

(3) lead to the replication of hydrogen technologies and draw such technologies into the marketplace;

(4) include vehicle, portable, and stationary demonstrations of fuel cell and hydrogen-based energy technologies;

(5) address the interdependency of demand for hydrogen fuel cell applications and hydrogen fuel infrastructure;

(6) raise awareness of hydrogen technology among the public;

(7) facilitate identification of an optimum technology among competing alternatives;

(8) address distributed generation using renewable sources;

(9) carry out demonstrations of evolving hydrogen and fuel cell technologies in national parks, remote island areas, and on Indian tribal land, as selected by the Secretary;

(10) carry out a program to demonstrate developmental hydrogen and fuel cell systems for mobile, portable, and stationary uses, using improved versions of the learning demonstrations program concept of the Department including demonstrations involving—

(A) light-duty vehicles;

(B) heavy-duty vehicles;

(C) fleet vehicles;

(D) specialty industrial and farm vehicles; and

(E) commercial and residential portable, continuous, and backup electric power generation;

(11) in accordance with any code or standards developed in a region, fund prototype, pilot fleet, and infrastructure regional hydrogen supply corridors along the interstate highway system in varied climates across the United States; and

(12) fund demonstration programs that explore the use of hydrogen blends, hybrid hydrogen, and hydrogen reformed from renewable agricultural fuels, including the use of hydrogen in hybrid electric, heavier duty, and advanced internal combustion-powered vehicles.

The Secretary shall give preference to projects which address multiple elements contained in paragraphs (1) through (12).

(b) System demonstrations

(1)¹ In general

As a component of the demonstration program under this section, the Secretary shall provide grants, on a cost share basis as appropriate, to eligible entities (as determined by the Secretary) for use in—

(A) devising system design concepts that provide for the use of advanced composite vehicles in programs under section 16122 of this title that—

(i) have as a primary goal the reduction of drive energy requirements;

(ii) after 2010, add another research and development phase, as defined in subsection (c), including the vehicle and infrastructure partnerships developed under the learning demonstrations program concept of the Department; and

(iii) are managed through an enhanced FreedomCAR program within the Department that encourages involvement in cost-shared projects by manufacturers and governments; and

(B) designing a local distributed energy system that—

(i) incorporates renewable hydrogen production, off-grid electricity production, and fleet applications in industrial or commercial service;

(ii) integrates energy or applications described in clause (i), such as stationary, portable, micro, and mobile fuel cells, into a high-density commercial or residential building complex or agricultural community; and

(iii) is managed in cooperation with industry, State, tribal, and local governments, agricultural organizations, and nonprofit generators and distributors of electricity.

(c) Identification of new program requirements

In carrying out the demonstrations under subsection (a), the Secretary, in consultation with the Task Force and the Technical Advisory Committee, shall—

(1) after 2008 for stationary and portable applications, and after 2010 for vehicles, identify new requirements that refine technological concepts, planning, and applications; and

(2) during the second phase of the learning demonstrations under subsection (b)(1)(A)(ii), redesign subsequent program work to incorporate those requirements.

(d) Authorization of appropriations

There are authorized to be appropriated to carry out this section—

(1) \$185,000,000 for fiscal year 2006;

(2) \$200,000,000 for fiscal year 2007;

(3) \$250,000,000 for fiscal year 2008;

(4) \$300,000,000 for fiscal year 2009;

(5) \$375,000,000 for fiscal year 2010; and

(6) such sums as are necessary for each of fiscal years 2011 through 2020.

(Pub. L. 109-58, title VIII, §808, Aug. 8, 2005, 119 Stat. 850.)

§ 16158. Codes and standards

(a) In general

The Secretary, in cooperation with the Task Force, shall provide grants to, or offer to enter into contracts with, such professional organizations, public service organizations, and government agencies as the Secretary determines appropriate to support timely and extensive development of safety codes and standards relating to fuel cell vehicles, hydrogen energy systems, and stationary, portable, and micro fuel cells.

(b) Educational efforts

The Secretary shall support educational efforts by organizations and agencies described in subsection (a) to share information, including information relating to best practices, among those organizations and agencies.

(c) Authorization of appropriations

There are authorized to be appropriated to carry out this section—

¹ So in original. No par. (2) has been enacted.

