(i) other Department activities, including those carried out by the Office of Science;

(ii) the Director of the National Institute of Standards and Technology;

(iii) the Administrator of the Environmental Protection Agency;

(iv) the Secretary of the Interior; and

(v) relevant industry stakeholders, as determined by the Secretary.

(6) Wind energy program strategic vision

(A) In general

Not later than September 1, 2022, and every 6 years thereafter, the Secretary shall submit to Congress a report on the strategic vision, progress, goals, and targets of the program, including assessments of wind energy markets and manufacturing.

(B) Preparation

The Secretary shall coordinate the preparation of the report under subparagraph (A) with—

(i) existing peer review processes;

(ii) studies conducted by the National Laboratories; and

(iii) the multiyear program planning required under section 16358 of this title.

(7) Authorization of appropriations

There is authorized to be appropriated to the Secretary to carry out the program $125,000,000 for each of fiscal years 2021 through 2025.

(Pub. L. 116–260, div. Z, title III, § 3003, Dec. 27, 2020, 134 Stat. 2497.)

Editorial Notes

CODIFICATION

Section was enacted as part of the Energy Act of 2020, and not as part of the Energy Policy Act of 2005 which comprises this chapter.

Statutory Notes and Related Subsidiaries

APPLICATION

Pub. L. 116–260, div. Z, title IX, § 9006(b), Dec. 27, 2020, 134 Stat. 2600, provided that: ''The provisions of section 602 of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3212) shall apply with respect to construction, alteration, or repair work of demonstration projects funded by grants or contracts authorized under sections 3001 [enacting part C of subchapter V of chapter 152 of this title], 3003 [enacting this section], 3004 [enacting section 16238 of this title], 5001 [enacting section 16298d of this title], and 8007 [enacting section 17389 of this title] and the amendments made by such sections.''

§ 16238. Solar 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'' has the meaning given the term in section 1001 of title 20.

(6) Mine land

The term ''mine land'' means—

(A) land subject to titles IV and V of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1231 et seq.; 30 U.S.C. 1251 et seq.); and

(B) land that has been claimed or patented subject to sections 2319 through 2344 of the Revised Statutes (commonly known as the ''Mining Law of 1872'') (30 U.S.C. 22 et seq.).

(7) Minority-serving institution

The term ''minority-serving institution'' has the meaning given the term ''eligible institution'' in section 1067q(a) of title 20.

(8) National Laboratory

The term ''National Laboratory'' has the meaning given such term in section 15801(3) of this title.

(9) Native Hawaiian community-based organization

The term ''Native Hawaiian community-based organization'' has the meaning given the term in section 7517 of title 20.

(10) Photovoltaic device

The term ''photovoltaic device'' means—

(A) a device that converts light directly into electricity through a solid-state, semiconductor process;

(B) the photovoltaic cells of a device described in subparagraph (A); and

(C) the electronic and electrical components of a device described in subparagraph (A).

(11) Program

The term ''program'' means the program established under subsection (b)(1)(A).

(12) Secretary

The term ''Secretary'' means the Secretary of Energy.

(13) Solar energy

The term ''solar energy'' means—

(A) thermal or electric energy derived from radiation from the Sun; or

(B) energy resulting from a chemical reaction caused by radiation recently originated in the Sun.

(14) Territory or freely associated state

The term ''territory or freely associated state'' has the meaning given the term ''insular area'' in section 3103 of title 7.

(15) Tribal energy development organization

The term ''Tribal energy development organization'' has the meaning given the term ''tribal energy development organization'' in section 3501 of title 25.

(16) Tribal organization

The term ''Tribal organization'' has the meaning given the term in section 5304 of title 25.

(b) Solar energy technology program

(1) Establishment

(A) In general

The Secretary shall establish a program to conduct research, development, demonstration, and commercialization of solar energy technologies in accordance with this subsection.

(B) Purposes

The purposes of the program are the following:

(i) To improve the energy efficiency, cost effectiveness, reliability, resilience, security, siting, integration, manufacturability, installation, decommissioning, and recyclability of solar energy technologies.

(ii) To optimize the performance and operation of solar energy components, cells, and systems, and enabling technologies, including through the development of new materials, hardware, and software.

(iii) To optimize the design and adaptability of solar energy systems to the broadest practical range of geographic and atmospheric conditions.

(iv) To support the integration of solar energy technologies with the electric grid and complementary energy technologies.

