(2) biomass; and
(3) geothermal energy systems.

(f) Analysis and evaluation

(1) In general

The Secretary shall conduct analysis and evaluation in support of the renewable energy programs under this part. These activities shall be used to guide budget and program decisions, and shall include—

(A) economic and technical analysis of renewable energy potential, including resource assessment;

(B) analysis of past program performance, both in terms of technical advances and in market introduction of renewable energy; and

(C) any other analysis or evaluation that the Secretary considers appropriate.

(2) Funding

The Secretary may designate up to 1 percent of the funds appropriated for carrying out this part for analysis and evaluation activities under this subsection.

(Pub. L. 109–58, title IX, § 931, Aug. 8, 2005, 119 Stat. 868; Pub. L. 110–140, title II, § 231, Dec. 19, 2007, 121 Stat. 1536; Pub. L. 116–260, div. Z, title III, § 3006(b)(3), Dec. 27, 2020, 134 Stat. 2512.)

Editorial Notes

AMENDMENTS

2020—Subsec. (a)(2). Pub. L. 116–260, § 3006(b)(3)(A)(i), (ii), redesignated subpars. (C) to (E) as (A) to (C), respectively, and struck out former subpars. (A) and (B) which related to solar and wind energy programs.

Subsecs. (d) to (g). Pub. L. 116–260, § 3006(b)(3)(B), (C), redesignated subsecs. (e) to (g) as (d) to (f), respectively, and struck out former subsec. (d) which related to solar power.

2007—Subsec. (b)(4). Pub. L. 110–140, § 231(1), added par. (4).

Subsec. (c)(2) to (4). Pub. L. 110–140, § 231(2), in par. (2), substituted ''$377,000,000'' for ''$251,000,000'', in par. (3), substituted ''$398,000,000'' for ''$274,000,000'', and added par. (4).

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.

§ 16232. Bioenergy program

(a) Definitions

In this section:

(1) Biomass

The term ''biomass'' means—

(A) any organic material grown for the purpose of being converted to energy;

(B) any organic byproduct of agriculture (including wastes from food production and processing) that can be converted into energy; or

(C) any waste material that can be converted to energy, is segregated from other waste materials, and is derived from—

(i) any of the following forest-related resources: mill residues, precommercial thinnings, slash, brush, or otherwise nonmerchantable material; or

(ii) wood waste materials, including waste pallets, crates, dunnage, manufacturing and construction wood wastes (other than pressure-treated, chemically-treated, or painted wood wastes), and landscape or right-of-way tree trimmings, but not including municipal solid waste, gas derived from the biodegradation of municipal solid waste, or paper that is commonly recycled.

(2) Lignocellulosic feedstock

The term ''lignocellulosic feedstock'' means any portion of a plant or coproduct from conversion, including crops, trees, forest residues, and agricultural residues not specifically grown for food, including from barley grain, grapeseed, rice bran, rice hulls, rice straw, soybean matter, and sugarcane bagasse.

(b) Program

The Secretary shall conduct a program of research, development, demonstration, and commercial application for bioenergy, including—

(1) biopower energy systems;
(2) biofuels;
(3) bioproducts;
(4) integrated biorefineries that may produce biopower, biofuels, and bioproducts;
(5) cross-cutting research and development in feedstocks; and
(6) economic analysis.

(c) Biofuels and bioproducts

The goals of the biofuels and bioproducts programs shall be to develop, in partnership with industry and institutions of higher education—

(1) advanced biochemical and thermochemical conversion technologies capable of making fuels from lignocellulosic feedstocks that are price-competitive with gasoline or diesel in either internal combustion engines or fuel cell-powered vehicles;

(2) advanced biotechnology processes capable of making biofuels and bioproducts with emphasis on development of biorefinery technologies using enzyme-based processing systems;

(3) advanced biotechnology processes capable of increasing energy production from lignocellulosic feedstocks, with emphasis on reducing the dependence of industry on fossil fuels in manufacturing facilities; and

(4) other advanced processes that will enable the development of cost-effective bioproducts, including biofuels.

(d) Integrated biorefinery demonstration projects

(1) In general

The Secretary shall carry out a program to demonstrate the commercial application of integrated biorefineries. The Secretary shall ensure geographical distribution of biorefinery demonstrations under this subsection. The Secretary shall not provide more than $100,000,000 under this subsection for any single biorefinery demonstration. In making awards under this subsection, the Secretary shall encourage—

(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—