(A) the demonstration of a wide variety of lignocellulosic feedstocks;

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

(i) liquid transportation fuels;

(ii) high-value biobased chemicals;

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

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

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

(2) Proposals

Not later than 6 months after August 8, 2005, the Secretary shall solicit proposals for demonstration of advanced biorefineries. The Secretary shall select only proposals that—

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

(B) enable the biorefinery to be easily replicated.

(e) University biodiesel program

The Secretary shall establish a demonstration program to determine the feasibility of the operation of diesel electric power generators, using biodiesel fuels with ratings as high as B100, at electric generation facilities owned by institutions of higher education. The program shall examine—

(1) heat rates of diesel fuels with large quantities of cellulosic content;

(2) the reliability of operation of various fuel blends;

(3) performance in cold or freezing weather;

(4) stability of fuel after extended storage; and

(5) other criteria, as determined by the Secretary.

(g)[1] Biorefinery energy efficiency

The Secretary shall establish a program of research, development, demonstration, and commercial application for increasing energy efficiency and reducing energy consumption in the operation of biorefinery facilities.

(h) Retrofit technologies for the development of ethanol from cellulosic materials

The Secretary shall establish a program of research, development, demonstration, and commercial application on technologies and processes to enable biorefineries that exclusively use corn grain or corn starch as a feedstock to produce ethanol to be retrofitted to accept a range of biomass, including lignocellulosic feedstocks.

(Pub. L. 109–58, title IX, §932, Aug. 8, 2005, 119 Stat. 870; Pub. L. 110–140, title II, §224, Dec. 19, 2007, 121 Stat. 1533.)

Editorial Notes

AMENDMENTS

2007—Subsecs. (g), (h). Pub. L. 110–140 added subsecs. (g) and (h).

[1] So in original. No subsec. (f) has been enacted.

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2007 AMENDMENT

Amendment by Pub. L. 110–140 effective on the date that is 1 day after Dec. 19, 2007, see section 1601 of Pub. L. 110–140, set out as an Effective Date note under section 1824 of Title 2, The Congress.

§16233. Low-cost renewable hydrogen and infrastructure for vehicle propulsion

The Secretary shall—

(1) establish a research, development, and demonstration program to determine the feasibility of using hydrogen propulsion in lightweight vehicles and the integration of the associated hydrogen production infrastructure using off-the-shelf components; and

(2) identify universities and institutions that—

(A) have expertise in researching and testing vehicles fueled by hydrogen, methane, and other fuels;

(B) have expertise in integrating off-the-shelf components to minimize cost; and

(C) within 2 years can test a vehicle based on an existing commercially available platform with a curb weight of not less than 2,000 pounds before modifications, that—

(i) operates solely on hydrogen;

(ii) qualifies as a light-duty passenger vehicle; and

(iii) uses hydrogen produced from water using only solar energy.

(Pub. L. 109–58, title IX, §933, Aug. 8, 2005, 119 Stat. 872.)

§16234. Concentrating solar power research program

(a) In general

The Secretary shall conduct a program of research and development to evaluate the potential for concentrating solar power for hydrogen production, including cogeneration approaches for both hydrogen and electricity.

(b) Administration

The program shall take advantage of existing facilities to the extent practicable and shall include—

(1) development of optimized technologies that are common to both electricity and hydrogen production;

(2) evaluation of thermochemical cycles for hydrogen production at the temperatures attainable with concentrating solar power;

(3) evaluation of materials issues for the thermochemical cycles described in paragraph (2);

(4) cogeneration of solar thermal electric power and photo-synthetic-based hydrogen production;

(5) system architectures and economics studies; and

(6) coordination with activities under the Next Generation Nuclear Plant Project established under part B of subchapter VI on high temperature materials, thermochemical cycles, and economic issues.

(c) Assessment

In carrying out the program under this section, the Secretary shall—

(1) assess conflicting guidance on the economic potential of concentrating solar power for electricity production received from the National Research Council in the report entitled ''Renewable Power Pathways: A Review of the U.S. Department of Energy's Renewable Energy Programs'' and dated 2000 and subsequent reviews of that report funded by the Department; and

(2) provide an assessment of the potential impact of technology used to concentrate solar power for electricity before, or concurrent with, submission of the budget for fiscal year 2008.

(d) Report

Not later than 5 years after August 8, 2005, the Secretary shall provide to Congress a report on the economic and technical potential for electricity or hydrogen production, with or without cogeneration, with concentrating solar power, including the economic and technical feasibility of potential construction of a pilot demonstration facility suitable for commercial production of electricity or hydrogen from concentrating solar power.

(Pub. L. 109–58, title IX, § 934, Aug. 8, 2005, 119 Stat. 872.)

§ 16235. Renewable energy in public buildings

(a) Demonstration and technology transfer program

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

(b) Limit on Federal funding

Notwithstanding section 16352 of this title, the Secretary shall provide under this section no more than 40 percent of the incremental costs of the solar or other renewable energy source project funded.

(c) Requirements

As part of the application for awards under this section, the Secretary shall require all applicants—

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

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

(Pub. L. 109–58, title IX, § 935, Aug. 8, 2005, 119 Stat. 873.)

§ 16236. Research and development into integrating renewable energy onto the electric grid

(a) In general

Not later than 180 days after December 27, 2020, the Secretary shall establish a research, development, and demonstration program on technologies that enable integration of renewable energy generation sources onto the electric grid across multiple program offices of the Department. The program shall include—

(1) forecasting for predicting generation from variable renewable energy sources;

(2) development of cost-effective low-loss, long-distance transmission lines; and

(3) development of cost-effective advanced technologies for variable renewable generation sources to provide grid services.

(b) Coordination

In carrying out this program, the Secretary shall coordinate across all relevant program offices at the Department to achieve the goals established in this section, including the Office of Electricity.

(c) Adoption of technologies

In carrying out this section, the Secretary shall consider barriers to adoption and commercial application of technologies that enable integration of renewable energy sources onto the electric grid, including cost and other economic barriers, and shall coordinate with relevant entities to reduce these barriers.

(Pub. L. 109–58, title IX, § 936, as added Pub. L. 116–260, div. Z, title VIII, § 8004(b), Dec. 27, 2020, 134 Stat. 2583.)

§ 16237. Wind energy research and development

(a) Definitions

In this section:

(1) Critical material

The term ''critical material'' has the meaning given the term in section 1606 of title 30.

(2) Economically distressed area

The term ''economically distressed area'' means an area described in section 3161(a) of this title.

(3) Eligible entity

The term ''eligible entity'' means—

(A) an institution of higher education, including a minority-serving institution;

(B) a National Laboratory;

(C) a Federal research agency;

(D) a State research agency;

(E) a research agency associated with a territory or freely associated state;

(F) a Tribal energy development organization;

(G) an Indian Tribe;

(H) a Tribal organization;

(I) a Native Hawaiian community-based organization;

(J) a nonprofit research organization;

(K) an industrial entity;

(L) any other entity, as determined by the Secretary; and

(M) a consortium of 2 or more entities described in subparagraphs (A) through (L).

(4) Indian Tribe

The term ''Indian Tribe'' has the meaning given the term in section 5304 of title 25.

(5) Institution of higher education

The term ''institution of higher education'' means—

(A) an institution of higher education (as defined in section 1001(a) of title 20); or