(v) To create and improve the conversion of solar energy to other useful forms of energy or other products.

(vi) To reduce the cost, risk, and other potential negative impacts across the lifespan of solar energy technologies, including manufacturing, siting, permitting, installation, operations, maintenance, decommissioning, and recycling.

(vii) To reduce and mitigate potential life cycle negative impacts of solar energy technologies on human communities, wildlife, and wildlife habitats.

(viii) To address barriers to the commercialization and export of solar energy technologies.

(ix) To support the domestic solar industry, workforce, and supply chain.

(C) Targets

Not later than 180 days after December 27, 2020, the Secretary shall establish targets for the program to address near-term (up to 2 years), mid-term (up to 7 years), and long-term (up to 15 years) challenges to the advancement of all types of solar energy systems.

(2) Activities

(A) Types of activities

In carrying out the program, the Secretary shall carry out research, development, demonstration, and commercialization activities, including—

(i) awarding grants and awards, on a competitive, merit-reviewed basis;

(ii) performing precompetitive research and development;

(iii) establishing or maintaining demonstration facilities and projects, including through stewardship of existing facilities;

(iv) providing technical assistance;

(v) entering into contracts and cooperative agreements;

(vi) providing small business vouchers;

(vii) establishing prize competitions;

(viii) conducting education and outreach activities;

(ix) conducting workforce development activities; and

(x) conducting analyses, studies, and reports.

(B) Subject areas

The Secretary shall carry out research, development, demonstration, and commercialization activities in the following subject areas:

(i) Advanced solar energy technologies of varying scale and power production, including—

(I) new materials, components, designs, and systems, including perovskites, cadmium telluride, and organic materials;

(II) advanced photovoltaic and thin-film devices;

(III) concentrated solar power;

(IV) solar heating and cooling; and

(V) enabling technologies for solar energy systems, including hardware and software.

(ii) Solar energy technology siting, performance, installation, operations, resilience, and security.

(iii) Integration of solar energy technologies with—

(I) the electric grid, including transmission, distribution, microgrids, and distributed energy systems;

(II) other energy technologies, including—

(aa) other generation sources;

(bb) demand response technologies; and

(cc) energy storage technologies; and

(III) other applications, such as in the agriculture, transportation, buildings, industrial, and fuels sectors.

(iv) Advanced solar energy manufacturing technologies and practices, including materials, processes, and design.

(v) Methods to improve the lifetime, maintenance, decommissioning, recycling, reuse, and sustainability of solar energy components and systems, including technologies and strategies that reduce the use of energy, water, critical materials, and other commodities that are determined to be vulnerable to disruption.

(vi) Solar energy forecasting, modeling, and atmospheric measurement systems, including for small-scale, large-scale, and aggregated systems.

(vii) Integrated solar energy systems that incorporate diverse—

(I) generation sources;

(II) loads; and

(III) storage technologies.

(viii) Reducing market barriers, including nonhardware and information-based barriers, to the adoption of solar energy technologies, including impacts on, or challenges relating to—

(I) distributed and community solar technologies, including the development of best practices, models, and voluntary streamlined processes for local siting and permitting of distributed solar energy systems to reduce costs;

(II) local communities, with special consideration given to economically distressed areas, previously disturbed lands such as landfills and former mines, and other areas disproportionately impacted by environmental pollution;

(III) wildlife and wildlife habitats; and

(IV) any other appropriate matter, as determined by the Secretary.

(ix) Transformational technologies for harnessing solar energy.

(x) Other research areas that advance the purposes of the program, as determined by the Secretary.

(C) Prioritization

In carrying out activities under the program, the Secretary shall, to the maximum extent practicable, give priority to projects that—

(i) are located in a geographically diverse range of eligible entities;

(ii) support the development or demonstration of projects—

(I) in economically distressed areas and areas disproportionately impacted by pollution; or

(II) that provide the greatest potential to reduce energy costs, as well as promote accessibility and community implementation of demonstrated technologies;

(iii) can be replicated in a variety of regions and climates;

(iv) include business commercialization plans that have the potential for—

(I) domestic manufacturing and production of solar energy technologies; or

(II) exports of solar energy technologies;

(v) are carried out in collaboration with Tribal energy development organizations, Indian Tribes, Tribal organizations, Native Hawaiian community-based organizations, minority-serving institutions, or territories or freely associated States; and

(vi) with regards to workforce development, activities that expand the number of individuals from underrepresented groups pursuing and attaining skills relevant to solar energy.

