

national laboratories, and professional and technical societies.

**(c) Proposals**

Within 1 year after October 24, 1992, the Secretary shall solicit proposals for conducting activities under this section.

**(d) "Alternative fuels" defined**

For purposes of this part, the term "alternative fuels" includes natural gas, liquefied petroleum gas, hydrogen, fuels other than alcohol that are derived from biological materials, and any fuel the content of which is at least 85 percent by volume methanol, ethanol, or other alcohol.

**(e) Authorization of appropriations**

(1) There are authorized to be appropriated to the Secretary for carrying out this part, including all transportation sector energy conservation research and development (other than activities under section 13435 of this title) and all transportation sector biofuels energy systems under solar energy, \$119,144,000 for fiscal year 1993 and \$160,000,000 for fiscal year 1994.

(2) There are authorized to be appropriated to the Secretary for carrying out section 13435 of this title—

- (A) \$60,300,000 for fiscal year 1993;
- (B) \$75,000,000 for fiscal year 1994;
- (C) \$80,000,000 for fiscal year 1995;
- (D) \$80,000,000 for fiscal year 1996;
- (E) \$90,000,000 for fiscal year 1997; and
- (F) \$100,000,000 for fiscal year 1998.

(Pub. L. 102-486, title XX, §2021, Oct. 24, 1992, 106 Stat. 3061.)

**§ 13432. Advanced automotive fuel economy**

**(a) Program direction**

The Secretary shall conduct a program, in accordance with sections 13541 and 13542 of this title, to supplement ongoing research activities of a similar nature at the Department of Energy, to accelerate the near-term and mid-term development of advanced technologies to improve the fuel economy of light-duty passenger vehicles powered by a piston engine, and hybrid vehicles powered by a combination of piston engine and electric motor.

**(b) Program goal**

The goal of the program established under subsection (a) shall be to stimulate the development of emerging technologies with the potential to achieve significant improvements in fuel economy while reducing emissions of air pollutants.

**(c) Proposals**

Within 1 year after October 24, 1992, the Secretary shall solicit proposals for conducting activities under this section, making a special effort to involve small businesses in the program.

(Pub. L. 102-486, title XX, §2022, Oct. 24, 1992, 106 Stat. 3061.)

**§ 13433. Alternative fuel vehicle program**

**(a) Program direction**

The Secretary shall carry out a program, in accordance with sections 13541 and 13542 of this

title, on techniques related to improving natural gas and other alternative fuel vehicle technology, including—

- (1) fuel injection;
- (2) carburetion;
- (3) manifolding;
- (4) combustion;
- (5) power optimization;
- (6) efficiency;
- (7) lubricants and detergents;
- (8) engine durability;
- (9) ignition, including fuel additives to assist ignition;
- (10) multifuel engines;
- (11) emissions control, including catalysts;
- (12) novel gas compression concepts;
- (13) advanced storage systems;
- (14) advanced gaseous fueling technologies; and
- (15) the incorporation of advanced materials in these areas.

**(b) Cooperative agreements and assistance**

The Secretary may enter into cooperative agreements with, and provide financial assistance to, public or private entities willing to provide 50 percent of the costs of a program to perform activities under subsection (a).

**(c) Definitions**

For purposes of this section—

- (1) the term "alternative fuel vehicle" means a motor vehicle that operates on alternative fuels; and
- (2) the term "motor vehicle" includes any automobile, truck, bus, van, or other on-road or off-road motor vehicle, including a boat.

(Pub. L. 102-486, title XX, §2023, Oct. 24, 1992, 106 Stat. 3062.)

**§ 13434. Biofuels user facility**

(a) The Secretary shall establish a biofuels user facility to expedite industry adoption of biofuels technologies, including production of alcohol fuels from biomass.

(b) The Secretary, through such universities and colleges as the Secretary determines are qualified, shall establish a program, in accordance with sections 13541 and 13542 of this title, with respect to the production and use of diesel fuels from vegetable oils or animal fats. The program shall investigate—

- (1) the economic feasibility of production of oilseed crops for biofuels purposes; and
- (2) the establishment of a mobile small-scale oilseed pressing and esterification unit and a stationary small-scale commercial oilseed pressing and esterification unit.

(Pub. L. 102-486, title XX, §2024, Oct. 24, 1992, 106 Stat. 3062.)

**§ 13435. Electric motor vehicles and associated equipment research and development**

**(a) General**

The Secretary shall conduct, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901-5920), a research and development program on electric motor vehicles and associated equipment. Such program shall be conducted in cooperation with

the electric utility industry, and automobile industry, battery manufacturers, and such other persons as the Secretary considers appropriate.

