 mission for exploring the frontiers of funda-
7 mental energy sciences; and
8 (C) ensure that its fundamental energy
9 sciences programs, where appropriate, help in-
10 form the applied research and development pro-
11 grams of the Department.

Page 8, line 11, strike "(a) IN GENERAL.—" and insert "(b) REVIEW AND ASSESSMENT.—".

Page 8, line 12, insert "measurable" after "that establishes".

Page 8, line 13, insert ", or that modifies the goals under subsection (a)," after "goals".

Page 8, line 14, strike ", projects, and activities".

Page 8, lines 15 and 16, strike ", project, or activity".

Page 8, lines 21 and 22, strike ", projects, and activities".

Page 8, line 23, strike "(b)" and insert "(c)".

Page 8, line 23, insert "measurable" after "establishing the".

Page 8, line 24, strike "(a)" and insert "(b)".

Page 9, lines 5 through 13, amend paragraphs (1) and (2) to read as follows:

1 (1) issue and publish in the Federal Register a
2 set of draft measurable cost and performance-based
3 goals for the programs authorized by this Act for
4 public comment—
5 (A) in the case of a program established
6 before the date of the enactment of this Act,
7 not later than 120 days after the date of the
8 enactment of this Act; and
9 (B) in the case of a program not estab-
10 lished before the date of the enactment of this
11 Act, not later than 120 days after the date of
12 establishment of the program; and
13 (2) not later than 60 days after the date of
14 publication under paragraph (1), after taking into
15 consideration any public comments received, trans-
16 mit to the Congress and publish in the Federal Reg-
17 ister the final measurable cost and performance-
18 based goals.

Page 10, lines 14 through 19, amend section 7 to read as follows:

1 **SEC. 7. BALANCE OF FUNDING PRIORITIES.**

2 (a) SENSE OF CONGRESS.—It is the sense of the Con-
3 gress that the funding of the various programs authorized
4 by titles I through IV of this Act should remain in the
5 same proportion to each other as provided in this Act, re-
6 gardless of the total amount of funding made available for
7 those programs.

8 (b) REPORT TO CONGRESS.—If for fiscal year 2002,
9 2003, or 2004 the amounts appropriated in general appro-
10 priations Acts for the programs authorized in titles I
11 through IV of this Act are not in the same proportion to
12 one another as are the authorizations for such programs
13 in this Act, the Secretary and the Administrator shall,
14 within 60 days after the date of the enactment of the last
15 general appropriations Act appropriating amounts for
16 such programs, transmit to the appropriate congressional
17 committees a report describing the programs, projects,
18 and activities that would have been funded if the propor-
19 tions provided for in this Act had been maintained in the
20 appropriations. The amount appropriated for the program
21 receiving the highest percentage of its authorized funding
22 for a fiscal year shall be used as the baseline for calcu-

1 lating the proportional deficiencies of appropriations for
2 other programs in that fiscal year.

Page 11, line 22, strike "or".

Page 11, line 23, insert "or ethanol" after "by methanol".

Page 11, line 24, strike the period and insert "; or".

Page 11, after line 24, insert the following new clause:

3 (vii) by propane.

Page 12, after line 14, insert the following new paragraph:

4 (3) ULTRA-LOW SULFUR DIESEL VEHICLE.—
5 The term "ultra-low sulfur diesel vehicle" means a
6 vehicle powered by a heavy-duty diesel engine that—
7 (A) is fueled by diesel fuel which contains
8 sulfur at not more than 15 parts per million;
9 and
10 (B) emits not more than the lesser of—
11 (i) for vehicles manufactured in—
12 (I) model years 2001 through
13 2003, 3.0 grams per brake horse-
14 power-hour of nonmethane hydro-
15 carbons and oxides of nitrogen and

1 .01 grams per brake horsepower-hour
2 of particulate matter; and
3 (II) model years 2004 through
4 2006, 2.5 grams per brake horse-
5 power-hour of nonmethane hydro-
6 carbons and oxides of nitrogen and
7 .01 grams per brake horsepower-hour
8 of particulate matter; or
9 (ii) the emissions of nonmethane hy-
10 drocarbons, oxides of nitrogen, and partic-
11 ulate matter of the best performing tech-
12 nology of ultra-low sulfur diesel vehicles of
13 the same type that are commercially avail-
14 able.

Page 12, lines 17 and 18, strike "an alternative fuel" and all that follows through "energy technology" and insert "a".

Page 13, after line 14, insert the following new paragraph:

15 (2) The acquisition of ultra-low sulfur diesel ve-
16 hicles.

Page 13, lines 15 and 18, redesignate paragraphs (2) and (3) as paragraphs (3) and (4), respectively.

Page 13, line 16, strike "a project" and insert "an alternative fuel vehicle project".

Page 14, line 6, insert "or ultra-low sulfur diesel vehicle" after "alternative fuel vehicle".

Page 15, line 3, strike "and".

Page 15, line 6, strike the period and insert "; and".

Page 15, after line 6, insert the following new subparagraph:

1 (H) documentation to the satisfaction of
2 the Secretary that diesel fuel containing sulfur
3 at not more than 15 parts per million is avail-
4 able for carrying out the projects, and a com-
5 mitment by the applicant to use such fuel in
6 carrying out the projects.

Page 15, lines 12 and 13, strike "involving alternative fuel vehicles" and insert "with similar projects".

Page 17, line 1, strike "90 days" and insert "3 months".

Page 17, line 7, strike "180 days" and insert "6 months".

Page 17, line 8, strike "180 days" and insert "6 months".

Page 17, after line 12, insert the following new subsection:

1 (g) LIMIT ON FUNDING.—The Secretary shall pro-
2 vide not less than 20 percent and not more than 25 per-
3 cent of the grant funding made available under this sec-
4 tion for the acquisition of ultra-low sulfur diesel vehicles.

Page 17, line 14, strike "60 days" and insert "2 months".

Page 18, line 16, insert "and ultra-low sulfur diesel vehicles" after "alternative fuel vehicles".

Page 19, line 1, through page 21, line 19, amend subtitle B to read as follows:

5 **Subtitle B—Distributed Power**
6 **Hybrid Energy Systems**

7 **SEC. 121. FINDINGS.**

8 The Congress makes the following findings:
9 (1) Our ability to take advantage of our renew-
10 able, indigenous resources in a cost-effective manner
11 can be greatly advanced through systems that com-
12 pensate for the intermittent nature of these re-
13 sources through distributed power hybrid systems.
14 (2) Distributed power hybrid systems can—

1 (A) shelter consumers from temporary en-
2 ergy price volatility created by supply and de-
3 mand mismatches;
4 (B) increase the reliability of energy sup-
5 ply; and
6 (C) address significant local differences in
7 power and economic development needs and re-
8 source availability that exist throughout the
9 United States.
10 (3) Realizing these benefits will require a con-
11 certed and integrated effort to remove market bar-
12 riers to adopting distributed power hybrid systems
13 by—
14 (A) developing the technological foundation
15 that enables designing, testing, certifying, and
16 operating distributed power hybrid systems; and
17 (B) providing the policy framework that
18 reduces such barriers.
19 (4) While many of the individual distributed
20 power hybrid systems components are either avail-
21 able or under development in existing private and
22 public sector programs, the capabilities to integrate
23 these components into workable distributed power
24 hybrid systems that maximize benefits to consumers

1 in a safe manner often are not coherently being ad-
2 dressed.

3 **SEC. 122. DEFINITIONS.**

4 For purposes of this subtitle—

5 (1) the term "distributed power hybrid system"
6 means a system using 2 or more distributed power
7 sources, operated together with associated sup-
8 porting equipment, including storage equipment, and
9 software necessary to provide electric power onsite
10 and to an electric distribution system; and

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

15 (A) reciprocating engines;
16 (B) turbines;
17 (C) microturbines;
18 (D) fuel cells;
19 (E) solar electric systems;
20 (F) wind energy systems;
21 (G) biopower systems;
22 (H) geothermal power systems; or
23 (I) combined heat and power sys-
24 tems.

1 **SEC. 123. STRATEGY.**

2 (a) REQUIREMENT.—Not later than 1 year after the
3 date of the enactment of this Act, the Secretary of Energy
4 shall develop and transmit to the Congress a distributed
5 power hybrid systems strategy showing—

6 (1) needs best met with distributed power hy-
7 brid systems configurations, especially systems in-
8 cluding one or more solar or renewable power
9 sources; and

10 (2) technology gaps and barriers (including bar-
11 riers to efficient connection with the power grid)
12 that hamper the use of distributed power hybrid sys-
13 tems.

14 (b) ELEMENTS.—The strategy shall provide for de-
15 velopment of—

16 (1) system integration tools (including data-
17 bases, computer models, software, sensors, and con-
18 trols) needed to plan, design, build, and operate dis-
19 tributed power hybrid systems for maximum bene-
20 fits;

21 (2) tests of distributed power hybrid systems,
22 power parks, and microgrids, including field tests
23 and cost-shared demonstrations with industry;

24 (3) design tools to characterize the benefits of
25 distributed power hybrid systems for consumers, to
26 reduce testing needs, to speed commercialization,

1 and to generate data characterizing grid operations,
2 including interconnection requirements;
3 (4) precise resource assessment tools to map
4 local resources for distributed power hybrid systems;
5 and
6 (5) a comprehensive research, development,
7 demonstration, and commercial application program
8 to ensure the reliability, efficiency, and environ-
9 mental integrity of distributed energy resources, fo-
10 cused on filling gaps in distributed power hybrid sys-
11 tems technologies identified under subsection (a)(2),
12 which may include—
13 (A) integration of a wide variety of ad-
14 vanced technologies into distributed power hy-
15 brid systems;
16 (B) energy storage devices;
17 (C) environmental control technologies
18 (D) interconnection standards, protocols,
19 and equipment; and
20 (E) ancillary equipment for dispatch and
21 control.
22 (c) IMPLEMENTATION AND INTEGRATION.—The Sec-
23 retary of Energy shall implement the strategy transmitted
24 under subsection (a) and the research program under sub-
25 section (b)(5). Activities pursuant to the strategy shall be

1 integrated with other activities of the Department's Office
2 of Distributed Energy Resources.

3 **SEC. 124. HIGH POWER DENSITY INDUSTRY PROGRAM.**

4 (a) IN GENERAL.—The Secretary shall develop and
5 implement a comprehensive research, development, dem-
6 onstration, and commercial application program to im-
7 prove energy efficiency, reliability, and environmental re-
8 sponsibility in high power density industries, such as data
9 centers, server farms, telecommunications facilities, and
10 heavy industry.

11 (b) AREAS.—In carrying out this section, the Sec-
12 retary shall consider technologies that provide—

13 (1) significant improvement in efficiency of high
14 power density facilities, and in data and tele-
15 communications centers, using advanced thermal
16 control technologies;

17 (2) significant improvements in air-conditioning
18 efficiency in facilities such as data centers and tele-
19 communications facilities;

20 (3) significant advances in peak load reduction;
21 and

22 (4) advanced real time metering and load man-
23 agement and control devices.

1 **SEC. 125. MICRO-COGENERATION ENERGY TECHNOLOGY.**

2 The Secretary shall make competitive, merit-based
3 grants to consortia of private sector entities for the devel-
4 opment of micro-cogeneration energy technology. The con-
5 sortia shall explore the creation of small-scale combined
6 heat and power through the use of residential heating ap-
7 pliances. There are authorized to be appropriated to the
8 Secretary $20,000,000 to carry out this section, to remain
9 available until expended.

10 **SEC. 126. PROGRAM PLAN.**

11 Within 4 months after the date of enactment of this
12 Act, the Secretary, in consultation with other appropriate
13 Federal agencies, shall prepare and transmit to the Con-
14 gress a 5-year program plan to guide activities under this
15 subtitle. In preparing the program plan, the Secretary
16 shall consult with appropriate representatives of the dis-
17 tributed energy resources, power transmission, and high
18 power density industries to prioritize appropriate program
19 areas. The Secretary shall also seek the advice of utilities,
20 energy services providers, manufacturers, institutions of
21 higher learning, other appropriate State and local agen-
22 cies, environmental organizations, professional and tech-
23 nical societies, and any other persons as the Secretary con-
24 siders appropriate.

1 **SEC. 127. REPORT.**

2 Two years after date of enactment of this Act and
3 at two year intervals thereafter, the Secretary, jointly with
4 other appropriate Federal agencies, shall transmit a report
5 to Congress describing the progress made to achieve the
6 purposes of this subtitle.

7 **SEC. 128. VOLUNTARY CONSENSUS STANDARDS.**

8 Not later than 2 years after the date of enactment
9 of this Act, the Secretary, in consultation with the Na-
10 tional Institute of Standards and Technology, shall work
11 with the Institute of Electrical and Electronic Engineers
12 and other standards development organizations toward the
13 development of voluntary consensus standards for distrib-
14 uted energy systems for use in manufacturing and using
15 equipment and systems for connection with electric dis-
16 tribution systems, for obtaining electricity from, or pro-
17 viding electricity to, such systems.

Page 21, after line 19, insert the following new subtitle, and make the necessary changes to subsequent subtitles and the table of contents:

18 **Subtitle C—Secondary Electric**
19 **Vehicle Battery Use**

20 **SEC. 131. DEFINITIONS.**

21 For purposes of this subtitle, the term—

1 (1) "battery" means an energy storage device
2 that previously has been used to provide motive
3 power in a vehicle powered in whole or in part by
4 electricity; and
5 (2) "associated equipment" means equipment
6 located at the location where the batteries will be
7 used that is necessary to enable the use of the en-
8 ergy stored in the batteries.

9 **SEC. 132. ESTABLISHMENT OF SECONDARY ELECTRIC VE-**
10 **HICLE BATTERY USE PROGRAM.**

11 (a) PROGRAM.—The Secretary shall establish and
12 conduct a research, development, and demonstration pro-
13 gram for the secondary use of batteries where the original
14 use of such batteries was in transportation applications.
15 Such program shall be—
16 (1) designed to demonstrate the use of batteries
17 previously used in transportation applications in sec-
18 ondary application, including utility and commercial
19 power storage and power quality;
20 (2) structured to evaluate the performance, in-
21 cluding longevity of useful service life and costs, of
22 such batteries in field operations, and evaluate the
23 necessary supporting infrastructure, including dis-
24 posal and reuse of batteries once used in transpor-
25 tation applications; and

1 (3) coordinated with ongoing secondary battery
2 use programs underway at the national laboratories
3 and in industry.
4 (b) SOLICITATION.—(1) Not later than 6 months
5 after the date of the enactment of this Act, the Secretary
6 shall solicit proposals to demonstrate the secondary use
7 of batteries and associated equipment and supporting in-
8 frastructure in geographic locations throughout the
9 United States. The Secretary may make additional solici-
10 tations for proposals if the Secretary determines that such
11 solicitations are necessary to carry out this section.
12 (2)(A) Proposals submitted in response to a solicita-
13 tion under this section shall include—
14 (i) a description of the project, including the
15 batteries to be used in the project, the proposed lo-
16 cations and applications for the batteries, the num-
17 ber of batteries to be demonstrated, and the type,
18 characteristics, and estimated life-cycle costs of the
19 batteries compared to other energy storage devices
20 currently used;
21 (ii) the contribution, if any, of State or local
22 governments and other persons to the demonstration
23 project;

1 (iii) the type of associated equipment to be
2 demonstrated and the type of supporting infrastruc-
3 ture to be demonstrated; and
4 (iv) any other information the Secretary con-
5 siders appropriate.
6 (B) If the proposal includes a lease arrangement, the
7 proposal shall indicate the terms of such lease arrange-
8 ment for the batteries and associated equipment.
9 (c) SELECTION OF PROPOSALS.—(1)(A) The Sec-
10 retary shall, not later that 90 days after the closing date
11 established by the Secretary for receipt of proposals under
12 subsection (b), select at least 5 proposals to receive finan-
13 cial assistance under this section.
14 (B) No one project selected under this section shall
15 receive more than 25 percent of the funds authorized
16 under this section. No more than 3 projects selected under
17 this section shall demonstrate the same battery type.
18 (2) In selecting a proposal under this section, the
19 Secretary shall consider—
20 (A) the ability of the proposer to acquire the
21 batteries and associated equipment and to success-
22 fully manage and conduct the demonstration project,
23 including the reporting requirements set forth in
24 paragraph (3)(B);

1 (B) the geographic and climatic diversity of the
2 projects selected;
3 (C) the long-term technical and competitive via-
4 bility of the batteries to be used in the project and
5 of the original manufacturer of such batteries;
6 (D) the suitability of the batteries for their in-
7 tended uses;
8 (E) the technical performance of the battery,
9 including the expected additional useful life and the
10 battery's ability to retain energy;
11 (F) the environmental effects of the use of and
12 disposal of the batteries proposed to be used in the
13 project selected;
14 (G) the extent of involvement of State or local
15 government and other persons in the demonstration
16 project and whether such involvement will—
17 (i) permit a reduction of the Federal cost
18 share per project; or
19 (ii) otherwise be used to allow the Federal
20 contribution to be provided to demonstrate a
21 greater number of batteries; and
22 (H) such other criteria as the Secretary con-
23 siders appropriate.
24 (3) CONDITIONS.—The Secretary shall require that—

1 (A) as a part of a demonstration project, the
2 users of the batteries provide to the proposer infor-
3 mation regarding the operation, maintenance, per-
4 formance, and use of the batteries, and the proposer
5 provide such information to the battery manufac-
6 turer, for 3 years after the beginning of the dem-
7 onstration project;
8 (B) the proposer provide to the Secretary such
9 information regarding the operation, maintenance,
10 performance, and use of the batteries as the Sec-
11 retary may request during the period of the dem-
12 onstration project; and
13 (C) the proposer provide at least 50 percent of
14 the costs associated with the proposal.

15 **SEC. 133. AUTHORIZATION OF APPROPRIATIONS.**

16 There are authorized to be appropriated to the Sec-
17 retary, from amounts authorized under section 141(a), for
18 purposes of this section—
19 (1) $1,000,000 for fiscal year 2002;
20 (2) $7,000,000 for fiscal year 2003; and
21 (3) $7,000,000 for fiscal year 2004.
22 Such appropriations may remain available until expended.

Page 21, lines 24 and 25, strike "section 105 and under subtitle E" and insert "section 105, section 126, and subtitle F".

Page 22, line 1, insert ", subtitle C," after "subtitle B".

Page 22, line 5, strike "$600,000,000" and insert "$625,000,000".

Page 24, line 15, strike "$1,800,000" and insert "$2,700,000".

Page 25, lines 2 through 18, strike subsection (a).

Page 25, line 19, and page 26, line 1, redesignate subsections (b) and (c) as subsections (a) and (b), respectively.

Page 26, lines 5 and 6, strike ", project, or activity has not been specifically" and insert "has not been".

Page 26, lines 7 through 25, strike subsection (d).

Page 27, lines 1 through 12, amend section 144 to read as follows:

1 **SEC. 144. COST SHARING.**

2 (a) RESEARCH AND DEVELOPMENT.—Except as oth-
3 erwise provided in this subtitle, for research and develop-
4 ment programs carried out under this subtitle, the Admin-
5 istrator shall require a commitment from non-Federal
6 sources of at least 20 percent of the cost of the project.

1 The Administrator may reduce or eliminate the non-Fed-
2 eral requirement under this subsection if the Adminis-
3 trator determines that the research and development is of
4 a basic or fundamental nature.

5 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
6 TION.—Except as otherwise provided in this subtitle, the
7 Administrator shall require at least 50 percent of the costs
8 directly and specifically related to any demonstration or
9 commercial application project under this subtitle to be
10 provided from non-Federal sources. The Administrator
11 may reduce the non-Federal requirement under this sub-
12 section if the Administrator determines that the reduction
13 is necessary and appropriate considering the technological
14 risks involved in the project and is necessary to meet the
15 objectives of this subtitle.

16 (c) CALCULATION OF AMOUNT.—In calculating the
17 amount of the non-Federal commitment under subsection
18 (a) or (b), the Administrator may include personnel, serv-
19 ices, equipment, and other resources.

Page 30, after line 20, insert the following new subtitles:

# Subtitle E—National Building Performance Initiative

**SEC. 161. NATIONAL BUILDING PERFORMANCE INITIATIVE.**

(a) INTERAGENCY GROUP.—Not later than 90 days after the date of the enactment of this Act, the Director of the Office of Science and Technology Policy shall establish an Interagency Group responsible for the development and implementation of a National Building Performance Initiative to address energy conservation and research and development and related issues. The National Institute of Standards and Technology shall provide necessary administrative support for the Interagency Group.

(b) PLAN.—Not later than 270 days after the date of the enactment of this Act, the Interagency Group shall transmit to the Congress a multiyear implementation plan describing the Federal role in reducing the costs, including energy costs, of using, owning, and operating commercial, institutional, residential, and industrial buildings by 30 percent by 2020. The plan shall include—

(1) research, development, and demonstration of systems and materials for new construction and retrofit, on the building envelope and components; and

(2) the collection and dissemination in a usable form of research results and other pertinent infor-

1 mation to the design and construction industry, gov-
2 ernment officials, and the general public.
3 (c) NATIONAL BUILDING PERFORMANCE ADVISORY
4 COMMITTEE.—A National Building Performance Advisory
5 Committee shall be established to advise on creation of
6 the plan, review progress made under the plan, advise on
7 any improvements that should be made to the plan, and
8 report to the Congress on actions that have been taken
9 to advance the Nation's capability in furtherance of the
10 plan. The members shall include representatives of a
11 broad cross-section of interests such as the research, tech-
12 nology transfer, architectural, engineering, and financial
13 communities; materials and systems suppliers; State,
14 county, and local governments; the residential, multi-
15 family, and commercial sectors of the construction indus-
16 try; and the insurance industry.
17 (d) REPORT.—The Interagency Group shall, within
18 90 days after the end of each fiscal year, transmit a report
19 to the Congress describing progress achieved during the
20 preceding fiscal year by government at all levels and by
21 the private sector, toward implementing the plan devel-
22 oped under subsection (b), and including any amendments
23 to the plan.

1 **Subtitle F—Green School Buses**

2 **SEC. 181. SHORT TITLE.**

3 This subtitle may be cited as the "Clean Green
4 School Bus Act of 2001".

5 **SEC. 182. ESTABLISHMENT OF PILOT PROGRAM.**

6 (a) ESTABLISHMENT.—The Secretary shall establish
7 a pilot program for awarding grants on a competitive basis
8 to eligible entities for the demonstration and commercial
9 application of alternative fuel school buses and ultra-low
10 sulfur diesel school buses.

11 (b) REQUIREMENTS.—Not later than 3 months after
12 the date of the enactment of this Act, the Secretary shall
13 establish and publish in the Federal register grant require-
14 ments on eligibility for assistance, and on implementation
15 of the program established under subsection (a), including
16 certification requirements to ensure compliance with this
17 subtitle.

18 (c) SOLICITATION.—Not later than 6 months after
19 the date of the enactment of this Act, the Secretary shall
20 solicit proposals for grants under this section.

21 (d) ELIGIBLE RECIPIENTS.—A grant shall be award-
22 ed under this section only—

23 (1) to a local governmental entity responsible
24 for providing school bus service for one or more pub-
25 lic school systems; or

1 (2) jointly to an entity described in paragraph
2 (1) and a contracting entity that provides school bus
3 service to the public school system or systems.
4 (e) TYPES OF GRANTS.—
5 (1) IN GENERAL.—Grants under this section
6 shall be for the demonstration and commercial appli-
7 cation of technologies to facilitate the use of alter-
8 native fuel school buses and ultra-low sulfur diesel
9 school buses in lieu of buses manufactured before
10 model year 1977 and diesel-powered buses manufac-
11 tured before model year 1991.
12 (2) NO ECONOMIC BENEFIT.—Other than the
13 receipt of the grant, a recipient of a grant under this
14 section may not receive any economic benefit in con-
15 nection with the receipt of the grant.
16 (3) PRIORITY OF GRANT APPLICATIONS.—The
17 Secretary shall give priority to awarding grants to
18 applicants who can demonstrate the use of alter-
19 native fuel buses and ultra-low sulfur diesel school
20 buses in lieu of buses manufactured before model
21 year 1977.
22 (f) CONDITIONS OF GRANT.—A grant provided under
23 this section shall include the following conditions:
24 (1) All buses acquired with funds provided
25 under the grant shall be operated as part of the

1 school bus fleet for which the grant was made for a
2 minimum of 5 years.
3 (2) Funds provided under the grant may only
4 be used—
5 (A) to pay the cost, except as provided in
6 paragraph (3), of new alternative fuel school
7 buses or ultra-low sulfur diesel school buses, in-
8 cluding State taxes and contract fees; and
9 (B) to provide—
10 (i) up to 10 percent of the price of the
11 alternative fuel buses acquired, for nec-
12 essary alternative fuel infrastructure if the
13 infrastructure will only be available to the
14 grant recipient; and
15 (ii) up to 15 percent of the price of
16 the alternative fuel buses acquired, for nec-
17 essary alternative fuel infrastructure if the
18 infrastructure will be available to the grant
19 recipient and to other bus fleets.
20 (3) The grant recipient shall be required to pro-
21 vide at least the lesser of 15 percent of the total cost
22 of each bus received or $15,000 per bus.
23 (4) In the case of a grant recipient receiving a
24 grant to demonstrate ultra-low sulfur diesel school
25 buses, the grant recipient shall be required to pro-

1 vide documentation to the satisfaction of the Sec-
2 retary that diesel fuel containing sulfur at not more
3 than 15 parts per million is available for carrying
4 out the purposes of the grant, and a commitment by
5 the applicant to use such fuel in carrying out the
6 purposes of the grant.
7 (g) BUSES.—Funding under a grant made under this
8 section may be used to demonstrate the use only of new
9 alternative fuel school buses or ultra-low sulfur diesel
10 school buses—
11 (1) with a gross vehicle weight of greater than
12 14,000 pounds;
13 (2) that are powered by a heavy duty engine;
14 (3) that, in the case of alternative fuel school
15 buses, emit not more than—
16 (A) for buses manufactured in model years
17 2001 and 2002, 2.5 grams per brake horse-
18 power-hour of nonmethane hydrocarbons and
19 oxides of nitrogen and .01 grams per brake
20 horsepower-hour of particulate matter; and
21 (B) for buses manufactured in model years
22 2003 through 2006, 1.8 grams per brake horse-
23 power-hour of nonmethane hydrocarbons and
24 oxides of nitrogen and .01 grams per brake
25 horsepower-hour of particulate matter; and

1 (4) that, in the case of ultra-low sulfur diesel
2 school buses, emit not more than—
3 (A) for buses manufactured in model years
4 2001 through 2003, 3.0 grams per brake horse-
5 power-hour of nonmethane hydrocarbons and
6 oxides of nitrogen and .01 grams per brake
7 horsepower-hour of particulate matter; and
8 (B) for buses manufactured in model years
9 2004 through 2006, 2.5 grams per brake horse-
10 power-hour of nonmethane hydrocarbons and
11 oxides of nitrogen and .01 grams per brake
12 horsepower-hour of particulate matter,
13 except that under no circumstances shall buses be
14 acquired under this section that emit nonmethane
15 hydrocarbons, oxides of nitrogen, or particulate mat-
16 ter at a rate greater than the best performing tech-
17 nology of ultra-low sulfur diesel school buses com-
18 mercially available at the time the grant is made.
19 (h) DEPLOYMENT AND DISTRIBUTION.—The Sec-
20 retary shall seek to the maximum extent practicable to
21 achieve nationwide deployment of alternative fuel school
22 buses through the program under this section, and shall
23 ensure a broad geographic distribution of grant awards,
24 with a goal of no State receiving more than 10 percent

1 of the grant funding made available under this section for
2 a fiscal year.
3 (i) LIMIT ON FUNDING.—The Secretary shall provide
4 not less than 20 percent and not more than 25 percent
5 of the grant funding made available under this section for
6 any fiscal year for the acquisition of ultra-low sulfur diesel
7 school buses.
8 (j) DEFINITIONS.—For purposes of this section—
9 (1) the term "alternative fuel school bus"
10 means a bus powered substantially by electricity (in-
11 cluding electricity supplied by a fuel cell), or by liq-
12 uefied natural gas, compressed natural gas, liquefied
13 petroleum gas, hydrogen, propane, or methanol or
14 ethanol at no less than 85 percent by volume; and
15 (2) the term "ultra-low sulfur diesel school
16 bus" means a school bus powered by diesel fuel
17 which contains sulfur at not more than 15 parts per
18 million.
19 **SEC. 183. FUEL CELL BUS DEVELOPMENT AND DEM-**
20 **ONSTRATION PROGRAM.**
21 (a) ESTABLISHMENT OF PROGRAM.—The Secretary
22 shall establish a program for entering into cooperative
23 agreements with private sector fuel cell bus developers for
24 the development of fuel cell-powered school buses, and
25 subsequently with not less than 2 units of local govern-

1 ment using natural gas-powered school buses and such
2 private sector fuel cell bus developers to demonstrate the
3 use of fuel cell-powered school buses.

4 (b) COST SHARING.—The non-Federal contribution
5 for activities funded under this section shall be not less
6 than—

7 (1) 20 percent for fuel infrastructure develop-
8 ment activities; and

9 (2) 50 percent for demonstration activities and
10 for development activities not described in paragraph
11 (1).

12 (c) FUNDING.—No more than $25,000,000 of the
13 amounts authorized under section 184 may be used for
14 carrying out this section for the period encompassing fis-
15 cal years 2002 through 2006.

16 (d) REPORTS TO CONGRESS.—Not later than 3 years
17 after the date of the enactment of this Act, and not later
18 than October 1, 2006, the Secretary shall transmit to the
19 Congress a report that—

20 (1) evaluates the process of converting natural
21 gas infrastructure to accommodate fuel cell-powered
22 school buses; and

23 (2) assesses the results of the development and
24 demonstration program under this section.

1 **SEC. 184. AUTHORIZATION OF APPROPRIATIONS.**

2 There are authorized to be appropriated to the Sec-
3 retary for carrying out this subtitle, to remain available
4 until expended—

5 (1) $40,000,000 for fiscal year 2002;

6 (2) $50,000,000 for fiscal year 2003;

7 (3) $60,000,000 for fiscal year 2004;

8 (4) $70,000,000 for fiscal year 2005; and

9 (5) $80,000,000 for fiscal year 2006.

## 10 Subtitle G—Next Generation
## 11 Lighting Initiative

12 **SEC. 191. SHORT TITLE.**

13 This subtitle may be cited as "Next Generation
14 Lighting Initiative Act".

15 **SEC. 192. DEFINITION.**

16 In this subtitle, the term "Lighting Initiative" means
17 the "Next Generation Lighting Initiative" established
18 under section 193(a).

19 **SEC. 193. NEXT GENERATION LIGHTING INITIATIVE.**

20 (a) ESTABLISHMENT.—The Secretary is authorized
21 to establish a lighting initiative to be known as the "Next
22 Generation Lighting Initiative" to research, develop, and
23 conduct demonstration activities on advanced lighting
24 technologies, including white light emitting diodes.

25 (b) RESEARCH OBJECTIVES.—The research objec-
26 tives of the Lighting Initiative shall be to develop, by

1 2011, advanced lighting technologies that, compared to in-
2 candescent and fluorescent lighting technologies as of the
3 date of the enactment of this Act, are—
4 (1) longer lasting;
5 (2) more energy-efficient; and
6 (3) cost-competitive.
7 **SEC. 194. STUDY.**
8 (a) IN GENERAL.—Not later than 180 days after the
9 date of enactment of this Act, the Secretary, in consulta-
10 tion with other Federal agencies, as appropriate, shall
11 complete a study on strategies for the development and
12 commercial application of advanced lighting technologies
13 . The Secretary shall request a review by the National
14 Academies of Sciences and Engineering of the study under
15 this subsection, and shall transmit the results of the study
16 to the appropriate congressional committees.
17 (b) REQUIREMENTS.—The study shall—
18 (1) develop a comprehensive strategy to imple-
19 ment the Lighting Initiative; and
20 (2) identify the research and development, man-
21 ufacturing, deployment, and marketing barriers that
22 must be overcome to achieve a goal of a 25 percent
23 market penetration by advanced lighting tech-
24 nologies into the incandescent and fluorescent light-
25 ing market by the year 2012.

1 (c) IMPLEMENTATION.—As soon as practicable after
2 the review of the study under subsection (a) is transmitted
3 to the Secretary by the National Academies of Sciences
4 and Engineering, the Secretary shall adapt the implemen-
5 tation of the Lighting Initiative in accordance with the
6 recommendations of the National Academies of Sciences
7 and Engineering.

8 **SEC. 195. GRANT PROGRAM.**

9 (a) IN GENERAL.—Subject to section 603 of this Act,
10 the Secretary may make merit-based competitive grants
11 to firms and research organizations that conduct research,
12 development, and demonstration projects related to ad-
13 vanced lighting technologies.

14 (b) ANNUAL REVIEW.—

15 (1) IN GENERAL.—An annual independent re-
16 view of the grant-related activities of firms and re-
17 search organizations receiving a grant under this
18 section shall be conducted by a committee appointed
19 by the Secretary under the Federal Advisory Com-
20 mittee Act (5 U.S.C. App.), or, at the request of the
21 Secretary, a committee appointed by the National
22 Academies of Sciences and Engineering.

23 (2) REQUIREMENTS.—Using clearly defined
24 standards established by the Secretary, the review
25 shall assess technology advances and progress to-

1 ward commercialization of the grant-related activi-
2 ties of firms or research organizations during each
3 fiscal year of the grant program.
4 (c) TECHNICAL AND FINANCIAL ASSISTANCE.—The
5 national laboratories and other Federal agencies, as ap-
6 propriate, shall cooperate with and provide technical and
7 financial assistance to firms and research organizations
8 conducting research, development, and demonstration
9 projects carried out under this subtitle.

Page 35, lines 19 through 22, amend subsection (f) to read as follows:

10 "(f) COST SHARING.—For research and development
11 programs carried out under this section, the Secretary
12 shall require a commitment from non-Federal sources of
13 at least 20 percent of the cost of the project. The Sec-
14 retary may reduce or eliminate the non-Federal require-
15 ment under this subsection if the Secretary determines
16 that the research and development is of a basic or funda-
17 mental nature.".

Page 36, line 8, insert "and inserting ', which shall include a fuel cell bus demonstration program to address hydrogen production, storage, and use in transit bus applications' " before "; and".

Page 41, line 4, insert ", and forestry residues and byproducts" after "waste materials".

Page 41, lines 6 through 8, amend section 223 to read as follows:

1 **SEC. 223. DEFINITIONS.**

2 For purposes of this subtitle—

3 (1) the term "bioenergy" means energy derived
4 from any organic matter that is available on a re-
5 newable or recurring basis, including agricultural
6 crops and trees, wood and wood wastes and residues,
7 plants (including aquatic plants), grasses, residues,
8 fibers, and animal and other organic wastes;

9 (2) the term "biofuels" includes liquid or gas-
10 eous fuels, industrial chemicals, or both;

11 (3) the term "biopower" includes the generation
12 of electricity or process steam or both; and

13 (4) the term "integrated bioenergy research and
14 development" includes biopower and biofuels applica-
15 tions.

Page 41, line 16, strike "(including biofuels)".

Page 42, line 12, strike "(including biofuels)".

Page 42, line 16, insert ", including the Plant Genome Program of the National Science Foundation" after "Federal agencies".

Page 42, after line 16, insert the following:

1 (d) INTEGRATED APPLICATIONS.—Amounts author-
2 ized to be appropriated under this subtitle may be used
3 to assist in the planning, design, and implementation of
4 projects to convert rice straw and barley grain into
5 biopower or biofuels.

## 6 Subtitle C—Transmission
## 7 Infrastructure Systems

### 8 SEC. 241. TRANSMISSION INFRASTRUCTURE SYSTEMS RE-
### 9 SEARCH, DEVELOPMENT, DEMONSTRATION,
### 10 AND COMMERCIAL APPLICATION.

11 (a) IN GENERAL.—The Secretary shall develop and
12 implement a comprehensive research, development, dem-
13 onstration, and commercial application program to ensure
14 the reliability, efficiency, and environmental integrity of
15 electrical transmission systems. Such program shall in-
16 clude advanced energy technologies and systems, high ca-
17 pacity superconducting transmission lines and generators,
18 advanced grid reliability and efficiency technologies devel-
19 opment, and technology transfer and education.

20 (b) TECHNOLOGY.—In carrying out this subtitle, the
21 Secretary may include research, development, and dem-
22 onstration on and commercial application of improved
23 transmission technologies including the integration of the
24 following technologies into improved transmission systems:

1 (1) High temperature superconductivity.

2 (2) Advanced transmission materials.

3 (3) Any other infrastructure technologies, as

4 appropriate.

5 **SEC. 242. PROGRAM PLAN.**

6 Within 120 days after the date of the enactment of

7 this Act, the Secretary, in consultation with other appro-

8 priate Federal agencies, shall prepare and transmit to

9 Congress a 5-year program plan to guide activities under

10 this subtitle. In preparing the program plan, the Secretary

11 shall consult with appropriate representatives of the trans-

12 mission infrastructure systems industry to select and

13 prioritize appropriate program areas. The Secretary shall

14 also seek the advice of utilities, energy services, providers,

15 manufacturers, institutions of higher learning, other ap-

16 propriate State and local agencies, environmental organi-

17 zations, professional and technical societies, and any other

18 persons as the Secretary considers appropriate.

19 **SEC. 243. REPORT.**

20 Two years after the date of the enactment of this Act,

21 and at two year intervals thereafter, the Secretary, in con-

22 sultation with other appropriate Federal agencies, shall

23 transmit a report to Congress describing the progress

24 made to achieve the purposes of this subtitle and identi-

25 fying any additional resources needed to continue the de-

1 velopment and commercial application of transmission in-
2 frastructure technologies.

Page 43, line 8, strike "$475,000,000" and insert "$535,000,000".

Page 43, line 9, strike "$585,000,000" and insert "$639,000,000".

Page 43, line 9, strike "$620,000,000" and insert "$683,000,000".

Page 43, after line 10, insert the following new subsections:

3 (b) WAVE POWERED ELECTRIC GENERATION.—
4 Within the amounts authorized to be appropriated to the
5 Secretary under subsection (a), the Secretary shall carry
6 out a research program, in conjunction with other appro-
7 priate Federal agencies, on wave powered electric genera-
8 tion.

9 (c) ASSESSMENT OF RENEWABLE ENERGY RE-
10 SOURCES.—

11 (1) IN GENERAL.—Using funds authorized in
12 subsection (a), of this section, the Secretary of En-
13 ergy shall transmit to the Congress, within one year
14 after the date of the enactment of this Act, an as-
15 sessment of all renewable energy resources available
16 within the United States.

1 (2) RESOURCE ASSESSMENT.—Such report
2 shall include a detailed inventory describing the
3 available amount and characteristics of solar, wind,
4 biomass, geothermal, hydroelectric, and other renew-
5 able energy sources, and an estimate of the costs
6 needed to develop each resource. The report shall
7 also include such other information as the Secretary
8 of Energy believes would be useful in siting renew-
9 able energy generation, such as appropriate terrain,
10 population and load centers, nearby energy infra-
11 structure, and location of energy resources.
12 (3) AVAILABILITY.—The information and cost
13 estimates in this report shall be updated annually
14 and made available to the public, along with the
15 data used to create the report.
16 (4) SUNSET.—This subsection shall expire at
17 the end of fiscal year 2004.

Page 43, line 11, strike "(b)" and insert "(d)".

Page 46, line 7, strike "and".

Page 46, after line 7, insert the following new paragraph:

18 (5) assist universities in maintaining reactor in-
19 frastructure; and

Page 46, line 8, strike "(5)" and insert "(6)".

Page 48, after line 2, insert the following new subsection:

1 (g) REPORT.—Not later than 180 days after the date
2 of the enactment of this Act, the Secretary shall prepare
3 and transmit to the appropriate congressional committees
4 a 5-year plan on how the programs authorized in this sub-
5 title will be implemented. The plan shall include a review
6 of the projected personnel needs in the fields of nuclear
7 science and engineering and of the scope of nuclear science
8 and engineering education programs at the Department
9 and other Federal agencies.

Page 51, line 13 through page 53, line 24, strike section 321, and redesignate the subsequent section accordingly.

Page 60, line 5, strike "$50,000,000" and insert "$20,000,000".

Page 60, line 13, strike "322(c)" and insert "321(c)".

Page 60, lines 16 and 17, strike "$221,000,000" and all that follows through "$240,000,000" and insert "$191,200,000 for fiscal year 2002, $199,000,000 for fiscal year 2003, and $207,000,000".

