

(4) increasing understanding of engineering issues concerning the design and scale-up of oil shale extraction and conversion technologies;

(5) improving techniques for oil shale mining systems; and

(6) providing for cooperation with universities and other private sector entities.

(c) Eastern oil shale program

(1) As part of the program authorized by this section, the Secretary shall carry out a program on oil shale that includes applied research, in cooperation with universities and the private sector, on eastern oil shale that may have the potential to decrease United States dependence on energy imports.

(2) As part of the program authorized by this subsection, the Secretary shall consider the potential benefits of including in that program applied research carried out in cooperation with universities and other private sector entities that are, as of October 24, 1992, engaged in research on eastern oil shale retorting and associated processes.

(3) The program carried out under this subsection shall be cost-shared with universities and the private sector to the maximum extent possible.

(d) Western oil shale program

As part of the program authorized by this section, the Secretary shall carry out a program on extracting oil from western oil shales that includes, if appropriate, establishment and utilization of at least one field testing center for the purpose of testing, evaluating, and developing improvements in oil shale technology at the field test level. In establishing such a center, the Secretary shall consider sites with existing oil shale mining and processing infrastructure and facilities. Sixty days prior to establishing any such field testing center, the Secretary shall submit a report to Congress on the center to be established.

(e) Authorization of appropriations

There are authorized to be appropriated to the Secretary for carrying out this section \$5,250,000 for fiscal year 1993 and \$6,000,000 for fiscal year 1994.

(Pub. L. 102-486, title XX, §2012, Oct. 24, 1992, 106 Stat. 3058.)

§ 13413. Natural gas supply

(a) Program direction

The Secretary shall conduct a 5-year program, in accordance with sections 13541 and 13542 of this title, to increase the recoverable natural gas resource base including, but not limited to—

(1) more intensive recovery of natural gas from discovered conventional resources;

(2) the extraction of natural gas from tight gas sands and devonian shales or other unconventional sources;

(3) surface gasification of coal; and

(4) recovery of methane from biofuels including municipal solid waste.

(b) Proposals

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

(c) Cofiring of natural gas and coal

(1) Program

The Secretary shall establish and carry out a 5-year program, in accordance with sections 13541 and 13542 of this title, on cofiring natural gas with coal in utility and large industrial boilers in order to determine optimal natural gas injection levels for both environmental and operational benefits.

(2) Financial assistance

The Secretary shall enter into agreements with, and provide financial assistance to, appropriate parties for application of cofiring technologies to boilers to demonstrate this technology.

(3) Report to Congress

The Secretary shall, before December 31, 1995, submit to the Congress a report on the progress made in carrying out this subsection.

(d) Authorization of appropriations

There are authorized to be appropriated to the Secretary for carrying out this section and sections 13414 and 13415 of this title, \$29,745,000 for fiscal year 1993 and \$45,000,000 for fiscal year 1994.

(Pub. L. 102-486, title XX, §2013, Oct. 24, 1992, 106 Stat. 3059.)

§ 13414. Natural gas end-use technologies

The Secretary shall carry out a 5-year program, in accordance with sections 13541 and 13542 of this title, on new and advanced natural gas utilization technologies including, but not limited to—

(1) stationary source emissions control and efficiency improvements including combustion systems, industrial processes, cogeneration, and waste fuels; and

(2) natural gas storage including increased deliverability from existing gas storage facilities and new capabilities for storage near demand centers, and on-site storage at major energy consuming facilities.

(Pub. L. 102-486, title XX, §2014, Oct. 24, 1992, 106 Stat. 3060.)

§ 13415. Midcontinent Energy Research Center

(a) Finding

Congress finds that petroleum resources in the midcontinent region of the United States are very large but are being prematurely abandoned.

(b) Purposes

The purposes of this section are to—

(1) improve the efficiency of petroleum recovery;

(2) increase ultimate petroleum recovery; and

(3) delay the abandonment of resources.

(c) Establishment

The Secretary may establish the Midcontinent Energy Research Center (referred to in this section as the “Center”) to—

(1) conduct research in petroleum geology and engineering focused on improving the recovery of petroleum from existing fields and

established plays in the upper midcontinent region of the United States; and

(2) ensure that the results of the research described in paragraph (1) are transferred to users.

(d) Research

(1) In general

In conducting research under this section, the Center shall, to the extent practicable, cooperate with agencies of the Federal Government, the States in the midcontinent region of the United States, and the affected industry.

(2) Programs

Research programs conducted by the Center may include—

- (A) data base development and transfer of technology;
- (B) reservoir management;
- (C) reservoir characterization;
- (D) advanced recovery methods; and
- (E) development of new technology.

(Pub. L. 102-486, title XX, §2015, Oct. 24, 1992, 106 Stat. 3060.)

PART B—OIL AND GAS DEMAND REDUCTION AND SUBSTITUTION

§ 13431. General transportation

(a) Program direction

The Secretary shall conduct a 5-year program, in accordance with sections 13541 and 13542 of this title, on cost effective technologies to reduce the demand for oil in the transportation sector for all motor vehicles, including existing vehicles, through increased energy efficiency and the use of alternative fuels. Such program shall include a broad range of technological approaches, and shall include field demonstrations of sufficient scale and number in operating environments to prove technical and economic viability to meet the goals stated in section 13401 of this title. Such program shall include the activities required under sections 13432 through 13437 of this title, and ongoing activities of a similar nature at the Department of Energy.

(b) Program plan

Within 180 days after October 24, 1992, the Secretary shall prepare and submit to the Congress a 5-year program plan to guide activities under this part. In preparing the program plan, the Secretary shall consult with appropriate representatives of industry, utilities, institutions of higher education, Federal agencies, including 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;