**(b) Comprehensive plan**

(1) The Secretary shall prepare a comprehensive 5-year program plan for carrying out the purposes of this section. Such comprehensive plan shall be updated biennially for a period of not less than 10 years after October 24, 1992.

(2) The comprehensive plan under paragraph (1) shall be prepared in consultation with the Administrator of the Environmental Protection Agency, the Secretary of Transportation, the Secretary of Commerce, the heads of other appropriate Federal agencies, representatives of the electric utility industry, electric motor vehicle manufacturers, the United States automobile industry, and such other persons as the Secretary considers appropriate.

(3) The comprehensive plan shall include—

(A) a prioritization of research areas critical to the commercialization of electric motor vehicles, including advanced battery technology;

(B) the program elements, management structure, and activities, including program responsibilities, of Federal agencies;

(C) the program strategies, including technical milestones to be achieved toward specific goals during each fiscal year of the comprehensive plan for all major activities and projects;

(D) the estimated costs of individual program elements, including estimated costs for each of the fiscal years of the comprehensive plan for each of the participating Federal agencies;

(E) a description of the methods of technology transfer;

(F) a proposal for participation by non-Federal entities in the implementation of the comprehensive plan; and

(G) such other information as the Secretary considers appropriate.

(4) Not later than 180 days after October 24, 1992, the Secretary shall transmit the comprehensive plan to the Congress. Biennial updates shall be submitted to the Congress.

**(c) Cooperative agreements**

The Secretary, consistent with the comprehensive plan under subsection (b), may enter into cooperative agreements to conduct research and development projects with industry in such areas of technology development as—

(1) high efficiency electric power trains, including advanced motors, motor controllers, and hybrid power trains for electric motor vehicle range improvement;

(2) light-weight structures for electric motor vehicle weight reduction;

(3) advanced batteries with high energy density and power density, and improved range or recharging cycles for a given unit weight, for electric motor vehicle application;

(4) hybrid power trains incorporating an electric motor and recyclable battery charged by an onboard liquid fuel engine, designed to significantly improve fuel economies while maintaining acceleration characteristics comparable to a conventionally fueled vehicle;

(5) batteries and fuel cells for electric-hybrid vehicle application;

(6) fuel cells and fuel cell systems for primary electric motor vehicle power sources; and

(7) photovoltaics for use with electric motor vehicles.

**(d) Solicitation of proposals**

(1) Within one year after October 24, 1992, the Secretary shall solicit proposals for cooperative agreements for research and development under subsection (c).

(2) Thereafter, the Secretary may solicit additional proposals for cooperative agreements under subsection (c) if, in the judgment of the Secretary, such cooperative agreements could contribute to the development of electric motor vehicles and associated equipment.

**(e) Cost-sharing**

(1) The Secretary shall require at least 50 percent of the costs directly and specifically related to any cooperative agreement under this section, other than a cooperative agreement under subsection (j), to be from non-Federal sources. Such share may be in the form of cash, personnel, services, equipment, and other resources.

(2) The Secretary may reduce the amount of costs required to be provided by non-Federal sources under paragraph (1), if the Secretary determines that the reduction is necessary and appropriate—

(A) considering the technological risks involved in the project; and

(B) in order to meet the objectives of this section.

**(f) Deployment**

(1) The Secretary shall conduct a program designed to accelerate deployment of advanced battery technologies for use with electric motor vehicles.

(2) In carrying out the program authorized by this subsection, the Secretary shall—

(A) undertake an inventory and assessment of advanced battery technologies and electric motor vehicle technologies and the commercial capability of such technologies; and

(B) develop a Federal industry information exchange program to improve the deployment or use of such technologies, which may consist of workshops, publications, conferences, and a data base for use by the public and private sectors.

**(g) Domestic parts manufacturers**

In carrying out this section, the Secretary, in consultation with the Secretary of Commerce, shall issue regulations to ensure that the procurement practices of participating electric motor vehicle and associated equipment manufacturers do not discriminate against the United States manufacturers of vehicle parts.

**(h) Hold harmless**

Nothing in this section shall be construed to alter, affect, modify, or change any activities or agreements initiated prior to October 24, 1992, with domestic motor vehicle manufacturers through joint venture or consortium agreements regarding batteries for electric motor vehicles.

**(i) Consultation**

The Secretary shall consult with the Administrator of the Environmental Protection Agency and the Secretary of Transportation in carrying out this section.

**(j) Fuel cells for transportation**

(1) The Secretary shall develop and implement a comprehensive program of research, development, and demonstration of fuel cells and related systems for transportation applications through the establishment of one or more cooperative programs among industry, government, and research institutions to develop and demonstrate the use of fuel cells as the primary power source for private and mass transit vehicles and other mobile applications.