Page 64, line 9, insert "research and development" after "related technologies".

Page 64, line 12, strike "Pressurized Fluidized Bed" and insert "Advanced Combustion".

Page 64, after line 14, insert the following new paragraph:

1 (6) Innovative technologies for demonstration;

Page 64, lines 15 through 18, redesignate paragraphs (6) through (9) as paragraphs (7) through (10), respectively.

Page 64, line 19, through page 65, line 4, strike section 406 and insert the following:

2 (c) LIMIT ON USE OF FUNDS.—Notwithstanding sub-
3 sections (a) and (b), no funds may be used to carry out
4 the activities authorized by this subtitle after September
5 30, 2002, unless the Secretary has transmitted to the ap-
6 propriate congressional committees the report required by
7 this subsection and 30 days have elapsed since that trans-
8 mission. The report shall include—
9 (1) with respect to subsection (a), a detailed
10 10-year plan containing—
11 (A) a detailed assessment of whether the
12 aggregate funding levels provided under sub-

1 section (a) are the appropriate funding levels
2 for that program;
3 (B) a detailed description of how proposals
4 will be solicited and evaluated, including a list
5 of all demonstration activities expected to be
6 undertaken;
7 (C) a detailed list of technical milestones
8 for each coal and related technology that will be
9 pursued;
10 (D) recommendations for a mechanism for
11 recoupment of Federal funding for successful
12 commercial projects; and
13 (E) a detailed description of how the pro-
14 gram will avoid problems enumerated in Gen-
15 eral Accounting Office reports on the Clean
16 Coal Technology Program, including problems
17 that have resulted in unspent funds and
18 projects that failed either financially or scientif-
19 ically;
20 (2) with respect to subsection (b), a plan
21 containing—
22 (A) a detailed description of how proposals
23 will be solicited and evaluated, including a list
24 of all demonstration activities expected to be
25 undertaken; and

1 (B) a detailed list of technical milestones
2 for each coal and related technology that will be
3 pursued; and
4 (3) a description of how the programs will be
5 carried out under subsection (a) and subsection (b)
6 so as to complement each other and not duplicate
7 activities.
8 (d) APPLICABILITY.—Subsection (c) shall not apply
9 to any program, project, or activity begun before Sep-
10 tember 30, 2001.
11 **SEC. 406. PROJECT CRITERIA.**
12 (a) IN GENERAL.—The Secretary shall not provide
13 funding for any research, development, demonstration, or
14 commercial application of coal and related technologies
15 that do not advance efficiency, environmental perform-
16 ance, and cost competitiveness well beyond the level of
17 technologies that are in operation or have been dem-
18 onstrated as of the date of the enactment of this Act.
19 (b) TECHNICAL CRITERIA FOR CLEAN COAL POWER
20 INITIATIVE.—
21 (1) SEQUESTRATION AND GASIFICATION.—(A)
22 In allocating the funds authorized under section 405
23 (a), the Secretary shall ensure that at least 80 per-
24 cent of the funds are used only for projects on car-
25 bon sequestration, or coal-based gasification tech-

1 nologies, including gasification combined cycle, gas-
2 ification fuel cells, gasification coproduction and hy-
3 brid gasification/combustion.
4 (B) The Secretary shall set technical milestones
5 specifying emissions levels that coal gasification
6 projects must be designed to and reasonably ex-
7 pected to achieve. The milestones shall get more re-
8 strictive through the life of the program. The mile-
9 stones shall be designed to achieve by 2020 coal gas-
10 ification projects able—
11 (i) to remove 99 percent of sulfur dioxide;
12 (ii) to emit no more than .05 lbs of NOx
13 per million BTU;
14 (iii) to remove 95 percent of mercury; and
15 (iv) to achieve a thermal efficiency of 60
16 percent higher heating value.
17 (2) OTHER PROJECTS.—For projects not de-
18 scribed in paragraph (1), the Secretary shall set
19 technical milestones specifying emissions levels that
20 the projects must be designed to and reasonably ex-
21 pected to achieve. The milestones shall get more re-
22 strictive through the life of the program. The mile-
23 stones shall be designed to achieve by 2010 projects
24 able—
25 (A) to remove 97 percent of sulfur dioxide;

1 (B) to emit no more than .08 lbs of NOx
2 per million BTU;
3 (C) to remove 90 percent of mercury; and
4 (D) to achieve a thermal efficiency of 45
5 percent higher heating value.
6 (c) FINANCIAL CRITERIA.—The Secretary shall not
7 provide a funding award for any research, development,
8 demonstration, or commercial application of coal and re-
9 lated technologies unless the recipient of the award has
10 documented to the satisfaction of the Secretary that—
11 (1) the award recipient is financially viable
12 without the receipt of additional Federal funding;
13 (2) the recipient will provide sufficient informa-
14 tion to the Secretary for the Secretary to ensure
15 that the award funds are spent efficiently and effec-
16 tively; and
17 (3) a market exists for the technology being
18 demonstrated or applied, as evidenced by statements
19 of interest in writing from potential purchasers of
20 the technology.
21 (d) FEDERAL SHARE.—The Federal share of the cost
22 of a coal or related technology project funded by the Sec-
23 retary shall not exceed 50 percent.

1 **SEC. 407. CLEAN COAL CENTERS OF EXCELLENCE.**

2 As part of the program authorized in section 405(a),
3 the Secretary shall award competitive, merit-based grants
4 to universities for the establishment of Centers of Excel-
5 lence for Energy Systems of the Future. Such Centers
6 shall be located at universities with a proven record of con-
7 ducting research on, developing, or demonstrating clean
8 coal technologies. The Secretary shall provide grants to
9 universities that can show the greatest potential for dem-
10 onstrating new clean coal technologies.

Page 65, line 22, through page 66, line 2, strike section 423.

Page 66, after line 2, insert the following new subtitle:

11 **Subtitle C—Ultra-Deepwater and**
12 **Unconventional Drilling**

13 **SEC. 481. SHORT TITLE.**

14 This subtitle may be cited as the "Natural Gas and
15 Other Petroleum Research, Development, and Demonstra-
16 tion Act of 2001".

17 **SEC. 482. DEFINITIONS.**

18 For purposes of this subtitle—

19 (1) the term "deepwater" means water depths
20 greater than 200 meters but less than 1,500 meters;

1 (2) the term "Fund" means the Ultra-Deep-
2 water and Unconventional Gas Research Fund es-
3 tablished under section 491;
4 (3) the term "institution of higher education"
5 has the meaning given that term in section 101 of
6 the Higher Education Act of 1965 (20 U.S.C.
7 1001);
8 (4) the term "Research Organization" means
9 the Research Organization created pursuant to sec-
10 tion 486(a);
11 (5) the term "ultra-deepwater" means water
12 depths greater than 1,500 meters; and
13 (6) the term "unconventional" means located in
14 heretofore inaccessible or uneconomic formations on
15 land.

16 **SEC. 483. ULTRA-DEEPWATER PROGRAM.**

17 The Secretary shall establish a program of research,
18 development, and demonstration of ultra-deepwater nat-
19 ural gas and other petroleum exploration and production
20 technologies. The program shall be carried out by the Re-
21 search Organization as provided in this subtitle.

22 **SEC. 484. NATIONAL ENERGY TECHNOLOGY LABORATORY.**

23 The National Energy Technology Laboratory and the
24 United States Geological Survey, when appropriate, shall
25 carry out programs of long-term research into new natural

1 gas and other petroleum exploration and production tech-
2 nologies and environmental mitigation technologies for
3 production from unconventional and ultra-deepwater re-
4 sources, including methane hydrates. Such Laboratory
5 shall also conduct a program of research, development,
6 and demonstration of new technologies for the reduction
7 of greenhouse gas emissions from unconventional and
8 ultra-deepwater natural gas or other petroleum explo-
9 ration and production activities, including sub-sea floor
10 carbon sequestration technologies.

11 **SEC. 485. ADVISORY COMMITTEE.**

12 (a) ESTABLISHMENT.—The Secretary shall, within
13 90 days after the date of the enactment of this Act, estab-
14 lish an Advisory Committee consisting of 7 members, each
15 having extensive operational knowledge of and experience
16 in the natural gas and other petroleum exploration and
17 production industry who are not Federal Government em-
18 ployees or contractors. A minimum of 4 members shall
19 have extensive knowledge of ultra-deepwater natural gas
20 or other petroleum exploration and production tech-
21 nologies, a minimum of 2 members shall have extensive
22 knowledge of unconventional natural gas or other petro-
23 leum exploration and production technologies, and at least
24 1 member shall have extensive knowledge of greenhouse

1 gas emission reduction technologies, including carbon se-
2 questration.

3 (b) FUNCTION.—The Advisory Committee shall ad-
4 vise the Secretary on the selection of an organization to
5 create the Research Organization and on the implementa-
6 tion of this subtitle.

7 (c) COMPENSATION.—Members of the Advisory Com-
8 mittee shall serve without compensation but shall receive
9 travel expenses, including per diem in lieu of subsistence,
10 in accordance with applicable provisions under subchapter
11 I of chapter 57 of title 5, United States Code.

12 (d) ADMINISTRATIVE COSTS.—The costs of activities
13 carried out by the Secretary and the Advisory Committee
14 under this subtitle shall be paid or reimbursed from the
15 Fund.

16 (e) DURATION OF ADVISORY COMMITTEE.—Section
17 14 of the Federal Advisory Committee Act shall not apply
18 to the Advisory Committee.

19 **SEC. 486. RESEARCH ORGANIZATION.**

20 (a) SELECTION OF RESEARCH ORGANIZATION.—The
21 Secretary, within 180 days after the date of the enactment
22 of this Act, shall solicit proposals from eligible entities for
23 the creation of the Research Organization, and within 90
24 days after such solicitation, shall select an entity to create
25 the Research Organization.

1 (b) ELIGIBLE ENTITIES.—Entities eligible to create
2 the Research Organization shall—
3 (1) have been in existence as of the date of the
4 enactment of this Act;
5 (2) be entities exempt from tax under section
6 501(c)(3) of the Internal Revenue Code of 1986;
7 and
8 (3) be experienced in planning and managing
9 programs in natural gas or other petroleum explo-
10 ration and production research, development, and
11 demonstration.
12 (c) PROPOSALS.—A proposal from an entity seeking
13 to create the Research Organization shall include a de-
14 tailed description of the proposed membership and struc-
15 ture of the Research Organization.
16 (d) FUNCTIONS.—The Research Organization shall—
17 (1) award grants on a competitive basis to
18 qualified—
19 (A) research institutions;
20 (B) institutions of higher education;
21 (C) companies; and
22 (D) consortia formed among institutions
23 and companies described in subparagraphs (A)
24 through (C) for the purpose of conducting re-
25 search, development, and demonstration of un-

1 conventional and ultra-deepwater natural gas or
2 other petroleum exploration and production
3 technologies; and
4 (2) review activities under those grants to en-
5 sure that they comply with the requirements of this
6 subtitle and serve the purposes for which the grant
7 was made.
8 **SEC. 487. GRANTS.**
9 (a) TYPES OF GRANTS.—
10 (1) UNCONVENTIONAL.—The Research Organi-
11 zation shall award grants for research, development,
12 and demonstration of technologies to maximize the
13 value of the Government's natural gas and other pe-
14 troleum resources in unconventional reservoirs, and
15 to develop technologies to increase the supply of nat-
16 ural gas and other petroleum resources by lowering
17 the cost and improving the efficiency of exploration
18 and production of unconventional reservoirs, while
19 improving safety and minimizing environmental im-
20 pacts.
21 (2) ULTRA-DEEPWATER.—The Research Orga-
22 nization shall award grants for research, develop-
23 ment, and demonstration of natural gas or other pe-
24 troleum exploration and production technologies
25 to—

1 (A) maximize the value of the Federal
2 Government's natural gas and other petroleum
3 resources in the ultra-deepwater areas;
4 (B) increase the supply of natural gas and
5 other petroleum resources by lowering the cost
6 and improving the efficiency of exploration and
7 production of ultra-deepwater reservoirs; and
8 (C) improve safety and minimize the envi-
9 ronmental impacts of ultra-deepwater develop-
10 ments.
11 (3) ULTRA-DEEPWATER ARCHITECTURE.—The
12 Research Organization shall award a grant to one or
13 more consortia described in section 486(c)(1)(D) for
14 the purpose of developing and demonstrating the
15 next generation architecture for ultra-deepwater pro-
16 duction of natural gas and other petroleum in fur-
17 therance of the purposes stated in paragraph (2)(A)
18 through (C).
19 (b) CONDITIONS FOR GRANTS.—Grants provided
20 under this section shall contain the following conditions:
21 (1) If the grant recipient consists of more than
22 one entity, the recipient shall provide a signed con-
23 tract agreed to by all participating members clearly
24 defining all rights to intellectual property for exist-
25 ing technology and for future inventions conceived

1 and developed using funds provided under the grant,
2 in a manner that is consistent with applicable laws.
3 (2) There shall be a repayment schedule for
4 Federal dollars provided for demonstration projects
5 under the grant in the event of a successful commer-
6 cialization of the demonstrated technology. Such re-
7 payment schedule shall provide that the payments
8 are made to the Secretary with the express intent
9 that these payments not impede the adoption of the
10 demonstrated technology in the marketplace. In the
11 event that such impedance occurs due to market
12 forces or other factors, the Research Organization
13 shall renegotiate the grant agreement so that the ac-
14 ceptance of the technology in the marketplace is en-
15 abled.
16 (3) Applications for grants for demonstration
17 projects shall clearly state the intended commercial
18 applications of the technology demonstrated.
19 (4) The total amount of funds made available
20 under a grant provided under subsection (a)(3) shall
21 not exceed 50 percent of the total cost of the activi-
22 ties for which the grant is provided.
23 (5) The total amount of funds made available
24 under a grant provided under subsection (a)(1) or
25 (2) shall not exceed 50 percent of the total cost of

1 the activities covered by the grant, except that the
2 Research Organization may elect to provide grants
3 covering a higher percentage, not to exceed 90 per-
4 cent, of total project costs in the case of grants
5 made solely to independent producers.

6 (6) An appropriate amount of funds provided
7 under a grant shall be used for the broad dissemina-
8 tion of technologies developed under the grant to in-
9 terested institutions of higher education, industry,
10 and appropriate Federal and State technology enti-
11 ties to ensure the greatest possible benefits for the
12 public and use of government resources.

13 (7) Demonstrations of ultra-deepwater tech-
14 nologies for which funds are provided under a grant
15 may be conducted in ultra-deepwater or deepwater
16 locations.

17 (c) ALLOCATION OF FUNDS.—Funds available for
18 grants under this subtitle shall be allocated as follows:

19 (1) 15 percent shall be for grants under sub-
20 section (a)(1).

21 (2) 15 percent shall be for grants under sub-
22 section (a)(2).

23 (3) 60 percent shall be for grants under sub-
24 section (a)(3).

1 (4) 10 percent shall be for carrying out section
2 484.

3 **SEC. 488. PLAN AND FUNDING.**

4 (a) TRANSMITTAL TO SECRETARY.—The Research
5 Organization shall transmit to the Secretary an annual
6 plan proposing projects and funding of activities under
7 each paragraph of section 487(a).

8 (b) REVIEW.—The Secretary shall have 30 days to
9 review the annual plan, and shall approve the plan, if it
10 is consistent with this subtitle. If the Secretary approves
11 the plan, the Secretary shall provide funding as proposed
12 in the plan.

13 (c) DISAPPROVAL.—If the Secretary does not approve
14 the plan, the Secretary shall notify the Research Organiza-
15 tion of the reasons for disapproval and shall withhold
16 funding until a new plan is submitted which the Secretary
17 approves. Within 30 days after notifying the Research Or-
18 ganization of a disapproval, the Secretary shall notify the
19 appropriate congressional committees of the disapproval.

20 **SEC. 489. AUDIT.**

21 The Secretary shall retain an independent, commer-
22 cial auditor to determine the extent to which the funds
23 authorized by this subtitle have been expended in a man-
24 ner consistent with the purposes of this subtitle. The audi-
25 tor shall transmit a report annually to the Secretary, who

1 shall transmit the report to the appropriate congressional
2 committees, along with a plan to remedy any deficiencies
3 cited in the report.

4 **SEC. 490. FUND.**

5 (a) ESTABLISHMENT.—There is established in the
6 Treasury of the United States a fund to be known as the
7 "Ultra-Deepwater and Unconventional Gas Research
8 Fund" which shall be available for obligation to the extent
9 provided in advance in appropriations Acts for allocation
10 under section 487(c).

11 (b) FUNDING SOURCES.—

12 (1) LOANS FROM TREASURY.—There are au-
13 thorized to be appropriated to the Secretary
14 $900,000,000 for the period encompassing fiscal
15 years 2002 through 2009. Such amounts shall be
16 deposited by the Secretary in the Fund, and shall be
17 considered loans from the Treasury. Income received
18 by the United States in connection with any ultra-
19 deepwater oil and gas leases shall be deposited in
20 the Treasury and considered as repayment for the
21 loans under this paragraph.

22 (2) ADDITIONAL APPROPRIATIONS.—There are
23 authorized to be appropriated to the Secretary such
24 sums as may be necessary for the fiscal years 2002
25 through 2009, to be deposited in the Fund.

1 (3) OIL AND GAS LEASE INCOME.—To the ex-
2 tent provided in advance in appropriations Acts, not
3 more than 7.5 percent of the income of the United
4 States from Federal oil and gas leases may be de-
5 posited in the Fund for fiscal years 2002 through
6 2009.

7 **SEC. 491. SUNSET.**

8 No funds are authorized to be appropriated for car-
9 rying out this subtitle after fiscal year 2009. The Research
10 Organization shall be terminated when it has expended all
11 funds made available pursuant to this subtitle.

Page 66, line 4, strike "**444**" and insert "**441**".

Page 66, line 5, insert "(a) IN GENERAL.—" before "The Secretary shall".

Page 66, after line 11, insert the following new subsections:

12 (b) MANUFACTURING PRODUCTION AND PROC-
13 ESSES.—In addition to the program under subsection (a),
14 the Secretary, in consultation other Federal agencies, as
15 appropriate, shall establish a program for the demonstra-
16 tion of fuel cell technologies, including fuel cell proton ex-
17 change membrane technology, for commercial, residential,
18 and transportation applications. The program shall spe-
19 cifically focus on promoting the application of and im-

1 proved manufacturing production and processes for fuel
2 cell technologies.
3 (c) AUTHORIZATION OF APPROPRIATIONS.—Within
4 the amounts authorized to be appropriated under section
5 461(a), there are authorized to be appropriated to the Sec-
6 retary for the purpose of carrying out subsection (b),
7 $28,000,000 for each of fiscal years 2002 through 2004.

Page 66, line 22, strike "$238,000,000" and insert "$282,000,000".

Page 66, line 23, strike "$247,000,000" and insert "$293,000,000".

Page 66, line 23, strike "$257,000,000" and insert "$305,000,000".

Page 81, line 7, strike "180 days" and insert "6 months".

Page 81, line 18, strike "270 days" and insert "9 months".

Page 82, line 10, strike "$3,296,076,000" and insert "$3,299,558,000".

Page 82, after line 11, insert the following new subsection:

1 (b) RESEARCH REGARDING PRECIOUS METAL CA-
2 TALYSIS.—Within the amounts authorized to be appro-
3 priated to the Secretary under subsection (a), $5,000,000
4 for fiscal year 2002 may be used to carry out research
5 in the use of precious metals (excluding platinum, palla-
6 dium, and rhodium) in catalysis, either directly though na-
7 tional laboratories, or through the award of grants, coop-
8 erative agreements, or contracts with public or nonprofit
9 entities.

Page 82, line 12, and page 83, line 15, redesignate subsections (b) and (c) as subsections (c) and (d), respectively.

Page 82, lines 20 and 21, strike "$10,000,000 for fiscal year 2002 and $1,405,000 for fiscal year 2003" and insert "$11,405,000 for fiscal year 2002".

Page 83, line 10, strike "$18,133,000" and insert "$18,633,000".

Page 83, line 16, strike "subsection (b)" and insert "subsection (c)".

Page 85, after line 19, insert the following new subsections:

10 (e) INVENTIONS.—An invention conceived and devel-
11 oped by any person using funds provided through a grant

1 under this Act shall be considered a subject invention for
2 the purposes of chapter 18 of title 35, United States Code
3 (commonly referred to as the Bayh-Dole Act).
4 (f) OUTREACH.—The Secretary shall ensure that
5 each program authorized by this Act includes an outreach
6 component to provide information, as appropriate, to man-
7 ufacturers, consumers, engineers, architects, builders, en-
8 ergy service companies, universities, facility planners and
9 managers, State and local governments, and other entities.

Page 85, line 20, and page 86, line 17, redesignate subsections (e) and (f) as subsections (g) and (h), respectively.

Page 86, line 25, through page 87, line 15, strike subsection (a).

Page 87, line 16, and page 88, lines 10 and 18, redesignate subsections (b), (c), and (d) as subsections (a), (b), and (c), respectively.

Page 88, line 22, strike ", project, or activity has not been specifically" and insert "has not been".

Page 88, line 24, through page 89, line 15, strike subsection (e).

Page 89, line 16, through page 90, line 3, amend section 603 to read as follows:

1 **SEC. 603. COST SHARING.**

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

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

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

Page 92, line 17, strike "$2,000,000" and insert "$5,000,000".

Page 94, line 5, strike "$2,000,000" and insert "$5,000,000".

Page 94, line 24, strike "$2,000,000" and insert "$5,000,000".

Page 96, line 15, strike "**INDEPENDENT REVIEWS AND ASSESSMENTS**" and insert "**PERIOD REVIEWS AND ASSESSMENTS**".

Page 96, line 16, strike "(a) PERIODIC REVIEWS AND ASSESSMENTS.—".

Page 96, lines 20 through 23, strike ", projects, and activities" and all that follows through "under section 4" and insert "authorized by this Act, as well as the measurable and performance-based goals for such programs as established under section 4, and the progress on meeting such goals".

Page 96, line 23, strike "biennially" and insert "every 5 years, or more often as the Secretary considers necessary".

Page 97, lines 3 through 17, strike subsection (b).

Chairman BOEHERT. I ask unanimous consent to dispense with the readings. Without objection, so ordered.

I will now ask Dr. Watson, staff director of the Energy Subcommittee, to explain the amendment. Dr. Watson, the microphone is yours.

Dr. WATSON. Thank you, Mr. Chairman. The first 14 pages, roughly, of the en block amendment is to replace the goal section that the bill was introduced. The idea here is to set more explicit goals for each of the programs, so that the taxpayers will be sure of getting their money's worth out of the programs.

The second, new section 7, replaces the old section 7, which address the balance of funding priorities, and is basically a sense of Congress that the ratios among the various R&D programs that are established in this bill should be maintained, and in the out years, we ask the Secretary of Energy and the Administrator of EPA to send us a report and tell us what the result was if the programs got out of balance.

The third, the next page, there are some, two amendments, to the alternative fuel vehicle bill, which is Subtitle A, and Title I. It has expanded the definition of alternative fuel vehicles to accommodate ethanol, propane, and there is also a provision in here which allows ultra-low sulfur diesel vehicles to become part of the program.

There is a, with regard to the ultra-low sulfur diesel fuel vehicles, there is a minimum of 20%, and grant funding and no more than 25% goes to the diesel vehicles.

Subtitle D is, or the next section, on page 18, is a replacement for the current distributed power hybrid energy systems, distributed energy resources provisions as the bill was introduced. It basically expands and elaborates on what we said, what was in the bill as it was introduced.

There is a new Subtitle C, beginning on page 25, through page 32 of the en bloc amendment. It basically provides our research and development demonstration. It establishes a research and development demonstration program through the secondary use of batteries that are used as transportation for primarily electric cars and buses.

We will go now to page 33, we inserted the new Subtitle E, the National Building Performance Initiative. It requires the director of the Office of Science and Technology Policy, to establish an interagency group to address energy conservation R&D and related issues, with regard to buildings.

Subtitle F is a new title, Green School Buses, which essentially establishes a five year, 300 million dollar total grant program for school buses, for alternative fuel school buses and ultra-low sulfur diesel school buses, to replace the current fleet of school buses throughout the Nation's schools.

Beginning on page 42 of the en bloc, we have a new subtitle G, the Next Generation Lighting Initiative, which is to establish a research and development program, primarily on innovative lighting technologies, and particularly it addressed some of the new developments in solid state lighting, such as light emitting diodes.

We have, on page 46, there are a few amendments to the bioenergy provision of the bill. We have further elaborated the defini-

tions of bioenergy, biofuel, biopower, et cetera. We have also included, as a—specifically that the program should consult with the National Science Foundation, with regard to Plant Genome Program.

We have introduced, beginning on page 47, a new subtitle C, Transmission Infrastructure Systems, which basically authorizes some, and better defines some ongoing programs in the Department of Energy with regard to superconductivity, transmission lines, generators, grid reliability, et cetera.

We have also, page 49, we have increased the authorizations for fiscal years 2002 through 2004. The original bill had $475 million, in 2002. This has been increased to $535 million.

There was a $585 million for 2003, that has been increased to $639 million, and we have gone in 2004 from $620 million to $683 million. We have also included, within the renewables, a section to carry out a research program on wave power electric generation. We have also established a new program——

Chairman BOEHLERT. Well, this is an important subject matter, I just wanted to make sure everyone feels comfortable in this. A lot of work has gone into it.

Would you move to waive the balance of the reading?

Mr. HALL. Mr. Chairman, I would move that we waive the balance of the reading.

Chairman BOEHLERT. Any objection?

Dr. WATSON. Oh, thank you.

Chairman BOEHLERT. The Chair recognizes Mr. Costello for five minutes.

Mr. COSTELLO. Mr. Chairman, I would like to discuss the clean coal portion of the manager's amendment and to thank Chairman Boehlert for developing this language with me. I am a strong supporter of the President's decision to fund a 10-year clean coal commercial demonstration program and have introduced legislation to implement that decision. Before my negotiations with the Chairman, I had planned to introduce that legislation as an amendment to this bill. However, I feel we have reached a reasonable compromise in the manager's amendment and no longer plan to offer my amendment today.

In 1998, the Coal Utilization Research Council, CURC, developed a technology roadmap that established cost, efficiency, and environmental performance targets for coal generation through the year 2020.

That roadmap is currently the definitive statement on what we can expect from coal through an aggressive program of research, development, and commercial demonstration. Our compromise language brings the legislation before us into conformity with industry expectations and capabilities and recognizes the changes in coal technology expected over the next two decades.

As in the CURC report, our bill now allocates 80 percent of funding under the clean coal program to advanced coal gasification and carbon sequestration technologies. The legislation expects that as the years pass, newly funded projects in this category will meet more stringent standards on a trajectory to achieve the CURC report's goals for 2020 on a timely basis. The remainder of the funds

will be used for conventional clean coal projects, on a similar trajectory designed to reach the CURC report's 2010 goals on time.

Since this is a commercial demonstration rather than a research program, I feel that it is most appropriate for us to be using the industry's best estimates of its future capabilities, and I applaud the Chairman for his concurrence in this decision, and others on the committee who have worked with us in reaching this agreement.

So, Mr. Chairman, I want to thank you and your staff for your cooperation and your understanding. Your staff and our staff, I know in the last couple of evenings, worked until the wee hours of the morning, trying to reach this agreement, and I want to thank the staff and personally thank the Chairman, and I want to say that this is a good bill, and I intend to support it.

[Statement of Jerry Costello follows:]

PREPARED STATEMENT OF HON. JERRY COSTELLO

Mr. Chairman, I would like to discuss the clean coal portion of the manager's amendment and to thank Chairman Boehlert for developing this language with me. I am a strong supporter of the President's decision to fund a 10 year clean coal commercial demonstration program and have introduced legislation to implement that decision. Before my negotiations with the Chairman, I had planned to introduce that legislation as an amendment to this bill. However, I feel we have reached a reasonable compromise in the manager's amendment and no longer plan to offer my amendment today.

In 1998, the Coal Utilization Research Council (CURC) developed a technology roadmap that established cost, efficiency, and environmental performance targets for coal generation through the year 2020. That roadmap is currently the definitive statement on what we can expect from coal through an aggressive program of research, development, and commercial demonstration. Our compromise language brings the legislation before us into conformit and industry expectations and capabilities and recognizes the changes in coal technology expected over the next two decades. As in the CURC report, our bill now allocates 80 percent of funding under the clean coal program to advanced coal gasification and carbon sequestration technologies. The legislation expects that as the years pass, newly funded projects in this category will meet more stringent standards on a trajectory to achieve of the funds will be used for conventional clean coal projects, on a similar trajectory designed to reach the CURC report's 2010 goals on time. Since this is a commercial demonstration rather than a research program, I feel that it is most appropriate for us to be using the industry's best estimate of its future capabilities, and I applaud the Chairman for his concurrence in this decision.

Chairman. BOEHLERT. Thank you very much. Anyone else care to be recognized?

Ms. WOOLSEY. I don't want to be left out.

Chairman BOEHLERT. Miss Woolsey.

Ms. WOOLSEY. Well, Mr. Chairman, before we vote on the en bloc, I want to make sure that my amendment will be discussed, and I won't know if it is before the en bloc or afterwards.

Chairman BOEHLERT. After.

Ms. WOOLSEY. That is, okay. All right, thank you.

Chairman BOEHLERT. Anyone else in rebuttal?

Mr. Lampson.

Mr. LAMPSON. Thank you, Mr. Chairman. I move to strike the last word, Mr. Chairman.

Chairman BOEHLERT. No objection, so ordered, you are recognized for five minutes.

Mr. LAMPSON. Thank you, Mr. Chairman. I was prepared to offer a responsible energy research and development demonstration pro-

gram authorization and amendment today, to raise authorization levels; but instead, I am pleased that we were able to work together, and that you, Mr. Chairman, saw the wisdom of putting these programs on a healthy authorization path.

And I wanted to take a moment to thank you for accepting my language. We now have authorization numbers for research and development programs restored to adequate levels, and authorizations in out years will now provide additional light. Funding levels will put oil and gas research programs on a path that will enable them to be increasingly productive in the years ahead.

It is a part that the United States have a balanced energy research and development and demonstration program to enhance fossil energy. The research should aim for an increased efficiency, and provide cycles, using high temperature fuel cells, advanced gasification technologies and coal, and biomass to produce power and clean fuels.

For offshore oil and natural gas resources we should investigate and develop technologies to extract methane hydrates in our Nation's coastal waters, and develop natural gas and oil reserves in the ultra-deep water of the central and western Gulf of Mexico.

Research and development on ultra-deep water resource recovery should focus on improving the safety and efficiency of recovery and of sub-sea production technology used for recovery, while lowering costs.

Once again, Mr. Chairman, I thank you for working with you, and I look forward to working with you for development of it still.

PREPARED STATEMENT OF HON. NICK LAMPSON

Thank you, Mr. Chairman. I was prepared to offer a fossil energy resource, development, and demonstration program authorization amendment today to raise authorization levels, but instead am pleased that we were able to work together and that you, Mr. Chairman, saw the wisdom in putting these programs on a healthy authorization path. I wanted to take a moment to thank you for accepting my language.

We now have authorization numbers for research and development programs restored to adequate levels and authorizations in outyears will now provide additional money. Funding levels will put oil and gas research programs on a path that will enable them to be increasingly productive in years ahead.

It is important that the United States have a balanced energy research, development, and demonstration program to enhance fossil energy. Research should aim toward increased efficiency of combined cycles using high temperature fuel cells, advanced gasification technologies for coal, and biomass to produce power and clean fuels. For offshore oil and natural gas resources, we should investigate and develop technologies to extract methane hydrates in our nation's coastal waters; and develop natural gas and oil reserves in the ultra-deepwater of the Central and Western Gulf of Mexico. Research and development on ultra-deepwater resource recovery should focus on improving the safety and efficiency of recovery and of sub-sea production technology used for recovery, while lowering costs.

Once again, thank you Mr. Chairman. I look forward to working with you through the development of this bill.

Chairman BOEHLERT. Thank you very much. The Chair recognizes Miss Hart.

Ms. HART. Thank you very much. I have questions, but before I ask the questions, let me just say that I think that there is much of value in what we put together, and I support most of it, maybe all of it, but my two questions relate to off-shore oil drilling.

On page 10 of this en bloc amendment, there is a provision relative to drilling in the coastal waters of the United States, as well

as, specifically, central western Gulf of Mexico, and on page 7, subtitle C, it relates to ultra-deep water. My inquiry relates to whether, by removing these provisions, we would be expanding or advancing beyond where we are today, the state of ultra oil drilling. And we had an answer, but——

Chairman BOEHLERT. You came to the right place, Dr. Watson, could you answer that?.

Dr. WATSON. Yes it is our understanding, it was not to expand, but rather to improve the technology. But it has nothing to do with expanding the area.

Chairman BOEHLERT. Miss Hart? It is still not working yet, so——

Ms. HART. I'll shout.

Thank you, Mr. Chairman. I want to congratulate you. As to the amendment, I was sort of part of it. I know a lot of members had a lot to add. I think it improved on what our goals are. It included a lot of what we said on Monday. We focused on, not only important things in my area, but important things in all.

Chairman BOEHLERT. Thank you very much. The Chair recognizes Miss Jackson Lee.

[Statement of Ms. Jackson Lee follows:]

PREPARED STATEMENT OF HON. SHEILA JACKSON-LEE

Chairman Boehlert and Ranking Member Hall, I would like to thank you for this opportunity for the House Science Committee to contribute in a substantive way to our country's National Energy Plan.

I have prepared for consideration an amendment for inclusion into H.R. 2460, the Comprehensive Energy Research and Technology Act of 2001. My amendment would create a new subtitle, and make necessary changes to subsequent subtitles in order to create a Secondary Electric Vehicle Battery Use Program in the Department of Energy.

This new program is designed to demonstrate the use of batteries previously only used in transportation applications in secondary applications, including utility and commercial power storage and power quality. The program would also evaluate the performance of these batteries, including their longevity of useful service life and costs, as well as the required supporting infrastructure to support their widespread use.

I found that at the "end-of-useful-life" of a battery system that is used in an electric vehicle (EV), that battery system still retains 80% of its initial capacity. However, the battery system is no longer useful in the EV because it has lost power *capabilities* that are required to run the vehicle effectively. In many electric utility applications, only the *capacity from a battery, not capability,* is required. This situation presents an opportunity for furthering the use of electric vehicles while finding a secondary market for the batteries used for transportation purposes.

The high vehicle prices for the initial series of electric vehicles, along with a lack of consumer familiarity and limited driving range, have greatly restricted consumer acceptance and prevent successful market penetration. In turn, manufacturers refuse to produce greater numbers of EVs, having reached conclusions that the costs are too high and the market too limited. The cycle of high costs and limited sales is broken only if costs are reduced and/or volume is increased dramatically. While it is estimated that prices for batteries begin to fall when the volume reaches 10,000 packs per year, auto manufacturers believe that volume alone cannot address the prohibitive costs of advanced technology batteries necessary to create consumer demand for EVs because the materials needed for such batteries (e.g., nickel) are expensive. Currently, there are a total of approximately 4,000 EVs on U.S. roads.

To assure volume sales of EVs, a dramatic reduction in the cost of batteries is required. An innovative approach to addressing this issue may be to "extend" the life—or value—of the batteries beyond vehicular use. Once the batteries have been "used" in a vehicle, there is an opportunity to refurbish, then "re-use" the batteries in a stationary application. For example, electric utilities could "re-use" EV battery packs in peak shaving, transmission deferral, back-up power and transmission quality improvement applications. If successfully demonstrated for secondary, sta-

tionary-use applications, the effective price of battery systems are projected to make EVs more competitive.

Preliminary studies have shown that if a secondary market is created that pays $100 to $200/kWh for EV batteries, the costs of such batteries for use in the first application, which was a vehicle, could be reduced to $100 to $150/kWh. This change in cost would bring the price point to where auto manufacturers believe is necessary to assure an affordable EV. The combination of values for the vehicular and stationary source uses likely would cover the cost of the battery pack, even at low volume production (estimated at $400kWh).

I thank the Chair and Ranking member for their consideration of this amendment and look forward to working with the committee as we work to bring this legislation before the full House for consideration. Thank you.

Ms. JACKSON LEE. Thank you very much, Mr. Chairman. I was intending to offer an amendment dealing with the secondary electric vehicle battery unit. I believe as the Science Committee, we have the opportunity to look at all aspects of enhancing the Nation's energy policies. One of the issues that I raise and I, again, am not being redundant, want to add to my appreciation for the bipartisan efforts that we have tried to raise in this Committee that I think is in Board of Consensus on the National Energy Policy. Although minute, let me suggest to you that this particular provision that is now included in the odd block, deals with a secondary electric battery—vehicle battery program in the Department of Energy. This new program is designed to demonstrate the use of batteries previously only used in transportation applications and secondary applications including utilities and commercial power storage and power quality. The program would also evaluate the performance of these batteries, including their longevity of useful life and costs, as well as the required supporting infrastructure to support their widespread use.

And I have found that at the end of useful life of a battery system that is used in an electric vehicle that the battery system still retained 80 percent of it's initial capacity. However, the battery system is no longer useful in the EV because it has lost power capabilities that are required to run the vehicle effectively. In many electric utility applications, only the capacity of the battery, not capability is required. This situation presents an opportunity for furthering the use of electric vehicles while finding a secondary market for the batteries used for transportation purposes.

Now, I am not going to vision today because I have not done the research, Mr. Chairman. But as you well know, I live in a community that suffered 36 inches of rain in the last 2 months. In that, we saw many of our medical facilities shut down. I believe there is need to look for every opportunity to have alternative resources of energy before these kinds of crisis.

Let me conclude by simply saying that—it was an important edition to the en bloc. And I also want to support the idea of opportunities for research in the fossil fuel area, which is included in the en bloc amendment. But I think that, again, the focus of the consensus is an energy plan. I yield back the balance of my time.

Chairman BOEHLERT. Thank you very much. The Chair is pleased to announce that the wonders of modern science never cease. The microphones are now back on. Just in time for Mr. Etheridge's outstanding comments.

Mr. ETHERIDGE. Thank you, Mr. Chairman. I am grateful for the mikes and the comment. As you know, I had planned to offer an

amendment, also, and I want to comment on it just briefly and then I think we can clear that up. It really deals with the amendment that Ms. Lofgren talked about a minute ago, a section in the bill. It deals with one of some concern to our folks because they were concerned about only glass-gas exploration off the coast of North Carolina. If you remember, we talked about when the Cheney task force issued a report just recently, in Chapter 5 of that report, it talked about the administration re-examining "current federal legal policy regime to determine if changes are needed regarding energy related activities and deciding of energy facilities in the coastal zones and on the outer continental shelf." And to the people of North Carolina, that sounded like a proposal to start drilling off the coast of Eastern North Carolina. That has been a very contentious thing for a long time. In this very room last month, Energy Secretary, Spencer Abraham, at a question I raised, helped clear up any confusion, I think, regarding the administration's contention or intention on oil and gas exploration in North Carolina. I am very pleased with his comment that the administration did not plan to lift the moratorium to drill in the pristine waters off North Carolina's Outer Banks. Today in this bill, as we just talked, and I want to make sure that I understand it because I think the Energy Research is a very laudable goal, which I support. And it includes a section dealing with research in oil and natural gas exploration and production. Again, a goal which I think is a very laudable goal. However, the amendment that I had proposed to offer would make sure it did not happen off the pristine coast of North Carolina and the Continental Shelf. And I hope, understand, Mr. Chairman, that that—from the comment I just heard, that is not the case.

Chairman BOEHLERT. That is exactly right.

Mr. ETHERIDGE. Thank you, Mr. Chairman.

Chairman BOEHLERT. My understanding is the same as yours, as a result of Secretary Abraham's testimony before this Committee and subsequent statements by Secretary Norton. Who else seeks recognition? Mr. Udall?

Mr. UDALL. Thank you, Mr. Chairman. I would ask unanimous consent to include my entire statement in the record and I will——

Chairman BOEHLERT. Without objection, so ordered.

Mr. UDALL [continuing]. Shorten my statement.

[Statement of Mark Udall follows:]

PREPARED STATEMENT OF HON. MARK UDALL

Mr. Chairman, I rise in support of the manager's amendment and this legislation.

After all the sharp rhetoric we've been hearing on the topic of energy in recent months, I am glad that we have this opportunity today to rise above recrimination and get to the heart of the problem.

As we all know, part of the problem involves an over-dependence on a single energy source—fossil fuels—to the detriment of our environment, our national security, and our economy. If there is a silver lining to the "crisis" we're experiencing, it is that we are being forced to think about balancing our energy portfolio and increasing the contributions of alternative energy sources.