- (1) \$4,000,000 for fiscal year 2006;
- (2) \$7,000,000 for fiscal year 2007;
- (3) \$8,000,000 for fiscal year 2008;
- (4) \$10,000,000 for fiscal year 2009;
- (5) \$9,000,000 for fiscal year 2010; and
- (6) such sums as are necessary for each of fiscal years 2011 through 2020.

(Pub. L. 109–58, title VIII, § 809, Aug. 8, 2005, 119 Stat. 851.)

§ 16159. Disclosure

Section 13293 of this title shall apply to any project carried out through a grant, cooperative agreement, or contract under this subchapter.

(Pub. L. 109–58, title VIII, § 810, Aug. 8, 2005, 119 Stat. 852.)

§ 16160. Reports

(a) Secretary

Subject to subsection (c), not later than 2 years after August 8, 2005, and triennially thereafter, the Secretary shall submit to Congress a report describing—

- (1) activities carried out by the Department under this subchapter,¹ for hydrogen and fuel cell technology;
- (2) measures the Secretary has taken during the preceding 3 years to support the transition of primary industry (or a related industry) to a fully commercialized hydrogen economy;
- (3) any change made to the strategy relating to hydrogen and fuel cell technology to reflect the results of a learning demonstrations;
- (4) progress, including progress in infrastructure, made toward achieving the goal of producing and deploying not less than—
 - (A) 100,000 hydrogen-fueled vehicles in the United States by 2010; and
 - (B) 2,500,000 hydrogen-fueled vehicles in the United States by 2020;
- (5) progress made toward achieving the goal of supplying hydrogen at a sufficient number of fueling stations in the United States by 2010 including by integrating—
 - (A) hydrogen activities; and
 - (B) associated targets and timetables for the development of hydrogen technologies;
- (6) any problem relating to the design, execution, or funding of a program under this subchapter;
- (7) progress made toward and goals achieved in carrying out this subchapter and updates to the developmental roadmap, including the results of the reviews conducted by the National Academy of Sciences under subsection (b) for the fiscal years covered by the report; and
- (8) any updates to strategic plans that are necessary to meet the goals described in paragraph (4).

(b) External review

The Secretary shall enter into an arrangement with the National Academy of Sciences under which the Academy will review the programs under sections 16154 and 16157 of this title every fourth year following August 8, 2005. The Acad-

emy's review shall include the program priorities and technical milestones, and evaluate the progress toward achieving them. The first review shall be completed not later than 5 years after August 8, 2005. Not later than 45 days after receiving the review, the Secretary shall transmit the review to Congress along with a plan to implement the review's recommendations or an explanation for the reasons that a recommendation will not be implemented.

(c) Authorization of appropriations

There is authorized to be appropriated to carry out this section \$1,500,000 for each of fiscal years 2006 through 2020.

(Pub. L. 109–58, title VIII, § 811, Aug. 8, 2005, 119 Stat. 852.)

§ 16161. Solar and wind technologies

(a) Solar energy technologies

The Secretary shall—

(1) prepare a detailed roadmap for carrying out the provisions in this subchapter related to solar energy technologies and for implementing the recommendations related to solar energy technologies that are included in the report transmitted under subsection (e);

(2) provide for the establishment of 5 projects in geographic areas that are regionally and climatically diverse to demonstrate the production of hydrogen at solar energy facilities, including one demonstration project at a National Laboratory or institution of higher education;

(3) establish a program—

(A) to develop optimized concentrating solar power devices that may be used for the production of both electricity and hydrogen; and

(B) to evaluate the use of thermochemical cycles for hydrogen production at the temperatures attainable with concentrating solar power devices;

(4) coordinate with activities sponsored by the Department's Office of Nuclear Energy, Science, and Technology on high-temperature materials, thermochemical cycles, and economic issues related to solar energy;

(5) provide for the construction and operation of new concentrating solar power devices or solar power cogeneration facilities that produce hydrogen either concurrently with, or independently of, the production of electricity;

(6) support existing facilities and programs of study related to concentrating solar power devices; and

(7) establish a program—

(A) to develop methods that use electricity from photovoltaic devices for the onsite production of hydrogen, such that no intermediate transmission or distribution infrastructure is required or used and future demand growth may be accommodated;

(B) to evaluate the economics of small-scale electrolysis for hydrogen production; and

(C) to study the potential of modular photovoltaic devices for the development of a hydrogen infrastructure, the security impli-

¹ So in original. The comma probably should not appear.