(2) Research, development, and demonstration activities under this subsection shall be designed to incorporate one or more of the following priorities:

(A) The potential for near-term to mid-term commercialization.

(B) The ability of the systems to use a variety of renewable and nonfossil fuels.

(C) Emission reduction and energy conservation potential.

(D) The potential to utilize fuel cells and fuel cell systems developed under Department of Defense and National Aeronautics and Space Administration programs.

(E) The potential to take maximum practical advantage of advances made in electric motor vehicle research, stationary source fuel cell research, and other research activities authorized by this subchapter.

(3)(A) Research, development, and demonstration projects selected by the Secretary under this subsection shall apply to—

- (i) passenger vehicles;
- (ii) vans and utility vehicles;
- (iii) light rail systems and locomotives;
- (iv) trucks, including long-haul trucks, dump trucks, and garbage trucks;
- (v) passenger buses;
- (vi) non-chlorofluorocarbon mobile refrigeration systems;
- (vii) marine vessels, including recreational marine engines; or
- (viii) mobile engines and power generation, including recreational generators, and industrial and construction equipment.

(B) The Secretary shall establish programs to undertake research, development, and demonstration activities for the applications listed in clauses (i) through (viii) of subparagraph (A) in each of fiscal years 1993, 1994, 1995, and 1996, based on the priorities established in paragraph (2), so that by the end of the period, research, development, and demonstration activities are under way for the applications under each such clause. The initiatives authorized and implemented pursuant to this subsection shall be in addition to any other fuel cell programs authorized in existing law.

**(k) Definitions**

For purposes of this section—

(1) the term “advanced battery technology” means electrochemical storage devices and

systems, including fuel cells, and associated technology necessary to charge, discharge, recharge, or regenerate such devices, for use as a source of power for an electric motor vehicle and any other associated equipment;

(2) the term “associated equipment” means equipment necessary for the regeneration, refueling, or recharging of batteries or other forms of electric energy used to power an electric motor vehicle and, in the case of electric-hybrid vehicles, such term includes nonpetroleum-related equipment necessary for, and solely related to, the demonstration of such vehicles;

(3) the term “electric motor vehicle” means a motor vehicle primarily powered by an electric motor that draws current from rechargeable storage batteries, fuel cells, photovoltaic arrays, or other sources of electric current and may include an electric-hybrid vehicle; and

(4) the term “electric-hybrid vehicle” means vehicle primarily powered by an electric motor that draws current from rechargeable storage batteries, fuel cells, or other sources of electric current and also relies on a non-electric source of power that also operates on or is capable of operating on a nonelectrical source of power.

(Pub. L. 102-486, title XX, § 2025, Oct. 24, 1992, 106 Stat. 3063; Pub. L. 105-362, title IV, § 402(a), Nov. 10, 1998, 112 Stat. 3283.)

**Editorial Notes**

## REFERENCES IN TEXT

The Federal Nonnuclear Energy Research and Development Act of 1974, referred to in subsec. (a), is Pub. L. 93-577, Dec. 31, 1974, 88 Stat. 1878, which is classified generally to chapter 74 (§5901 et seq.) of this title. For complete classification of this Act to the Code, see Short Title note set out under section 5901 of this title and Tables.

## AMENDMENTS

1998—Subsec. (b)(1). Pub. L. 105-362, § 402(a)(1), substituted “biennially” for “annually” in second sentence.

Subsec. (b)(4). Pub. L. 105-362, § 402(a)(2), substituted “Biennial updates” for “Annual updates” in second sentence.

**§ 13436. Repealed. Pub. L. 104-271, title I, § 103(b)(2), Oct. 9, 1996, 110 Stat. 3306**

Section, Pub. L. 102-486, title XX, § 2026, Oct. 24, 1992, 106 Stat. 3066; Pub. L. 104-271, title I, § 103(b)(1), Oct. 9, 1996, 110 Stat. 3306, related to a 5-year program on renewable hydrogen energy systems.

**Statutory Notes and Related Subsidiaries**

## EFFECTIVE DATE OF REPEAL

Pub. L. 104-271, title I, § 103(b)(2), Oct. 9, 1996, 110 Stat. 3306, provided that the repeal made by section 103(b)(2) is effective Oct. 1, 1998.

**§ 13437. Advanced diesel emissions program****(a) Program direction**

The Secretary shall initiate a 5-year program, in accordance with sections 13541 and 13542 of this title, on diesel engine combustion and engine systems, related advanced materials, and fuels and lubricants to reduce emissions oxides