As the chairman knows, clean energy is something that is important to me, and it is the reason I took on the responsibilities of lead co-chair of the House Renewable Energy and Energy Efficiency Caucus in this Congress.

So I am very pleased with the generous authorization levels included in the manager's amendment for renewable energy and energy efficiency R&D. I hope we will

all work hard to retain these funding levels as the bill makes its way through the House.

Mr. Chairman, I want to commend you for the way you and your staff worked with me and other Democratic Members to shape the bill and this manager's amendment. Like you, I believe that working in a bipartisan manner is critical to the development of good public policy.

It was in this bipartisan spirit, Mr. Chairman, that you and I drafted H.R. 2518, the Clean Green School Bus Act, I am very glad that it is included as part of this manager's amendment.

There are nearly half a million school buses in this country. Most of them are aging diesel vehicles. And studies show that children riding inside those buses risk inhaling too much toxic diesel exhaust.

The health of our children should be our overriding concern. But our school districts have a problem because money needed for new and cleaner buses is also needed for school programs. Schools shouldn't be forced to choose between a quality education and the health of our children.

That's why I support authorizing a federal investment in these alternative fuel buses. This provision of the manager's amendment authorizes grants to help school districts replace aging diesel vehicles with clean, alternative fuel buses. This program will not only benefit school districts, but even more importantly, it will benefit the health of our children and the environment.

I am also pleased that the manager's amendment includes my bill, the Distributed Power Hybrid Energy Act, and adds to it good provisions developed by Chairman Boehlert, Mr. Nethercutt, and Mr. Wu.

My bill would direct the Secretary of Energy to develop and implement a strategy for research, development, demonstration, and commercial application of distributed power hybrid energy systems.

Distributed power can avoid the need for and cost of additional transmission lines and pipelines, reduce associated delivery losses, and increase energy efficiency. In addition, distributed power can provide insurance against energy disruptions and expand the available energy service choices for consumers.

"Hybrid" distributed power systems—systems that combine two or more renewable sources or a renewable and a fossil source—enable us to offset the weaknesses of one technology with the strengths of another. For example, in a hybrid system, the intermittency of wind power can be offset by the reliability and affordability of power generated by a microturbine.

The additional benefit of such a combination is cleaner generating capacity. So two or more systems working together can provide synergistic benefits that one system alone cannot.

Distributed generation represents the most significant technological change in the electric industry in decades. Knowing this, it makes sense to focus our R&D priorities on distributed power hybrid systems that can both help improve power reliability and affordability and bring more efficiency and cleaner energy resources into the mix.

So again, I thank the Chairman, the Committee staff, and my colleagues who contributed provisions to this amendment for working with me to include this important distributed energy subtitle.

I'll conclude by noting that this bill isn't perfect. No bill can be perfect for everyone. I have strong reservations about some provisions in the bill, such as those related to new nuclear research and clean coal. But on balance, I believe this bill is a good product that deserves the support of the Committee.

Thank you, Mr. Chairman.

Mr. UDALL. I wanted to also join my colleagues on both sides of the aisle saying thanking you and congratulating you in working together with all of us to craft, I think, a very important and significant piece of legislation. In particular, I wanted to acknowledge the so-called Clean Green School Bus Act and—that you and I drafted and introduced just separately. And I am glad it is included in this Manager's Amendment. And when we talk about Clean Green, we are not talking about the color of the school buses, but we are talking about the performance characteristics we hope that future school buses will have. And this is in large part, not only about the environment, but it is about the health of our children, who we have learned they are exposed to some pretty toxic fumes

from the school buses that are now on the roads. And this would make significant investment in changing the characteristics of those school buses.

Chairman BOEHLERT. It is an outstanding program. I was pleased to work cooperatively with you on it.

Mr. UDALL. And we both, I know, think this is something that will be good for our children and good for the environment. Secondly, I want to mention the Distributed Power Hybrid Energy Act, which is a bill I introduced and it has been, I think, improved by provisions that you have introduced and Mr. Nethercutt and Mr. Wu. And it would direct the Secretary of Energy to develop and implement a strategy for research, development, demonstration and commercial application of distributed power hybrid energy systems. Hybrid systems combine 2 or more renewable sources or a fossil fuel source and a renewable source and it lets us offset the weakness of one technology with the strengths of another. So a good example is if you have a wind power system and you have a micro turbine that backs it up, you have a system that compliments itself when one system is down or not able to be utilized.

So in the end, I want to thank you again for your good work and I want to express my support for this important Manager's Amendment. I yield back my time.

Chairman BOEHLERT. The Chair recognizes Mr. Baird.

Mr. BAIRD. Thank you, Mr. Chair. I think my question was answered in the response to Mr. Etheridge. But I would share his concern. The language of this seems somewhat vague and it talks about developing resources, but I—if it is a research enterprise, I am comfortable with it. But if it is to expand development, I would have some concerns. Thank you very much.

Ms. LOFGREN. Would the gentleman yield?

Chairman BOEHLERT. Ms. Lofgren?

Ms. LOFGREN. I wonder—and I thank the gentleman for yielding. Whether it might be possible—I mean, we know what we mean in this room today because we are talking about it. But whether we might by unanimous consent put together some saving clause or clarification in the body of the bill so that when the bill leaves this wonderful chambers, everyone will know what we all agree on today and I would ask the Chairman at a suitable time whether he might consider that.

Chairman BOEHLERT. We can deal with that, I think, adequately in the report. Counsel on your side advises that. I think we have a clear understanding. We will make it crystal clear in black and white in the Committee Report. Mr. Matheson?

Mr. MATHESON. Thank you, Mr. Chairman. I really want to commend the Committee for this excellent bipartisan bill. And I think this is an example of what we need to do in the House in general in terms of tackling this energy issue, a balanced bipartisan approach really is the best path, I think, to finding some good solutions. And this legislation we are looking at today really fills a critical role because no approach to energy policy is going to be complete and have a long-term component without an emphasis on good research and development.

And I am particularly pleased this amendment that we are looking at right now includes a provision that I had talked about, the

enhanced research and development in electric transmission technologies and efficiency. No matter what energy source we depend upon in our future, our ability to transmit the electricity to consumers in an efficient, responsible manner will be critical. And increased efficiency will decrease line losses, it will improve our efficiency. I think it is critical that we look at any potential improvements to our transmission infrastructure. So this is one that may be a little bit below the radar screen compared to some of the other things we have been talking about. But I am pleased it is part of this amendment and I just wanted to yield back the balance of my time, but also thank the Chairman for this bill.

Chairman BOEHLERT. Mr. Weiner.

Mr. WEINER. Thank you, Mr. Chairman. And I, too, want to join in commending you and the Minority Members and staff. But if you were giving the—there appears to be no section by section summary of what the en bloc is. And I know we had stopped the reading of it. And frankly, the reading of it, I wasn't understanding terribly well as it was going, anyway. Would it be possible, given the fact that this was created in the final form very recently, to get some type of a summary of what is in it for those of us who weren't working as actively on in the Subcommittee? Because it seems—and people I respect a great deal on this Committee are praising it, so by association, it is obviously an excellent bill. But given the many instances in the en bloc amendment that reference the base bill, would it be possible, perhaps, to get a little bit of what is in here?

Chairman BOEHLERT. Yeah. And I think we can do that. Let me ask counsel. Just a moment. Let me point out that it was active participation, active participation on both sides. And on all sides of the various subjects under discussion. So let me—Staff Director, is it possible for you to collaborate with—

Mr. WEINER. Given how enthusiastic so many members are, I don't want to burden them with having to sit through a tutorial on this, but I mean, this document isn't terribly old, is my understanding. Right? And——

Chairman BOEHLERT. About 20 minutes. How does that do?

Mr. WEINER. Yeah. So I am—that means I am about 25 minutes behind everyone else. And, again, Mr. Chairman, I—as I said, I have got complete confidence in you and the minority members who worked on this. I wasn't as actively involved and I would—great. Thank you.

Chairman BOEHLERT. Mr. Staff Director, with Mr. Palmer looking over your shoulder, can you develop something in a hurry? Is there anyone else that seeks recognition? Because we would like to get on with the bill. If not, no further discussion, then all those in favor of the Manager's Amendment say aye. Aye. Those opposed, say no. The ayes have it. The Amendment is agreed to. The next amendment on the roster is an amendment by Ms. Woolsey. Amendment number 2.

AMENDMENT TO EN BLOC AMENDMENT TO H.R. 2460 OFFERED BY MS. WOOLSEY OF CALIFORNIA

On page xx in the item related to page 51, line 13, strike "page 53, line 24, strike section 321, and redesignate the subsequent section accordingly" and insert "page 54, line 23, strike section 321 and 322".

Ms. WOOLSEY. Mr. Chairman, I have an amendment at the desk. Shall I speak while it is being handed out? This is the Nuclear Spent Fuel——

Chairman BOEHLERT. The Clerk will—let me just say the Clerk will report the amendment. And the unanimous consent to dispense with the reading. And without objection, so ordered. The gentle lady from California is recognized for 5 minutes.

Ms. WOOLSEY. Mr. Chairman, this is a straight-forward amendment that would strike Section 322 from the bill. Let me begin by saying that my opposition to the Section 322 can't be whittled down to a nuclear versus anti-nuclear stance. One can support Title 3 and the ideals behind nuclear energy research initiative, nuclear energy technologies and the university nuclear science and engineering effort, but not support Section 322.

In essence, Section 322 has the potential for developing dangerous and costly technologies with no apparent justification or payoff. On an issue this complex and far reaching, I can't agree with a proposal that allows development of reprocessing technologies to move forward unchecked.

As proposed, this program would fund R and D on advanced fuel cycle technologies with no conditions on whether that technology is cheaper, safer or more proliferation resistant than current reactors. As written, Section 322 does not limit the activities of the program to paper studies and roadmaps. That makes this a full-fledged R & D program dedicated to recycling spent nuclear fuel.

What alarms me is that Section 322 opens the door for 2 reprocessing or recycling technologies, pyroprocessing and the transmutation of waste. Unfortunately, these two promising technologies still face the same problems as traditional reprocessing.

First of all, these technologies are not cost effective. Both are too costly now and indications are they will remain so for the foreseeable future.

Secondly, while these reprocessing techniques may reduce the volume of radioactivity of the waste material, the processes are still very waste intensive. Processes which continue to call for reprocess waste to be eliminated or otherwise dealt with by some method of permanent disposal. This means that if we decide to reprocess high volumes of spent fuel, we will need storage both before and after reprocessing in different repositories.

The energy challenges we are facing should not mean that we are open to supporting risky technologies. Instead, we need to invest in smart proven, cost effective energy technologies like renewables. Technologies that don't threaten our environment.

I am certainly one who hopes that one day, we will be able to find a solution to the nuclear waste problem. However, I believe that this section would lead us down the path where we would have to deal with waste disposal and transportation nightmares. This is what makes Americans skeptical of nuclear energy. Just ask our friends in Nevada. And it does nothing to prevent the risk of the ultimate cost of advancing nuclear energy, namely a nuclear accident.

I urge my colleagues to support my amendment. And I thank you and yield back the balance of my time.

Chairman BOEHLERT. The Chair recognizes Dr. Ehlers.

Mr. EHLERS. Thank you, Mr. Chairman. I am not a great fan of nuclear power, but I think it does have it's place in the future. I am also——I don't profess to be an expert on reprocessing. But I am not willing to reject it out of hand. As you well know, some other nations engage in nuclear reprocessing and obviously, they wouldn't do it if it didn't make sense. The reason we don't is that we had a previous President who just issued a blanket requirement that we not engage in any reprocessing.

There are some things where reprocessing might be worthwhile. For example, reducing the intensity of the waste or perhaps the volume of waste. Or separating the waste into different half-life elements so that the 2 different wastes could be treated in different fashions and thereby increase or pardon me, decrease the cost.

So I am not willing to simply say we shouldn't do any reprocessing at all. I think we have something to learn by looking at it. And looking at the chemistry of it and see whether or not we can't develop some reprocessing that is useful in this country for various purposes. I yield back.

Ms. WOOLSEY. Would the gentleman yield? Oh. I am sorry. I had my microphone.

Mr. HOEFFEL. Thank you, Mr. Chairman. I would like to support the Woolsey amendment. I share the gentle lady's concern that this language would reverse a 24 year prohibition in this country against reprocessing reactor waste.

When you reprocess reactor waste, that can create plutonium. And plutonium is, of course, the raw material of nuclear weapons. For 24 years, under 2 different Presidential directives, we have not permitted reprocessing. It is a policy that if we are going to change it, I think requires more notice and more debate than a small amendment and a very large energy bill coming through this Committee.

The gentle lady's concerns about pyroprocessing are also on target because that suggests a return to breeder technology. The use of so called fast reactors that actually create more plutonium than they use. And the reason that we, for 24 years, have not allowed breeder research or reprocessing is because of the threat to the proliferation of nuclear weapons.

This amendment has implications far beyond the scope of this bill or this committee. We are trying mightily around the world to stop the proliferation of nuclear weapons. If we are through this measure sort of unknowingly or in a back-handed way creating even more plutonium in the world market, we, I think, will be working against our efforts to stop proliferation of weapons around the world.

I would urge support for the Woolsey amendment.

Chairman BOEHLERT. The Chair recognizes Dr. Bartlett. The Chair will be prepared to have a statement and bring the matter to a vote.

Mr. BARTLETT. Thank you, Mr. Chairman. I would first like to note that there is nothing in this section of the bill that requires or implies that we are going to change our national policy. All this does is to authorize some research and development which would make us better able to make that informed decision in the future when the time comes to discuss that. We are not discussing now

changing that policy. We are simply discussing whether or not we ought to proceed with this research and development.

We face a very uncertain energy future. We have only 2 percent of the known reserves of oil in the world. We use 25 percent of the world's oil. We now import about 56 percent of the oil which we use.

To give you some idea of how important nuclear is, when you leave today, note that every 5th house you pass, every 5th farm you pass and every 5th industry you pass would not have electricity tomorrow if we shut down our nuclear plants today. 20 percent doesn't sound like much, but every 5th one really sends it home to you that we really need nuclear.

Now, I think that it would be irresponsible for us not to proceed with this R and D because it leaves open to us options in the future that we would not have if we had not pursued this R and D.

Mr. CALVERT. Would the gentleman yield.

Mr. BARTLETT. The—prove the correct thing to do.

Mr. CALVERT. Will the gentleman yield to me?

Mr. BARTLETT. I would. I will yield.

Mr. CALVERT. I just want to also point out and agree with Chairman Bartlett that this is extremely important. In fact, this new technology can reduce waste streams and also enhance proliferation resistance, which I think is also very important. Technology has changed since President Carter made a determination 20 some odd years ago. And the United States has advanced very far in the types of technology we use for reprocessing nuclear waste and certainly the so called technology called pyroprocessing. So I would certainly oppose my friend from California's amendment. I think we should move forward with this technology and I thank the gentleman for yielding.

Mr. HOEFFEL. Would the gentleman yield?

Chairman BOEHLERT. Yes, sir?

Mr. HOEFFEL. Perhaps the problem here is with the unclear language or the vague language in the amendment. I certainly salute the knowledge of both gentlemen who have just spoken. But the Section 322 talks about recycling technology research, which seems to suggest reprocessing. Because that is what reprocessing is, recycling. And it talks about alternative national strategies, which would certainly be the two that the gentle lady identified, pyroprocessing and the other.

Mr. BARTLETT. Again, reclaiming my time, I think that all this section of the bill does is to authorize research and development, which would provide information technologies. It would make us better able to make a decision in the future. We, here, make no decisions about where we are going in the future with this technology. But we don't know now where we could go unless we do this R and D. So I think it is entirely prudent that we do this and reserve for another day the very important discussions whether this is a road we should travel or not.

Mr. ROHRABACHER. Would the gentleman yield?

Mr. BARTLETT. We are not starting down this road.

Mr. ROHRABACHER. Would the gentleman yield?

Mr. BARTLETT. Yes.

Mr. ROHRABACHER. Let me just note that for the last 25 years, we keep hearing these arguments against nuclear energy. And especially, you know, what are we going to do with the waste? Well, it is a little—isn't it a little bit hypocritical to say we can't even use research dollars to try to find a solution to that problem? We are just going to write off this energy source altogether at a time when we are so dependent on overseas energy to keep our country going? Are we just going to write off that as an alternative? Not even going to study it for the possibility that we might come up with an answer to the problem?

Mr. HOEFFEL. Would the gentleman yield?

Mr. ROHRABACHER. I don't have—I cannot——

Mr. HOEFFEL. Yield. Who has to yield?

Mr. ROHRABACHER. I would yield back my time to——

Chairman BOEHLERT. Dr. Bartlett is controlling the time. He has 55 seconds.

Mr. BARTLETT. I will yield 50 of those 55.

Mr. HOEFFEL. I thank the gentleman very much. The problem here is that we are appropriating $10 million for the research——

Chairman BOEHLERT. We authorize.

Mr. HOEFFEL. Thank you. We are authorizing $10 million. And that, I think, is changing national policy without the kind of national debate we ought to have. I thank the gentleman for his yielding and his cooperation.

Mr. BARTLETT. Okay. Reclaiming the time, I would just like to note that in the grand scheme of things, $10 million is probably too little to provide the information we need to make a considered judgment as to where we ought to go in the future. Mr. Chairman, thank you very much for recognizing me.

Chairman BOEHLERT. Listen. Let the Chair state that I have some legitimate concerns about nuclear waste disposal and the potential for proliferation in general. I believe nuclear power, quite frankly, is and should remain a part of a balanced national energy policy. And a responsible nuclear energy policy must include adequate science research and development activities. That is what we are all about in this Committee. Just as the Department of Energy must have adequate resources to carry out it's mission. I mean, we are talking about $10 million for an R and D program related to proliferation resistant fuel—nuclear fuel recycling programs. So I think Section 322 is a responsible authorization, one that is intended to promote the next generation technologies and reduce proliferation threats. And, therefore, I would urge my colleagues to oppose the gentle lady's amendment, as much as I like it, respect—

Ms. WOOLSEY. Will the Chairman yield?

Chairman BOEHLERT. The Chairman will yield. But I don't want to prolong this discussion all evening.

Ms. WOOLSEY. Well, we have one more person besides myself that I think that wants to speak. But, Mr. Chairman, could we—before rules, sit down and take some of what Dr. Ehlers was talking about to make this language clearer, exactly what we are talking about instead of making it look like we are going down a path that we don't—really, Americans don't want us to go down?

Chairman BOEHLERT. Well, let the Chair state that the Chair is always willing, as is Dr. Ehlers and Dr. Bartlett, to work to clarify

our intent as we go about our important business. No problem there. We can talk some more. We will be glad to do so. But I think we have to deal with the amendment right now in a timely fashion. And we will talk to the gentle lady about report language with as much specificity as we can muster.

Ms. WOOLSEY. Thank you, Mr. Chairman

Chairman BOEHLERT. Okay. Ms. Rivers? And then this will be—unless everybody feels compelled to say the same thing over again, this will be the last thing before the vote. Ms. Rivers?

Ms. RIVERS. Thank you, Mr. Chair. Someone mentioned a few minutes ago that this is a different world than it was 25 years ago. And that is true. But radioactive materials are still just as dangerous as they were 25 years ago. Public skepticism remains as high as it did 25 years ago. And the difficulty of finding waste repositories is every bit as hard as it was 25 years ago. So we cannot avoid many of the problems that we have struggled with for the last 25 years.

I understand that it is the intent of this particular Committee to limit this research to a particular kind and that ultimately would produce technology that we shouldn't be frightened of. But there are certainly other plans in existence out there. And I refer to a Washington Post article which ran just 2 weeks ago on the 2nd of July that talks about a strategic alliance with Russia for reprocessing of nuclear materials. Talks about private subsidization at Duke Power in South Carolina so that they can do reprocessing. And this—these are troubling reports. Troubling reports for foreign affairs reasons. Troubling reports for this Committee, who has in many times, spoken out strenuously that we should not be paying private industry to do things that they would normally do on their own. And so I think there are lots of reasons to be concerned about this. And while I recognize that Mr. Bartlett is being very straightforward, when he says we don't have to worry about what the Committee wants to have happen, I am concerned about what the administration might want to have happen or what agreements may have already been made between us and other countries or between us and private industry. And, you know, there is an old saying, I only know what I read in the newspaper. And this particular article in the newspaper gives me great pause about this particular technology. And the——

Mr. EHLERS. Will the gentlewoman yield?

Ms. RIVERS. In one moment, I will. And to go back to how I started my comments, it may be a different world in some respects, but when it comes to the production and the handling of radioactive materials, there are just as many problems today as there were 25 years ago. And we should not hurry ourselves past those problems in an effort to reassure ourselves we can somehow eliminate our reliance on foreign energy supplies. Because it is not going to happen. I will yield to my friend from Michigan.

Mr. EHLERS. I thank the gentleman for yielding. Just let me clarify something. It is a more dangerous world, but not because of anything related to reprocessing, it is because of the downfall of the former Soviet Union. And the greatest—if you are going to worry about plutonium and stay awake at night, think about their plutonium and not about anything in this country. They have tons, lit-

erally tons of plutonium around the country. Not very much safeguarded. And it is a constant worry to me and to most people in the United States.

The agreement with Russia that you are talking about, unless it is something different than we have been doing for the past few years is trying to take their plutonium and reprocess it, bring it back to this country and safeguard it.

Ms. RIVERS. Claiming my time.

Mr. EHLERS. As they dismantle their nuclear warhead.

Ms. RIVERS. Reclaiming my time. According to The Washington Post, the agreement provides for both countries to engage in reprocessing. So it is not simply a matter of the United States picking up the waste and handling it here within our borders only.

Mr. EHLERS. If I—if the gentlewoman will yield. Let me just clarify—finish my statement. Clarify it. We have been doing it for a long time. We are now going to try to train them to do the same thing. As they continue to dismantle their nuclear weapons.

Ms. RIVERS. So as I said, we are moving toward an agreement where this kind of technology will be used both in the United States and in Russia. Thank you, Mr. Chair.

Chairman BOEHLERT. Thank you very much. And for the final comment, the Chair is pleased to recognize Ms. Biggert.

Ms. BIGGERT. Thank you, Mr. Chairman. From some of the conversation, it sounds like we have not been doing this at all. And I happen—I would like to invite you all to come to Argonne National Laboratory where there has been a research effort to—and it has successfully reduced the toxicity of spent fuel from an experimental reactor. And right now, we are looking into some commercial uses of this technology. And 3 times, we in the Congress have voted not to eliminate this research and development. So I think that we need to continue to—with this type of process. And I can't emphasize enough that what we are talking about is only the R and D. And that is how we find in the future how we are going to deal with this. And I think that something like the EMT, if you want to come and see that at Argonne, I think that you will see that this is a way to deal with the nuclear waste and to solve our energy problem.

Chairman BOEHLERT. Thank you very much. And I just would reiterate that Section 322 deals with research and development. And that is the mission that this Committee is most interested in. I have as many reservations for some of the very reasons outlined by Ms. Rivers about nuclear energy and spent fuel and all related to it. But the fact of the matter is, I think in terms of a balance program, we have to deal with the reality of today and we also have to deal with the necessity for conducting important research and development.

Before I call a final vote, let me point out that staff is passing out a summary of the highlights of the en bloc amendment. Mr. Weiner, I hope that will be helpful to you.

[The Summary of highlights of en bloc amendment follows:]

SUMMARY OF HIGHLIGHTS OF EN BLOC AMENDMENT

(Page numbers refer to en bloc amendment)

Pages 1 through 12, rewrites the section in the bill on goals (sec. 4) to set specific technology goals for programs. Adapted from Ms. Woolsey's bill.

Page 13, clarifies that reports on to set goals for new programs are due within 120 days of the program beginning operation.

Page 14, rewrites sec. 7 of the bill to make clear that the Committee expects the ratios among the spending levels for the programs in the bill to be maintained. Requires a report if that does not happen.

Pages 15 through 18, amends Subtitle I A of the bill to add ultra low-sulfur diesel vehicles to the alternative vehicle grants program.

Pages 19 through 25, adds a new Subtitle to the bill to promote research on distributed energy systems. Based on bills by Mr. Nethercutt, Mr. Udall and others.

Pages 25 through 30, adds a new Subtitle to the bill to authorize research on the reuse of the batteries that power electric vehicles. Adapted fro Ms. Sheila Jackson-Lee's bill.

Pages 31 and 32, clarifies the language in the bill on cost-sharing requirements. Based on current law.

Pages 33 and 34, adds a new Subtitle to create an interagency Committee on building technologies.

Pages 35 through 46, adds a new Subtitle to create a program to demonstrate cleaner technologies for school buses. Based on a bill by Mr. Boehlert and Mr. Udall.

Page 46, adds definitions for bipower programs.

Pages 47 and 48, adds a new Subtitle on research on transmission systems. Based on a bill by Mr. Matheson.

Pages 49 and 50, adds a new section to require an assessment of renewable energy resources. Based on a provision by Ms. Woolsey.

Page 51, adds a reporting requirement to the programs on nuclear education.

Pages 52 through 57, adds language reflecting a compromise between Mr. Costello and Mr. Boehlert to ensure that the clean coal program funds environmental improvements.

Pages 57 through 68, adds a new Subtitle to authorize research on drilling for oil and gas in deep waters. Adapted from a bill by Mr. Hall.

Remainder are primarily clarifying amendments.

Chairman BOEHLERT. And we also have—pardon me?

Ms. WOOLSEY. Big words. Mr. Chairman?

Chairman BOEHLERT. Now, let us call—the Chair calls——

Ms. WOOLSEY. Mr. Chairman.

Chairman BOEHLERT. Yes?

Ms. WOOLSEY. I would like to withdrawal this amendment until we have had a chance to sit down and see if we can do something about the wording. And then we will——

Chairman BOEHLERT. Without objection, so ordered. Let us move to the next——

Ms. WOOLSEY [continuing]. Talk about it at the——

Chairman BOEHLERT. Fine.

Ms. WOOLSEY [continuing]. On the floor.

Chairman BOEHLERT. Next—the second Woolsey amendment. The gentlelady is recognized. Well, let us see. The Clerk will report the amendment.

The CLERK. Amendment to en bloc amendment to H.R. 2460, offered by Ms. Woolsey of California.

AMENDMENT TO EN BLOC AMENDMENT TO H.R. 2460 OFFERED BY MS. WOOLSEY OF CALIFORNIA

On page xx (near 19, a couple of pages after Green Buses), in the item related to page 60, line 5, strike "$20,000,000" and insert "$4,500,000".

On page xx in the item related to page 60, line 16, strike "$191,200,000" and insert "$175,700,000".

Chairman BOEHLERT. The gentlelady is recognized for 5 minutes.

Ms. WOOLSEY. Thank you, Mr. Chairman. This amendment would reduce the funding in the amended bill from $20 million to $4.5 million. The President's budget request is absolutely crystal clear that the nuclear energy technology account needs just $4.5 million to complete a technology roadmap study on generation 4 nuclear reactor technologies. Not $50 million, as was the base bill or $20 million, as in the bill as amended. The goal of the $4.5 million study is to finish a technology roadmap report and deliver it to Congress for review. According to the budget request, that is the final step for this account. Future work and requests are contingent presumably upon what the plan proposes. I can find no reason to authorize $15.5 million more than the President says he needs. Apparently, the House Appropriations Committee couldn't, either, because last month, they appropriated just $4.5 million for this account.

That is why, Mr. Chairman, I am asking members to support a good government amendment to strike the unnecessary funds from the bill. I think that the proper procedure is to give the department the money they need to finish their report, but no more than that. After the report is delivered, then we can go on from there. Please know I am not trying to block the study. Whether you love or hate nuclear energy isn't my point. The point is, we should have a clear purpose for the sums we authorize tied to either a request from the administration or a strong Committee record. Unfortunately, we have neither in this instance. I hope my colleagues can support this amendment. And I thank you, Mr. Chairman.

Chairman BOEHLERT. Let me point out to the gentlelady that the Chair looked at this, too, and had some real questions about the opening figure. And the opening figure was $50 million. We cut it down to $20 million. Would counsel care to shed any further light on the difference between—I know what the difference is between 4.5 and 20. Pretty good at math, at least up to the 5th grade level. After that, I am challenged. But—counsel? Dr. Watson, do you have any comment?

Dr. WATSON. Yes, Mr. Chairman. We agreed to further look at the program that perhaps the $50 million was a bit ambitious. That the Department, however, has provided information that justifies R&D that can support the roadmapping activities and the implementation of that road mapping activities. We have, in detail, a $20 million R&D program which would be in addition to the $4.5 million required to complete the roadmap. And so we are actually short-changing things that could be done.

Chairman BOEHLERT. Care to speak to the amendment? Mr. Calvert.

Mr. CALVERT. I, again, I hate to oppose my good friend from California, but again, as we are looking for solutions to the future for new energy, as has been pointed out by the Chairman and others here that nuclear power has to be part of that solution. 20 percent of the electric base load power of the United States comes from nuclear power. And as we proceed down the road—and this is R and D money, to come up with a standardized design for light water reactor that we can build in this country that people feel confident and will provide safe and reliable base load energy to the United States.

And by the way, if you do believe in global warming and I have been to—I was at Kyoto and several other of the COPs, if you believe that that, in fact, is a problem in the world, that nuclear power is probably one of the best solutions to a potential problem. So, again, I would oppose this amendment, Mr. Chairman. I would encourage that the R and D take place and that we move toward a standardized design for a nuclear component to our energy solution. Thank you.

Chairman BOEHLERT. Recognizes Ms. Rivers. Do I sense a pattern emerging here? Or should we confine this to a discussion within the California delegation of both sides? Ms. Rivers.

Ms. RIVERS. Thank you, Mr. Chair. I am looking at a document the Generation 4 nuclear energy systems initiative. My staff brought it back to my office yesterday. I believe it was handed out to staff when questions were raised about the initiative—where the—emphasis for this funding. Can anybody tell me who wrote it?

Chairman BOEHLERT. Dr. Watson.

Dr. WATSON. It is my understanding this is a condensation of the Nuclear Energy Research Advisory Committee work. It has already been underway on the roadmap.

Ms. RIVERS. So it came from where?

Dr. WATSON. It came from the Department of Energy.

Ms. RIVERS. Department of Energy. Okay.

Dr. WATSON. Yes. Which was a summary, as they say, of——

Ms. RIVERS. It has no date, no name, no agency on it. Nothing.

Chairman BOEHLERT. We didn't distribute it.

Ms. RIVERS. Who did distribute it? It came—it was given out as an answer to the question how the $20 million request was generated.

Chairman BOEHLERT. Dr. Watson, is this from staff?

Dr. WATSON. Yes. This was during our staff discussions.

Ms. RIVERS. But came——

Dr. WATSON. Staff was seeking clarification. So it was——

Chairman BOEHLERT. So we got it from Department of Energy?

Ms. RIVERS. It came from the——

Dr. WATSON. During our discussions.

Chairman BOEHLERT. But it came from Department of Energy?

Dr. WATSON. Yes. Yes, sir.

Ms. RIVERS. Okay.

Chairman BOEHLERT. And just in future—and I agree with Ms. Rivers. In the future, obviously, we should identify the source of any material passed out so we all know——

Ms. RIVERS. I look at this proposal and I understand that the DOE, now that you tell me the DOE has put this together. What did the OMB decide on this kind of request?

Dr. WATSON. Excuse me. It was $4.5 million was in the President's request.

Ms. RIVERS. Right. So you are saying that the OMB agreed that $4.5 million was appropriate and that $20 or $50 million probably was not?

Dr. WATSON. That is correct.

Ms. RIVERS. Okay. Do you have any idea why the OMB would have taken that position?

Dr. WATSON. I——

Chairman BOEHLERT. Well, if you can figure out why OMB takes a lot of positions, you can sit in the Chair.

Ms. RIVERS. And since we are approving or at least we are contemplating approving this first portion of funding, I see that the full funding for this program is $108 million. Is the Committee in—for $180 million? Is the Committee endorsing that kind of an expenditure on this research over the period of time contemplated in this document? This is on page 3 of the document. There is a summary table. It shows the funding over, I think——

Chairman BOEHLERT. I clarify, we did not pass this out.

Ms. RIVERS. But you did.

Chairman BOEHLERT. No we didn't. I mean, this was a document—in discussions between majority—minority staff, apparently this was a document that was used—one document was given to the minority staff and apparently the minority staff passed it out. We didn't.

Ms. RIVERS. It was—my understanding and I—you can correct me. My understanding is that this document was given to explain the Committee's recommendation that we should fund these programs at $50 million.

Chairman BOEHLERT. No. No. This was—right. During the discussion between majority and minority staff——

Ms. RIVERS. Um-hum.

Chairman BOEHLERT. —and minority staff asked where did the figure $20 million come from.

Ms. RIVERS. No. I think the question was, why are you recommending $50 million or $20 million?

Chairman BOEHLERT. We are not. We are cutting from $50 to $20 million.

Ms. RIVERS. Okay. Why are we recommending $20 million——

Chairman BOEHLERT. Dr. Watson, do you want to address that?

Ms. RIVERS [continuing]. Given that OMB didn't support it?

Chairman BOEHLERT. Well, but OMB doesn't support a lot of things that you and I strongly agree with. And so we fight OMB every step of the way. We just think it is more prudent to go with a little higher figure. We thought the $50 million was too ambitious. So we went back to $20 million. Let us say—let us move to a vote.

Ms. RIVERS. One further question.

Chairman BOEHLERT. Sure.

Ms. RIVERS. Because I think I still have time. Which is, is there a Committee record on this? Is there a Hearing record? Is there some sort of record of discussion taking place to make this recommendation that is so far in excess of what the President recommended and OMB approved?

Chairman BOEHLERT. Dr. Watson.

Mr. WATSON. Yes. We received testimony from Representative Graham on his bill, which had the $50 million figure in it, during our examination of legislation. I can't remember the exact date.

Mr. BARTLETT. Mr. Chairman? Down at this end.

Chairman BOEHLERT. Dr. Bartlett.

Mr. BARTLETT. Oh, thank you. I thought I heard you say that the President's request was for $4.5 million, the administration request

for $4.5 million to finish the roadmap. Then this $20 million includes that and R&D. Is that correct?

Chairman BOEHLERT. Yes, sir.

Mr. BARTLETT. Okay. So this is not blowing the $4.5 million up to $20 million. This is really trying to squeeze the $4.5 million into a very small $20 million that is there for R&D.

Ms. RIVERS. Well, would the gentleman yield?

Mr. BARTLETT. Yes.

Ms. RIVERS. R&D for what? The roadmap is supposed to—the $4.5 million is to decide the roadmap. Why are we deciding now that we are going to invest in something that we haven't even gotten a report on?

Mr. BARTLETT. Well, I think if you know that——

Ms. RIVERS. Haven't been given to.

Mr. BARTLETT [continuing]. I think if you know that you are going somewhere, it would be nice to get started, and I think that is what this does.

Ms. RIVERS. We may not get started depending what they say.

Mr. BARTLETT. Thank you, for yielding, Mr. Chairman.

Chairman BOEHLERT. I think both sides had ample opportunity to be heard. Let us move to a vote. The vote is on the amendment. All in favor say aye. Opposed, no. In the opinion of the Chair the no's——

Ms. RIVERS. Mr. Chairman——

Chairman BOEHLERT [continuing]. Have it.

Ms. RIVERS [continuing]. I would like a recorded vote, please.

Chairman BOEHLERT. The clerk will call the roll.

The CLERK. Mr. Boehlert.

Chairman BOEHLERT. No.

The CLERK. Mr. Boehlert votes no. Mr. Smith.

Mr. SMITH. No.

The CLERK. No. Mrs. Morella.

Ms. MORELLA. Aye.

The CLERK. Mrs. Morella votes yes. Mr. Shays. Mr. Curt Weldon. Mr. Rohrabacher.

Mr. ROHRABACHER. No.

The CLERK. Mr. Barton. Mr. Calvert.

Mr. CALVERT. No.

The CLERK. Mr. Smith.

Mr. SMITH. No.

The CLERK. Mr. Bartlett.

Mr. BARTLETT. No.

The CLERK. Mr. Ehlers. No. Mr. Dave Weldon.

Mr. WELDON. No.

The CLERK. Mr. Gutknecht.

Mr. GUTKNECHT. No.

The CLERK. Mr. Cannon.

Mr. CANNON. No.

The CLERK. Mr. Cannon votes no. Mr. Nethercutt.

Mr. NETHERCUTT. No.

The CLERK. Mr. Lucas.

Mr. LUCAS. No.

The CLERK. Mr. Miller. Mrs. Biggert.

Ms. BIGGERT. No.

The CLERK. Mr. Gilchrest.
Mr. GILCHREST. No.
The CLERK. Mr. Akin.
Mr. AKIN. No.
The CLERK. Mr. Johnson.
Mr. JOHNSON. No.
The CLERK. Mr. Pence. Mr. Grucci.
Mr. GRUCCI. No.
The CLERK. Ms. Hart.
Ms. HART. No.
The CLERK. Mr. Forbes.
Mr. FORBES. No.
The CLERK. Mr. Hall. Mr. Gordon. Mr. Costello.
Mr. COSTELLO. Yes.
The CLERK. Mr. Barcia. Ms. Johnson.
Ms. JOHNSON. Aye.
The CLERK. Ms. Woolsey.
Ms. WOOLSEY. Aye.
The CLERK. Ms. Rivers.
Ms. RIVERS. Aye.
The CLERK. Ms. Lofgren.
Ms. LOFGREN. Aye.
The CLERK. Ms. Jackson Lee.
Ms. JACKSON LEE. Aye.
The CLERK. Mr. Etheridge.
Mr. ETHERIDGE. Aye.
The CLERK. Mr. Lampson.
Mr. LAMPSON. Aye.
The CLERK. Mr. Larson.
Mr. LARSON. No.
The CLERK. Mr. Udall.
Mr. UDALL. Aye.
The CLERK. Mr. Wu. Mr. Weiner.
Mr. WEINER. Aye.
The CLERK. Mr. Baird.
Mr. BAIRD. Aye.
The CLERK. Mr. Hoeffel.
Mr. HOEFFEL. Yes.
The CLERK. Mr. Baca.
Mr. BACA. Aye.
The CLERK. Mr. Matheson.
Mr. MATHESON. Aye.
The CLERK. Mr. Israel.
Mr. ISRAEL. Aye.
The CLERK. Mr. Moore.
Mr. MOORE. Aye.
The CLERK. Mr. Honda.
Mr. HONDA. Aye.
Chairman BOEHLERT. Clerk will report.
The CLERK. Mr. Chairman, yes, 18, no, 20.