(D) Coordination

To the maximum extent practicable, the Secretary shall coordinate activities under the program with other relevant programs and capabilities of the Department and other Federal research programs.

(E) Use of funds

To the extent that funding is not otherwise available through other Federal programs or power purchase agreements, funding awarded for demonstration projects may be used for additional nontechnology costs, as determined to be appropriate by the Secretary, such as engineering or feasibility studies.

(F) Solicitation

Not less than once every two years, the Secretary shall conduct a national solicitation for applications for demonstration projects under this section.

(3) Advanced solar energy manufacturing initiative

(A) Grants

In addition to the program activities described in paragraph (2), in carrying out the program, the Secretary shall award financial assistance to eligible entities for research, development, demonstration, and commercialization projects to advance new solar energy manufacturing technologies and techniques.

(B) Priority

In awarding grants under subparagraph (A), to the extent practicable, the Secretary shall give priority to solar energy manufacturing projects that—

(i) increase efficiency and cost effectiveness in—

(I) the manufacturing process; and

(II) the use of resources, such as energy, water, and critical materials;

(ii) support domestic supply chains for materials and components;

(iii) identify and incorporate nonhazardous alternative materials for components and devices;

(iv) operate in partnership with Tribal energy development organizations, Indian Tribes, Tribal organizations, Native Hawaiian community-based organizations, minority-serving institutions, or territories or freely associated states; or

(v) are located in economically distressed areas.

(C) Evaluation

Not later than 3 years after December 27, 2020, and every 4 years thereafter, the Sec-

retary shall conduct, and make available to the public and the relevant committees of Congress, an independent review of the progress of the grants awarded under subparagraph (A).

(4) Solar energy technology recycling research, development, and demonstration program

(A) In general

In addition to the program activities described in paragraph (2), in carrying out the program, the Secretary shall award financial assistance to eligible entities for research, development, demonstration, and commercialization projects to create innovative and practical approaches to increase the reuse and recycling of solar energy technologies, including—

(i) by increasing the efficiency and cost effectiveness of the recovery of raw materials from solar energy technology components and systems, including enabling technologies such as inverters;

(ii) by minimizing potential environmental impacts from the recovery and disposal processes;

(iii) by advancing technologies and processes for the disassembly and recycling of solar energy devices;

(iv) by developing alternative materials, designs, manufacturing processes, and other aspects of solar energy technologies and the disassembly and resource recovery process that enable efficient, cost effective, and environmentally responsible disassembly of, and resource recovery from, solar energy technologies; and

(v) strategies to increase consumer acceptance of, and participation in, the recycling of photovoltaic devices.

(B) Dissemination of results

The Secretary shall make available to the public and the relevant committees of Congress the results of the projects carried out through financial assistance awarded under subparagraph (A), including—

(i) development of best practices or training materials for use in the photovoltaics manufacturing, design, installation, refurbishing, disposal, or recycling industries;

(ii) dissemination at industry conferences;

(iii) coordination with information dissemination programs relating to recycling of electronic devices in general;

(iv) demonstration projects; and

(v) educational materials.

(C) Priority

In carrying out the activities authorized under this subsection, the Secretary shall give special consideration to projects that recover critical materials.

(D) Sensitive information

In carrying out the activities authorized under this subsection, the Secretary shall ensure proper security controls are in place to protect proprietary or sensitive information, as appropriate.

(5) Solar energy technology materials physical property database

(A) In general

Not later than September 1, 2022, the Secretary shall establish a comprehensive physical property database of materials for use in solar energy technologies, which shall identify the type, quantity, country of origin, source, significant uses, projected availability, and physical properties of materials used in solar energy technologies.

(B) Coordination

In establishing the database described in subparagraph (A), the Secretary shall coordinate with—

(i) other Department activities, including those carried out by the Office of Science;

(ii) the Director of the National Institute of Standards and Technology;

(iii) the Administrator of the Environmental Protection Agency;

(iv) the Secretary of the Interior; and

(v) relevant industry stakeholders, as determined by the Secretary.

(6) Solar energy technology program strategic vision

(A) In general

Not later than September 1, 2022, and every 6 years thereafter, the Secretary shall submit to Congress a report on the strategic vision, progress, goals, and targets of the program, including assessments of solar energy markets and manufacturing.