COMMITTEE ON SCIENCE - ROLL CALL - 107th CONGRESS

DATE: July 18, 2001 SUBJECT: Amendment to reduce authorization in Sec. 343 & 344. (Ms. Woolsey)

| Rm. | Phone | Member | Yes | No | Not Voting | Present | Absent |
|---|---|---|---|---|---|---|---|
| 2246 | 53665 | Mr. Boehlert, R-NY | | ✓ | | | |
| 2231 | 54236 | Mr. Lamar Smith, R-TX | | ✓ | | | |
| 2228 | 55341 | Mrs. Morella, R-MD | ✓ | | | | |
| 1126 | 55541 | Mr. Shays, R-CT | | | | | |
| 2466 | 52011 | Mr. Curt Weldon, R-PA | | | | | |
| 2338 | 52415 | Mr. Rohrabacher, R-CA | | ✓ | | | |
| 2264 | 52002 | Mr. Barton, R-TX | | | | | |
| 2201 | 51986 | Mr. Calvert, R-CA | | ✓ | | | |
| 2305 | 56276 | Mr. Nick Smith, R-MI | | ✓ | | | |
| 2412 | 52721 | Mr. Bartlett, R-MD | | ✓ | | | |
| 1714 | 53831 | Mr. Ehlers, R-MI | | ✓ | | | |
| 332 | 53671 | Mr. Dave Weldon, R-FL | | ✓ | | | |
| 425 | 52472 | Mr. Gutknecht, R-MN | | ✓ | | | |
| 118 | 57751 | Mr. Cannon, R-UT | | ✓ | | | |
| 223 | 52006 | Mr. Nethercutt, R-WA | | ✓ | | | |
| 438 | 55565 | Mr. Lucas, R-OK | | ✓ | | | |
| 1037 | 53201 | Mr. Miller, R-CA | | | | | |
| 1213 | 53515 | Mrs. Biggert, R-IL | | ✓ | | | |
| 2245 | 55311 | Mr. Gilchrest, R-MD | | ✓ | | | |
| 501 | 52561 | Mr. Akin, R-MO | | ✓ | | | |
| 1541 | 52371 | Mr. Johnson, R-IL | | ✓ | | | |
| 1605 | 53021 | Mr. Pence, R-IN | | | | | |
| 1505 | 53826 | Mr. Grucci, R-NY | | ✓ | | | |
| 1508 | 52565 | Ms. Hart, R-PA | | ✓ | | | |
| 2371 | 56365 | Mr. Forbes, R-VA | | ✓ | | | |
| ***2221*** | ***56673*** | ***Mr. Hall, D-TX*** | | | | | |
| ***2368*** | ***54231*** | ***Mr. Gordon, D-TN*** | | | | | |
| ***2454*** | ***55661*** | ***Mr. Costello, D-IL*** | ✓ | | | | |
| ***2419*** | ***58171*** | ***Mr. Barcia, D-MI*** | | | | | |
| ***1511*** | ***58885*** | ***Ms. Johnson, D-TX*** | ✓ | | | | |
| ***2263*** | ***55161*** | ***Ms. Woolsey, D-CA*** | ✓ | | | | |
| ***1724*** | ***56261*** | ***Ms. Rivers, D-MI*** | ✓ | | | | |
| ***227*** | ***53072*** | ***Ms. Lofgren, D-CA*** | ✓ | | | | |
| ***403*** | ***53816*** | ***Ms. Jackson Lee, D-TX*** | ✓ | | | | |
| ***1533*** | ***54531*** | ***Mr. Etheridge, D-NC*** | ✓ | | | | |
| ***417*** | ***56565*** | ***Mr. Lampson, D-TX*** | ✓ | | | | |
| ***1419*** | ***52265*** | ***Mr. Larson, D-CT*** | | ✓ | | | |
| ***115*** | ***52161*** | ***Mr. Udall, D-CO*** | ✓ | | | | |
| ***1023*** | ***50855*** | ***Mr. Wu, D-OR*** | | | | | |
| ***222*** | ***56616*** | ***Mr. Weiner, D-NY*** | ✓ | | | | |
| ***1721*** | ***53536*** | ***Mr. Baird, D-WA*** | ✓ | | | | |
| ***1229*** | ***56111*** | ***Mr. Hoeffel, D-PA*** | ✓ | | | | |
| ***1133*** | ***56161*** | ***Mr. Baca, D-CA*** | ✓ | | | | |
| ***410*** | ***53011*** | ***Mr. Matheson, D-UT*** | ✓ | | | | |
| ***429*** | ***53335*** | ***Mr. Israel, D-NY*** | ✓ | | | | |
| ***431*** | ***52865*** | ***Mr. Moore, D-KS*** | ✓ | | | | |
| ***503*** | ***52631*** | ***Mr. Honda, D-CA*** | ✓ | | | | |
| | | TOTAL | 18 | 20 | | | |

Attest: Vivian A. Testerman (Clerk)

Chairman BOEHLERT. The no's have it, and the amendment is defeated.

Number 4. First of all, Ms. Woolsey is recognized.

**AMENDMENT TO H.R. 2460**

**OFFERED BY MS. WOOLSEY**

Page 30, after line 20, insert the following new subtitle:

1 **Subtitle E—Enhanced Aeronautical**
2 **Systems**

3 **SEC. 105. ENHANCED AERONAUTICAL SYSTEM ENERGY EF-**
4 **FICIENCY RESEARCH, DEVELOPMENT, AND**
5 **DEMONSTRATION.**

6 (a) GOALS.—For aeronautical system energy effi-
7 ciency, the National Aeronautics and Space Administra-
8 tion shall seek to—

9 (1) develop technologies that will enable a 50
10 percent increase in aircraft engine energy efficiencies
11 by 2010 as compared to the most energy efficient
12 engine in the United States commercial aircraft fleet
13 as of the date of the enactment of this Act; and

14 (2) develop air transportation management
15 operational concepts and procedures that will enable
16 a 25 percent increase in the energy efficiency of the
17 overall air transport system on a per flight basis by
18 2010 as compared to the efficiency as of the date of
19 the enactment of this Act.

1 (b) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Administrator of
3 the National Aeronautics and Space Administration for
4 carrying out activities to achieve the goals described in
5 subsection (a)—
6 (1) $50,000,000 for fiscal year 2002;
7 (2) $55,000,000 for fiscal year 2003;
8 (3) $60,000,000 for fiscal year 2004;
9 (4) $65,000,000 for fiscal year 2005; and
10 (5) $70,000,000 for fiscal year 2006.

Ms. WOOLSEY. Thank you, Mr. Chairman. I actually am going to withdraw this but I would like to have a little dialogue about it. This amendment based on Section 105 of my bill, H.R. 2324, is intended to call all of our attention to the fact that if we are truly serious about having a comprehensive approach to energy efficiency and conservation, we can't afford to ignore air transportation.

According to the Energy Information Administration air passenger and freight operations account for approximately 7 percent of the total energy expended on transportation in this nation. That is a significant level by any standard, and we all know air transportation is on the increase. And I believe we should act to make air transportation more efficient, and that is why I propose that this Committee include words that will have NASA do two things. First, develop technologies that will enable 50 percent of air transportation system—oh, no. 50 percent—a 50 percent increase in aircraft engine efficiencies by 2010 and secondly, to develop air transportation system management operation concepts and procedures that will enable a 25 percent increase in the energy efficiency of the overall U.S. air transportation system on a per-flight basis by 2010.

Mr. Chairman, I am not going to go on and on. You will tell me that NASA already has these programs but their programs need to be built upon. They are too passive. We have to go forward, and air transportation is a great opportunity to start working on efficiency.

Chairman BOEHLERT. I couldn't agree more, gentlelady, and let me applaud her for the amendment. We are moving the same direction, and we will revisit that issue I am sure several times in the months and years ahead to insure that we are getting the desired result. You have touched a sensitive cord here, and I look forward to working with you and with NASA and FAA to monitor the progress on developing a more efficient air transportation system, one, because I am concerned of my own hide but two, I think we ought to be concerned with everybody. And that is exactly why the amendment is good in spirit. I applaud it, and I thank her for agreeing to withdraw it, and we will be talking——

Ms. WOOLSEY. Okay.

Chairman BOEHLERT [continuing]. A lot more about this in the future.

Ms. WOOLSEY. I count on that, Mr. Chairman.

Chairman BOEHLERT. And without objection of gentlelady's unanimous consent request to withdraw the amendment is honored. It is withdrawn.

The next amendment is amendment number 5 by Ms. Jackson Lee. Clerk will report.

The CLERK. Amendment to H.R. 2460 offered by Ms. Jackson Lee of Texas.

**AMENDMENT TO H.R. 2460**

**OFFERED BY MS. JACKSON-LEE OF TEXAS**

Page 67, after line 9, insert the following new subtitle:

1 **Subtitle E—Energy Pipeline**
2 **Research and Development**

3 **SEC. 481. SHORT TITLE.**

4 This subtitle may be cited as the "Energy Pipeline
5 Research and Development Act of 2001".

6 **SEC. 482. COOPERATIVE PROGRAM.**

7 The Secretary of Transportation, in coordination
8 with the Secretary of Energy and the Director of the Na-
9 tional Institute of Standards and Technology, shall de-
10 velop and implement an accelerated cooperative program
11 of research, development, and demonstration to ensure the
12 integrity, reliability, safety, and security of natural gas
13 and hazardous liquid pipelines. The program—

14 (1) shall address materials inspection tech-
15 niques, risk assessment methodology, and informa-
16 tion systems reliability; and

17 (2) shall complement, and not replace, the re-
18 search programs of the Department of Energy and
19 the National Institute of Standards and Technology

1 addressing natural gas pipeline issues existing on
2 the date of enactment of this Act.

3 **SEC. 483. RESEARCH PRIORITIES.**

4 In carrying out this subtitle, the Secretary of Trans-
5 portation, in coordination with the Secretary of Energy
6 and the Director of the National Institute of Standards
7 and Technology, shall consider research, development, and
8 demonstration on natural gas, crude oil, and petroleum
9 product pipelines with respect to—

10 (1) expanded capabilities of internal inspection
11 devices for early crack, defect, and damage detec-
12 tion, including real-time damage monitoring;

13 (2) automated internal pipeline inspection sen-
14 sor systems and other inspection techniques for pipe-
15 lines that cannot accommodate the internal inspec-
16 tion devices, including measurement of structural in-
17 tegrity;

18 (3) land use guidance and set back manage-
19 ment along pipeline rights-of-way for communities;

20 (4) internal corrosion control;

21 (5) improved materials and coatings for use in
22 pipelines, including corrosion-resistant coatings;

23 (6) improved cathodic protection;

24 (7) improving the capability, reliability, and
25 practicality of external leak detection including port-

able real-time video imaging technology, and the advancement of computerized control center leak detection systems utilizing real-time remote field data input;

(8) assessing the remaining strength of existing pipes;

(9) risk and reliability analysis models, to be used to identify safety improvements that could be realized in the near term resulting from analysis of data obtained from a pipeline performance tracking initiative;

(10) identification of underground environments that might lead to shortened service life;

(11) demonstration of technologies that improve pipeline safety, reliability, and integrity;

(12) highly secure information systems for controlling the operation of pipelines.

(13) identification, monitoring, and prevention of outside force damage, including satellite surveillance; and

(14) any other areas necessary to ensuring the public safety and protecting the environment.

**SEC. 484. POINTS OF CONTACT.**

To coordinate and implement the research, development, and demonstration programs and activities author-

1 ized under this subtitle, the Secretary of Transportation,
2 the Secretary of Energy, and the Director of the National
3 Institute of Standards and Technology shall each des-
4 ignate a senior official of their organization as the point
5 of contact within their organization for coordinating and
6 overseeing the implementation of the research, develop-
7 ment, and demonstration program under section 483.

8 **SEC. 485. PROGRAM PLAN.**

9 Within 240 days after the date of enactment of this
10 Act, the Secretary of Transportation, in coordination with
11 the Secretary of Energy, the Director of the National In-
12 stitute of Standards and Technology, and the Pipeline In-
13 tegrity Technical Advisory Committee, shall prepare and
14 transmit to the Congress a 5-year program plan to guide
15 research, development, and demonstration activities under
16 this subtitle. In preparing the program plan, the Secretary
17 of Transportation shall consult with appropriate rep-
18 resentatives of the natural gas, crude oil, and petroleum
19 product pipeline industries to select and prioritize appro-
20 priate project proposals. The Secretary of Transportation
21 may also seek the advice of utilities, manufacturers, insti-
22 tutions of higher learning, Federal agencies, the pipeline
23 research institutions, national laboratories, State pipeline
24 safety officials, environmental organizations, pipeline safe-
25 ty advocates, and professional and technical societies.

1 **SEC. 486. IMPLEMENTATION.**

2 The Secretary of Transportation shall have lead re-
3 sponsibility for ensuring the 5-year plan prepared under
4 section 485 is implemented as intended.

5 **SEC. 487. REPORTS TO CONGRESS.**

6 The Secretary of Transportation shall report to the
7 Congress annually as to the status and results to date of
8 the implementation of the research, development, and
9 demonstration program plan. The report shall include the
10 plan-related activities of the Departments of Transpor-
11 tation and Energy, the National Institute of Standards
12 and Technology, the national laboratories, universities,
13 and any other research organizations, including industry
14 research organizations.

Chairman BOEHLERT. The gentlelady is recognized for five minutes.

Ms. JACKSON LEE. I thank you very much, Mr. Chairman. I think as I indicated when we were discussing the legislation dealing with election reform, and I might add that I might have failed to acknowledge Congresswoman Eddie Bernice Johnson chairing the Congressional Black Caucus, and the enormous work that we have done on that issue, I said that it was important for the Science Committee to be a stakeholder in the question of election reform. Likewise, I am gratified that we are a stakeholder in a consensus energy reform or an energy plan for the nation.

My amendment deals with an important opportunity, a research opportunity for our nation's need to construct more gas and oil pipelines but do it safely. Unfortunately, many in my community work steadfastly on a pipeline safety initiative in the last session of Congress, and it did not reach its fruition for a variety of reasons.

I would like to have this Committee stake its interest in pipeline safety as it relates to research. There are about 2 million miles of pipeline in the United States, and I grant you a great deal of which are located in the State of Texas. Millions of miles of pipeline carry the vast majority of oil and natural gas across the nation.

As we look to become less dependent on foreign oil we will look for opportunities to be safe, we will look for opportunities to produce domestic energy in a way that brings about a consensus.

Over the past decade more than 2,200 pipeline accidents have occurred resulting in 200 deaths, thousands of serious injuries, and an estimated 700 million in damage to property. Last August 12 members of a family camping in New Mexico were killed when a natural gas pipeline exploded, of course, focusing all of us on that issue.

Upon inspection by the National Transportation Safety Board the section of pipeline that was involved in the explosion was judged to have never been examined with an internal inspection tool or undergone hydrostatic testing since it was installed in 1952. What a solvable problem.

Much of the danger with pipelines is caused by their age. An estimated 24 percent of gas pipelines alone are more than 50 years old, and the particular pipeline in New Mexico was almost 50 years old and was found to have experienced substantial internal corrosion. Another factor is increased suburbanization into previously rural areas and therefore, density problems as well.

I believe that we can produce safe pipelines, and I think the Science Committee can be part of the solution. The Sandia National Laboratories have produced a pipeline safety white paper titled, "Capabilities and Area of Research and Development to Enhance Pipeline Safety in the United States." This lab is a national security lab operated by the U.S. Department of Energy by the Sandia Corporation and Lockheed Martin.

A Sandia team has worked with the natural gas industry, regulators, and oil companies to adapt commercially-available laser-imaging tools to detect low-pressure leaks in urban gas distribution lines and in oil refineries.

Mr. Chairman, what I am asking is that this amendment be included to get us, if you will, in the mix in dealing with the research aspect to provide the opportunities for safe pipelines, get us above the fray and above the political aspects of it and engage the Department of Energy and the laboratories in this kind of research.

[Statement of Ms. Jackson Lee follows:]

PREPARED STATEMENT OF HON. SHEILA JACKSON LEE

Chairman Boehlert and Ranking Member Hall, I would like to thank you for this opportunity for the House Science Committee to contribute in a substantive way to our country's National Energy Plan.

I have an amendment that I would like to offer which will provide important research opportunities for our nation's need to construct more gas and oil pipelines.

There are about 2 million miles of pipeline in the United States, and I grant you, a great deal of which is located in the State of Texas. These millions of miles of pipeline carry the vast majority of oil and natural gas across the nation.

Over the past decade, more than 2,200 pipeline accidents have occurred, resulting in more than 200 deaths, thousands of serious injuries and an estimated $700 million in damage to property. Last August 12 members of a family camping near Carlsbad, New Mexico were killed when a natural gas pipeline exploded. This accident became the deadliest pipeline accident in the United States in nearly a quarter of a century.

Upon inspection by the National Transportation and Safety Board, the section of pipeline that was involved in the explosion was judged to have never been examined with an internal inspection tool or undergone hydrostatic testing since it was installed in 1952.

Much of the danger with pipelines is caused by their age; an estimated 24% of gas pipelines alone are more than 50 years old (the section of pipeline involved in the Carlsbad explosion was almost 50 years old and was found to have experienced substantial internal corrosion). Another factor is increased suburbanization into previously rural areas, which bring residents closer to oil and gas pipelines.

Federal regulation of pipeline safety is the responsibility of the Office of Pipeline Safety (OPS) within the Transportation Department. However, that office does not have the necessary purview to provide research and development options for improving pipeline safety. In the late 1980s, the National Transportation Safety Board (NTSB), the independent federal agency, which investigates transportation accidents, including major pipeline accidents, and makes safety recommendations to prevent their recurrence, recommended that major oil and gas pipelines be regularly inspected.

The current state of knowledge regarding pipeline safety is lacking in the creativity and focus that a federally assisted research and development pipeline safety program would engender.

Sandia National Laboratories has produced a pipeline safety white paper titled "Capabilities and Area of Research and Development to Enhance Pipeline Safety in the US." Sandia National Laboratories is a national security laboratory operated for the US Department of Energy by the Sandia Corporation and Lockheed Martin.

A Sandia team has worked with the natural gas industry, regulators, and oil companies to adapt commercially available laser-imaging tools to detect low-pressure leaks in urban gas distribution lines and at oil refineries. One exciting test that demonstrated the importance of this type of research was conducted in 1997. A van was driven through the streets of Atlanta using a van-mounted laser-imaging system designed to detect methane. The van monitoring system detected one potentially dangerous gas leak in a manhole.

The white paper produced by Sandia suggested several areas of research that could revolutionize pipeline safety in the United States: advanced robotic and remote sensor technology, improved inspection protocols, and ranking of pipeline safety priorities.

The research I am proposing would improve our nation's pipeline infrastructure and create better opportunities for energy distribution, while minimizing risks to communities. Thank you.

Ms. JACKSON LEE. With that, Mr. Chairman, I am holding my time for an able response from the Committee.

Chairman BOEHLERT. Well, thank you very much, and I tell the gentlelady I support the efforts to improve the pipeline safety R&D

and as a matter of fact, the Senate has done something in its bill that will get the conference to work with them. They were also working with the Transportation Committee, Mr. Young, because I think it is a very important subject, and you are absolutely right. We have to address it. A lot of it is in Texas but let me tell you it is up in our neck of the woods, too, and all across this country. It is a very important subject. I think we have to deal with it at the right time and the right place. I don't think this particular bill in view of what Young is saying, and they have principle responsibility. We have the R&D portion so I think we can all work together, with the Gentle Lady, with our colleagues in the Senate who recognize and appreciate what you are saying to be true, and with Chairman Young who wants to deal with it separate from the total energy package.

Ms. JACKSON LEE. Would the gentleman—would the Chairman yield?

Chairman BOEHLERT. It is your time.

Ms. JACKSON LEE. I thank you very much. What I would ask the Chairman, and I appreciate his interest in the issue, as we coordinate with the Transportation Committee, would the Chairman offer for us to have hearings in this Committee dealing with the R&D aspect of pipeline safety?

Chairman BOEHLERT. Sure. Quite frankly I put that down as a no-brainer. I mean, I think we are all interested, and we have got to put more into R&D. The question is how much and of course, the hearings would be very appropriate.

Ms. JACKSON LEE. Mr. Chairman, what I want and what I think all of us would like to have would be solutions. I think the deaths are tragic. I think the issues will continue to be a problem as the country becomes more dense, and I will withdraw this amendment so that we can collaborate but I would look forward to our hearings to be scheduled and for us to work on the research and development aspect.

It certainly seems shameful to have work by the national labs that could save lives and that we have not been able to move forward.

Chairman BOEHLERT. Thank you very much. Without objection the gentlelady asks permission to withdraw her amendment. Without objection, so ordered.

The Chair recognizes Mr. Hoeffel.

Mr. HOEFFEL. Thank you, Mr. Chairman. I had intended to offer an amendment to this point to authorize funding for the Department for a nanoscale science and engineering research and development. Nanotechnology is an amazing new technology. Scientists are now able to see at the molecular level and therefore, able to build structures as they see fit, wholly new structures. There is a good deal of private sector research and academic research happening in this field. I know in California and also very much in the Philadelphia area but my staff tells me, Mr. Chairman, that you are very interested in this as well, and that you intend to pursue a free-standing bill in the area of nanotechnology, so I would withdraw this amendment, and to tell you I would love to work with you on that bill, and thank you for your cooperation.

**AMENDMENT TO H.R. 2460**

**OFFERED BY MR. HOEFFEL**

Page 83, after line 22, insert the following new subtitle:

# Subtitle F—Nanoscale Science and Engineering

**SEC. 591. SHORT TITLE.**

This subtitle may be cited as "Department of Energy Nanoscale Science and Engineering Research Act".

**SEC. 592. FINDINGS.**

The Congress finds the following:

(1) The emerging fields of nanoscience and nanoengineering address the ability to create materials with fundamentally new compositions by prepositioning atoms within an overall molecular composition.

(2) The ability of the United States to respond to the energy and economic challenges of the 21st century will be driven by science and technology. Nanoscience and nanoengineering will enable the United States to develop new technologies for energy exploration and production, for monitoring energy infrastructure, for increasing energy efficiency in end-use application, and for developing new tech-

1 nologies applicable to other Department of Energy
2 statutory missions. These advances will also enhance
3 the strength of United States science, technology,
4 and medicine generally.
5 (3) The fundamental intellectual challenges in-
6 herent in nanoscience and nanoengineering are con-
7 siderable, and require public support for basic and
8 applied research and development. Significant ad-
9 vances in areas such as the self-assembly of atom
10 clusters will be required before nanoscience or
11 nanoengineering will be useful to the energy or man-
12 ufacturing industries.
13 (4) The development of new scientific instru-
14 ments will also be required to advance nanoscience
15 and nanoengineering. Such instruments are likely to
16 be large and costly. Specialized facilities are also
17 likely to be required in order to advance the field
18 and to realize its promise. Such facilities will be suf-
19 ficiently expensive that they will have to be located
20 and constructed on a centralized basis, similar to a
21 number of unique facilities already managed by the
22 Department of Energy.
23 (5) Contributions from individual researchers as
24 well as multidisciplinary research teams will be re-
25 quired to advance nanoscience and nanoengineering.

1 (6) The Department of Energy's Office of
2 Science is well suited to manage nanoscience and
3 nanoengineering research, development, demonstra-
4 tion, and commercial application for the Depart-
5 ment. Through its support of research, development,
6 demonstration, and commercial application pursuant
7 to the Department's statutory authorities, the Office
8 of Science is the principal Federal supporter of re-
9 search, development, demonstration, and commercial
10 application in the physical and computational
11 sciences. The Office is also a significant source of
12 Federal support for research in genomics and the
13 life sciences. The Office supports research, develop-
14 ment, demonstration, and commercial application by
15 individual investigators and multidisciplinary teams,
16 and manages special user facilities that serve inves-
17 tigators in both universities and industry.

18 **SEC. 593. DEPARTMENT OF ENERGY PROGRAM.**

19 (a) ESTABLISHMENT.—The Secretary of Energy,
20 through the Office of Science of the Department of En-
21 ergy, shall support a program of research, development,
22 demonstration, and commercial application in nanoscience
23 and nanoengineering consistent with the Department's
24 statutory authorities related to research, development,
25 demonstration, and commercial application. The program

1 shall include efforts to further the understanding of the
2 chemistry, physics, materials science, and engineering of
3 phenomena on the scale of 1 to 100 nanometers.

4 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
5 rying out the program under this subtitle, the Director
6 of the Office of Science shall—

7 (1) support both individual investigators and
8 multidisciplinary teams of investigators;

9 (2) pursuant to subsection (c), develop, plan,
10 construct, acquire, or operate special equipment or
11 facilities for the use of investigators conducting re-
12 search, development, demonstration, and commercial
13 application in nanoscience and nanoengineering;

14 (3) support technology transfer activities to
15 benefit industry and other users of nanoscience and
16 nanoengineering; and

17 (4) coordinate research, development, dem-
18 onstration, and commercial application activities
19 with industry and other Federal agencies.

20 (c) NANOSCIENCE AND NANOENGINEERING RE-
21 SEARCH CENTERS AND INSTRUMENTATION.—

22 (1) AUTHORIZATION.—The Secretary shall pro-
23 vide for projects to develop, plan, construct, acquire,
24 or operate equipment, instrumentation, or facilities
25 for investigators conducting research, development,

1 demonstration, and commercial application in
2 nanoscience and nanoengineering.
3 (2) PROJECTS.—Projects under paragraph (1)
4 may include the measurement of properties at the
5 scale of 1 to 100 nanometers, manipulation at such
6 scales, and the integration of technologies based on
7 nanoscience or nanoengineering into bulk materials
8 or other technologies.
9 (3) FACILITIES.—Facilities under paragraph
10 (1) may include electron microcharacterization facili-
11 ties, microlithography facilities, scanning probe fa-
12 cilities, and related instrumentation science.
13 (4) COLLABORATION.—The Secretary shall en-
14 courage collaborations among universities, labora-
15 tories, and industry at facilities under this sub-
16 section. At least one Department facility under this
17 subsection shall have a specific mission of technology
18 transfer to other institutions and to industry.
19 (d) MERIT REVIEW REQUIRED.—All grants, con-
20 tracts, cooperative agreements, or other financial assist-
21 ance awards under this subtitle shall be made only after
22 independent merit review.
23 **SEC. 594. AUTHORIZATION OF APPROPRIATIONS.**
24 (a) TOTAL AUTHORIZATION.—The following sums
25 are authorized to be appropriated to the Secretary of En-

1 ergy, to remain available until expended, for the purposes
2 of carrying out this subtitle:
3 (1) $160,000,000 for fiscal year 2002.
4 (2) $270,000,000 for fiscal year 2003.
5 (3) $290,000,000 for fiscal year 2004.
6 (4) $310,000,000 for fiscal year 2005.
7 (5) $330,000,000 for fiscal year 2006.
8 (b) NANOSCIENCE AND NANOENGINEERING RE-
9 SEARCH CENTERS AND MAJOR INSTRUMENTATION.—Of
10 the funds under subsection (a), the following sums are au-
11 thorized to be appropriated to carry out section 593(c):
12 (1) $55,000,000 for fiscal year 2002.
13 (2) $135,000,000 for fiscal year 2003.
14 (3) $150,000,000 for fiscal year 2004.
15 (4) $120,000,000 for fiscal year 2005.
16 (5) $100,000,000 for fiscal year 2006.

Chairman BOEHLERT. Thank you very much. We are going to do a major inter-agency bill. Nanotechnology is very important to all of us. I am particularly close to it with the center, nanotechnology center at the State University of New York in Albany. Not in my district but in my state and that is something we should all be very interested in, and we will work together with the gentleman.

The Chair recognizes——

UNIDENTIFIED SPEAKER. Are there any further amendments and recognize——

Ms. LOFGREN. Mr. Chairman.

Chairman BOEHLERT. Ms. Lofgren.

Ms. LOFGREN. Mr. Chairman, I have an amendment at the desk, and I would ask unanimous consent that it be considered as read. It is my understanding after consultation between the two staffs that there is agreement that we would rather be redundant than sorry, and so this would memorialize our understanding relative to the scope of the drilling. And I appreciate the Chairman's indulgence for my anxiety.

Chairman BOEHLERT. Would you just explain it so that everybody will know what is going on? We have had discussions with staff.

Ms. LOFGREN. It is on page 58 in the manager's amendment, there is the section, and I am struggling to find it here, the section relative to ultra-deep water unconventional drilling. And the amendment which the staff has drafted would after the word technology on line 20 on page 58 note that the technologies in areas currently available for outer-continental shelf leasing, which would limit the scope of what we are doing here to what currently is permitted, which is our understanding——

Chairman BOEHLERT. It is a perfecting——

Ms. LOFGREN [continuing]. On both sides of the aisle.

Chairman BOEHLERT [continuing]. Of the amendment.

Ms. LOFGREN. Exactly.

AMENDMENT TO THE EN BLOC AMENDMENT TO H.R. 2460 OFFERED BY MS. LOFGREN OF CALIFORNIA

On page 58, line 20, delete "technologies" and insert "technologies, in areas currently available for Outer Continental Shelf leasing."

Chairman BOEHLERT. It makes it absolutely clear, and the Chair is prepared to accept it.

Ms. LOFGREN. I appreciate that very much, Mr. Chairman.

Chairman BOEHLERT. Is there anyone who has any—without objection the Chair accepts the amendment and puts the amendment to the vote. All in favor, say aye. Opposed, nay. The ayes have it.

Mr. NETHERCUTT. Mr. Chairman.

Chairman BOEHLERT. Mr. Nethercutt.

Mr. NETHERCUTT. I have two amendments, Mr. Chairman, that are not controversial. They are more technical in nature. I would ask that they—unanimous consent that they be considered en bloc.

Chairman BOEHLERT. And the gentleman is recognized for five minutes to explain the amendments.

Mr. NETHERCUTT. Thank you, Mr. Chairman. The first amendment is found on page 23 of the en bloc amendments that were approved by the Chairman and by the Committee. Under Section 124,

High Power Density Industry Program, we add language that just is consistent with the prior section that is implementing an integration language so it is an addition of language that duplicates the preceding section, makes clear that the High Power Density Industry Program authorized in this section is to be funded through the Distributed Energy Office.

The second amendment is found on page 47 under sub-title C. It adds on—I should say page 48, pardon me. It is under sub-title C. We add a Section 3 and 4 that adds two promising approaches to electricity transmission. Mr. Gutknecht in particular is supportive of these amendments, and it also identifies two new goals and outcomes expected from this research activity, and I would ask that——

NETHERCUTT AMENDMENT TO HIGH DENSITY INDUSTRY PROGRAM

Insert the following, as appropriate:

(c) IMPLEMENTATION AND INTEGRATION.—Activities pursuant to this program shall be integrated with other activities of the Department's Office of Distributed Energy Resources.

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NETHERCUTT AMENDMENT TO EN BLOC

Page 47, on line 19 after "technologies development," insert "technologies contributing to significant load reductions, advanced metering and load management and control technologies,"

Page 48, on line 2, after the period insert the following, and renumber as appropriate:

"(3) Self-adjusting equipment, processes or software for survivability, security and failure containment

(4) Enhancements of energy transfers over existing lines"

Chairman BOEHLERT. Thank you. They are straight-forward and non-controversial. The Chair recognizes Mr. Costello.

Mr. COSTELLO. Mr. Chairman, we have no objection to this amendment and accept it.

Chairman BOEHLERT. Any further questions? If not, the vote is on the amendment, amendments en bloc. All in favor, say aye. Nay.

Mr. NETHERCUTT. Thank you, Mr.——

Chairman BOEHLERT. With that the amendment is passed. Who seeks—Mr. Weiner.

Mr. WEINER. I move to strike the last word. Mr. Chairman——

Chairman BOEHLERT. The gentleman is recognized five minutes.

Mr. WEINER. I do so just to clarify a couple of points on an earlier amendment that Ms. Lofgren raised about deep-water drilling for oil and gas, something that gives many of us pause. And if you will indulge me just to ask a couple of brief questions, why is it that the way the grants are administered are through something that is refereed to in the bill called the research organization. And a research organization is defined in the en bloc amendment as an organization that among other things has to be a tax-exempt organization, has to be in existence from the date of the act, and it has to be experienced in planning and managing programs in natural gas or other petroleum exploration and production research, development, and demonstration. It sounds like what we are going to be doing is hiring an organization whose business it is to do development to give us advice on how to do development. Why are we not just letting the Department of Energy, who has perhaps a more

balanced approach, in this Administration who knows, but who gets paid already by the taxpayers to give us this kind of counsel, why are we going to an outside organization to do that?

Chairman BOEHLERT. I will let—I point out that this is Mr. Hall's interest, and the same question was asked by staff. Adequate answer. Dr. Watson.

Dr. WATSON. Quite frankly I was not deeply involved in these discussions. I believe Mr. Cook, however, could explain the issue in detail.

Chairman BOEHLERT. The Chair recognizes the minority side.

Mr. COOK Thank you very much. Congressman, the rationale behind the structure in the bill is actually a rough model of the SEMATECH Organization that was put together roughly ten years ago, 15 years ago to assist the semiconductor industry in developing new technologies to make them competitive, keep them competitive with the Asians, particularly the Japanese. The need is to put this organization—to put together an organization that has demonstrated capabilities to pull together and manage research programs on a crash basis, and that the belief is that such an organization will be able to manage these programs in such a way that the research will be done better in essence, better, more completely, and on a faster timetable so that they can be deployed in commercial exploration and development programs.

Mr. WEINER. Well, if I could, I mean, I am not sure I am comforted by that.

Chairman BOEHLERT. Let me try to add to your comfort level. The Chair would recognize without objection—who has worked with all concerned on this.

Mr. GOLDSTON. Let me add just one point to what Mr. Cook said. Because of some of the very concerns that you are bringing up there are two sections that were—one that was clarified and one that was added to make sure that the Department itself has the ability to look out for the taxpayers' interests even as this consortium takes care of sort of the day-to-day operation, which is, again, not unprecedented, number one, the Secretary has to review their plan annually and withhold money, their annual payment if he is—he or she is not satisfied with the plan. And number two based again on the SEMATECH language that Charlie mentioned there is an annual audit to make sure that the money is being spent in accordance with the Department's wishes.

Mr. WEINER. Well, not to belabor this, the difference is it seems to me when you set up an organization like this, it is almost a foregone conclusion that they are going to determine that they, A, want to do these things, they can be done safely, and the government should fund them. It seems we have also in the bill section 45 that establishes a very balanced advisory committee made up of experts in all different walks of the industry, and then after we establish the advisory committee, later on in the bill we establish this research organization that goes to great pains. I don't see anyone that can do this research except someone who is self-interested by this bill. I mean, experienced in planning and managing programs in natural gas or other petroleum exploration and production, we are establishing a program to have an organization by the explanation of staff go on a crash program to, you know, that is probably

a bad use of words, go on a crash program to come up with technologies that I am not sure many of us agree are necessarily worth coming up with. And I am not sure if——

Mr. CALVERT. Will the gentleman yield?

Mr. WEINER. Certainly.

Mr. CALVERT. Will the gentleman yield?

Mr. WEINER. Sure. I don't know to whom but yes.

Mr. CALVERT. Over here.

UNKNOWN SPEAKER. Mr. Calvert.

Mr. CALVERT. The—I think it has been made pretty clear based upon Ms. Lofgren's language that areas in the United States or the continental shelf of the United States where states do not want to have offshore exploration or drilling will not have it. But areas in the United States, such off the coast of Texas and Louisiana that have offshore drilling, if, in fact, there are methologies to go after those resources in a safe way and a more credible way, especially deep-water exploration, we ought to explore those ways of doing it. And a methology in which to come up with types of technologies has been brought out by both the minority and the majority, and I think we should support that.

We could not sustain the energy we have in this country without the oil that has been produced off the gulf and off of Louisiana.

Mr. WEINER. Mr. Chairman.

Mr. CALVERT. And so I——

Mr. WEINER. Mr. Calvert, if I can just reclaim my time just for the purpose of clarification, you support offshore drilling for gas and for other things and——

Mr. CALVERT. In the areas in which those states and those areas have agreed to it.

Mr. WEINER. Okay. Well, there are some of us who are concerned about it going on period, and there are some of us who are concerned about the presumption in this bill that has been negotiated among people who I think support offshore drilling to come up with a mechanism to do what was described by staff as a crash course to come up with this. This is the equivalent of supporting funding for the semi-conductor, the supercolliding semi-smashing thing, whatever we did in the '80s.

Chairman BOEHLERT. Superconducting——

Mr. CALVERT. That had nothing to do with——

Chairman BOEHLERT. I know that very well.

Mr. WEINER. Right. But it would be the equivalent of giving it to a—of saying that although I might not think that is a great idea, let us go out and give a contract to the very guys who are going to ultimately build it. And I would further say if you go further into the bill and look at who gets the grants, again, in there is another—it seems another grant program for the industry. On page 62 and 63 it describes on who is going to be able to get the grants. One type of grant for research, development, and demonstration of technologies to maximize the value of the Government's natural gas.

Section 2 is ultra-deepwater research, grants for research development and demonstration, and then the third one refers back to 486(c)(1)(D) that talks about a consortium among the industry, and it gives them—we don't evenly divide the grants. It goes 15, 15,

and then 60 for that subsection. I mean, it strikes me, Mr. Chairman, that if you are someone like myself who kind of has some qualms about this, what we are voting on here at least with this section, is a dramatic expansion of grants going to industry that does this work that is going to be decided on not by the Government but by the industry-created arm. And it really does give me great pause and perhaps, I don't know, Mr. Chairman, you have been great on this issue. Maybe you can clarify that some.

Mr. CALVERT. Mr. Chairman, strike that last word.

Chairman BOEHLERT. Mr. Calvert.

Mr. CALVERT. Again, you know, I would point out that this section of the bill has been negotiated by—with the majority and the minority to look at research and development, something we were talking about earlier. Research and development in ways that can safely and with confidence extract oil in areas in which states and localities have agreed to offshore extraction of oil. It has nothing to do with California or Florida or areas in which offshore oil drilling presently is not agreed to in those locations.

Mr. WEINER. Would the gentleman yield on that point?

Mr. CALVERT. I would be happy to.

Mr. WEINER. In point of fact the bill speaks to demonstration.

Mr. CALVERT. Claiming back my—reclaiming my time.

Mr. WEINER. Sure.

Mr. CALVERT. Unless the areas in which you are referring to, I mean, alleged areas, unless they agree to those demonstrations then those projects will not take place because under existing law, whether in California or elsewhere, those areas must agree to those demonstrations taking place. It has nothing to do with areas such as Louisiana and Texas. And by the way I will say this once again. This country could not sustain itself, the oil that we receive out of the gulf. If the Gentleman would like to see us not receive any additional oil out of the Gulf of Mexico or offshore, we cannot sustain this country as we are presently doing. And we can extract that oil in areas in which those states are supportive of that type of extraction, and I would support this bill as it is constructed, and move on.

UNIDENTIFIED SPEAKER. Mr. Chairman.

Chairman BOEHLERT. Mr. Weiner, your time has expired.

Mr. BARTLETT. Mr. Chairman.

Chairman BOEHLERT. Dr. Bartlett, are you seeking recognition?

Mr. BARTLETT. I am, sir.

Chairman BOEHLERT. Well, just let the Chair interject here at this point. Mr. Weiner, you and I have voted alike on several amendments, high-profile amendments in recent weeks on the floor, and I am not one that is anxious for pell-mell expansion of offshore oil drilling. This is only for existing, already approved oil drilling, and this is engaging in R&D to make it even safer and better. That is the essence of the whole amendment.

With that I recognize Dr. Bartlett.

Mr. BARTLETT. Mr. Chairman, I am opposed to offshore drilling. I am opposed to drilling in ANWR not for environmental reasons but simply because if you have only 2 percent of the known reserves of oil it doesn't make any sense to me to rush out and find

and pump that oil. If you pumped it all tomorrow, what would you do the day after tomorrow?

But I am still strongly supportive of this language because one day when it is a rainier day than we have today we are going to have to pump that oil, and when we do it, I want to do it in the best possible way, and this is simply R&D to be prepared so that when we need to go out there, we will do it in the best possible way.

I am opposed to drilling now but I am not opposed to R&D so that when it—when we have to do it, we will do it right.

Chairman BOEHLERT. Well, that about sums up——

Ms. WOOLSEY. Mr. Chairman.

Chairman BOEHLERT. Yes. Ms. Woolsey.

Ms. WOOLSEY. Very quickly. Mr. Weiner, you—see if I am hearing you right. One of the concerns is this is a great deal of money. We aren't putting that much into renewable energy sources. We are helping an industry that pretty much could help itself, and I think that has a lot to do with our concerns on this side.

Mr. WEINER. Would the gentleman yield——

Ms. WOOLSEY. Yes, I will.

Mr. WEINER [continuing]. For a moment? I appreciate what you are saying, Mr. Chairman, and I have great confidence in your not guiding us down any path that is unwise here. I must say that I have yet to hear an explanation on the merits besides precedent for why it is the industry should be not only getting the grants but in charge of coming up with an organization to decide who gets the grants.

Saying that it is expeditious, that they know the business, well, apparently great care went into drafting the advisory panel language here that talks in great length about the expertise we want the advisory committee to have.

Chairman BOEHLERT. Mr. Weiner——

Mr. WEINER. Yes, sir.

Chairman BOEHLERT. Businesses loan money. Your five minutes have expired. I mean——

Ms. WOOLSEY. It is my time.

Mr. WEINER. I was actually on a yield——

Chairman BOEHLERT. Your five minutes——

Mr. WEINER [continuing]. And I would yield back.

Ms. LOFGREN. Mr. Chairman.

Chairman BOEHLERT. We have debated this endlessly. This is loan money. There is a recoupment provision. This is something that has been worked out with both sides. Let me tell you something. I stand with you, and I have stood with you on the floor and have argued the case against expansion of offshore oil drilling off the coast of Florida, in the Great Lakes, and in my bathroom for that matter. I mean, there is some people that want to drill any place they can find a place to drill.

But this deals only with those drilling that has already been approved. This is not expanding it. It is——

Ms. LOFGREN. Mr. Chairman, would you just——

UNIDENTIFIED SPEAKER. Would the gentle——

UNIDENTIFIED SPEAKER. One more moment, please.

Chairman BOEHLERT. I have listened to several people make a request. I would recognize only one. Mr. Weiner.

Mr. WEINER. I am actually on the gentlewoman's yielded time. To say that it has been worked out, that gives me comfort. It does. Can someone give me a substantive reason why the industry gets to decide, an industry-created panel that is going to give grants to the industry about how to further the industry when we have a governmental agency and——

Ms. JACKSON LEE. Mr. Chairman, can——

UNIDENTIFIED SPEAKER. Wait.

UNIDENTIFIED SPEAKER. Chairman, it is called penal review. We do it everywhere in the government.

Ms. JACKSON LEE. Mr. Chairman, I think the gentleman does deserve an answer, and I will reflect back on some of the efforts made by the Clinton Administration with respect to paper, aluminum, and steel where they collaborated with industries to be able to do research. But let me say that it does not preclude academic institutions, and I guess I rise to support it based on the fact that it is research and development, and that institutions, academic institutions I hope nationwide can be part of this so that whether you are pro or con we can get pure research that tells us which direction we can go in oil and gas.

But we have had a history of collaboration, and it is a loan, and it will be paid back through the royalties, and I yield back, Mr. Chairman.

Chairman BOEHLERT. Ms. Lofgren.

Ms. LOFGREN. I just wanted to make a brief comment because if the model is SEMATECH, that really is an excellent model, and I don't know if everybody on the Science Committee is aware what happened at that time but as I think back and the semiconductor industry was destroyed. I mean, it was on the verge of going away completely to Japan, and the late and absolutely totally great, Bob Noise, stepped down from Intel to head up SEMATECH, which was a consortium of semiconductor companies. It was very controversial at the time because there were loans involved, and there were grants just as this model is, grants made to academic entities and to other institutes. And basically they saved the semiconductor industry for America for which I am very grateful.

Now, obviously, this is a different mission, which is to use technology, and you could argue whether or not we want to do that with the loan program but I can say that really the semi model was a very effective approach. And I thank the Chairman for allowing me to speak.

Chairman BOEHLERT. Thank you for that intervention. Ms. Rivers.

Ms. RIVERS. Thank you, Mr. Chair. I just want to raise an issue of consistency because I have spent many an hour in this particular hearing room listening to people attack the Advanced Technology Program, listening to people attack the Department of Energy Grant Program, and essentially saying that the Government should absolutely not under any circumstances ever be funding anything that private industry can fund on its own.

Now, I happen to think there are very good reasons to invest in R&D efforts through private industry but I am very unhappy when

I hear people who argue vigorously against doing that because they don't agree with particular programs.

And I would hope that we would take a consistent position that it is good to have allies in private industry. It is good to work within existing infrastructure. It is good to invest in research and development and not pick and choose our friends and the programs that are important to our country.

Chairman BOEHLERT. Particularly well-said. Thank you so much. Are there any other amendments? If none, then——

Mr. BAIRD. Mr. Chair. This will be brief.

Chairman BOEHLERT. Who seeks—Mr. Baird.

Mr. BAIRD. Move to strike the last word. I wonder if in the process I have great respect for the Chair and respect his position on a variety of issues of concern here, the environment and others and so this is not meant to criticize the Chair per se, and I understand the pressures that have moved with some expediency to bring this hearing and this mark-up to the floor or to the body.

I have some concern about the tendency here to move things very rapidly without adequate debate or discussion or hearings, and I think we may have seen that a little bit. I see a lot of folks reading through the bill, et cetera. One fundamental question that I would like to ask counsel on this before proceeding would be could you give us two things. One, some simple, thumbnail sketch of net money being spent on renewables and conservation as opposed to nuclear and petroleum in this bill.

Chairman BOEHLERT. The Chair recognizes counsel as he is grabbing—

Dr. Watson.

Dr. WATSON. I have a chart here. Yes.

Chairman BOEHLERT. You have a chart that has been distributed to all members?

Dr. WATSON. Yes.

Chairman BOEHLERT. It is in the members' packets.

Dr. WATSON. No. This is a revised——

Chairman BOEHLERT. But Mr. Baird makes a good point, and I would suggest, and you know, everybody has been working so hard day and night and trying to work everything out but it would be nice to have a thumbnail sketch summary with dollar, you know, without the section by section, 25-page analysis. We didn't want to delay this mark-up, you know, until tomorrow with the potential for a very busy schedule tomorrow, interruptions 48 times, and then we would be carried over to next week. We wanted to get it finished with, and everybody, both sides, worked diligently to work out the differences, and now we have them worked out. We are paying somewhat of a penalty by going forward. We don't have some of the things that members really have every right to ask for. It is a very reasonable request. The Chair has the same request, only I was a little bit more silent about it. Dr. Ehlers has an observation relating to your——

Mr. BAIRD. Actually, another request, Mr. Chairman, because I am fully supportive of what we are doing here, and I like the original bill, we have gone through a number of amendments, particularly the en bloc amendment. I think we should just realize that we have another bite out of the apple when we hit the floor. But

another concern of mine is how is—how this will mesh with the other bills on energy being produced by other committees. Therefore, my request is that if the staff could assemble the final version of this bill, excuse me, as amended as soon as possible and distribute it to us so that we can read it and begin preparing for floor debate, and particularly use it as a reference when looking at the bills that are coming out of the other committees.

Chairman BOEHLERT. Legislative counsel will be doing that, and let me suggest, I mean, we all know each other quite well those of us who have been around more than a couple of hours. I would suggest that this is going to be probably the most positive portion of a comprehensive bill where I have a number of problems and as many of my colleagues do on both sides of the aisle.

Are there any other——

UNIDENTIFIED SPEAKER. If the gentleman would yield.

Mr. BAIRD. Mr. Chair, I am not sure I finished my time.

Chairman BOEHLERT. All right.

Mr. BAIRD. That is all right.

Chairman BOEHLERT. The gentleman is recognized for——

Mr. BAIRD. I have got——

Chairman BOEHLERT [continuing]. Three minutes and 40 seconds.

Mr. BAIRD. Thanks, Mr. Chair. I timed it pretty close to that. I have—this is the problem with sort of hurrying things through but I have got the Democratic Staff's version of H.R. 2460, and as I look at say renewable energy under Democratic Staff, and I will ask Democratic Staff to help me here, and it may be without the en bloc admittedly, I am seeing numbers on renewable energy that are substantially different than staff counsel's, and I am just trying to reconcile those.

Chairman BOEHLERT. Mr.—Dr. Watson, can you——

Dr. WATSON. I will not voucher the absoluteness of my numbers. I am operating under a little sleep deficit.

Mr. BAIRD. We understand that.

Dr. WATSON. I may——

Mr. BAIRD. Well, let me ask you——

Chairman BOEHLERT. Do both sides agree with the numbers that are appearing some place?

UNIDENTIFIED SPEAKER. Yeah.

Chairman BOEHLERT. Mr. Baird, do you have those numbers?

Mr. BAIRD. Yeah. I think it may have been explained.

Dr. WATSON. I assume it is just the difference between the en bloc amendment we added. The numbers changed again last night.

Chairman BOEHLERT. Well, the chart he has does not have the numbers from——

Mr. BAIRD. I think I have got them, Mr. Chair. I think it has been explained. Let me ask then with my remaining 14.56 seconds——

Chairman BOEHLERT. All right.

Mr. BAIRD [continuing]. And nanoseconds I am sure, I see a fairly substantial expenditure here for fusion energy, and I am curious as to how much this country has spent on fusion energy over the last two decades, and how much energy it has produced relative to how much we have spent on solar energy and how much energy is

produced. I don't expect you to have that number but I would just point out for the record that we are spending annually tremendous amounts of money on fusion without a kilowatt of energy being produced relative to what we spend on other——

Chairman BOEHLERT. It has great potential. Ms. Lofgren, you might want to address that subject.

Ms. LOFGREN. Thank you, Mr. Chairman. I would love to, and fusion, the gentleman is correct that fusion has not yet achieved its potential, however, we—it is a science project. It is not an electricity-generation project, and we have cut the budget for fusion research by 40 percent since I became a member of Congress.

This is an effort, and I am joined I think by 39 members of the House and I think 15 members of the Science Committee in putting together a comprehensive measure that will get us to where we need to be to a burning plasma experiment, which is the next step to see whether or not, and we believe actually we are now moving forward, we have produced energy. It is just we can't sustain it so that we know that fusion is possible but without the investment in science by mid-century we will be out of fossil fuels without a source of energy that will serve us for the remainder of the century.

Mr. NETHERCUTT. Will gentlelady yield?

Ms. LOFGREN. Certainly.

Mr. NETHERCUTT. I think the gentlelady is absolutely right. You know, we spend millions of dollars on cancer research, diabetes research, and a lot of research. We haven't cured cancer or diabetes yet. So I would say to my friend from Washington, you know, be patient. This is well-spent money. It is going to be I think a long-term, very beneficial solution for all of us. It is clean energy but it is not going to happen tomorrow. We have to keep at it.

Mr. BAIRD. Well, my friend from Washington——

Mr. NETHERCUTT. It is not my time. I yield back.

Ms. LOFGREN. I would certainly yield to the gentleman.

Mr. BAIRD. I appreciate that but we have been—my point is that we have been spending this on a distant promise. Of course fusion is possible. The sun is a fusion reactor but—and hot. We have been doing this for 20 years. My original question was this, and I will reiterate it because I think the comments, though well taken, are not particularly germane. My original question was to what extent have we generated actual kilowatt hours for the dollars invested by solar energy and other renewables versus actual kilowatt hours for the dollars invested in fusion. And I understand, I have been tracking this since the early days of tokamak but I don't see that we are getting the return on investment. And if I had to prioritize our expenditures, if we have a crisis, if we don't have a crisis, then what is the point of accelerating the mark-up today, if we have a crisis, it seems to me you invest your first dollars most immediately and where you get an actual return on energy investment. And we have gotten no net energy return on investment. That is the point——

Ms. LOFGREN. If I may reclaim my time, the—this bill I think is a mix of approaches. Some are for today, some of them are for the near term, the next several years or a decade, and some are for our long-term future as a planet. And if we are serious about global cli-

mate change, the only piece of the energy mix that is going to provide that solution is the investment that we are making in fusion energy.

Now, there has not been commercial electricity generated by fusion energy, and no one has suggested that that has yet occurred or will happen in any likelihood in the next ten years. But if we fail to take the long-term view on—to secure the safety of our environment and to avert global climate change, I think we will all regret that. We may not live to regret it but certainly our children will——

Chairman BOEHLERT. The gentlelady's time——

Ms. LOFGREN [continuing]. And I thank you——

Chairman BOEHLERT [continuing]. Has expired.

Ms. LOFGREN [continuing]. Chairman for——

Chairman BOEHLERT. She has ended on a positive note. All time has expired. No further amendments. Hearing none the question is on the bill H.R. 2460, Comprehensive Energy Research and Technology Act of 2001 as amended. All those in favor, say aye. Opposed, no. In the opinion of the Chair the ayes have it.

I now will recognize Mr. Costello for a motion.

Mr. COSTELLO. Mr. Chairman, in Mr. Hall's absence I would move that the Committee favorably report H.R. 2460 as amended to the House with the recommendation that the bill is amended as passed. Furthermore, I move that 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.

Chairman BOEHLERT. The Chair notes the presence of a reporting quorum. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye. Opposed, no.

I thank everybody here for their indulgence today. I move that the Members have two subsequent calendar days in which to submit supplementary, minority, or additional views on the measure. I move pursuant to Clause 1 of rule 22 of the Rules of the House that the Committee authorize the Chairman to offer such motions as may be necessary in the House to go to conference with the Senate on the bill H.R. 2460 or a similar Senate bill.

This concludes our Committee Markup. Thank you all very much.

[Whereupon, at 7:30 p.m., the Committee was adjourned.]

## H.R. 2460—COMPREHENSIVE ENERGY RESEARCH AND TECHNOLOGY ACT OF 2001
## SECTION-BY-SECTION ANALYSIS

(To H.R. 2460 as Introduced)

*Section 1. Short title; table of contents*

Subsection 1(a) cites the Act as the "Comprehensive Energy Research and Technology Act of 2001," and subsection 1(b) contains the bill's Table of Contents.

*Sec. 2. Findings*

Section 2 contains the 8 findings.

*Sec. 3. Purposes*

Section 3 contains the 8 purposes of the Act.

*Sec. 4. Goals*

Section 4 requires the Secretary of Energy, in consultation with others, to perform an assessment that establishes measurable cost and performance-based goals, for 2005, 2010, 2015, and 2020 for each of the programs authorized by this Act that would enable each such program the purposes of under section 3. The assessment is to be based on the latest scientific and technical knowledge, and shall also take into consideration, as appropriate, the comparative environmental impacts (including emission of greenhouse gases) of the energy saved or produced by specific programs. Within 120 days of the date of enactment of this Act, the Secretary is to issue—and publish in the Federal Register—a set of draft goals for public comment, and within 180 days, after taking into consideration any public comments received, to transmit to Congress and publish in the Federal Register the final goals. These goals must be updated on a biennial basis.

*Sec 5. Definitions*

Secton 5 defines the terms: (1) "Administrator" to mean the Administrator of the Environmental Protection Agency (EPA); (2) "appropriate congressional committees" to mean—(A) the Committee on Science and the Committee on Appropriations of the House; and (B) the Committee on Energy and Natural Resources and the Committee on Appropriations of the Senate; (3) the "Department" to mean the Department of Energy; and (4) the "Secretary" to mean the Secretary of Energy.

*Sec. 6. Authorizations*

Section 6 states that authorizations of appropriations under this Act are for environmental research and development, scientific and energy research, development, and commercial applications of energy technology programs, projects, and activities. This is consistent with the Science Committee's jurisdiction under rule X, clause 1(n) of the Rules of the House.

*Sec. 7. Sense of Congress*

Section 7 addresses funding balance by expressing the sense of the Congress that the balance of funding priorities among the various programs authorized by this Act should remain as provided in this Act, regardless of the total amount of funding made available for this Act.

## Title I—Energy Conservation and Energy Efficiency

### SUBTITLE A—ALTERNATIVE FUEL VEHICLES

Subtitle A directs the Secretary to establish an alternative fuel vehicle energy demonstration and commercial application of energy technology competitive grant pilot program. The $200.0 pilot program is to award not more than 15 grants, limited to a maximum of $20.0 million, to State governments, local governments, or metropolitan transportation authorities to acquire alternative fuel vehicles.

*Sec. 101. Short title*

Subsection 101 cites the subtitle as the "Alternative Fuel Vehicle Acceleration Act of 2001." Act as the "Comprehensive Energy Research and Technology Act of 2001." and subsection.

*Sec. 102. Definitions*

Section 102 defines the terms "alternative fuel vehicle" and "pilot program."

*Sec. 103. Pilot program*

Subsection 103(a) directs the Secretary to establish an alternative fuel vehicle energy demonstration and commercial application of energy technology competitive grant pilot program to provide not more than 15 grants to State governments, local governments, or metropolitan transportation authorities to carry out a project or projects for the purposes described in subsection (b).

Subsection 103(b) defines the purposes for which the grants may be used, as follows:

> "(1) The Acquisition of alternative fuel vehicles, including—(A) passenger vehicles; (B) buses used for public transportation or transportation to and from schools; (C) delivery vehicles for goods or services; (D) ground support vehicles at public airports, including vehicles to carry baggage or push airplanes away from terminal gates, and (E) motorized two-wheel bicycles, scooters, or other vehicles for use by law enforcement personnel or other State or local government or metropolitan transportation authority employees;
>
> "(2) Infrastructure necessary to directly support a project funded by the grant, including fueling and other support equipment;

"(3) Operation and maintenance of vehicles, infrastructure, and equipment acquired as part of a project funded by the grant."

Subsections 103(c), (d), and (e) set out the grant applications requirements, selection criteria, and pilot project requirements, respectively. Subsection 103(e) limits: (1) the amount of an award to any one applicant to not more than $20.0 million; (2) the Federal cost share to not more than 50 percent; and (3) the length of the funding period to not more than 5 years.

*Sec. 104. Report*

Section 104 requires the Secretary to transmit an initial report to the Committee on Science and to the Senate Committee on Energy and Natural Resources within 60 days after the grants are awarded, and a report containing an evaluation of the pilot program's effectiveness not later than 3 years after the date of enactment to the same Committees. The evaluation report is to include "an assessment of the benefits to the environment derived from the projects included in the pilot program as well as an estimate of the potential benefits to the environment to be derived from widespread application of alternative fuel vehicles," and is to be updated annually until the program ends.

*Sec. 105. Authoritization of appropriations*

Section 105 authorizes $200.0 million for the pilot program, to remain available until expended.

SUBTITLE B—DISTRIBUTED ENERY RESOURCES

*Sec. 121. Distributed energy resources research, development, demonstration, and commercial application*

Section 121 directs the Secretary to develop and implement a comprehensive and cooperative research, development, and demonstration, and commercial application program to ensure the reliability, efficiency and environmental responsibility of distributed energy resources. The program is to address advanced energy technologies and systems, advanced grid reliability technologies, development, and technology transfer and education. It is to include the integration of renewable energy resources, fuel cells, combined heat and power systems, microturbines, advanced natural gas turbines, advanced internal combustion engine generators, energy storage devices, any other technologies, as appropriate, interconnection standards, protocols, and equipment, and ancillary equipment for dispatch and control.

*Sec. 122. Program plan*

Section 122 requires the Secretary, in consultation with other appropriate Federal agencies, within 120 days of enactment, to present to Congress a 5 year program plan to guide activities under this subtitle, including the creation of cost-sharing programs with private entities.

*Sec. 123. Report*

Section 123 instructs Secretary to report to Congress every two years on the program's progress.

SUBTITLE C—DEPARTMENT OF ENERGY AUTHORIZATION OF APPROPRIATIONS

*Sec. 131. Authorization of appropriations*

In addition to the $200.0 million authorized in section 105 for the alternative fuel vehicle grant pilot program, subsection 131(a) authorizes $600.0 million for fiscal year (FY) 2002, $700.0 million for FY 2003; and (3) $800 million for FY 2004 for Energy Conservation operation and maintenance (including Building Technology, State and Community Sector, Industry Sector, Transportation Sector, Power Technologies, and Policy and Management), to remain available until expended.

Subsection 131(b) provides that none of the funds authorized to be appropriated in subsection 131(a) may be used for: "(1) Building Technology, State and Community Sector—(A) Residential Building Energy Codes; (B) Commercial Building Energy Codes; (C) Lighting and Appliance Standards; (D) Weatherization Assistance Program; or (E) State Energy Program; or (2) Federal Energy Management Program." This limitation is included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of these programs either resides with the Committee on Energy and Commerce, or is shared with that Committee.

SUBTITLE D—ENVIRONMENTAL PROTECTION AGENCY OFFICE OF AIR AND RADIATION AUTHORIZATION OF APPROPRIATIONS

*Sec. 141. Short title*

Section 141 cites the subtitle as the "Environmental Protection Agency Office of Air and Radiation Authorization Act of 2001."

*Sec. 142. Authorization of appropriations*

Section 142 authorizes to be appropriated to the EPA Administrator for the Office of Air and Radiation a total of $156.7 million for FY 2002; $163.0 million for FY 20993, and $169.4 million for FY 2004, to remain available until expended. Of these amounts, $28.3 million for FY 2902, $29.4 million for FY 2993, and $30.6 million for FY 2004 shall be for Science; and $128.4 million for FY 2002, $133.6 million for FY 2003, and $138.8 million for FY 2004 shall be for Climate Change Protection Programs, including—

(A) $52.7 million for FY 2002, $54.8 million for FY 2003, and $57.0 million for FY 2004 for Buildings;

(B) $32.4 million for FY 2002, $33.7 million for FY 2003, and $35.0 million for FY 2004 for Transportation;

(C) $32.0 million FY 2002, $33.3 million for FY 2003, and $34.6 million for FY 2004 for Industry;

(D) $1.7 million for FY 2002, $1.750 million FY 2003, and $1.8 million for FY 2004 for Carbon Removal;

(E) $2.5 million for FY 2002, $2.6 million for FY 2003, and $1.8 million for FY 2004 for State and Local Climate;

(F) $6.3 million for FY 2002, $6.6 million for FY 2003, and $6.8 million for FY 2004 for International Capacity Building; and

(G) $0.8 million for FY 2002, $0.85 million FY 2003, and $0.9 million for FY 2004 for Technical Cooperation with Industrial and Developing Countries.

*Sec. 143. Limits on use of funds*

Subsection 143(a) prohibits the use of funds authorized by this Act to award, amend, or modify a contract of the EPA Office of Air and Radiation in a manner that deviates from the Federal Acquisition Regulation unless the Administrator grants, on a case-by-case basis, a waiver to allow for such a deviation. The Administrator may not delegate the authority to grant such a waiver. It also requires that at least 60 days before a contract award, amendment, or modification for which the Administrator intends to grant such a waiver, the Administrator shall submit to congressional committees a report notifying the committees of the waiver and setting forth the reasons for the waiver.

Subsection 143(b) prohibits EPA from using of funds to produce or provide articles or services for the purpose of selling the articles or services to a person outside the Federal Government, unless the Administrator determines that comparable articles or services are not available from a commercial source in the United States.

Subsection 143(c) prohibits EPA from using funds to initiate Requests for Proposals (RFPs) for unauthorized programs, projects, or activities.

Subsection 143(d) prohibits EPA from using funds, either directly or indirectly, to fund a grant, contract, subcontract or any other form of financial assistance awarded by the Agency to a trade association on a noncompetitive basis.

*Sec. 144. Cost sharing*

Section 144 requires non-Federal cost-sharing of at least: (a) 20 percent for R&D carried out by industry; and (b) 50 percent of any demonstration or commercial application program, project, or activity.

*Sec. 145. Limitations on demonstrations and commercial application of energy technology*

Section 145 requires the Administrator to provide funding only for demonstration or commercial application programs, projects and activities for technologies or processes that can reasonably be expected to yield new, measurable benefits to the cost, efficiency, or performance of the technology or process.

*Sec. 146. Reprogramming*

Section 146 prohibits the reprogramming of funds in excess of 105 percent of the amount authorized for a program, project, or activity, or in excess of $0.25 million above the amount authorized for the program, program, project, or activity until the Administrator submits a report to the appropriate congressional committees and a period of 30 days has elapsed after the date on which the report is received.

*Sec. 147. Budget request format*

Section 147 requires the Administrator to provide to the appropriate congressional committees, to be transmitted at the same time as the EPA's annual budget request submission, a detailed justification for budget authorization for the programs, projects, and activities for which funds are authorized by this subtitle.

Each such document shall include, for the fiscal year for which funding is being requested and for the two previous fiscal years: (1) a description of, and funding requested or allocated for, each such program, project, or activity; (2) an identification of all recipients of funds to conduct such programs, projects, and activities; and (3) an estimate of the amounts to be expended by each recipient of funds.

*Sec. 148. Other provisions*

Subsection 148(a) requires the Administrator to provide simultaneously to the Science Committee: (1) any annual operating plan or other operational funding document, including any additions or amendments thereto; and (2) any report relating to the environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology programs, projects, or activities of the EPA, provided to any committee of Congress.

Subsection 148(b) requires the Administrator to provide notice to the appropriate congressional committees not later than 15 days before any reorganization of any environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Office of Air and Radiation.

## Title II—Renewable Energy

### SUBTITLE A—HYDROGEN

*Sec. 201. Short title*

Subsection 201 cites the subtitle as the "Robert S. Walker and George E. Brown, Jr. Hydrogen Energy Act of 2001."

*Sec. 202. Purposes*

*Sec. 203. Definitions*

*Sec. 204. Reports to Congress*

*Sec. 205. Hydrogen research and development*

*Sec. 206. Technology transfer*

*Sec. 208. Coordination and consultation*

*Sec. 209. Advisory committee*

*Sec. 210. Authorization of appropriations*

Sections 202 through 210 amend sections 102(b), 102(c) and 103 through 108 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990. These include changes to revise its purposes to include R&D activities leading to the use of hydrogen for commercial applications, and the development of a hydrogen production methodology that minimizes adverse environmental impacts, including efficient and cost-effective production from renewable and nonrenewable resources. The subtitle also amends as a purpose the development of renewable energy resources as a primary source of energy for hydrogen production. It also instructs the Secretary to report annually to Congress on programs and activities authorized under the Act, conduct a hydrogen technology transfer program designed to accelerate wider application in foreign countries, increase the global market for hydrogen technologies, and foster global economic development without harmful environmental effects and enter into arrangements with the National Academies of Sciences and Engineering to establish an advisory committee to replace the current Hydrogen Technical Advisory Panel.

*Sec. 210. Authorization of appropriations*

Subsection 210 amends Section 109 of Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 to provide authorization of appropriations for the 5-year period, FY 2002–FY 2006.

Subsection 210(a) authorizes $40.0 million for FY 2002, $45.0 million for FY 2003, $50.0 million for FY 2003, $55.0 million for FY 2005, and $60.0 million for FY 2006 for hydrogen research and development (R&D) activities and the advisory committee.

Subsection 210(b) authorizes $20.0 million for FY 2002, $25.0 million for FY 2003, $30.0 million for FY 2003, $35.0 million for FY 2005, and $40.0 million for FY 2006 for hydrogen development activities.

*Sec. 211. Repeal*

Section 211 amends the Hydrogen Future Act of 1996 to repeal the program relating to the integration of fuel cells with hydrogen production systems.

SUBTITLE B—BIOENERGY

*Section 221. Short title*

Section 221 cites the Act as the "Bioenergy Act of 2001."

*Sec. 222. Findings*

Section 222 lists five findings.

*Sec. 223. Definitions*

Section 223 defines the term "biofuels" to include the production of industrial chemicals.

*Sec. 224. Authorizations*

Section 224 authorizes the Secretary to conduct bioenergy-related research, development, demonstration, and commercial application programs, projects, and activities, including: (1) biopower energy systems, (2) biofuels energy systems, and (3) integrated bioenergy R&D.

*Sec. 225. Authorization of appropriations*

As shown in the following table, section 225 authorizes a total of $912.2 million for Biopower Energy Systems, Biofuels Energy Systems, and Integrated Bioenergy R&D for the 5-year period, FY 2002–FY 2006. Also shown in the table is the current (i.e., FY 2001) funding for these programs.

BIOENERGY ACT OF 2001 AUTHORIZATIONS: FY 2002–FY 2006

[In thousands of dollars]

| Program | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | Total (FY02–FY06) |
|---|---|---|---|---|---|---|---|
| Biopower | 39,742 | 45,700 | 52,500 | 60,300 | 69,300 | 79,600 | 307,400 |
| Biofuels | 46,526 | 53,500 | 61,400 | 70,600 | 81,100 | 93,200 | 359,800 |
| Integrated Bioenergy R&D | 0 | 49,000 | 49,000 | 49,000 | 49,000 | 49,000 | 245,000 |
| Total | 86,268 | 148,200 | 162,900 | 179,900 | 199,400 | 221,800 | 912,200 |

SUBTITLE C—AUTHORIZATION OF APPROPRIATIONS

*Sec. 241. Authorization of appropriations*

Including the amounts authorized for hydrogen under section 201 and for bioenergy under section 225, subsection 241(a) authorizes $475.0 million for FY 2002, $585.0 million for FY 2003, and $620.0 million for FY 2004 for Renewable Energy operation and maintenance, including Geothermal Technology Development, Hydropower, Concentrating Solar Power, Photovoltaic Energy Systems, Solar Building Technology Research, Wind Energy Systems, High Temperature Superconducting Research and Development, Energy Storage Systems, Transmission Reliability, International Renewable Energy Program, Renewable Energy Production Incentive Program, Renewable Program Support, National Renewable Energy Laboratory, and Program Direction, to remain available until expended.

Subsection 241(b) provides that none of the funds authorized to be appropriated in subsection 131(a) may be used for: "(1) Departmental Energy Management Program; or (2) Renewable Indian Energy Program." This limitation is included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of these programs either resides with the Committee on Energy and Commerce, or is shared with that Committee.

## Title III—Nuclear Energy

### SUBTITLE A—UNIVERSITY NUCLEAR SCIENCE AND ENGINEERING

*Section 301. Short title*

Section 301 cites the Act as the "Department of Energy University Nuclear Science and Engineering Act."

*Sec. 302. Findings*

Section 302 lists three findings.

*Sec. 303. Department of Energy Program*

Subsection 303(a) directs the Secretary of Energy, through the Office of Nuclear Energy, Science and Technology (Office) to maintain the Nation's human resource investment and infrastructure related to civilian nuclear R&D.

Subsection 303(b) requires the Director of the Office: (1) develop a robust graduate and undergraduate program to attract new students; (2) develop a Junior Faculty Research Initiation Grant to recruit and maintain new faculty; (3) maintain investment in the Nuclear Engineering Education Research Program; (4) encourage collaborative nuclear research between industry, national labs and universities through Nuclear Energy Research Initiative; and (5) support public outreach regarding nuclear science and engineering.

Subsection 303(c) directs the Office to provide for: (1) university research and training reactor refueling, upgrade of operational instrumentation upgrading, reactor sharing, relicensing collaboration with industry, awards for reactor improvements for research, training and education.

Subsection 303(d) directs the Secretary to develop a program in the Office of Nuclear Energy, Science and Technology for: nuclear science and technology sabbatical fellowship for university professors at the DOE labs; visiting scientist program for DOE lab staff to visit universities' nuclear science programs to work with faculty and staff.

Subsection 303(e) requires cost sharing in the reactor's operation costs by investigator and the host institution.

Subsection 303(f) requires that all grants, contracts, cooperative agreements or other financial assistance awards under this act be made based on independent merit review.

*Sec. 304. Authorization of appropriations*

Subsection 304(a) authorizes total appropriation of funds to carry out the purposes of the act and for all funds to remain available until expended, $30.2 million for FY 2002; $42.0 million for FY 2003; $47.9 million for FY 2004; $55.6 million for FY 2005; and $64.1 million for FY 2006.

For the Junior Faculty Research Initiation Grant Program to carry out subsection 303(b)(2) for the funds authorized in subsection 304(a), subsection 304(c) authorizes $50.0 million for FY 2002, $7.0 million for FY 2003; $8.0 million for FY 2004; $9.0 million for FY 2005; and $10.0 million for FY 2006.

For the Nuclear Engineering and Education Research Program to carry out subsection 303(b)(3) from the funds authorized in subsection 304(a), subsection 304(d) authorizes $8.0 million for FY 2002, $12.0 million for FY 2003; $13.0 million for FY 2004; $15.0 million for FY 2005; and $20.0 million for FY 2006.

For Communication and Outreach Related to Nuclear Science and Engineering to carry out subsection 303(b)(5) from the funds authorized in subsection 304(a), subsection 304(e) authorizes $0.2 million for each of FY 2002 and FY 2003, and $0.3 million for each of FY 2004–FY 2006.

For Refueling of Research Reactors and Instrumentation Upgrades to carry out section 303(c)(1) from the funds authorizes in subsection 304(a), subsection 304(f) authorizes $6.0 million for FY 2002, $6.5 million for FY 2003; $7.0 million for FY 2004; $7.5 million for FY 2005; and $8.0 million for FY 2006.

For Re-Licensing Assistance to carry out subsection 303(c)(2) from the funds authorized in subsection 304(a), subsection 304(g) authorizes $1.9 million for FY 2002, $1.1 million for FY 2003; $1.2 million for FY 2004; and $1.3 million for each of FY 2005 and FY 2006.

For the Reactor Research and Training Award Program to carry out subsection 303(c)(3) from the funds authorized in subsection 304(a) subsection 304(h) authorizes $6.0 million for FY 2002, $10.0 million for FY 2003; $14.0 million for FY 2004; $18.0 million for FY 2005; and $20.0 million for FY 2006.

For University-DOE Laboratory Interactions to carry out subsection 303(c)(3) from the funds authorized in subsection 304(d), subsection 304(i) authorizes $1.0 million

for FY 2002, $1.1 million for FY 2003; $1.2 million for FY 2004; and 41.3 million for each of FY 2005 and FY 2006.

SUBTITLE B—SPENT NUCLEAR FUEL AND FUEL CYCLE RESEARCH, DEVELOPMENT, AND DEMONSTRATION

*Sec. 321. Office of Spent Nuclear Fuel Research*

Subsection 321(a) defines the term "Associate Director" to mean the Associate Director of the Office of Spent Nuclear Fuel Research established by subsection 321(b).

Subsection 321(b) establishes an Office of Spent Nuclear Research within the Office of Nuclear Energy, Science and Technology of the Department.

Subsection 321(c) specifies that the Office shall be headed by the Associate Director, who shall be a member of the Senior Executive Service appointed by the Director of the Office of Nuclear Energy, Science and Technology.

Subsection 321(d) defines the duties of the Associate Director. The Associate Director shall coordinate the participation of national laboratories, other DOE facilities, universities, the commercial nuclear industry, and other organizations in the research, development, and demonstration (RD&D) of technologies for the treatment, recycling, and disposal of spent nuclear fuel and high-level radioactive waste. The Associate Director shall also: (A) develop a research plan to provide recommendations to the Secretary by 2015; (B) identify promising technologies for the treatment, recycling, and disposal of spent nuclear fuel and high-level radioactive waste; (C) conduct RD&D activities for promising technologies; (D) ensure that all activities include as key objectives minimization of proliferation concerns and risk to health of the general public or site workers, as well as development of cost-effective technologies; (E) require research on both reactor-based and accelerator-based transmutation systems; (F) require research on advanced processing and separations; (G) include participation of international collaborators in research efforts, and provide funding to a collaborator that brings unique capabilities not available in the United States if the country in which the collaborator is located is unable to provide support; and (H) ensure that research efforts are coordinated with research on advanced fuel cycles and reactors conducted by the Office of Nuclear Energy, Science and Technology.

Subsection 321(e) permits the Secretary to make grants, or enter into contracts, for the purposes of the activities described in subsection 321(d)(2).

Subsection 321(f) requires the Secretary shall annually submit to the appropriate congressional committees a report on the activities and expenditures of the Office that describes the progress being made in the activities described in subsection 321(d)(2).

*Sec. 322. Advanced fuel recycling technology research and development program*

Section 322(a) requires the Secretary, through the Director of the Office of Nuclear Energy, Science and Technology, to conduct an advanced fuel recycling technology R&D program to further the availability of proliferation-resistant fuel recycling technologies as an alternative to aqueous reprocessing in support of evaluation of alternative national strategies for spent nuclear fuel and the Generation IV advanced reactor concepts, subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

Section 322(b) directs the Secretary shall report on the activities of the advanced fuel recycling technology R&D program, as part of the Department's annual budget submission.

Section 322(c) authorizes $10.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

SUBTITLE C—DEPARTMENT OF ENERGY AUTHORIZATION OF APPROPRIATIONS

*Sec. 341. Nuclear research initiative*

Subsection 341(a) requires the Secretary, through the Office of Nuclear Energy, Science and Technology, to conduct a Nuclear Energy Research Initiative for grants to be competitively awarded and subject to peer review for research relating to nuclear energy.

Subsection 341(b) mandates that the program be directed toward accomplishing the objectives of: (1) developing advanced concepts and scientific breakthroughs in nuclear fission and reactor technology to address and overcome the principal technical and scientific obstacles to the expanded use of nuclear energy in the United States; (2) advancing the state of nuclear technology to maintain a competitive position in foreign markets and a future domestic market; (3) promoting and maintaining a United States nuclear science and engineering infrastructure to meet future technical challenges; (4) providing an effective means to collaborate on a cost-shared

basis with international agencies and research organizations to address and influence nuclear development worldwide; and (5) promoting United States leadership and partnerships in bilateral and multilateral nuclear energy research.

Subsection 341(c) authorizes to be appropriated to the Secretary to carry out this section: (1) $60.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

*Sec. 342. Nuclear Energy Plant Optimization Program*

Subsection 342(a) requires the Secretary to conduct a Nuclear Energy Plant Optimization R&D program jointly with industry and cost-shared by industry by least 50 percent and subject to annual review by the Secretary's Nuclear Energy Research Advisory Committee or other independent entity, as appropriate.

Subsection 342(b) states the program shall be directed toward accomplishing the following technical objectives: (1) managing long-term effects of component aging; and (2) improving efficiency and productivity of existing nuclear power stations.

Subsection 342(c) authorizes to be appropriated to the Secretary to carry out this section: (1) $15.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

*Sec. 343. Nuclear energy technologies*

Subsection 343(a) requires the Secretary to conduct a study of Generation IV nuclear energy systems, including development of a technology roadmap and performance of R&D necessary to make an informed technical decision regarding the most promising candidates for commercial application.

Under subsection 343(b), to the extent practicable, in conducting the study under subsection 343(a), the Secretary shall study nuclear energy systems that offer the highest possibility of achieving the goals for Generation IV nuclear energy systems, including: (1) economics competitive with any other generators; (2) enhanced safety features, including passive safety features; (3) substantially reduced production of high-level waste, as compared with the quantity of waste produced by reactors in operation on the date of enactment of this Act; (4) highly proliferation-resistant fuel and waste; (5) sustainable energy generation including optimized fuel utilization; and (6) substantially improved thermal efficiency, as compared with the thermal efficiency of reactors in operation on the date of enactment of this Act.

In preparing the study under subsection 343(b), subsection 343(c) requires the Secretary to consult with appropriate representatives of industry, institutions of higher education, Federal agencies, and international, professional and technical organizations.

Subsection 343(d) requires that, not later than December 31, 2002, the Secretary shall transmit to appropriate congressional committees a report describing the activities of the Secretary under this section, and plans for R&D leading to a public/private cooperative demonstration of one or more Generation IV nuclear energy systems. The report shall contain: (A) an assessment of all available technologies; (B) a summary of actions needed for the most promising candidates to be considered as viable commercial options within the five to ten years after the date of the report, with consideration of regulatory, economic, and technical issues; (C) a recommendation of not more than three promising Generation IV nuclear energy system concepts for further development; (D) an evaluation of opportunities for public/private partnerships; (E) a recommendation for structure of a public/private partnership to share in development and construction costs; (F) a plan leading to the selection and conceptual design, by September 30, 2004, of at least one Generation IV nuclear energy system for demonstration through a public/private partnership; (G) an evaluation of opportunities for siting demonstration facilities on Department of Energy land; and (H) a recommendation for appropriate involvement of other Federal agencies.

Subsection 343(e) authorizes to be appropriated to the Secretary to carry out this section: (1) $50.0 million for FY 2002; and (2) such sums as are necessary for FY 2003 and FY 2004.

*Sec. 344. Authorization of appropriations*

Subsection 344(a) authorizes to carry out activities authorized under this title for nuclear energy operation and maintenance, including amounts authorized under sections 304(a) (University Nuclear Science and Engineering), 322(c) (Advanced Fuel Recycling Technology R&D Program), 341(c) (Nuclear Energy Research Initiative), 342(c) (Nuclear Energy Plant Optimization Program), and 343(e) (Nuclear Technologies), and including Advanced Radioisotope Power Systems, Test Reactor Landlord, and Program Direction, $221.0 million for FY 2002, $230.0 million for FY 2003, and $240.0 million for FY 2004, to remain available until expended.

## Title IV—Fossil Energy

### SUBTITLE A—CLEAN COAL

*Section 401. Short title*

Section 401 cites the subtitle as the "National Electricity and Environmental Technology Research and Development Act."

*Sec. 402. Findings*

Section 402 lists six findings.

*Sec. 403. Definition*

Section 403 defines the term "cost and performance-based goals" to mean the cost and performance-based goals established under section 4.

*Sec. 404. Clean coal power initiative*

Subsection 404 requires the Secretary carry out a program of research on and development, demonstration, and commercial application of clean coal technologies under: (1) this subtitle; (2) the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.); (3) the Energy Reorganization Act of 1974 (42 14 U.S.C. 5801 et seq.); and (4) title XIII of the Energy Policy Act of 1992 (42 U.S.C. 13331 et seq.).

Subsection 404(b) mandates that the research, development, demonstration, and commercial application program described in subsection (a) shall be designed to achieve the cost and performance-based goals.

*Sec. 405. Authorization of appropriations*

Except as provided in section 406, subsection 405(a) authorizes to be appropriated to the Secretary to carry out the Clean Coal Power Initiative under section 404 $200.0 million for each of the fiscal years 2003 through 2011, to remain available until expended.

Also, except as provided in section 406, subsection 405(b) authorizes to be appropriated to the Secretary $172.0 million for FY 2002, $179.0 million for FY 2003, and $186.0 million for FY 2004, to remain available until expended, for other coal and related technologies programs, which shall include: (1) Innovations for Existing Plants; (2) Integrated Gasification Combined Cycle; (3) Pressurized Fluidized Bed Systems; (4) Turbines; (5) Sequestration Research and Development; (6) Transportation Fuels and Chemicals; (7) Solid Fuels and Feedstocks; (8) Advanced Fuels Research; and (9) Advanced Research.

### SUBTITLE B—OIL AND GAS

*Sec. 421. Petroleum-oil technology*

Section 421 directs the Secretary to conduct a program to conduct a program of research, development, and demonstration, and commercial application on petroleum, natural gas, and unconventional and ultra-deepwater natural gas petroleum. The program shall address: (1) Exploration and Production Supporting Research; (2) Oil Technology Reservoir Management/Extension; and (3) Effective Environmental Protection.

*Sec. 422. Gas*

Section 422 directs the Secretary to conduct a program to conduct a program of research, development, demonstration, and commercial application on natural gas technologies. The program shall address: (1) Exploration and Production; (2) Infrastructure; (3) Effective Environmental Protection.

*Sec. 423. Unconventional and ultra-deepwater natural gas and petroleum*

Section 423 directs the Secretary to conduct a program of RD&D of unconventional and ultra-deepwater natural gas and petroleum exploration and production technologies.

### SUBTITLE C—FUEL CELLS

Section 441 directs the Secretary to conduct a program of research, development, research, development, demonstration, and commercial application on fuel cells. The program shall address: (1) Advanced Research; (2) Systems Development; (3) Vision 21-Hybrids; and (4) Innovative Concepts.

SUBTITLE D—AUTHORIZATION OF APPROPRIATIONS

*Sec. 461. Authorization of appropriations*

Subsection 461(a) authorizes appropriations for subtitles B (Oil and Gas) and C (Fuel Cells), and for Fossil Energy Research and Development Headquarters Program Direction, Field Program Direction, Plant and Capital Equipment, Cooperative Research and Development, Import/Export Authorization, and Advanced Metallurgical Processes $238.0 million for FY 2002, $247.0 million for FY 2003, and $257.0 million for FY 2004.

Subsection 461(b) provides that none of the funds authorized to be appropriated in subsection 461(a) may be used for: "(1) Gas Hydrates; (2) Fossil Energy Environmental Restoration; or (3) research, development, demonstration, and commercial application on coal and related technologies, including activities under subtitle A [Clean Coal Power Initiative]." The first limitation is imposed because the Methane Hydrate Act of 2000 has been recently enacted and has its own separate authorization. The second limitation is limitation is included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of Fossil Energy Environmental Restoration is shared with the Committee on Energy and Commerce. The third limitation is imposed to limit the amount of coal funding to that contained in Subtitle A.

## Title V—Science

SUBTITLE A—FUSION ENERGY SCIENCES

*Section 501. Short title*

Section 501 cites the subtitle as the "Fusion Energy Sciences Act of 2001."

*Sec. 502. Findings.*

Section 502 lists nine findings

*Sec. 503. Plan for fusion experiment*

Subsection 503(a) requires the Secretary—in full consultation with the Fusion Energy Sciences Advisory Committee and the Secretary of Energy Advisory Board—to develop a plan for United States (U.S.) construction of a magnetic fusion burning plasma experiment for the purpose of accelerating scientific understanding of fusion plasmas. The Secretary shall request a review of the plan by the National Academy of Sciences (NAS), and shall transmit the plan and the NAS review to the Congress by July 1, 2004.

Subsection 503(b) requires the plan to: (1) address key burning plasma physics issues; and (2) include specific information on the scientific capabilities of the proposed experiment, the relevance of these capabilities to the goal of practical fusion energy, and the overall design of the experiment including its estimated cost and potential construction sites.

Subsection 503(c) authorizes the Secretary—in full consultation with the Fusion Energy Sciences Advisory Committee and the Secretary of Energy Advisory Board—to develop a plan for U.S. participation in an international burning plasma experiment for the purpose of accelerating scientific understanding of fusion plasma, whose construction is found by the Secretary to be highly likely, and where U.S. participation is cost effective relative to the cost and scientific benefits of a domestic experiment described in subsection 503(a). If the Secretary elects to develop a plan under this subsection, the Secretary shall include the information described in subsection 503(b), and an estimate of the cost of U.S. participation in such an international experiment. The Secretary shall request a review by the NAS of any such plan, shall transmit the plan and the review to the Congress by July 1, 2004.

Subsection 503(d) authorizes the Secretary, through the Department of Energy's (DOE's) Fusion Energy Sciences Program, to conduct any R&D necessary to fully develop the plans described in this section.

*Sec. 504. Plan for Fusion Energy Sciences Program*

Section 504 requires that within six months of the enactment of this Act, the Secretary—in full consultation with the Fusion Energy Sciences Advisory Committee—to develop and transmit to the Congress a plan for the purpose of ensuring a strong scientific base for the Fusion Energy Sciences Program and to enable the burning plasma experiment described in Section 503. Such plan shall insure: (1) that existing fusion research facilities and equipment are more fully utilized with appropriate measurements and control tools; (2) a strengthened fusion science theory and computational base; (3) that the selection of and funding for new magnetic and inertial fusion research facilities is based on scientific innovation and cost effectiveness; (4)

improvement in the communication of scientific results and methods between the fusion science community and the wider scientific community; (5) that adequate support is provided to optimize the design of the magnetic fusion burning plasma experiment referred to in Section 503; (6) that inertial confinement fusion facilities are utilized to the extent practicable for the purpose of inertial fusion energy research and development; (7) to develop a roadmap for a fusion-based energy source that shows the important scientific questions, the evolution of confinement configurations, the relation between these two features, and their relation to the fusion energy goal; (8) to establish several new centers of excellence, selected through a competitive peer review process and devoted to exploring the frontiers of fusion science; (9) to ensure that the National Science Foundation, and other agencies, as appropriate, play a role in extending the reach of fusion science and in sponsoring general plasma science; and (10) to ensure that there be continuing broad assessments of the outlook for fusion energy and periodic external reviews of fusion energy sciences.

*Sec. 505. Authorization of appropriations*

Section 505 authorizes—for ongoing activities in DOE's Fusion Energy Sciences Program and for the purpose of planning activities under Section 503, but not for implementation of such plans—$320.0 million for FY 2002 and $335.0 million for FY 2003.

SUBTITLE B—SPALLATION NEUTRON SOURCE

*Sec. 521. Definition*

Section 521 defines the term "Spallation Neutron Source" to mean Department Project 99–E–334, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

*Sec. 522. Authorization of appropriations*

Section 522(a) authorizes for construction of the Spallation Neutron Source (SNS): (1) $276.3 million for FY 2002, (2) $210.571 million for FY 2003; (3) $124.6 million for FY 2004; (4) $79.8 million for FY 2005; and (5) $41.1 million for FY 2006 for completion of construction.

Subsection 522(b) authorizes for other SNS project costs (including R&D necessary to complete the project, pre-operations costs, and capital equipment not related to construction) $15.353 million for FY 2002 and $103.279 million for FY 2003–2006, to remain available until expended.

*Sec. 523. Report*

Section 523 requires the Secretary to report on the SNS as part of DOE's annual budget submission, including a description of the achievement of milestones, a comparison of actual costs to estimated costs, and any changes in estimated project costs or schedule.

*Sec. 524. Limitations*

Section 524 limits the total amount obligated for the SNS by the Department, including prior year appropriations, to not more than (1) $1,192,700,000 for costs of construction; (2) $219,000,000 for other project costs; and (3) $1,411,700,000 for total project cost.

SUBTITLE C—FACILITIES, INFRASTRUCTURE, AND USER FACILITIES

*Sec. 541. Definition*

Subsection 541(1) defines the term "nonmilitary energy laboratory" to mean: (1) Ames Laboratory; (2) 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; (J) Thomas Jefferson National Accelerator Facility; or (K) any other facility of the Department that the Secretary, in consultation with the Director, Office of Science and the appropriate congressional committees, determines to be consistent with the mission of the Office of Science.

Subsection 541(2) defines the term "user facillity" to mean: (A) an Office of Science facility at a nonmilitary energy laboratory that provides special scientific and research capabilities, including technical expertise and support as appropriate, to serve the research needs of the Nation's universities, industry, private laboratories, Federal laboratories, and others, including research institutions or individuals from other nations where reciprocal accommodations are provided to United States research institutions and individuals or where the Secretary considers such accommodation to be in the national interest; and (B) any other Office of Science funded facility designated by the Secretary as a user facility.

*Sec. 542. Facility and infrastructure support for nonmilitary energy laboratories*

Subsection 542(a) requires the Secretary to develop and implement a least-cost nonmilitary energy laboratory facility and infrastructure strategy for: (1) maintaining existing facilities and infrastructure, as needed; (2) closing unneeded facilities; (3) making facility modifications; and (4) building new facilities.

Subsection 542(b) requires the Secretary shall prepare a comprehensive 10-year plan for conducting future facility maintenance, making repairs, modifications, and new additions, and constructing new facilities at each nonmilitary energy laboratory. Such plan is to provide for facilities work in accordance with the following priorities: (1) providing for the safety and health of employees, visitors, and the general public with regard to correcting existing structural mechanical, electrical, and environmental deficiencies; (2) providing for the repair and rehabilitation of existing facilities to keep them in use and prevent deterioration, if feasible; and (3) providing engineering design and construction services for those facilities that require modification or additions in order to meet the needs of new or expanded programs.

Subsection 542(c) requires the Secretary to prepare and transmit to the appropriate congressional committees a report containing the plan prepared under subsection (b) within 1 year after the date of the enactment of this Act. For each nonmilitary energy laboratory, the report is to contain: (A) the current priority list of proposed facilities and infrastructure projects, including cost and schedule requirements; (B) a current ten-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 facilities and infrastructure project compared to the original baseline cost, schedule, and scope.

The report shall also: (A) include a plan for new facilities and facility modifications at each nonmilitary energy laboratory that will be required to meet the Department's changing missions of the twenty-first century, including schedules and estimates for implementation, and including a section outlining long-term funding requirements consistent with anticipated budgets and annual authorization of appropriations; (B) address the coordination of modernization and consolidation of facilities among the nonmilitary energy laboratories in order to meet changing mission requirements; (C) provide for annual reports to the appropriate congressional committees on accomplishments, conformance to schedules, commitments, and expenditures.

*Sec. 543. User facilities*

Under subsection 543(a), when the Department makes a user facility available to universities and other potential users, or seeks input from universities and other potential users regarding significant characteristics or equipment in a user facility or a proposed user facility, the Department shall ensure broad public notice of such availability or such need for input to universities and other potential users.

Subsection 543(b) requires the Department to employ full and open competition in selecting participants when the Department considers the participation of a university or other potential user in the establishment or operation of a user facility.

Section 543(c) prohibits the Department from redesignating a user facility, as defined by section 541(b) as something other than a user facility for avoid the requirements of subsections (a) and (b).

SUBTITLE D—ADVISORY PANEL ON OFFICE OF SCIENCE

*Sec. 561. Establishment*

Section 561 requires the Director of the Office of Science and Technology Policy, in consultation with the Secretary, to establish an Advisory Panel on the Office of Science comprised of knowledgeable individuals to: (1) address concerns about the current status and the future of scientific research supported by the Office; (2) examine alternatives to the current organizational structure of the Office within the Department, taking into consideration existing structures fro the support of scientific research in other Federal agencies and the private sector; and (3) suggest actions to strengthen the scientific research by the Office that might be taken jointly by the Department and Congress.

*Sec. 562. Report*

Under Section 562, within 180 days after the date of the enactment of this Act, the Advisory Panel shall transmit its findings and recommendations in a report to the Director of the Office of Science and Technology Policy and the Secretary. The Director and the Secretary shall jointly: (1) consider each of the Panel's findings and recommendations, and comment on each as they consider appropriate; and (2) trans-

mit the Panel's report and the comments of the Director and the Secretary on the appropriate congressional committees within 270 days after the date of the enactment of this Act.

SUBTITLE D—DEPARTMENT OF ENERGY AUTHORIZATION OF APPROPRIATIONS

*Sec. 581. Authorization of appropriations*

Including the amounts authorized to be appropriated for FY 2002 under section 505 for Fusion Energy Sciences and under subsection 522(b) for the Spallation Neutron Source, subsection 581(a) authorizes to be appropriated to the Secretary for the Office of Science (also including High Energy Physics, Nuclear Physics, Biological and Environmental Research, Basic Energy Sciences (except for the Spallation Neutron Source), Advanced Scientific Computing Research, Energy Research Analysis, Multiprogram Energy Laboratories—Facilities Support, Facilities and Infrastructure, Safeguards and Security, and Program Direction) operation and maintenance $3,296,076,000 for FY 2002, to remain available until expended.

In addition to the amounts authorized under subsection 522(a) for construction of the Spallation Neutron Source, subsection 581(b) authorizes:

(1) $11,400,000 for FY 2002 for completion of construction of Project 98–G–304, Neutrinos at the Main Injector, Fermi National Accelerator Laboratory Project;

(2) $10,000,000 for FY 2002 and $1,405,000 for FY 2003 for completion of construction of Project 01–E–300, Laboratory for Comparative and Functional Genomics, Oak Ridge National Laboratory;

(3) $4,000,000 for FY 2002, $8,000,000 for FY 2003, and $2,000,000 for FY 2004 for completion of construction of Project 02–SC–002, Project Engineering Design (PED), Various Locations;

(4) $3,183,000 for FY 2002 for completion of construction of Project 02–SC–002, Multiprogram Energy Laboratories Infrastructure Project Engineering Design (PED), Various Locations; and

(5) $18,133,000 for FY 2002 and $13,029,000 for FY 2002 for completion of construction of Project MEL–001 Multiprogram Energy Laboratories, Infrastructure, Various Locations.

Subsection 581(c) provides that none of the funds authorized to be appropriated in section 581(b) may be used for construction at any national security laboratory as defined in section 3281(1) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(1)) or at any nuclear weapons production facility as defined in section 3281(2) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(2)). This limitation is included to preserve the Science Committee's sole jurisdiction over the bill, since the jurisdiction of thee laboratories and facilities reside with the Committee on Armed Services.

## Title VI—Miscellaneous

SUBTITLE A—GENERAL PROVISIONS FOR THE DEPARTMENT OF ENERGY

*Sec. 601. Research, development, demonstration and commercial application of energy technology programs, projects, and activities*

Subsection 601 requires that research development and demonstration activities be carried out under the procedures of the Federal Nonnuclear Energy Research and Development Act of 1974, Atomic Energy Act of 1954, or any other Act the Secretary is authorized to carry out such programs. It also authorizes the Secretary to use provisions of the Stevenson-Wydler technology Innovation Act of 1980.

*Sec. 602. Limits on use of funds*

Subsection 602(a) prohibits the use of funds authorized by this Act to award, amend, or modify a contract of the Department in a manner that deviates from the Federal Acquisition Regulation unless the Secretary grants, on a case-by-case basis, a waiver to allow for such a deviation. The Secretary may not delegate the authority to grant such a waiver. It also requires that at least 60 days before a contract award, amendment, or modification for which the Secretary intends to grant such a waiver, the Secretary shall submit to congressional committees a report notifying the committees of the waiver and setting forth the reasons for the waiver.

Subsection 602(c) prohibits DOE from using of funds to produce or provide articles or services for the purpose of selling the articles or services to a person outside the Federal Government, unless the Secretary determines that comparable articles or services are not available from a commercial source in the United States.

Subsection 602(d) prohibits DOE from using funds to initiate Requests for Proposals (RFPs) for unauthorized programs, projects, or activities.

Subsection 602(e) prohibits DOE from using funds, either directly or indirectly, to fund a grant, contract, subcontract or any other form of financial assistance awarded by the Department to a trade association on a noncompetitive basis.

*Sec. 603. Cost sharing*

Section 603 requires non-Federal cost-sharing of at least: (a) 20 percent of R&D carried out by industry; and (b) 50 percent of any demonstration of commercial application program, project, or activity.

*Sec. 604. Limitations on demonstrations and commercial application of energy technology*

Section 604 requires the Secretary to provide funding only for demonstration or commercial application programs, projects and activities for technologies or processes that can reasonably be expected to yield new, measurable benefits to the cost, efficiency, or performance of the technology or process.

*Sec. 605. Reprogramming*

Section 605 prohibits the reprogramming of funds in excess of 105 percent of the amount authorized for a program, project, or activity, or in excess of $0.25 million above the amount authorized for the program, program, project, or activity until the Secretary submits a report to the appropriate congressional committees and a period of 30 days has elapsed after the date on which the report is received.

SUBTITLE B—OTHER MISCELLANEOUS PROVISIONS

*Sec. 611. Notice of reorganization*

Section 611 requires the Secretary to provide notice to Congress not later than 15 days before any reorganization of certain research projects.

*Sec. 612. Limits on general plant projects*

Section 612 requires the Secretary to halt the construction of a civilian energy or scientific research, development, or demonstration or related commercial application of energy technology "general plant project" if the estimated cost of the project (including any revisions) exceeds $2,000,000 unless the Secretary has furnished a complete report to the appropriate congressional committees explaining the project and the reasons for the estimate or revision.

*Sec. 613. Limits on construction projects*

Section 613 prohibits construction on a civilian energy or scientific research, development, or demonstration or related commercial application of energy technology construction project for which funding has been specifically authorized by law to be initiated and continued if the estimated cost for the project exceeds 110 percent of the higher of: (1) the amount authorized for the project, or (2) the most recent total estimated cost presented to the Congress as justification for such project. To exceed such limits, the Secretary must report in detail to the appropriate congressional committees and the report must be before the committees for 30 legislative days (excluding 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). This section shall not apply to any construction project that has a current estimated cost of less than $2,000,000.

*Sec. 614. Authority for conceptual design*

Section 614 limits the Secretary's authority to request construction funding in excess of $2,000,000 for a civilian energy or scientific research, development, or demonstration or related commercial application of energy technology construction project until the Secretary has completed a conceptual design for that project. Furthermore, if the estimated cost of completing a conceptual design for the construction project exceeds $750,000, the Secretary must submit a request to Congress for funds for the conceptual design before submitting a request for the construction project. In addition, the subsection allows the Secretary to carry out construction design (including architectural and engineering services) in connection with any proposed construction project that is in support of a civilian energy or scientific research, development, or demonstration or related commercial application of energy technology program, project, or activity of the Department if the total estimated cost for such design does not exceed $250,000; if the total estimated cost for construction design exceeds $250,000, funds for such design must be specifically authorized by law.

*Sec. 615. National Energy Policy Group mandated reports*

Section 615 requires that upon completion of the Secretary's review of current funding and historic performance of the Department's energy efficiency, renewable

energy, and alternative energy R&D programs in response to the recommendations of the May 16, 2001, Report of the National Energy Policy Development Group, the Secretary shall transmit a report containing the results of such review to the appropriate congressional committees.

It also requires that upon completion of the Office of Science and Technology Policy and the President's Council of Advisors on Science and Technology reviewing and making recommendations on using the Nation's energy resources more efficiently, in response to the recommendations of same report, the Director of the Office of Science and Technology Policy shall transmit a report containing the results of such review and recommendations to the appropriate congressional committees.

*Sec. 616. Independent reviews and assessments*

Subsection 616(a) requires the Secretary to enter into appropriate arrangements with the National Academies of Sciences and Engineering to ensure that there be periodic reviews and assessments of the programs, projects, and activities authorized by this Act, as well as the goals for such programs, projects, and activities as established under section. Such reviews and assessments shall be conducted at least biennially, and the Secretary shall transmit to the appropriate congressional committees reports containing the results of such reviews and assessments.

Under subsection 616(b), not later than 180 days after the date of the enactment of this Act, the Administrator and the Secretary shall jointly prepare and transmit to the appropriate congressional committees a report on the Environmental Protection Agency Office of Air and Radiation programs authorized under this Act, all programs of the Office of Energy Efficiency and Renewable Energy, and any programs of other appropriate offices of the Department that may duplicate the programs of those 2 offices, that delineates the similarities and differences between the programs. Such report shall also provide for an independent, peer-reviewed assessment of the performance goals of these programs, the progress being made in meeting those goals, and the accomplishments of these programs.

I

107TH CONGRESS
1ST SESSION

# H. R. 2460

To authorize appropriations for environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities of the Department of Energy and of the Office of Air and Radiation of the Environmental Protection Agency, and for other purposes.

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IN THE HOUSE OF REPRESENTATIVES

JULY 11, 2001

Mr. BOEHLERT introduced the following bill; which was referred to the Committee on Science

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# A BILL

To authorize appropriations for environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities of the Department of Energy and of the Office of Air and Radiation of the Environmental Protection Agency, and for other purposes.

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

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

2 (a) SHORT TITLE.—This Act may be cited as the
3 "Comprehensive Energy Research and Technology Act of
4 2001".

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

Sec. 1. Short title; table of contents.
Sec. 2. Findings.
Sec. 3. Purposes.
Sec. 4. Goals.
Sec. 5. Definitions.
Sec. 6. Authorizations.
Sec. 7. Sense of Congress.

TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY

Subtitle A—Alternative Fuel Vehicles

Sec. 101. Short title.
Sec. 102. Definitions.
Sec. 103. Pilot program.
Sec. 104. Reports to Congress.
Sec. 105. Authorization of appropriations.

Subtitle B—Distributed Energy Resources

Sec. 121. Distributed energy resources research, development, demonstration, and commercial application.
Sec. 122. Program plan.
Sec. 123. Report.

Subtitle C—Department of Energy Authorization of Appropriations

Sec. 131. Authorization of appropriations.

Subtitle D—Environmental Protection Agency Office of Air and Radiation Authorization of Appropriations

Sec. 141. Short title.
Sec. 142. Authorization of appropriations.
Sec. 143. Limits on use of funds.
Sec. 144. Cost sharing.
Sec. 145. Limitation on demonstration and commercial applications of energy technology.
Sec. 146. Reprogramming.
Sec. 147. Budget request format.
Sec. 148. Other provisions.

TITLE II—RENEWABLE ENERGY

Subtitle A—Hydrogen

Sec. 201. Short title.
Sec. 202. Purposes.
Sec. 203. Definitions.
Sec. 204. Reports to Congress.
Sec. 205. Hydrogen research and development.
Sec. 206. Demonstrations.
Sec. 207. Technology transfer.
Sec. 208. Coordination and consultation.
Sec. 209. Advisory committee.
Sec. 210. Authorization of appropriations.
Sec. 211. Repeal.

Subtitle B—Bioenergy

Sec. 221. Short title.
Sec. 222. Findings.
Sec. 223. Definition.
Sec. 224. Authorization.
Sec. 225. Authorization of appropriations.

Subtitle C—Department of Energy Authorization of Appropriations

Sec. 241. Authorization of appropriations.

TITLE III—NUCLEAR ENERGY

Subtitle A—University Nuclear Science and Engineering

Sec. 301. Short title.
Sec. 302. Findings.
Sec. 303. Department of Energy program.
Sec. 304. Authorization of appropriations.

Subtitle B—Spent Nuclear Fuel and Fuel Cycle Research, Development, and Demonstration

Sec. 321. Office of Spent Nuclear Fuel Research.
Sec. 322. Advanced fuel recycling technology research and development program.

Subtitle C—Department of Energy Authorization of Appropriations

Sec. 341. Nuclear Energy Research Initiative.
Sec. 342. Nuclear Energy Plant Optimization program.
Sec. 343. Nuclear energy technologies.
Sec. 344. Authorization of appropriations.

TITLE IV—FOSSIL ENERGY

Subtitle A—Clean Coal

Sec. 401. Short title.
Sec. 402. Findings.
Sec. 403. Definition.
Sec. 404. Clean Coal Power Initiative.
Sec. 405. Authorization of appropriations.
Sec. 406. Limit on use of funds.

Subtitle B—Oil and Gas

Sec. 421. Petroleum-oil technology.
Sec. 422. Gas.
Sec. 423. Unconventional and ultra-deepwater natural gas and petroleum.

Subtitle C—Fuel Cells

Sec. 441. Fuel cells.

Subtitle D—Authorization of Appropriations

Sec. 461. Authorization of appropriations.

TITLE V—SCIENCE

Subtitle A—Fusion Energy Sciences

Sec. 501. Short title.
Sec. 502. Findings.
Sec. 503. Plan for fusion experiment.
Sec. 504. Plan for Fusion Energy Sciences Program.
Sec. 505. Authorization of appropriations.

Subtitle B—Spallation Neutron Source

Sec. 521. Definition.
Sec. 522. Authorization of appropriations.
Sec. 523. Report.
Sec. 524. Limitations.

Subtitle C—Facilities, Infrastructure, and User Facilities

Sec. 541. Definition.
Sec. 542. Facility and infrastructure support for nonmilitary energy laboratories.
Sec. 543. User facilities.

Subtitle D—Advisory Panel on Office of Science

Sec. 561. Establishment.
Sec. 562. Report.

Subtitle E—Department of Energy Authorization of Appropriations

Sec. 581. Authorization of appropriations.

TITLE VI—MISCELLANEOUS

Subtitle A—General Provisions for the Department of Energy

Sec. 601. Research, development, demonstration, and commercial application of energy technology programs, projects, and activities.
Sec. 602. Limits on use of funds.
Sec. 603. Cost sharing.
Sec. 604. Limitation on demonstration and commercial application of energy technology.
Sec. 605. Reprogramming.

Subtitle B—Other Miscellaneous Provisions

Sec. 611. Notice of reorganization.
Sec. 612. Limits on general plant projects.
Sec. 613. Limits on construction projects.
Sec. 614. Authority for conceptual and construction design.
Sec. 615. National Energy Policy Development Group mandated reports.
Sec. 616. Independent reviews and assessments.

1 **SEC. 2. FINDINGS.**

2 The Congress finds that—

3 (1) the Nation's prosperity and way of life are
4 sustained by energy use;

5 (2) the growing imbalance between domestic en-
6 ergy production and consumption means that the
7 Nation is becoming increasingly reliant on imported
8 energy, which has the potential to undermine the
9 Nation's economy, standard of living, and national
10 security;

11 (3) energy conservation and energy efficiency
12 help maximize the use of available energy resources,
13 reduce energy shortages, lower the Nation's reliance
14 on energy imports, mitigate the impacts of high en-
15 ergy prices, and help protect the environment and
16 public health;

17 (4) development of a balanced portfolio of do-
18 mestic energy supplies will ensure that future gen-
19 erations of Americans will have access to the energy
20 they need;

21 (5) energy efficiency technologies, renewable
22 and alternative energy technologies, and advanced

energy systems technologies will help diversify the Nation's energy portfolio with few adverse environmental impacts and are vital to delivering clean energy to fuel the Nation's economic growth;

(6) development of reliable, affordable, and environmentally sound energy efficiency technologies, renewable and alternative energy technologies, and advanced energy systems technologies will require maintenance of a vibrant fundamental scientific knowledge base and continued scientific and technological innovations that can be accelerated by Federal funding, whereas commercial deployment of such systems and technologies are the responsibility of the private sector;

(7) Federal funding should focus on those programs, projects, and activities that are long-term, high-risk, noncommercial, and well-managed, and that provide the potential for scientific and technological advances; and

(8) public-private partnerships should be encouraged to leverage scarce taxpayer dollars.

**SEC. 3. PURPOSES.**

The purposes of this Act are to—

1 (1) protect and strengthen the Nation's econ-
2 omy, standard of living, and national security by re-
3 ducing dependence on imported energy;
4 (2) meet future needs for energy services at the
5 lowest total cost to the Nation, including environ-
6 mental costs, giving balanced and comprehensive
7 consideration to technologies that improve the effi-
8 ciency of energy end uses and that enhance energy
9 supply;
10 (3) reduce the air, water, and other environ-
11 mental impacts (including emissions of greenhouse
12 gases) of energy production, distribution, transpor-
13 tation, and use through the development of environ-
14 mentally sustainable energy systems;
15 (4) consider the comparative environmental im-
16 pacts of the energy saved or produced by specific
17 programs, projects, or activities;
18 (5) maintain the technological competitiveness
19 of the United States and stimulate economic growth
20 through the development of advanced energy systems
21 and technologies;
22 (6) foster international cooperation by devel-
23 oping international markets for domestically pro-
24 duced sustainable energy technologies, and by trans-
25 ferring environmentally sound, advanced energy sys-

tems and technologies to developing countries to promote sustainable development;

(7) provide sufficient funding of programs, projects, and activities that are performance-based and modeled as public-private partnerships, as appropriate; and

(8) enhance the contribution of a given program, project, or activity to fundamental scientific knowledge.

**SEC. 4. GOALS.**

(a) IN GENERAL.—The Secretary shall perform an assessment that establishes cost and performance-based goals, as appropriate, for 2005, 2010, 2015, and 2020 for each of the programs, projects, and activities authorized by this Act that would enable each such program, project, or activity to meet to the purposes of this Act under section 3. Such assessment shall be based on the latest scientific and technical knowledge, and shall also take into consideration, as appropriate, the comparative environmental impacts (including emissions of greenhouse gases) of the energy saved or produced by specific programs, projects, and activities.

(b) CONSULTATION.—In establishing the cost and performance-based goals under subsection (a), the Secretary shall consult with the private sector, institutions of

1 higher learning, national laboratories, environmental orga-
2 nizations, professional and technical societies, and any
3 other persons as the Secretary considers appropriate.

4 (c) SCHEDULE.—The Secretary shall—

5 (1) not later than 120 days after the date of
6 the enactment of this Act, issue and publish in the
7 Federal Register a set of draft cost and perform-
8 ance-based goals for public comment;

9 (2) not later than 180 days after the date of
10 the enactment of this Act, after taking into consider-
11 ation any public comments received, transmit to
12 Congress and publish in the Federal Register the
13 final cost and performance-based goals; and

14 (3) update all such cost and performance-based
15 goals on a biennial basis.

16 **SEC. 5. DEFINITIONS.**

17 For purposes of this Act, except as otherwise
18 provided—

19 (1) the term "Administrator" means the Ad-
20 ministrator of the Environmental Protection Agency;

21 (2) the term "appropriate congressional com-
22 mittees" means—

23 (A) the Committee on Science and the
24 Committee on Appropriations of the House of
25 Representatives; and

1 (B) the Committee on Energy and Natural
2 Resources and the Committee on Appropria-
3 tions of the Senate;
4 (3) the term "Department" means the Depart-
5 ment of Energy; and
6 (4) the term "Secretary" means the Secretary
7 of Energy.

8 **SEC. 6. AUTHORIZATIONS.**

9 Authorizations of appropriations under this Act are
10 for environmental research and development, scientific
11 and energy research, development, and demonstration,
12 and commercial application of energy technology pro-
13 grams, projects, and activities.

14 **SEC. 7. SENSE OF CONGRESS.**

15 It is the sense of the Congress that the balance of
16 funding priorities among the various programs authorized
17 by this Act should remain as provided in this Act, regard-
18 less of the total amount of funding made available for this
19 Act.

# TITLE I—ENERGY CONSERVATION AND ENERGY EFFICIENCY

## Subtitle A—Alternative Fuel Vehicles

**SEC. 101. SHORT TITLE.**

This subtitle may be cited as the "Alternative Fuel Vehicle Acceleration Act of 2001".

**SEC. 102. DEFINITIONS.**

For the purposes of this subtitle, the following definitions apply:

(1) ALTERNATIVE FUEL VEHICLE.—

(A) IN GENERAL.—Except as provided in subparagraph (B), the term "alternative fuel vehicle" means a motor vehicle that is powered—

(i) in whole or in part by electricity, including electricity supplied by a fuel cell;

(ii) by liquefied natural gas;

(iii) by compressed natural gas;

(iv) by liquefied petroleum gas;

(v) by hydrogen; or

(vi) by methanol at no less than 85 percent by volume.

1 (B) EXCLUSIONS.—The term "alternative
2 fuel vehicle" does not include—
3 (i) any vehicle designed to operate
4 solely on gasoline or diesel derived from
5 fossil fuels, regardless of whether it can
6 also be operated on an alternative fuel; or
7 (ii) any vehicle that the Secretary de-
8 termines, by rule, does not yield substan-
9 tial environmental benefits over a vehicle
10 operating solely on gasoline or diesel de-
11 rived from fossil fuels.
12 (2) PILOT PROGRAM.—The term "pilot pro-
13 gram" means the competitive grant program estab-
14 lished under section 103.
15 **SEC. 103. PILOT PROGRAM.**
16 (a) ESTABLISHMENT.—The Secretary shall establish
17 an alternative fuel vehicle energy demonstration and com-
18 mercial application of energy technology competitive grant
19 pilot program to provide not more than 15 grants to State
20 governments, local governments, or metropolitan transpor-
21 tation authorities to carry out a project or projects for
22 the purposes described in subsection (b).
23 (b) GRANT PURPOSES.—Grants under this section
24 may be used for the following purposes:

1 (1) The acquisition of alternative fuel vehicles,
2 including—
3 (A) passenger vehicles;
4 (B) buses used for public transportation or
5 transportation to and from schools;
6 (C) delivery vehicles for goods or services;
7 (D) ground support vehicles at public air-
8 ports, including vehicles to carry baggage or
9 push airplanes away from terminal gates; and
10 (E) motorized two-wheel bicycles, scooters,
11 or other vehicles for use by law enforcement
12 personnel or other State or local government or
13 metropolitan transportation authority employ-
14 ees.
15 (2) Infrastructure necessary to directly support
16 a project funded by the grant, including fueling and
17 other support equipment.
18 (3) Operation and maintenance of vehicles, in-
19 frastructure, and equipment acquired as part of a
20 project funded by the grant.
21 (c) APPLICATIONS.—
22 (1) REQUIREMENTS.—The Secretary shall issue
23 requirements for applying for grants under the pilot
24 program. At a minimum, the Secretary shall require
25 that applications be submitted by the head of a

1 State or local government or a metropolitan trans-
2 portation authority, or any combination thereof, and
3 shall include—
4 (A) at least one project to enable pas-
5 sengers or goods to be transferred directly from
6 one alternative fuel vehicle to another in a
7 linked transportation system;
8 (B) a description of the projects proposed
9 in the application, including how they meet the
10 requirements of this subtitle;
11 (C) an estimate of the ridership or degree
12 of use of the projects proposed in the applica-
13 tion;
14 (D) an estimate of the air pollution emis-
15 sions reduced and fossil fuel displaced as a re-
16 sult of the projects proposed in the application,
17 and a plan to collect and disseminate environ-
18 mental data, related to the projects to be fund-
19 ed under the grant, over the life of the projects;
20 (E) a description of how the projects pro-
21 posed in the application will be sustainable
22 without Federal assistance after the completion
23 of the term of the grant;
24 (F) a complete description of the costs of
25 each project proposed in the application, includ-

1 ing acquisition, construction, operation, and
2 maintenance costs over the expected life of the
3 project; and
4 (G) a description of which costs of the
5 projects proposed in the application will be sup-
6 ported by Federal assistance under this subtitle.
7 (2) PARTNERS.—An applicant under paragraph
8 (1) may carry out projects under the pilot program
9 in partnership with public and private entities.
10 (d) SELECTION CRITERIA.—In evaluating applica-
11 tions under the pilot program, the Secretary shall consider
12 each applicant's previous experience involving alternative
13 fuel vehicles and shall give priority consideration to appli-
14 cations that—
15 (1) are most likely to maximize protection of
16 the environment;
17 (2) demonstrate the greatest commitment on
18 the part of the applicant to ensure funding for the
19 proposed projects and the greatest likelihood that
20 each project proposed in the application will be
21 maintained or expanded after Federal assistance
22 under this subtitle is completed; and
23 (3) exceed the minimum requirements of sub-
24 section (c)(1)(A).
25 (e) PILOT PROJECT REQUIREMENTS.—

1 (1) MAXIMUM AMOUNT.—The Secretary shall
2 not provide more than $20,000,000 in Federal as-
3 sistance under the pilot program to any applicant.
4 (2) COST SHARING.—The Secretary shall not
5 provide more than 50 percent of the cost, incurred
6 during the period of the grant, of any project under
7 the pilot program.
8 (3) MAXIMUM PERIOD OF GRANTS.—The Sec-
9 retary shall not fund any applicant under the pilot
10 program for more than 5 years.
11 (4) DEPLOYMENT AND DISTRIBUTION.—The
12 Secretary shall seek to the maximum extent prac-
13 ticable to achieve nationwide deployment of alter-
14 native fuel vehicles through the pilot program, and
15 shall ensure a broad geographic distribution of
16 project sites.
17 (5) TRANSFER OF INFORMATION AND KNOWL-
18 EDGE.—The Secretary shall establish mechanisms to
19 ensure that the information and knowledge gained
20 by participants in the pilot program are transferred
21 among the pilot program participants and to other
22 interested parties, including other applicants that
23 submitted applications.
24 (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 within 180 days of the publication of the notice.
8 (2) SELECTION.—Not later than 180 days after
9 the date by which applications for grants are due,
10 the Secretary shall select by competitive, peer review
11 all applications for projects to be awarded a grant
12 under the pilot program.

13 **SEC. 104. REPORTS TO CONGRESS.**

14 (a) INITIAL REPORT.—Not later than 60 days after
15 the date grants are awarded under this subtitle, the Sec-
16 retary shall transmit to the Committee on Science of the
17 House of Representatives and the Committee on Energy
18 and Natural Resources of the Senate a report
19 containing—
20 (1) an identification of the grant recipients and
21 a description of the projects to be funded;
22 (2) an identification of other applicants that
23 submitted applications for the pilot program; and
24 (3) a description of the mechanisms used by the
25 Secretary to ensure that the information and knowl-

1 edge gained by participants in the pilot program are
2 transferred among the pilot program participants
3 and to other interested parties, including other ap-
4 plicants that submitted applications.

5 (b) EVALUATION.—Not later than 3 years after the
6 date of enactment of this Act, and annually thereafter
7 until the pilot program ends, the Secretary shall transmit
8 to the Committee on Science of the House of Representa-
9 tives and the Committee on Energy and Natural Re-
10 sources of the Senate a report containing an evaluation
11 of the effectiveness of the pilot program, including an as-
12 sessment of the benefits to the environment derived from
13 the projects included in the pilot program as well as an
14 estimate of the potential benefits to the environment to
15 be derived from widespread application of alternative fuel
16 vehicles.

17 **SEC. 105. AUTHORIZATION OF APPROPRIATIONS.**

18 There are authorized to be appropriated to the Sec-
19 retary $200,000,000 to carry out this subtitle, to remain
20 available until expended.

# Subtitle B—Distributed Energy Resources

**SEC. 121. DISTRIBUTED ENERGY RESOURCES RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION.**

(a) IN GENERAL.—The Secretary shall develop and implement a comprehensive and cooperative research, development, demonstration, and commercial application program to ensure the reliability, efficiency, and environmental responsibility of distributed energy resources. Such program shall include advanced energy technologies and systems, advanced grid reliability technologies development, and technology transfer and education.

(b) AREAS.—(1) In carrying out this subtitle, the Secretary shall consider research, development, and demonstration on and commercial application of distributed energy resources, advanced systems development, and advanced electrical grid reliability for each of the following:

(A) Significant advancement in efficiency for distributed energy resources technologies.

(B) Significant advancement in efficiency for thermally activated technologies.

(C) Significant advancement in reduction of environmental impact by deploying pollution prevention enabling technologies

1 (2) The program should include the following areas:
2 (A) Integration of the following technologies
3 into distributed energy resources systems:
4 (i) Renewable energy resources, including
5 bioenergy, geothermal, solar, and wind.
6 (ii) Fuel cells.
7 (iii) Combined heat and power systems.
8 (iv) Microturbines.
9 (v) Advanced natural gas turbines.
10 (vi) Advanced internal combustion engine
11 generators.
12 (vii) Energy storage devices.
13 (viii) Any other technologies, as appro-
14 priate.
15 (B) Interconnection standards, protocols, and
16 equipment.
17 (C) Ancillary equipment for dispatch and con-
18 trol.

19 **SEC. 122. PROGRAM PLAN.**

20 Within 120 days after the date of the enactment of
21 this Act, the Secretary, in consultation with other appro-
22 priate Federal agencies, shall prepare and transmit to
23 Congress a 5-year program plan to guide activities under
24 this subtitle. In preparing the program plan, the Secretary
25 shall consult with appropriate representatives of the dis-

1 tributed energy resources industry to select and prioritize
2 appropriate project proposals. The Secretary may also
3 seek the advice of utilities, energy services providers, man-
4 ufacturers, institutions of higher learning, other appro-
5 priate State and local agencies, environmental organiza-
6 tions, professional and technical societies, and any other
7 persons as the Secretary considers appropriate. In order
8 to ensure that technologies are readily adopted by private
9 entities, the Secretary shall create cost-sharing programs
10 with private entities.

11 **SEC. 123. REPORT.**

12 Two years after the date of the enactment of this Act,
13 and at two year intervals thereafter, the Secretary, jointly
14 with other appropriate Federal agencies, shall transmit a
15 report to Congress describing the progress made to
16 achieve the purposes of this subtitle and identifying any
17 additional resources needed to continue the development
18 and commercial application of distributed energy re-
19 sources.

## 20 Subtitle C—Department of Energy
## 21 Authorization of Appropriations

22 **SEC. 131. AUTHORIZATION OF APPROPRIATIONS.**

23 (a) OPERATION AND MAINTENANCE.—In addition to
24 amounts authorized to be appropriated under section 105
25 and under subtitle E, there are authorized to be appro-

1 priated to the Secretary for subtitle B and for Energy
2 Conservation operation and maintenance (including Build-
3 ing Technology, State and Community Sector, Industry
4 Sector, Transportation Sector, Power Technologies, and
5 Policy and Management) $600,000,000 for fiscal year
6 2002, $700,000,000 for fiscal year 2003, and
7 $800,000,000 for fiscal year 2004, to remain available
8 until expended.

9 (b) LIMITS ON USE OF FUNDS.—None of the funds
10 authorized to be appropriated in subsection (a) may be
11 used for—

12 (1) Building Technology, State and Community
13 Sector—

14 (A) Residential Building Energy Codes;

15 (B) Commercial Building Energy Codes;

16 (C) Lighting and Appliance Standards;

17 (D) Weatherization Assistance Program;
18 or

19 (E) State Energy Program; or

20 (2) Federal Energy Management Program.

# Subtitle D—Environmental Protection Agency Office of Air and Radiation Authorization of Appropriations

**SEC. 141. SHORT TITLE.**

This subtitle may be cited as the "Environmental Protection Agency Office of Air and Radiation Authorization Act of 2001".

**SEC. 142. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Administrator for the Office of Air and Radiation $156,700,000 for fiscal year 2002, $163,000,000 for fiscal year 2003, and $169,400,000 for fiscal year 2004 to remain available until expended, of which—

(1) $28,300,000 for fiscal year 2002, $29,400,000 for fiscal year 2003, and $30,600,000 for fiscal year 2004 shall be for Science; and

(2) $128,400,000 for fiscal year 2002, $133,600,000 for fiscal year 2003, and $138,800,000 for fiscal year 2004 shall be for Climate Change Protection Programs, of which—

(A) $52,700,000 for fiscal year 2002, $54,800,000 for fiscal year 2003, and $57,000,000 for fiscal year 2004 shall be for Buildings;

(B) $32,400,000 for fiscal year 2002, $33,700,000 for fiscal year 2003, and $35,000,000 for fiscal year 2004 shall be for Transportation;

(C) $32,000,000 for fiscal year 2002, $33,300,000 for fiscal year 2003, and $34,600,000 for fiscal year 2004 shall be for Industry;

(D) $1,700,000 for fiscal year 2002, $1,750,000 for fiscal year 2003, and $1,800,000 for fiscal year 2004 shall be for Carbon Removal;

(E) $2,500,000 for fiscal year 2002, $2,600,000 for fiscal year 2003, and $1,800,000 for fiscal year 2004 shall be for State and Local Climate;

(F) $6,300,000 for fiscal year 2002, $6,600,000 for fiscal year 2003, and $6,800,000 for fiscal year 2004 shall be for International Capacity Building; and

(G) $800,000 for fiscal year 2002, $850,000 for fiscal year 2003, and $900,000 for fiscal year 2004 shall be for Technical Co-operation with Industrial and Developing Countries.

1 **SEC. 143. LIMITS ON USE OF FUNDS.**

2 (a) FEDERAL ACQUISITION REGULATION.—

3 (1) REQUIREMENT.—None of the funds author-
4 ized to be appropriated by this subtitle may be used
5 to award, amend, or modify a contract of the Office
6 of Air and Radiation in a manner that deviates from
7 the Federal Acquisition Regulation, unless the Ad-
8 ministrator grants, on a case-by-case basis, a waiver
9 to allow for such a deviation. The Administrator
10 may not delegate the authority to grant such a waiv-
11 er.

12 (2) CONGRESSIONAL NOTICE.—At least 60 days
13 before a contract award, amendment, or modifica-
14 tion for which the Administrator intends to grant
15 such a waiver, the Administrator shall submit to the
16 appropriate congressional committees a report noti-
17 fying the committees of the waiver and setting forth
18 the reasons for the waiver.

19 (b) PRODUCTION OR PROVISION OF ARTICLES OR
20 SERVICES.—None of the funds authorized to be appro-
21 priated by this subtitle may be used to produce or provide
22 articles or services for the purpose of selling the articles
23 or services to a person outside the Federal Government,
24 unless the Administrator determines that comparable arti-
25 cles or services are not available from a commercial source
26 in the United States.

1 (c) REQUESTS FOR PROPOSALS.—None of the funds
2 authorized to be appropriated by this subtitle may be used
3 by the Environmental Protection Agency to prepare or ini-
4 tiate Requests for Proposals for a program, project, or ac-
5 tivity if the program, project, or activity has not been spe-
6 cifically authorized by Congress.
7 (d) TRADE ASSOCIATIONS.—None of the funds au-
8 thorized to be appropriated by this subtitle may be used
9 either directly or indirectly to fund a grant, contract, sub-
10 contract, or any other form of financial assistance award-
11 ed by the Environmental Protection Agency to a trade as-
12 sociation on a noncompetitive basis. As part of the Envi-
13 ronmental Protection Agency's annual budget request sub-
14 mission to the Congress, the Administrator shall submit
15 a report to the appropriate congressional committees that
16 identifies—
17 (1) the estimated amount of funds provided by
18 the Environmental Protection Agency to trade asso-
19 ciations, by trade association, for the fiscal year of
20 such budget submission, as well as for the 2 pre-
21 vious fiscal years;
22 (2) the services either provided or to be pro-
23 vided by each such trade association; and
24 (3) the sources of funds for services provided by
25 each such trade association.

1 **SEC. 144. COST SHARING.**

2 (a) RESEARCH AND DEVELOPMENT.—The Adminis-
3 trator shall require, for research and development pro-
4 grams, projects, and activities carried out by industry
5 under this subtitle, a commitment from non-Federal
6 sources of at least 20 percent of the cost of such pro-
7 grams, projects, and activities.

8 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
9 TION.—The Administrator shall require a commitment
10 from non-Federal sources of at least 50 percent of the cost
11 of any demonstration or commercial application program,
12 project, or activity conducted under this subtitle.

13 **SEC. 145. LIMITATION ON DEMONSTRATION AND COMMER-**
14 **CIAL APPLICATIONS OF ENERGY TECH-**
15 **NOLOGY.**

16 The Administrator shall provide funding for scientific
17 or energy demonstration or commercial application of en-
18 ergy technology programs, projects, or activities of the Of-
19 fice of Air and Radiation only for technologies or processes
20 that can be reasonably expected to yield new, measurable
21 benefits to the cost, efficiency, or performance of the tech-
22 nology or process.

23 **SEC. 146. REPROGRAMMING.**

24 (a) AUTHORITY.—The Administrator may use
25 amounts appropriated under this subtitle for a program,

1 project, or activity other than the program, project, or ac-
2 tivity for which such amounts were appropriated only if—
3 (1) the Administrator has transmitted to the
4 appropriate congressional committees a report de-
5 scribed in subsection (b) and a period of 30 days has
6 elapsed after such committees receive the report;
7 (2) amounts used for the program, project, or
8 activity do not exceed—
9 (A) 105 percent of the amount authorized
10 for the program, project, or activity; or
11 (B) $250,000 more than the amount au-
12 thorized for the program, project, or activity,
13 whichever is less; and
14 (3) the program, project, or activity has been
15 presented to, or requested of, the Congress by the
16 Administrator.
17 (b) REPORT.—(1) The report referred to in sub-
18 section (a) is a report containing a full and complete state-
19 ment of the action proposed to be taken and the facts and
20 circumstances relied upon in support of the proposed ac-
21 tion.
22 (2) In the computation of the 30-day period under
23 subsection (a), there shall be excluded any day on which
24 either House of Congress is not in session because of an
25 adjournment of more than 3 days to a day certain.

1 (c) LIMITATIONS.—(1) In no event may the total
2 amount of funds obligated pursuant to this subtitle exceed
3 the total amount authorized to be appropriated by this
4 subtitle.

5 (2) Funds appropriated pursuant to this subtitle may
6 not be used for an item for which Congress has declined
7 to authorize funds.

8 **SEC. 147. BUDGET REQUEST FORMAT.**

9 The Administrator shall provide to the appropriate
10 congressional committees, to be transmitted at the same
11 time as the Environmental Protection Agency's annual
12 budget request submission, a detailed justification for
13 budget authorization for the programs, projects, and ac-
14 tivities for which funds are authorized by this subtitle.
15 Each such document shall include, for the fiscal year for
16 which funding is being requested and for the 2 previous
17 fiscal years—

18 (1) a description of, and funding requested or
19 allocated for, each such program, project, or activity;

20 (2) an identification of all recipients of funds to
21 conduct such programs, projects, and activities; and

22 (3) an estimate of the amounts to be expended
23 by each recipient of funds identified under para-
24 graph (2).

1 **SEC. 148. OTHER PROVISIONS.**

2 (a) ANNUAL OPERATING PLAN AND REPORTS.—The
3 Administrator shall provide simultaneously to the Com-
4 mittee on Science of the House of Representatives—

5 (1) any annual operating plan or other oper-
6 ational funding document, including any additions or
7 amendments thereto; and

8 (2) any report relating to the environmental re-
9 search or development, scientific or energy research,
10 development, or demonstration, or commercial appli-
11 cation of energy technology programs, projects, or
12 activities of the Environmental Protection Agency,

13 provided to any committee of Congress.

14 (b) NOTICE OF REORGANIZATION.—The Adminis-
15 trator shall provide notice to the appropriate congressional
16 committees not later than 15 days before any reorganiza-
17 tion of any environmental research or development, sci-
18 entific or energy research, development, or demonstration,
19 or commercial application of energy technology program,
20 project, or activity of the Office of Air and Radiation.

# 21 TITLE II—RENEWABLE ENERGY

## 22 Subtitle A—Hydrogen

23 **SEC. 201. SHORT TITLE.**

24 This subtitle may be cited as the "Robert S. Walker
25 and George E. Brown, Jr. Hydrogen Energy Act of
26 2001".

1 **SEC. 202. PURPOSES.**

2 Section 102(b) of the Spark M. Matsunaga Hydrogen
3 Research, Development, and Demonstration Act of 1990
4 is amended to read as follows:

5 "(b) PURPOSES.—The purposes of this Act are—

6 "(1) to direct the Secretary to conduct re-
7 search, development, and demonstration activities
8 leading to the production, storage, transportation,
9 and use of hydrogen for industrial, commercial, resi-
10 dential, transportation, and utility applications;

11 "(2) to direct the Secretary to develop a pro-
12 gram of technology assessment, information dissemi-
13 nation, and education in which Federal, State, and
14 local agencies, members of the energy, transpor-
15 tation, and other industries, and other entities may
16 participate; and

17 "(3) to develop methods of hydrogen production
18 that minimize adverse environmental impacts, with
19 emphasis on efficient and cost-effective production
20 from renewable energy resources.".

21 **SEC. 203. DEFINITIONS.**

22 Section 102(c) of the Spark M. Matsunaga Hydrogen
23 Research, Development, and Demonstration Act of 1990
24 is amended—

25 (1) by redesignating paragraphs (1) through
26 (3) as paragraphs (2) through (4), respectively; and

1 (2) by inserting before paragraph (2), as so re-
2 designated by paragraph (1) of this section, the fol-
3 lowing new paragraph:
4 "(1) 'advisory committee' means the advisory
5 committee established under section 108;".

6 **SEC. 204. REPORTS TO CONGRESS.**

7 Section 103 of the Spark M. Matsunaga Hydrogen
8 Research, Development, and Demonstration Act of 1990
9 is amended to read as follows:

10 **"SEC. 103. REPORTS TO CONGRESS.**

11 "(a) REQUIREMENT.—Not later than 1 year after the
12 date of the enactment of the Robert S. Walker and George
13 E. Brown, Jr. Hydrogen Energy Act of 2001, and bienni-
14 ally thereafter, the Secretary shall transmit to Congress
15 a detailed report on the status and progress of the pro-
16 grams and activities authorized under this Act.
17 "(b) CONTENTS.—A report under subsection (a) shall
18 include, in addition to any views and recommendations of
19 the Secretary—
20 "(1) an assessment of the extent to which the
21 program is meeting the purposes specified in section
22 102(b);
23 "(2) a determination of the effectiveness of the
24 technology assessment, information dissemination,

1 and education program established under section
2 106;
3 "(3) an analysis of Federal, State, local, and
4 private sector hydrogen-related research, develop-
5 ment, and demonstration activities to identify pro-
6 ductive areas for increased intergovernmental and
7 private-public sector collaboration; and
8 "(4) recommendations of the advisory com-
9 mittee for any improvements needed in the programs
10 and activities authorized by this Act.".

11 **SEC. 205. HYDROGEN RESEARCH AND DEVELOPMENT.**

12 Section 104 of the Spark M. Matsunaga Hydrogen
13 Research, Development, and Demonstration Act of 1990
14 is amended to read as follows:

15 **"SEC. 104. HYDROGEN RESEARCH AND DEVELOPMENT.**

16 "(a) ESTABLISHMENT OF PROGRAM.—The Secretary
17 shall conduct a hydrogen research and development pro-
18 gram relating to production, storage, transportation, and
19 use of hydrogen, with the goal of enabling the private sec-
20 tor to demonstrate the technical feasibility of using hydro-
21 gen for industrial, commercial, residential, transportation,
22 and utility applications.
23 "(b) ELEMENTS.—In conducting the program au-
24 thorized by this section, the Secretary shall—

"(1) give particular attention to developing an understanding and resolution of critical technical issues preventing the introduction of hydrogen as an energy carrier into the marketplace;

"(2) initiate or accelerate existing research and development in critical technical issues that will contribute to the development of more economical hydrogen production, storage, transportation, and use, including critical technical issues with respect to production (giving priority to those production techniques that use renewable energy resources as their primary source of energy for hydrogen production), liquefaction, transmission, distribution, storage, and use (including use of hydrogen in surface transportation); and

"(3) survey private sector and public sector hydrogen research and development activities worldwide, and take steps to ensure that research and development activities under this section do not—

"(A) duplicate any available research and development results; or

"(B) displace or compete with the privately funded hydrogen research and development activities of United States industry.

1 "(c) EVALUATION OF TECHNOLOGIES.—The Sec-
2 retary shall evaluate, for the purpose of determining
3 whether to undertake or fund research and development
4 activities under this section, any reasonable new or im-
5 proved technology that could lead or contribute to the de-
6 velopment of economical hydrogen production, storage,
7 transportation, and use.

8 "(d) RESEARCH AND DEVELOPMENT SUPPORT.—
9 The Secretary is authorized to arrange for tests and dem-
10 onstrations and to disseminate to researchers and devel-
11 opers information, data, and other materials necessary to
12 support the research and development activities authorized
13 under this section and other efforts authorized under this
14 Act, consistent with section 106 of this Act.

15 "(e) COMPETITIVE PEER REVIEW.—The Secretary
16 shall carry out or fund research and development activities
17 under this section only on a competitive basis using peer
18 review.

19 "(f) COST SHARING.—The Secretary shall require,
20 for research and development activities carried out by in-
21 dustry under this section, a commitment from non-Federal
22 sources of at least 20 percent of the cost of the project.".

**SEC. 206. DEMONSTRATIONS.**

Section 105 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended—

(1) in subsection (a), by striking ", preferably in self-contained locations,";

(2) in subsection (b), by striking "at self-contained sites"; and

(3) in subsection (c), by inserting "NON-FEDERAL FUNDING REQUIREMENT.—" after "(c)".

**SEC. 207. TECHNOLOGY TRANSFER.**

Section 106 of the Spark M. Matsunaga Hydrogen Research, Development, and Demonstration Act of 1990 is amended to read as follows:

**"SEC. 106. TECHNOLOGY ASSESSMENT, INFORMATION DISSEMINATION, AND EDUCATION PROGRAM.**

"(a) PROGRAM.—The Secretary shall, in consultation with the advisory committee, conduct a program designed to accelerate wider application of hydrogen production, storage, transportation, and use technologies, including application in foreign countries to increase the global market for the technologies and foster global economic development without harmful environmental effects.

"(b) INFORMATION.—The Secretary, in carrying out the program authorized by subsection (a), shall—

1 "(1) undertake an update of the inventory and
2 assessment, required under section 106(b)(1) of this
3 Act as in effect before the date of the enactment of
4 the Robert S. Walker and George E. Brown, Jr. Hy-
5 drogen Energy Act of 2001, of hydrogen tech-
6 nologies and their commercial capability to economi-
7 cally produce, store, transport, or use hydrogen in
8 industrial, commercial, residential, transportation,
9 and utility sector; and
10 "(2) develop, with other Federal agencies as ap-
11 propriate and industry, an information exchange
12 program to improve technology transfer for hydro-
13 gen production, storage, transportation, and use,
14 which may consist of workshops, publications, con-
15 ferences, and a database for the use by the public
16 and private sectors.".

17 **SEC. 208. COORDINATION AND CONSULTATION.**

18 Section 107 of the Spark M. Matsunaga Hydrogen
19 Research, Development, and Demonstration Act of 1990
20 is amended—
21 (1) by amending paragraph (1) of subsection
22 (a) to read as follows:
23 "(1) shall establish a central point for the co-
24 ordination of all hydrogen research, development,

1 and demonstration activities of the Department;
2 and"; and
3 (2) by amending subsection (c) to read as fol-
4 lows:
5 "(c) CONSULTATION.—The Secretary shall consult
6 with other Federal agencies as appropriate, and the advi-
7 sory committee, in carrying out the Secretary's authorities
8 pursuant to this Act.".

9 **SEC. 209. ADVISORY COMMITTEE.**

10 Section 108 of the Spark M. Matsunaga Hydrogen
11 Research, Development, and Demonstration Act of 1990
12 is amended to read as follows:

13 **"SEC. 108. ADVISORY COMMITTEE.**

14 "(a) ESTABLISHMENT.—The Secretary shall enter
15 into appropriate arrangements with the National Acad-
16 emies of Sciences and Engineering to establish an advisory
17 committee consisting of experts drawn from domestic in-
18 dustry, academia, Governmental laboratories, and finan-
19 cial, environmental, and other organizations, as appro-
20 priate, to review and advise on the progress made through
21 the programs and activities authorized under this Act.
22 "(b) COOPERATION.—The heads of Federal agencies
23 shall cooperate with the advisory committee in carrying
24 out this section and shall furnish to the advisory com-

1 mittee such information as the advisory committee reason-
2 ably deems necessary to carry out this section.
3 "(c) REVIEW.—The advisory committee shall review
4 and make any necessary recommendations to the Sec-
5 retary on—
6 "(1) the implementation and conduct of pro-
7 grams and activities authorized under this Act; and
8 "(2) the economic, technological, and environ-
9 mental consequences of the deployment of hydrogen
10 production, storage, transportation, and use systems.
11 "(d) RESPONSIBILITIES OF THE SECRETARY.—The
12 Secretary shall consider, but need not adopt, any rec-
13 ommendations of the advisory committee under subsection
14 (c). The Secretary shall provide an explanation of the rea-
15 sons that any such recommendations will not be imple-
16 mented and include such explanation in the report to Con-
17 gress under section 103(a) of this Act.".

18 **SEC. 210. AUTHORIZATION OF APPROPRIATIONS.**

19 Section 109 of the Spark M. Matsunaga Hydrogen
20 Research, Development, and Demonstration Act of 1990
21 is amended to read as follows:

22 **"SEC. 109. AUTHORIZATION OF APPROPRIATIONS.**

23 "(a) RESEARCH AND DEVELOPMENT; ADVISORY
24 COMMITTEE.—There are authorized to be appropriated to
25 the Secretary to carry out sections 104 and 108—

"(1) $40,000,000 for fiscal year 2002;

"(2) $45,000,000 for fiscal year 2003;

"(3) $50,000,000 for fiscal year 2004;

"(4) $55,000,000 for fiscal year 2005; and

"(5) $60,000,000 for fiscal year 2006.

"(b) DEMONSTRATION.—There are authorized to be appropriated to the Secretary to carry out section 105—

"(1) $20,000,000 for fiscal year 2002;

"(2) $25,000,000 for fiscal year 2003;

"(3) $30,000,000 for fiscal year 2004;

"(4) $35,000,000 for fiscal year 2005; and

"(5) $40,000,000 for fiscal year 2006.".

**SEC. 211. REPEAL.**

(a) REPEAL.—Title II of the Hydrogen Future Act of 1996 is repealed.

(b) CONFORMING AMENDMENT.—Section 2 of the Hydrogen Future Act of 1996 is amended by striking "titles II and III" and inserting "title III".

## Subtitle B—Bioenergy

**SEC. 221. SHORT TITLE.**

This subtitle may be cited as the "Bioenergy Act of 2001".

**SEC. 222. FINDINGS.**

Congress finds that bioenergy has potential to help—

(1) meet the Nation's energy needs;

(2) reduce reliance on imported fuels;

(3) promote rural economic development;

(4) provide for productive utilization of agricultural residues and waste materials; and

(5) protect the environment.

**SEC. 223. DEFINITION.**

For purposes of this subtitle the term ''biofuels'' includes production of industrial chemicals.

**SEC. 224. AUTHORIZATION.**

The Secretary is authorized to conduct environmental research and development, scientific and energy research, development, and demonstration, and commercial application of energy technology programs, projects, and activities related to bioenergy, including biopower energy systems, biofuels energy systems, and integrated bioenergy research and development (including biofuels).

**SEC. 225. AUTHORIZATION OF APPROPRIATIONS.**

(a) BIOPOWER ENERGY SYSTEMS.—There are authorized to be appropriated to the Secretary for Biopower Energy Systems programs, projects, and activities—

(1) $45,700,000 for fiscal year 2002;

(2) $52,500,000 for fiscal year 2003;

(3) $60,300,000 for fiscal year 2004;

(4) $69,300,000 for fiscal year 2005; and

(5) $79,600,000 for fiscal year 2006.

1 (b) BIOFUELS ENERGY SYSTEMS.—There are au-
2 thorized to be appropriated to the Secretary for biofuels
3 energy systems programs, projects, and activities—
4 (1) $53,500,000 for fiscal year 2002;
5 (2) $61,400,000 for fiscal year 2003;
6 (3) $70,600,000 for fiscal year 2004;
7 (4) $81,100,000 for fiscal year 2005; and
8 (5) $93,200,000 for fiscal year 2006.
9 (c) INTEGRATED BIOENERGY RESEARCH AND DE-
10 VELOPMENT.—There are authorized to be appropriated to
11 the Secretary for integrated bioenergy research and devel-
12 opment (including biofuels) programs, projects, and activi-
13 ties, $49,000,000 for each of the fiscal years 2002 through
14 2006. Activities funded under this subsection shall be co-
15 ordinated with ongoing related programs of other Federal
16 agencies.

## 17 Subtitle C—Department of Energy
## 18 Authorization of Appropriations

19 **SEC. 241. AUTHORIZATION OF APPROPRIATIONS.**

20 (a) OPERATION AND MAINTENANCE.—There are au-
21 thorized to be appropriated to the Secretary for Renewable
22 Energy operation and maintenance, including Geothermal
23 Technology Development, Hydropower, Concentrating
24 Solar Power, Photovoltaic Energy Systems, Solar Building
25 Technology Research, Wind Energy Systems, High Tem-

1 perature Superconducting Research and Development,
2 Energy Storage Systems, Transmission Reliability, Inter-
3 national Renewable Energy Program, Renewable Energy
4 Production Incentive Program, Renewable Program Sup-
5 port, National Renewable Energy Laboratory, and Pro-
6 gram Direction, and including amounts authorized under
7 the amendment made by section 210 and amounts author-
8 ized under section 225, $475,000,000 for fiscal year 2002,
9 $585,000,000 for fiscal year 2003, and $620,000,000 for
10 fiscal year 2004, to remain available until expended.

11 (b) LIMITS ON USE OF FUNDS.—None of the funds
12 authorized to be appropriated in subsection (a) may be
13 used for—

14 (1) Departmental Energy Management Pro-
15 gram; or

16 (2) Renewable Indian Energy Resources.

# 17 TITLE III—NUCLEAR ENERGY
# 18 Subtitle A—University Nuclear
# 19 Science and Engineering

20 **SEC. 301. SHORT TITLE.**

21 This subtitle may be cited as "Department of Energy
22 University Nuclear Science and Engineering Act".

23 **SEC. 302. FINDINGS.**

24 The Congress finds the following:

1 (1) United States university nuclear science and
2 engineering programs are in a state of serious de-
3 cline, with nuclear engineering enrollment at a 35-
4 year low. Since 1980, the number of nuclear engi-
5 neering university programs has declined nearly 40
6 percent, and over two-thirds of the faculty in these
7 programs are 45 years of age or older. Also, since
8 1980, the number of university research and train-
9 ing reactors in the United States has declined by
10 over 50 percent. Most of these reactors were built
11 in the late 1950s and 1960s with 30-year to 40-year
12 operating licenses, and many require relicensing in
13 the next several years.
14 (2) A decline in a competent nuclear workforce,
15 and the lack of adequately trained nuclear scientists
16 and engineers, will affect the ability of the United
17 States to solve future nuclear waste storage issues,
18 operate existing and design future fission reactors in
19 the United States, respond to future nuclear events
20 worldwide, help stem the proliferation of nuclear
21 weapons, and design and operate naval nuclear reac-
22 tors.
23 (3) The Department of Energy's Office of Nu-
24 clear Energy, Science and Technology, a principal
25 Federal agency for civilian research in nuclear

1 science and engineering, is well suited to help main-
2 tain tomorrow's human resource and training invest-
3 ment in the nuclear sciences and engineering.

4 **SEC. 303. DEPARTMENT OF ENERGY PROGRAM.**

5 (a) ESTABLISHMENT.—The Secretary, through the
6 Office of Nuclear Energy, Science and Technology, shall
7 support a program to maintain the Nation's human re-
8 source investment and infrastructure in the nuclear
9 sciences and engineering consistent with the Department's
10 statutory authorities related to civilian nuclear research,
11 development, and demonstration and commercial applica-
12 tion of energy technology.

13 (b) DUTIES OF THE OFFICE OF NUCLEAR ENERGY,
14 SCIENCE AND TECHNOLOGY.—In carrying out the pro-
15 gram under this subtitle, the Director of the Office of Nu-
16 clear Energy, Science and Technology shall—

17 (1) develop a robust graduate and under-
18 graduate fellowship program to attract new and tal-
19 ented students;

20 (2) assist universities in recruiting and retain-
21 ing new faculty in the nuclear sciences and engineer-
22 ing through a Junior Faculty Research Initiation
23 Grant Program;

1 (3) maintain a robust investment in the funda-
2 mental nuclear sciences and engineering through the
3 Nuclear Engineering Education Research Program;
4 (4) encourage collaborative nuclear research
5 among industry, national laboratories, and univer-
6 sities through the Nuclear Energy Research Initia-
7 tive; and
8 (5) support communication and outreach re-
9 lated to nuclear science and engineering.
10 (c) MAINTAINING UNIVERSITY RESEARCH AND
11 TRAINING REACTORS AND ASSOCIATED INFRASTRUC-
12 TURE.—The Secretary, through the Office of Nuclear En-
13 ergy, Science and Technology, shall provide for the fol-
14 lowing university research and training reactor infrastruc-
15 ture maintenance and research activities:
16 (1) Refueling of university research reactors
17 with low enriched fuels, upgrade of operational in-
18 strumentation, and sharing of reactors among uni-
19 versities.
20 (2) In collaboration with the United States nu-
21 clear industry, assistance, where necessary, in reli-
22 censing and upgrading university training reactors
23 as part of a student training program.
24 (3) A university reactor research and training
25 award program that provides for reactor improve-

1 ments as part of a focused effort that emphasizes re-
2 search, training, and education.
3 (d) UNIVERSITY-DOE LABORATORY INTER-
4 ACTIONS.—The Secretary, through the Office of Nuclear
5 Energy, Science and Technology, shall develop—
6 (1) a sabbatical fellowship program for univer-
7 sity faculty to spend extended periods of time at De-
8 partment of Energy laboratories in the areas of nu-
9 clear science and technology; and
10 (2) a visiting scientist program in which labora-
11 tory staff can spend time in academic nuclear
12 science and engineering departments.
13 The Secretary may under subsection (b)(1) provide for fel-
14 lowships for students to spend time at Department of En-
15 ergy laboratories in the areas of nuclear science and tech-
16 nology under the mentorship of laboratory staff.
17 (e) OPERATIONS AND MAINTENANCE.—To the extent
18 that the use of a university research reactor is funded
19 under this subtitle, funds authorized under this subtitle
20 may be used to supplement operation of the research reac-
21 tor during the investigator's proposed effort. The host in-
22 stitution shall provide at least 50 percent of the cost of
23 the reactor's operation.
24 (f) MERIT REVIEW REQUIRED.—All grants, con-
25 tracts, cooperative agreements, or other financial assist-

1 ance awards under this subtitle shall be made only after
2 independent merit review.

3 **SEC. 304. AUTHORIZATION OF APPROPRIATIONS.**

4 (a) TOTAL AUTHORIZATION.—The following sums
5 are authorized to be appropriated to the Secretary, to re-
6 main available until expended, for the purposes of carrying
7 out this subtitle:

8 (1) $30,200,000 for fiscal year 2002.
9 (2) $41,000,000 for fiscal year 2003.
10 (3) $47,900,000 for fiscal year 2004.
11 (4) $55,600,000 for fiscal year 2005.
12 (5) $64,100,000 for fiscal year 2006.

13 (b) GRADUATE AND UNDERGRADUATE FELLOW-
14 SHIPS.—Of the funds authorized by subsection (a), the fol-
15 lowing sums are authorized to be appropriated to carry
16 out section 303(b)(1):

17 (1) $3,000,000 for fiscal year 2002.
18 (2) $3,100,000 for fiscal year 2003.
19 (3) $3,200,000 for fiscal year 2004.
20 (4) $3,200,000 for fiscal year 2005.
21 (5) $3,200,000 for fiscal year 2006.

22 (c) JUNIOR FACULTY RESEARCH INITIATION GRANT
23 PROGRAM.—Of the funds authorized by subsection (a),
24 the following sums are authorized to be appropriated to
25 carry out section 303(b)(2):

1 (1) $5,000,000 for fiscal year 2002.

2 (2) $7,000,000 for fiscal year 2003.

3 (3) $8,000,000 for fiscal year 2004.

4 (4) $9,000,000 for fiscal year 2005.

5 (5) $10,000,000 for fiscal year 2006.

6 (d) NUCLEAR ENGINEERING EDUCATION RESEARCH
7 PROGRAM.—Of the funds authorized by subsection (a),
8 the following sums are authorized to be appropriated to
9 carry out section 303(b)(3):

10 (1) $8,000,000 for fiscal year 2002.

11 (2) $12,000,000 for fiscal year 2003.

12 (3) $13,000,000 for fiscal year 2004.

13 (4) $15,000,000 for fiscal year 2005.

14 (5) $20,000,000 for fiscal year 2006.

15 (e) COMMUNICATION AND OUTREACH RELATED TO
16 NUCLEAR SCIENCE AND ENGINEERING.—Of the funds
17 authorized by subsection (a), the following sums are au-
18 thorized to be appropriated to carry out section 303(b)(5):

19 (1) $200,000 for fiscal year 2002.

20 (2) $200,000 for fiscal year 2003.

21 (3) $300,000 for fiscal year 2004.

22 (4) $300,000 for fiscal year 2005.

23 (5) $300,000 for fiscal year 2006.

24 (f) REFUELING OF UNIVERSITY RESEARCH REAC-
25 TORS AND INSTRUMENTATION UPGRADES.—Of the funds

1 authorized by subsection (a), the following sums are au-
2 thorized to be appropriated to carry out section 303(c)(1):
3 (1) $6,000,000 for fiscal year 2002.
4 (2) $6,500,000 for fiscal year 2003.
5 (3) $7,000,000 for fiscal year 2004.
6 (4) $7,500,000 for fiscal year 2005.
7 (5) $8,000,000 for fiscal year 2006.
8 (g) RELICENSING ASSISTANCE.—Of the funds au-
9 thorized by subsection (a), the following sums are author-
10 ized to be appropriated to carry out section 303(c)(2):
11 (1) $1,000,000 for fiscal year 2002.
12 (2) $1,100,000 for fiscal year 2003.
13 (3) $1,200,000 for fiscal year 2004.
14 (4) $1,300,000 for fiscal year 2005.
15 (5) $1,300,000 for fiscal year 2006.
16 (h) REACTOR RESEARCH AND TRAINING AWARD
17 PROGRAM.—Of the funds authorized by subsection (a),
18 the following sums are authorized to be appropriated to
19 carry out section 303(c)(3):
20 (1) $6,000,000 for fiscal year 2002.
21 (2) $10,000,000 for fiscal year 2003.
22 (3) $14,000,000 for fiscal year 2004.
23 (4) $18,000,000 for fiscal year 2005.
24 (5) $20,000,000 for fiscal year 2006.

1 (i) UNIVERSITY-DOE LABORATORY INTER-
2 ACTIONS.—Of the funds authorized by subsection (a), the
3 following sums are authorized to be appropriated to carry
4 out section 303(d):
5 (1) $1,000,000 for fiscal year 2002.
6 (2) $1,100,000 for fiscal year 2003.
7 (3) $1,200,000 for fiscal year 2004.
8 (4) $1,300,000 for fiscal year 2005.
9 (5) $1,300,000 for fiscal year 2006.

## 10 Subtitle B—Spent Nuclear Fuel
## 11 and Fuel Cycle Research, Devel-
## 12 opment, and Demonstration

13 **SEC. 321. OFFICE OF SPENT NUCLEAR FUEL RESEARCH.**

14 (a) DEFINITION.—In this section the term "Associate
15 Director" means the Associate Director of the Office of
16 Spent Nuclear Fuel Research established by subsection
17 (b).

18 (b) ESTABLISHMENT.—There is established an Office
19 of Spent Nuclear Fuel Research within the Office of Nu-
20 clear Energy, Science and Technology of the Department.

21 (c) HEAD OF OFFICE.—The Office of Spent Nuclear
22 Fuel Research shall be headed by the Associate Director,
23 who shall be a member of the Senior Executive Service
24 appointed by the Director of the Office of Nuclear Energy,

1 Science and Technology, and compensated at a rate deter-
2 mined by applicable law.
3 (d) DUTIES OF THE ASSOCIATE DIRECTOR.—
4 (1) PARTICIPATION.—The Associate Director
5 shall coordinate the participation of national labora-
6 tories, other Department facilities, universities, the
7 commercial nuclear industry, and other organiza-
8 tions in the research, development, and demonstra-
9 tion of technologies for the treatment, recycling, and
10 disposal of spent nuclear fuel and high-level radio-
11 active waste.
12 (2) ACTIVITIES.—The Associate Director
13 shall—
14 (A) develop a research plan to provide rec-
15 ommendations to the Secretary by 2015;
16 (B) identify promising technologies for the
17 treatment, recycling, and disposal of spent nu-
18 clear fuel and high-level radioactive waste;
19 (C) conduct research, development, and
20 demonstration activities for promising tech-
21 nologies;
22 (D) ensure that all activities include as key
23 objectives minimization of proliferation concerns
24 and risk to health of the general public and site

1 workers, as well as development of cost-effective
2 technologies;
3 (E) require research on both reactor-based
4 and accelerator-based transmutation systems;
5 (F) require research on advanced proc-
6 essing and separations;
7 (G) include participation of international
8 collaborators in research efforts, and provide
9 funding to a collaborator that brings unique ca-
10 pabilities not available in the United States if
11 the country in which the collaborator is located
12 is unable to provide support; and
13 (H) ensure that research efforts are co-
14 ordinated with research on advanced fuel cycles
15 and reactors conducted by the Office of Nuclear
16 Energy, Science and Technology.
17 (e) GRANT AND CONTRACT AUTHORITY.—The Sec-
18 retary may make grants, or enter into contracts, for the
19 purposes of the activities described in subsection (d)(2).
20 (f) REPORT.—The Secretary shall report on the ac-
21 tivities and expenditures of the Office, describing the
22 progress being made in the activities described in sub-
23 section (d)(2), as part of the Department's annual budget
24 submission.

1 **SEC. 322. ADVANCED FUEL RECYCLING TECHNOLOGY RE-**
2 **SEARCH AND DEVELOPMENT PROGRAM.**

3 (a) IN GENERAL.—The Secretary, through the Direc-
4 tor of the Office of Nuclear Energy, Science and Tech-
5 nology, shall conduct an advanced fuel recycling tech-
6 nology research and development program to further the
7 availability of proliferation-resistant fuel recycling tech-
8 nologies as an alternative to aqueous reprocessing in sup-
9 port of evaluation of alternative national strategies for
10 spent nuclear fuel and the Generation IV advanced reactor
11 concepts, subject to annual review by the Secretary's Nu-
12 clear Energy Research Advisory Committee or other inde-
13 pendent entity, as appropriate.

14 (b) REPORTS.—The Secretary shall report on the ac-
15 tivities of the advanced fuel recycling technology research
16 and development program, as part of the Department's
17 annual budget submission.

18 (c) AUTHORIZATION OF APPROPRIATIONS.—There
19 are authorized to be appropriated to the Secretary to carry
20 out this section—

21 (1) $10,000,000 for fiscal year 2002; and

22 (2) such sums as are necessary for fiscal year
23 2003 and fiscal year 2004.

# Subtitle C—Department of Energy Authorization of Appropriations

**SEC. 341. NUCLEAR ENERGY RESEARCH INITIATIVE.**

(a) PROGRAM.—The Secretary, through the Office of Nuclear Energy, Science and Technology, shall conduct a Nuclear Energy Research Initiative for grants to be competitively awarded and subject to peer review for research relating to nuclear energy.

(b) OBJECTIVES.—The program shall be directed toward accomplishing the objectives of—

(1) developing advanced concepts and scientific breakthroughs in nuclear fission and reactor technology to address and overcome the principal technical and scientific obstacles to the expanded use of nuclear energy in the United States;

(2) advancing the state of nuclear technology to maintain a competitive position in foreign markets and a future domestic market;

(3) promoting and maintaining a United States nuclear science and engineering infrastructure to meet future technical challenges;

(4) providing an effective means to collaborate on a cost-shared basis with international agencies and research organizations to address and influence nuclear technology development worldwide; and

1 (5) promoting United States leadership and
2 partnerships in bilateral and multilateral nuclear en-
3 ergy research.
4 (c) AUTHORIZATION OF APPROPRIATIONS.—There
5 are authorized to be appropriated to the Secretary to carry
6 out this section—
7 (1) $60,000,000 for fiscal year 2002; and
8 (2) such sums as are necessary for fiscal year
9 2003 and fiscal year 2004.

10 **SEC. 342. NUCLEAR ENERGY PLANT OPTIMIZATION PRO-**
11 **GRAM.**

12 (a) PROGRAM.—The Secretary, through the Office of
13 Nuclear Energy, Science and Technology, shall conduct a
14 Nuclear Energy Plant Optimization research and develop-
15 ment program jointly with industry and cost-shared by in-
16 dustry by least 50 percent and subject to annual review
17 by the Secretary's Nuclear Energy Research Advisory
18 Committee or other independent entity, as appropriate.
19 (b) OBJECTIVES.—The program shall be directed to-
20 ward accomplishing the objectives of—
21 (1) managing long-term effects of component
22 aging; and
23 (2) improving the efficiency and productivity of
24 existing nuclear power stations.

1 (c) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary to carry
3 out this section—
4 (1) $15,000,000 for fiscal year 2002; and
5 (2) such sums as are necessary for fiscal years
6 2003 through 2006.

7 **SEC. 343. NUCLEAR ENERGY TECHNOLOGIES.**

8 (a) IN GENERAL.—The Secretary, through the Office
9 of Nuclear Energy, Science and Technology, shall conduct
10 a study of Generation IV nuclear energy systems, includ-
11 ing development of a technology roadmap and perform-
12 ance of research and development necessary to make an
13 informed technical decision regarding the most promising
14 candidates for commercial application.
15 (b) REACTOR CHARACTERISTICS.—To the extent
16 practicable, in conducting the study under subsection (a),
17 the Secretary shall study nuclear energy systems that offer
18 the highest probability of achieving the goals for Genera-
19 tion IV nuclear energy systems, including—
20 (1) economics competitive with any other gen-
21 erators;
22 (2) enhanced safety features, including passive
23 safety features;
24 (3) substantially reduced production of high-
25 level waste, as compared with the quantity of waste

1 produced by reactors in operation on the date of en-
2 actment of this Act;
3 (4) highly proliferation-resistant fuel and waste;
4 (5) sustainable energy generation including op-
5 timized fuel utilization; and
6 (6) substantially improved thermal efficiency, as
7 compared with the thermal efficiency of reactors in
8 operation on the date of enactment of this Act.
9 (c) CONSULTATION.—In conducting the study under
10 subsection (a), the Secretary shall consult with appro-
11 priate representatives of industry, institutions of higher
12 education, Federal agencies, and international, profes-
13 sional, and technical organizations.
14 (d) REPORT.—
15 (1) IN GENERAL.—Not later than December 31,
16 2002, the Secretary shall transmit to the appro-
17 priate congressional committees a report describing
18 the activities of the Secretary under this section, and
19 plans for research and development leading to a
20 public/private cooperative demonstration of one or
21 more Generation IV nuclear energy systems.
22 (2) CONTENTS.—The report shall contain—
23 (A) an assessment of all available tech-
24 nologies;

(B) a summary of actions needed for the most promising candidates to be considered as viable commercial options within the five to ten years after the date of the report, with consideration of regulatory, economic, and technical issues;

(C) a recommendation of not more than three promising Generation IV nuclear energy system concepts for further development;

(D) an evaluation of opportunities for public/private partnerships;

(E) a recommendation for structure of a public/private partnership to share in development and construction costs;

(F) a plan leading to the selection and conceptual design, by September 30, 2004, of at least one Generation IV nuclear energy system concept recommended under subparagraph (C) for demonstration through a public/private partnership;

(G) an evaluation of opportunities for siting demonstration facilities on Department of Energy land; and

(H) a recommendation for appropriate involvement of other Federal agencies.

1 (e) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary to carry
3 out this section and to carry out the recommendations in
4 the report transmitted under subsection (d)—
5 (1) $50,000,000 for fiscal year 2002; and
6 (2) such sums as are necessary for fiscal year
7 2003 and fiscal year 2004.

8 **SEC. 344. AUTHORIZATION OF APPROPRIATIONS.**

9 (a) OPERATION AND MAINTENANCE.—There are au-
10 thorized to be appropriated to the Secretary to carry out
11 activities authorized under this title for nuclear energy op-
12 eration and maintenance, including amounts authorized
13 under sections 304(a), 322(c), 341(c), 342(c), and 343(e),
14 and including Advanced Radioisotope Power Systems,
15 Test Reactor Landlord, and Program Direction,
16 $221,000,000 for fiscal year 2002, $230,000,000 for fis-
17 cal year 2003, and $240,000,000 for fiscal year 2004, to
18 remain available until expended.
19 (b) CONSTRUCTION.—There are authorized to be ap-
20 propriated to the Secretary—
21 (1) $950,000 for fiscal year 2002, $2,200,000
22 for fiscal year 2003, $1,246,000 for fiscal year
23 2004, and $1,699,000 for fiscal year 2005 for com-
24 pletion of construction of Project 99-E-200, Test
25 Reactor Area Electric Utility Upgrade, Idaho Na-

1 tional Engineering and Environmental Laboratory;
2 and
3 (2) $500,000 for fiscal year 2002, $500,000 for
4 fiscal year 2003, $500,000 for fiscal year 2004, and
5 $500,000 for fiscal year 2005, for completion of con-
6 struction of Project 95-E-201, Test Reactor Area
7 Fire and Life Safety Improvements, Idaho National
8 Engineering and Environmental Laboratory.
9 (c) LIMITS ON USE OF FUNDS.—None of the funds
10 authorized to be appropriated in subsection (a) may be
11 used for Nuclear Energy Isotope Support and Production,
12 Argonne National Laboratory-West Operations, Fast Flux
13 Test Facility, or Nuclear Facilities Management.

# 14 TITLE IV—FOSSIL ENERGY

## 15 Subtitle A—Clean Coal

16 **SEC. 401. SHORT TITLE.**

17 This subtitle may be cited as the "National Elec-
18 tricity and Environmental Technology Research and De-
19 velopment Act".

20 **SEC. 402. FINDINGS.**

21 Congress finds that—
22 (1) reliable, affordable, increasingly clean elec-
23 tricity will continue to power the growing United
24 States economy;

(2) an increasing use of electrotechnologies, the desire for continuous environmental improvement, a more competitive electricity market, and concerns about rising energy prices add importance to the need for reliable, affordable, increasingly clean electricity;

(3) coal, which, as of the date of enactment of this Act, accounts for more than ½ of all electricity generated in the United States, is the most abundant fossil energy resource of the United States;

(4) coal comprises more than 85 percent of all fossil resources in the United States and exists in quantities sufficient to supply the United States for 250 years at current usage rates;

(5) investments in electricity generating facility emissions control technology over the past 30 years have reduced the aggregate emissions of pollutants from coal-based generating facilities by 21 percent, even as coal use for electricity generation has nearly tripled; and

(6) continued environmental improvement in coal-based generation through continued research, development, and demonstration toward an ultimate goal of near-zero emissions is important and desirable.

1 **SEC. 403. DEFINITION.**

2 In this subtitle, the term "cost and performance-
3 based goals" means the cost and performance-based goals
4 established under section 4.

5 **SEC. 404. CLEAN COAL POWER INITIATIVE.**

6 (a) IN GENERAL.—The Secretary shall carry out a
7 program of research on and development, demonstration,
8 and commercial application of clean coal technologies
9 under—

10 (1) this subtitle;

11 (2) the Federal Nonnuclear Energy Research
12 and Development Act of 1974 (42 U.S.C. 5901 et
13 seq.);

14 (3) the Energy Reorganization Act of 1974 (42
15 U.S.C. 5801 et seq.); and

16 (4) title XIII of the Energy Policy Act of 1992
17 (42 U.S.C. 13331 et seq.).

18 (b) CONDITIONS.—The research, development, dem-
19 onstration, and commercial application program described
20 in subsection (a) shall be designed to achieve the cost and
21 performance-based goals.

22 **SEC. 405. AUTHORIZATION OF APPROPRIATIONS.**

23 (a) CLEAN COAL POWER INITIATIVE.—Except as
24 provided in section 406, there are authorized to be appro-
25 priated to the Secretary to carry out the Clean Coal Power

1 fiscal years 2002 through 2011, to remain available until
2 expended.

3 (b) OTHER COAL AND RELATED TECHNOLOGIES
4 PROGRAMS.—Except as provided in section 406, there are
5 authorized to be appropriated to the Secretary
6 $172,000,000 for fiscal year 2002, $179,000,000 for fis-
7 cal year 2003, and $186,000,000 for fiscal year 2004, to
8 remain available until expended, for other coal and related
9 technologies programs, which shall include—

10 (1) Innovations for Existing Plants;
11 (2) Integrated Gasification Combined Cycle;
12 (3) Pressurized Fluidized Bed Systems;
13 (4) Turbines;
14 (5) Sequestration Research and Development;
15 (6) Transportation Fuels and Chemicals;
16 (7) Solid Fuels and Feedstocks;
17 (8) Advanced Fuels Research; and
18 (9) Advanced Research.

19 **SEC. 406. LIMIT ON USE OF FUNDS.**

20 Notwithstanding section 405, no funds may be used
21 to carry out the activities authorized by this subtitle until
22 30 days after the Secretary transmits a report to the ap-
23 propriate congressional committees that includes a de-
24 tailed 10-year plan on implementation, Federal and non-
25 Federal funding profiles, and provisions for recoupment

of Federal funding, and that addresses in detail how the Department intends to avoid management problems encountered in the administration of the Clean Coal Technology Program.

## Subtitle B—Oil and Gas

**SEC. 421. PETROLEUM-OIL TECHNOLOGY.**

The Secretary shall conduct a program of research, development, demonstration, and commercial application on petroleum-oil technology. The program shall address—

(1) Exploration and Production Supporting Research;

(2) Oil Technology Reservoir Management/Extension; and

(3) Effective Environmental Protection.

**SEC. 422. GAS.**

The Secretary shall conduct a program of research, development, demonstration, and commercial application on natural gas technologies. The program shall address—

(1) Exploration and Production;

(2) Infrastructure; and

(3) Effective Environmental Protection.

**SEC. 423. UNCONVENTIONAL AND ULTRA-DEEPWATER NATURAL GAS AND PETROLEUM.**

The Secretary shall conduct a program of research, development, and demonstration of unconventional and

1 ultra-deepwater natural gas and petroleum exploration
2 and production technologies.

## 3 Subtitle C—Fuel Cells

4 **SEC. 444. FUEL CELLS.**

5 The Secretary shall conduct a program of research,
6 development, demonstration, and commercial application
7 on fuel cells. The program shall address—

8 (1) Advanced Research;
9 (2) Systems Development;
10 (3) Vision 21-Hybrids; and
11 (4) Innovative Concepts.

## 12 Subtitle D—Authorization of 13 Appropriations

14 **SEC. 461. AUTHORIZATION OF APPROPRIATIONS.**

15 (a) OPERATION AND MAINTENANCE.—There are au-
16 thorized to be appropriated to the Secretary for operation
17 and maintenance for subtitles B and C, and for Fossil En-
18 ergy Research and Development Headquarters Program
19 Direction, Field Program Direction, Plant and Capital
20 Equipment, Cooperative Research and Development, Im-
21 port/Export Authorization, and Advanced Metallurgical
22 Processes $238,000,000 for fiscal year 2002,
23 $247,000,000 for fiscal year 2003, and $257,000,000 for
24 fiscal year 2004, to remain available until expended.

(b) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (a) may be used for—

(1) Gas Hydrates.

(2) Fossil Energy Environmental Restoration; or

(3) research, development, demonstration, and commercial application on coal and related technologies, including activities under subtitle A.

# TITLE V—SCIENCE

## Subtitle A—Fusion Energy Sciences

**SEC. 501. SHORT TITLE.**

This subtitle may be cited as the "Fusion Energy Sciences Act of 2001".

**SEC. 502. FINDINGS.**

The Congress finds that—

(1) economic prosperity is closely linked to an affordable and ample energy supply;

(2) environmental quality is closely linked to energy production and use;

(3) population, worldwide economic development, energy consumption, and stress on the environment are all expected to increase substantially in the coming decades;

(4) the few energy options with the potential to meet economic and environmental needs for the long-term future should be pursued as part of a balanced national energy plan;

(5) fusion energy is an attractive long-term energy source because of the virtually inexhaustible supply of fuel, and the promise of minimal adverse environmental impact and inherent safety;

(6) the National Research Council, the President's Committee of Advisers on Science and Technology, and the Secretary of Energy Advisory Board have each recently reviewed the Fusion Energy Sciences Program and each strongly supports the fundamental science and creative innovation of the program, and has confirmed that progress toward the goal of producing practical fusion energy has been excellent, although much scientific and engineering work remains to be done;

(7) each of these reviews stressed the need for a magnetic fusion burning plasma experiment to address key scientific issues and as a necessary step in the development of fusion energy;

(8) the National Research Council has also called for a broadening of the Fusion Energy Sciences Program research base as a means to more

1 fully integrate the fusion science community into the
2 broader scientific community; and
3 (9) the Fusion Energy Sciences Program budg-
4 et is inadequate to support the necessary science and
5 innovation for the present generation of experiments,
6 and cannot accommodate the cost of a burning plas-
7 ma experiment constructed by the United States, or
8 even the cost of key participation by the United
9 States in an international effort.

10 **SEC. 503. PLAN FOR FUSION EXPERIMENT.**

11 (a) PLAN FOR UNITED STATES FUSION EXPERI-
12 MENT.—The Secretary, on the basis of full consultation
13 with the Fusion Energy Sciences Advisory Committee and
14 the Secretary of Energy Advisory Board, as appropriate,
15 shall develop a plan for United States construction of a
16 magnetic fusion burning plasma experiment for the pur-
17 pose of accelerating scientific understanding of fusion
18 plasmas. The Secretary shall request a review of the plan
19 by the National Academy of Sciences, and shall transmit
20 the plan and the review to the Congress by July 1, 2004.
21 (b) REQUIREMENTS OF PLAN.—The plan described
22 in subsection (a) shall—
23 (1) address key burning plasma physics issues;
24 and

1 (2) include specific information on the scientific
2 capabilities of the proposed experiment, the rel-
3 evance of these capabilities to the goal of practical
4 fusion energy, and the overall design of the experi-
5 ment including its estimated cost and potential con-
6 struction sites.

7 (c) UNITED STATES PARTICIPATION IN AN INTER-
8 NATIONAL EXPERIMENT.—In addition to the plan de-
9 scribed in subsection (a), the Secretary, on the basis of
10 full consultation with the Fusion Energy Sciences Advi-
11 sory Committee and the Secretary of Energy Advisory
12 Board, as appropriate, may also develop a plan for United
13 States participation in an international burning plasma
14 experiment for the same purpose, whose construction is
15 found by the Secretary to be highly likely and where
16 United States participation is cost effective relative to the
17 cost and scientific benefits of a domestic experiment de-
18 scribed in subsection (a). If the Secretary elects to develop
19 a plan under this subsection, he shall include the informa-
20 tion described in subsection (b), and an estimate of the
21 cost of United States participation in such an inter-
22 national experiment. The Secretary shall request a review
23 by the National Academies of Sciences and Engineering
24 of a plan developed under this subsection, and shall trans-

1 mit the plan and the review to the Congress not later than
2 July 1, 2004.

3 (d) AUTHORIZATION OF RESEARCH AND DEVELOP-
4 MENT.—The Secretary, through the Fusion Energy
5 Sciences Program, may conduct any research and develop-
6 ment necessary to fully develop the plans described in this
7 section.

8 **SEC. 504. PLAN FOR FUSION ENERGY SCIENCES PROGRAM.**

9 Not later than 6 months after the date of the enact-
10 ment of this Act, the Secretary, in full consultation with
11 FESAC, shall develop and transmit to the Congress a plan
12 for the purpose of ensuring a strong scientific base for
13 the Fusion Energy Sciences Program and to enable the
14 experiments described in section 503. Such plan shall in-
15 clude as its objectives—

16 (1) to ensure that existing fusion research fa-
17 cilities and equipment are more fully utilized with
18 appropriate measurements and control tools;

19 (2) to ensure a strengthened fusion science the-
20 ory and computational base;

21 (3) to ensure that the selection of and funding
22 for new magnetic and inertial fusion research facili-
23 ties is based on scientific innovation and cost effec-
24 tiveness;

(4) to improve the communication of scientific results and methods between the fusion science community and the wider scientific community;

(5) to ensure that adequate support is provided to optimize the design of the magnetic fusion burning plasma experiments referred to in section 503;

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

(7) to develop a roadmap for a fusion-based energy source that shows the important scientific questions, the evolution of confinement configurations, the relation between these two features, and their relation to the fusion energy goal;

(8) to establish several new centers of excellence, selected through a competitive peer-review process and devoted to exploring the frontiers of fusion science;

(9) to ensure that the National Science Foundation, and other agencies, as appropriate, play a role in extending the reach of fusion science and in sponsoring general plasma science; and

(10) to ensure that there be continuing broad assessments of the outlook for fusion energy and periodic external reviews of fusion energy sciences.

**SEC. 505. AUTHORIZATION OF APPROPRIATIONS.**

There are authorized to be appropriated to the Secretary for the development and review, but not for implementation, of the plans described in this subtitle and for activities of the Fusion Energy Sciences Program $320,000,000 for fiscal year 2002 and $335,000,000 for fiscal year 2003, of which up to $15,000,000 for each of fiscal year 2002 and fiscal year 2003 may be used to establish several new centers of excellence, selected through a competitive peer-review process and devoted to exploring the frontiers of fusion science.

## Subtitle B—Spallation Neutron Source

**SEC. 521. DEFINITION.**

For the purposes of this subtitle, the term "Spallation Neutron Source" means Department Project 99–E–334, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

**SEC. 522. AUTHORIZATION OF APPROPRIATIONS.**

(a) AUTHORIZATION OF CONSTRUCTION FUNDING.—There are authorized to be appropriated to the Secretary for construction of the Spallation Neutron Source—

1 (1) $276,300,000 for fiscal year 2002;
2 (2) $210,571,000 for fiscal year 2003;
3 (3) $124,600,000 for fiscal year 2004;
4 (4) $79,800,000 for fiscal year 2005; and
5 (5) $41,100,000 for fiscal year 2006 for com-
6 pletion of construction.
7 (b) AUTHORIZATION OF OTHER PROJECT FUND-
8 ING.—There are authorized to be appropriated to the Sec-
9 retary for other project costs (including research and de-
10 velopment necessary to complete the project, preoperations
11 costs, and capital equipment not related to construction)
12 of the Spallation Neutron Source $15,353,000 for fiscal
13 year 2002 and $103,279,000 for the period encompassing
14 fiscal years 2003 through 2006, to remain available until
15 expended through September 30, 2006.
16 **SEC. 523. REPORT.**
17 The Secretary shall report on the Spallation Neutron
18 Source as part of the Department's annual budget submis-
19 sion, including a description of the achievement of mile-
20 stones, a comparison of actual costs to estimated costs,
21 and any changes in estimated project costs or schedule.
22 **SEC. 524. LIMITATIONS.**
23 The total amount obligated by the Department, in-
24 cluding prior year appropriations, for the Spallation Neu-
25 tron Source may not exceed—

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

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

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

## Subtitle C—Facilities, Infrastructure, and User Facilities

**SEC. 541. DEFINITION.**

For purposes of this subtitle—

(1) 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;

(J) Thomas Jefferson National Accelerator Facility; or

(K) any other facility of the Department that the Secretary, in consultation with the Di-

1 rector, Office of Science and the appropriate
2 congressional committees, determines to be con-
3 sistent with the mission of the Office of
4 Science; and
5 (2) the term "user facility" means—
6 (A) an Office of Science facility at a non-
7 military energy laboratory that provides special
8 scientific and research capabilities, including
9 technical expertise and support as appropriate,
10 to serve the research needs of the Nation's uni-
11 versities, industry, private laboratories, Federal
12 laboratories, and others, including research in-
13 stitutions or individuals from other nations
14 where reciprocal accommodations are provided
15 to United States research institutions and indi-
16 viduals or where the Secretary considers such
17 accommodation to be in the national interest;
18 and
19 (B) any other Office of Science funded fa-
20 cility designated by the Secretary as a user fa-
21 cility.

1 **SEC. 542. FACILITY AND INFRASTRUCTURE SUPPORT FOR**
2 **NONMILITARY ENERGY LABORATORIES.**

3 (a) FACILITY POLICY.—The Secretary shall develop
4 and implement a least-cost nonmilitary energy laboratory
5 facility and infrastructure strategy for—

6 (1) maintaining existing facilities and infra-
7 structure, as needed;

8 (2) closing unneeded facilities;

9 (3) making facility modifications; and

10 (4) building new facilities.

11 (b) PLAN.—The Secretary shall prepare a com-
12 prehensive 10-year plan for conducting future facility
13 maintenance, making repairs, modifications, and new ad-
14 ditions, and constructing new facilities at each nonmilitary
15 energy laboratory. Such plan shall provide for facilities
16 work in accordance with the following priorities:

17 (1) Providing for the safety and health of em-
18 ployees, visitors, and the general public with regard
19 to correcting existing structural, mechanical, elec-
20 trical, and environmental deficiencies.

21 (2) Providing for the repair and rehabilitation
22 of existing facilities to keep them in use and prevent
23 deterioration, if feasible.

24 (3) Providing engineering design and construc-
25 tion services for those facilities that require modi-

1 fication or additions in order to meet the needs of
2 new or expanded programs.
3 (c) REPORT.—
4 (1) TRANSMITTAL.—Within 1 year after the
5 date of the enactment of this Act, the Secretary
6 shall prepare and transmit to the appropriate con-
7 gressional committees a report containing the plan
8 prepared under subsection (b).
9 (2) CONTENTS.—For each nonmilitary energy
10 laboratory, such report shall contain—
11 (A) the current priority list of proposed fa-
12 cilities and infrastructure projects, including
13 cost and schedule requirements;
14 (B) a current ten-year plan that dem-
15 onstrates the reconfiguration of its facilities and
16 infrastructure to meet its missions and to ad-
17 dress its long-term operational costs and return
18 on investment;
19 (C) the total current budget for all facili-
20 ties and infrastructure funding; and
21 (D) the current status of each facilities
22 and infrastructure project compared to the
23 original baseline cost, schedule, and scope.
24 (3) ADDITIONAL ELEMENTS.—The report shall
25 also—

1 (A) include a plan for new facilities and fa-
2 cility modifications at each nonmilitary energy
3 laboratory that will be required to meet the De-
4 partment's changing missions of the twenty-
5 first century, including schedules and estimates
6 for implementation, and including a section out-
7 lining long-term funding requirements con-
8 sistent with anticipated budgets and annual au-
9 thorization of appropriations;
10 (B) address the coordination of moderniza-
11 tion and consolidation of facilities among the
12 nonmilitary energy laboratories in order to meet
13 changing mission requirements; and
14 (C) provide for annual reports to the ap-
15 propriate congressional committees on accom-
16 plishments, conformance to schedules, commit-
17 ments, and expenditures.

18 **SEC. 543. USER FACILITIES.**

19 (a) NOTICE REQUIREMENT.—When the Department
20 makes a user facility available to universities and other
21 potential users, or seeks input from universities and other
22 potential users regarding significant characteristics or
23 equipment in a user facility or a proposed user facility,
24 the Department shall ensure broad public notice of such

availability or such need for input to universities and other potential users.

(b) COMPETITION REQUIREMENT.—When the Department considers the participation of a university or other potential user in the establishment or operation of a user facility, the Department shall employ full and open competition in selecting such a participant.

(c) PROHIBITION.—The Department may not redesignate a user facility, as defined by section 541(b) as something other than a user facility for avoid the requirements of subsections (a) and (b).

## Subtitle D—Advisory Panel on Office of Science

**SEC. 561. ESTABLISHMENT.**

The Director of the Office of Science and Technology Policy, in consultation with the Secretary, shall establish an Advisory Panel on the Office of Science comprised of knowledgeable individuals to—

(1) address concerns about the current status and the future of scientific research supported by the Office;

(2) examine alternatives to the current organizational structure of the Office within the Department, taking into consideration existing structures

1 for the support of scientific research in other Fed-
2 eral agencies and the private sector; and
3 (3) suggest actions to strengthen the scientific
4 research supported by the Office that might be
5 taken jointly by the Department and Congress.

6 **SEC. 562. REPORT.**

7 Within 180 days after the date of the enactment of
8 this Act, the Advisory Panel shall transmit its findings
9 and recommendations in a report to the Director of the
10 Office of Science and Technology Policy and the Sec-
11 retary. The Director and the Secretary shall jointly—
12 (1) consider each of the Panel's findings and
13 recommendations, and comment on each as they
14 consider appropriate; and
15 (2) transmit the Panel's report and the com-
16 ments of the Director and the Secretary on the re-
17 port to the appropriate congressional committees
18 within 270 days after the date of the enactment of
19 this Act.

## 20 Subtitle E—Department of Energy
## 21 Authorization of Appropriations

22 **SEC. 581. AUTHORIZATION OF APPROPRIATIONS.**

23 (a) OPERATION AND MAINTENANCE.—Including the
24 amounts authorized to be appropriated for fiscal year
25 2002 under section 505 for Fusion Energy Sciences and

1 under section 522(b) for the Spallation Neutron Source,
2 there are authorized to be appropriated to the Secretary
3 for the Office of Science (also including High Energy
4 Physics, Nuclear Physics, Biological and Environmental
5 Research, Basic Energy Sciences (except for the Spall-
6 ation Neutron Source), Advanced Scientific Computing
7 Research, Energy Research Analysis, Multiprogram En-
8 ergy Laboratories-Facilities Support, Facilities and Infra-
9 structure, Safeguards and Security, and Program Direc-
10 tion) operation and maintenance $3,296,076,000 for fiscal
11 year 2002, to remain available until expended.

12 (b) CONSTRUCTION.—In addition to the amounts au-
13 thorized to be appropriated under section 522(a) for con-
14 struction of the Spallation Neutron Source, there are au-
15 thorized to be appropriated to the Secretary for Science—

16 (1) $11,400,000 for fiscal year 2002 for com-
17 pletion of construction of Project 98-G-304,
18 Neutrinos at the Main Injector, Fermi National Ac-
19 celerator Laboratory Project;

20 (2) $10,000,000 for fiscal year 2002 and
21 $1,405,000 for fiscal year 2003 for completion of
22 construction of Project 01-E-300, Laboratory for
23 Comparative and Functional Genomics, Oak Ridge
24 National Laboratory;

(3) $4,000,000 for fiscal year 2002, $8,000,000 for fiscal year 2003, and $2,000,000 for fiscal year 2004 for completion of construction of Project 02-SC-002, Project Engineering Design (PED), Various Locations;

(4) $3,183,000 for fiscal year 2002 for completion of construction of Project 02-SC-002, Multiprogram Energy Laboratories Infrastructure Project Engineering Design (PED), Various Locations; and

(5) $18,133,000 for fiscal year 2002 and $13,029,000 for fiscal year 2003 for completion of construction of Project MEL-001, Multiprogram Energy Laboratories, Infrastructure, Various Locations.

(c) LIMITS ON USE OF FUNDS.—None of the funds authorized to be appropriated in subsection (b) may be used for construction at any national security laboratory as defined in section 3281(1) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(1)) or at any nuclear weapons production facility as defined in section 3281(2) of the National Defense Authorization Act for Fiscal Year 2000 (50 U.S.C. 2471(2)).

# TITLE VI—MISCELLANEOUS

## Subtitle A—General Provisions for the Department of Energy

### SEC. 601. RESEARCH, DEVELOPMENT, DEMONSTRATION, AND COMMERCIAL APPLICATION OF ENERGY TECHNOLOGY PROGRAMS, PROJECTS, AND ACTIVITIES.

(a) AUTHORIZED ACTIVITIES.—Except as otherwise provided in this Act, research, development, demonstration, and commercial application programs, projects, and activities for which appropriations are authorized under this Act may be carried out under the procedures of the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901 et seq.), the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), or any other Act under which the Secretary is authorized to carry out such programs, projects, and activities, but only to the extent the Secretary is authorized to carry out such activities under each such Act.

(b) AUTHORIZED AGREEMENTS.—Except as otherwise provided in this Act, in carrying out research, development, demonstration, and commercial application programs, projects, and activities for which appropriations are authorized under this Act, the Secretary may use, to the extent authorized under applicable provisions of law,

1 contracts, cooperative agreements, cooperative research
2 and development agreements under the Stevenson-Wydler
3 Technology Innovation Act of 1980 (15 U.S.C. 3701 et
4 seq.), grants, joint ventures, and any other form of agree-
5 ment available to the Secretary.

6 (c) DEFINITION.—For purposes of this section, the
7 term "joint venture" has the meaning given that term
8 under section 2 of the National Cooperative Research and
9 Production Act of 1993 (15 U.S.C. 4301), except that
10 such term may apply under this section to research, devel-
11 opment, demonstration, and commercial application of en-
12 ergy technology joint ventures.

13 (d) PROTECTION OF INFORMATION.—Section
14 12(c)(7) of the Stevenson-Wydler Technology Innovation
15 Act of 1980 (15 U.S.C. 3710a(c)(7)), relating to the pro-
16 tection of information, shall apply to research, develop-
17 ment, demonstration, and commercial application of en-
18 ergy technology programs, projects, and activities for
19 which appropriations are authorized under this Act.

20 (e) GUIDELINES AND PROCEDURES.—The Secretary
21 shall provide guidelines and procedures for the transition,
22 where appropriate, of energy technologies from research
23 through development and demonstration to commercial
24 application of energy technology. Nothing in this section
25 shall preclude the Secretary from—

1 (1) entering into a contract, cooperative agree-
2 ment, cooperative research and development agree-
3 ment under the Stevenson-Wydler Technology Inno-
4 vation Act of 1980 (15 U.S.C. 3701 et seq.), grant,
5 joint venture, or any other form of agreement avail-
6 able to the Secretary under this section that relates
7 to research, development, demonstration, and com-
8 mercial application of energy technology; or
9 (2) extending a contract, cooperative agree-
10 ment, cooperative research and development agree-
11 ment under the Stevenson-Wydler Technology Inno-
12 vation Act of 1980, grant, joint venture, or any
13 other form of agreement available to the Secretary
14 that relates to research, development, and dem-
15 onstration to cover commercial application of energy
16 technology.
17 (f) APPLICATION OF SECTION.—This section shall
18 not apply to any contract, cooperative agreement, coopera-
19 tive research and development agreement under the Ste-
20 venson-Wydler Technology Innovation Act of 1980 (15
21 U.S.C. 3701 et seq.), grant, joint venture, or any other
22 form of agreement available to the Secretary that is in
23 effect as of the date of enactment of this Act.
24 **SEC. 602. LIMITS ON USE OF FUNDS.**
25 (a) FEDERAL ACQUISITION REGULATION.—

1 (1) REQUIREMENT.—None of the funds author-
2 ized to be appropriated to the Secretary by this Act
3 may be used to award, amend, or modify a contract
4 of the Department in a manner that deviates from
5 the Federal Acquisition Regulation, unless the Sec-
6 retary grants, on a case-by-case basis, a waiver to
7 allow for such a deviation. The Secretary may not
8 delegate the authority to grant such a waiver.
9 (2) CONGRESSIONAL NOTICE.—At least 60 days
10 before a contract award, amendment, or modifica-
11 tion for which the Secretary intends to grant such
12 a waiver, the Secretary shall submit to the appro-
13 priate congressional committees a report notifying
14 the committees of the waiver and setting forth the
15 reasons for the waiver.
16 (b) MANAGEMENT AND OPERATING CONTRACTS.—
17 (1) COMPETITIVE PROCEDURE REQUIRE-
18 MENT.—None of the funds authorized to be appro-
19 priated to the Secretary by this Act may be used to
20 award a management and operating contract for a
21 federally owned or operated nonmilitary energy lab-
22 oratory of the Department unless such contract is
23 awarded using competitive procedures or the Sec-
24 retary grants, on a case-by-case basis, a waiver to

1 allow for such a deviation. The Secretary may not
2 delegate the authority to grant such a waiver.
3 (2) CONGRESSIONAL NOTICE.—At least 60 days
4 before a contract award, amendment, or modifica-
5 tion for which the Secretary intends to grant such
6 a waiver, the Secretary shall submit to the appro-
7 priate congressional committees a report notifying
8 the committees of the waiver and setting forth the
9 reasons for the waiver.
10 (c) PRODUCTION OR PROVISION OF ARTICLES OR
11 SERVICES.—None of the funds authorized to be appro-
12 priated to the Secretary by this Act may be used to
13 produce or provide articles or services for the purpose of
14 selling the articles or services to a person outside the Fed-
15 eral Government, unless the Secretary determines that
16 comparable articles or services are not available from a
17 commercial source in the United States.
18 (d) REQUESTS FOR PROPOSALS.—None of the funds
19 authorized to be appropriated to the Secretary by this Act
20 may be used by the Department to prepare or initiate Re-
21 quests for Proposals for a program, project, or activity if
22 the program, project, or activity has not been specifically
23 authorized by Congress.
24 (e) TRADE ASSOCIATIONS.—None of the funds au-
25 thorized to be appropriated to the Secretary by this Act

1 may be used either directly or indirectly to fund a grant,
2 contract, subcontract, or any other form of financial as-
3 sistance awarded by the Department to a trade association
4 on a noncompetitive basis. As part of the Department's
5 annual budget request submission to the Congress, the
6 Secretary shall submit a report to the appropriate congres-
7 sional committees that identifies—

8 (1) the estimated amount of funds provided by
9 the Department to trade associations, by trade asso-
10 ciation, for the fiscal year of such budget submis-
11 sion, as well as for the 2 previous fiscal years;

12 (2) the services either provided or to be pro-
13 vided by each such trade association; and

14 (3) the sources of funds for services provided by
15 each such trade association.

16 **SEC. 603. COST SHARING.**

17 (a) RESEARCH AND DEVELOPMENT.—Except as oth-
18 erwise provided in this Act, the Secretary shall require,
19 for research and development programs, projects, and ac-
20 tivities carried out by industry under this Act, a commit-
21 ment from non-Federal sources of at least 20 percent of
22 the cost of such programs, projects, and activities.

23 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
24 TION.—Except as otherwise provided in this Act, the Sec-
25 retary shall require a commitment from non-Federal

1 sources of at least 50 percent of the cost of any dem-
2 onstration or commercial application program, project, or
3 activity conducted under this Act.

4 **SEC. 604. LIMITATION ON DEMONSTRATION AND COMMER-**
5 **CIAL APPLICATION OF ENERGY TECH-**
6 **NOLOGY.**

7 Except as otherwise provided in this Act, the Sec-
8 retary shall provide funding for scientific or energy dem-
9 onstration and commercial application of energy tech-
10 nology programs, projects, or activities only for tech-
11 nologies or processes that can be reasonably expected to
12 yield new, measurable benefits to the cost, efficiency, or
13 performance of the technology or process.

14 **SEC. 605. REPROGRAMMING.**

15 (a) AUTHORITY.—The Secretary may use amounts
16 appropriated under this Act for a program, project, or ac-
17 tivity other than the program, project, or activity for
18 which such amounts were appropriated only if—

19 (1) the Secretary has transmitted to the appro-
20 priate congressional committees a report described
21 in subsection (b) and a period of 30 days has
22 elapsed after such committees receive the report;

23 (2) amounts used for the program, project, or
24 activity do not exceed—

1 (A) 105 percent of the amount authorized
2 for the program, project, or activity; or
3 (B) $250,000 more than the amount au-
4 thorized for the program, project, or activity,
5 whichever is less; and
6 (3) the program, project, or activity has been
7 presented to, or requested of, the Congress by the
8 Secretary.
9 (b) REPORT.—(1) The report referred to in sub-
10 section (a) is a report containing a full and complete state-
11 ment of the action proposed to be taken and the facts and
12 circumstances relied upon in support of the proposed ac-
13 tion.
14 (2) In the computation of the 30-day period under
15 subsection (a), there shall be excluded any day on which
16 either House of Congress is not in session because of an
17 adjournment of more than 3 days to a day certain.
18 (c) LIMITATIONS.—(1) In no event may the total
19 amount of funds obligated by the Secretary pursuant to
20 this Act exceed the total amount authorized to be appro-
21 priated to the Secretary by this Act.
22 (2) Funds appropriated to the Secretary pursuant to
23 this Act may not be used for an item for which Congress
24 has declined to authorize funds.

# Subtitle B—Other Miscellaneous Provisions

**SEC. 611. NOTICE OF REORGANIZATION.**

The Secretary shall provide notice to the appropriate congressional committees not later than 15 days before any reorganization of any environmental research or development, scientific or energy research, development, or demonstration, or commercial application of energy technology program, project, or activity of the Department.

**SEC. 612. LIMITS ON GENERAL PLANT PROJECTS.**

If, at any time during the construction of a civilian environmental research and development, scientific or energy research, development, or demonstration, or commercial application of energy technology project of the Department for which no specific funding level is provided by law, the estimated cost (including any revision thereof) of the project exceeds $2,000,000, the Secretary may not continue such construction unless the Secretary has furnished a complete report to the appropriate congressional committees explaining the project and the reasons for the estimate or revision.

**SEC. 613. LIMITS ON CONSTRUCTION PROJECTS.**

(a) LIMITATION.—Except as provided in subsection (b), construction on a civilian environmental research and development, scientific or energy research, development, or

1 demonstration, or commercial application of energy tech-
2 nology project of the Department for which funding has
3 been specifically provided by law may not be started, and
4 additional obligations may not be incurred in connection
5 with the project above the authorized funding amount,
6 whenever the current estimated cost of the construction
7 project exceeds by more than 10 percent the higher of—
8 (1) the amount authorized for the project, if the
9 entire project has been funded by the Congress; or
10 (2) the amount of the total estimated cost for
11 the project as shown in the most recent budget jus-
12 tification data submitted to Congress.
13 (b) NOTICE.—An action described in subsection (a)
14 may be taken if—
15 (1) the Secretary has submitted to the appro-
16 priate congressional committees a report on the pro-
17 posed actions and the circumstances making such
18 actions necessary; and
19 (2) a period of 30 days has elapsed after the
20 date on which the report is received by the commit-
21 tees.
22 (c) EXCLUSION.—In the computation of the 30-day
23 period described in subsection (b)(2), there shall be ex-
24 cluded any day on which either House of Congress is not

1 in session because of an adjournment of more than 3 days
2 to a day certain.
3 (d) EXCEPTION.—Subsections (a) and (b) shall not
4 apply to any construction project that has a current esti-
5 mated cost of less than $2,000,000.

6 **SEC. 614. AUTHORITY FOR CONCEPTUAL AND CONSTRUC-**
7 **TION DESIGN.**

8 (a) REQUIREMENT FOR CONCEPTUAL DESIGN.—(1)
9 Subject to paragraph (2) and except as provided in para-
10 graph (3), before submitting to Congress a request for
11 funds for a construction project that is in support of a
12 civilian environmental research and development, scientific
13 or energy research, development, or demonstration, or
14 commercial application of energy technology program,
15 project, or activity of the Department, the Secretary shall
16 complete a conceptual design for that project.
17 (2) If the estimated cost of completing a conceptual
18 design for a construction project exceeds $750,000, the
19 Secretary shall submit to Congress a request for funds for
20 the conceptual design before submitting a request for
21 funds for the construction project.
22 (3) The requirement in paragraph (1) does not apply
23 to a request for funds for a construction project, the total
24 estimated cost of which is less than $2,000,000.

1 (b) AUTHORITY FOR CONSTRUCTION DESIGN.—(1)
2 The Secretary may carry out construction design (includ-
3 ing architectural and engineering services) in connection
4 with any proposed construction project that is in support
5 of a civilian environmental research and development, sci-
6 entific or energy research, development, and demonstra-
7 tion, or commercial application of energy technology pro-
8 gram, project, or activity of the Department if the total
9 estimated cost for such design does not exceed $250,000.
10 (2) If the total estimated cost for construction design
11 in connection with any construction project described in
12 paragraph (1) exceeds $250,000, funds for such design
13 must be specifically authorized by law.

14 **SEC. 615. NATIONAL ENERGY POLICY DEVELOPMENT**
15 **GROUP MANDATED REPORTS.**

16 (a) THE SECRETARY'S REVIEW OF ENERGY EFFI-
17 CIENCY RENEWABLE ENERGY, AND ALTERNATIVE EN-
18 ERGY RESEARCH AND DEVELOPMENT.—Upon completion
19 of the Secretary's review of current funding and historic
20 performance of the Department's energy efficiency, renew-
21 able energy, and alternative energy research and develop-
22 ment programs in response to the recommendations of the
23 May 16, 2001, Report of the National Energy Policy De-
24 velopment Group, the Secretary shall transmit a report

1 containing the results of such review to the appropriate
2 congressional committees.

3 (b) REVIEW AND RECOMMENDATIONS ON USING THE
4 NATION'S ENERGY RESOURCES MORE EFFICIENTLY.—
5 Upon completion of the Office of Science and Technology
6 Policy and the President's Council of Advisors on Science
7 and Technology reviewing and making recommendations
8 on using the Nation's energy resources more efficiently,
9 in response to the recommendation of the May 16, 2001,
10 Report of the National Energy Policy Development Group,
11 the Director of the Office of Science and Technology Pol-
12 icy shall transmit a report containing the results of such
13 review and recommendations to the appropriate congres-
14 sional committees.

15 **SEC. 616. INDEPENDENT REVIEWS AND ASSESSMENTS.**

16 (a) PERIODIC REVIEWS AND ASSESSMENTS.—The
17 Secretary shall enter into appropriate arrangements with
18 the National Academies of Sciences and Engineering to
19 ensure that there be periodic reviews and assessments of
20 the programs, projects, and activities authorized by this
21 Act, as well as the goals for such programs, projects, and
22 activities as established under section 4. Such reviews and
23 assessments shall be conducted at least biennially, and the
24 Secretary shall transmit to the appropriate congressional

1 committees reports containing the results of such reviews
2 and assessments.

3 (b) INDEPENDENT ASSESSMENT OF ACCOMPLISH-
4 MENTS.—Not later than 180 days after the date of the
5 enactment of this Act, the Administrator and the Sec-
6 retary shall jointly prepare and transmit to the appro-
7 priate congressional committees a report on the Environ-
8 mental Protection Agency Office of Air and Radiation pro-
9 grams authorized under this Act, all programs of the Of-
10 fice of Energy Efficiency and Renewable Energy, and any
11 programs of other appropriate offices of the Department
12 that may duplicate the programs of those 2 offices, that
13 delineates the similarities and differences between the pro-
14 grams. Such report shall also provide for an independent,
15 peer-reviewed assessment of the performance goals of
16 these programs, the progress being made in meeting those
17 goals, and the accomplishments of these programs.

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