(B) Inclusion

As a part of the report described in subparagraph (A), the Secretary, in consultation with the Secretary of the Interior and the Administrator of the Environmental Protection Agency for purposes of clause (iv), shall include a study that examines the viable market opportunities available for solar energy technology manufacturing in the United States, including—

(i) a description of—

(I) the ability to competitively manufacture solar technology in the United States, including the manufacture of—

(aa) new and advanced materials, such as cells made with new, high efficiency materials;

(bb) solar module equipment and enabling technologies, including smart inverters, sensors, and tracking equipment; and

(cc) innovative solar module designs and applications, including those that can directly integrate with new and existing buildings and other infrastructure; and

(II) opportunities and barriers within the United States and international solar energy technology market;

(ii) policy recommendations for enhancing solar energy technology manufacturing in the United States;

(iii) a 10-year target and plan to enhance the competitiveness of solar energy tech-

nology manufacturing in the United States;

(iv) a description of the technical and economic viability of siting solar energy technologies on current and former mine land, including necessary interconnection and transmission siting and the impact on local job creation; and

(v) any other research areas as determined by the Secretary.

(C) Preparation

The Secretary shall coordinate the preparation of the report under subparagraph (A) with—

(i) existing peer review processes;

(ii) studies conducted by the National Laboratories; and

(iii) the multiyear program planning required under section 16358 of this title.

(7) Authorization of appropriations

There is authorized to be appropriated to the Secretary to carry out the program $300,000,000 for each of fiscal years 2021 through 2025.

(Pub. L. 116–260, div. Z, title III, § 3004, Dec. 27, 2020, 134 Stat. 2504; Pub. L. 117–58, div. D, title III, § 40341, Nov. 15, 2021, 135 Stat. 1030.)

Editorial Notes

REFERENCES IN TEXT

The Surface Mining Control and Reclamation Act of 1977, referred to in subsec. (a)(6)(A), is Pub. L. 95–87, Aug. 3, 1977, 91 Stat. 445. Titles IV and V of the Act are classified generally to subchapters IV (§ 1231 et seq.) and V (§ 1251 et seq.), respectively, of chapter 25 of Title 30, Mineral Lands and Mining. For complete classification of this Act to the Code, see Short Title note set out under section 1201 of Title 30 and Tables.

The Mining Law of 1872, referred to in subsec. (a)(6)(B), is act May 10, 1872, ch. 152, 17 Stat. 91, which was incorporated into the Revised Statutes of 1878 as R.S. §§ 2319 to 2328, 2331, 2333 to 2337, and 2344, which are classified to sections 22 to 24, 26 to 28, 29, 30, 33 to 35, 37, 39 to 42, and 47 of Title 30, Mineral Lands and Mining. For complete classification of such Revised Statutes sections to the Code, see Tables.

CODIFICATION

Section was enacted as part of the Energy Act of 2020, and not as part of the Energy Policy Act of 2005 which comprises this chapter.

AMENDMENTS

2021—Subsec. (a)(6) to (16). Pub. L. 117–58, § 40341(1), added par. (6) and redesignated former pars. (6) to (15) as (7) to (16), respectively.

Subsec. (b)(6)(B). Pub. L. 117–58, § 40341(2)(A), inserted '', in consultation with the Secretary of the Interior and the Administrator of the Environmental Protection Agency for purposes of clause (iv),'' after ''the Secretary'' in introductory provisions.

Subsec. (b)(6)(B)(iv), (v). Pub. L. 117–58, § 40341(2)(B)–(D), added cl. (iv) and redesignated former cl. (iv) as (v).

Statutory Notes and Related Subsidiaries

WAGE RATE REQUIREMENTS

For provisions relating to rates of wages to be paid to laborers and mechanics on projects for construction, alteration, or repair work funded under div. D or an amendment by div. D of Pub. L. 117–58, including authority of Secretary of Labor, see section 18851 of this title.

APPLICATION

Provisions of section 3212 of this title applicable to construction, alteration, or repair work of demonstration projects funded by grants or contracts authorized under this section, see section 9006(b) of div. Z of Pub. L. 116–260, set out as a note under section 16237 of this title.

PART D—AGRICULTURAL BIOMASS RESEARCH AND DEVELOPMENT PROGRAMS

§ 16251. Production incentives for cellulosic biofuels

(a) Purpose

The purpose of this section is to—

(1) accelerate deployment and commercialization of biofuels;

(2) deliver the first 1,000,000,000 gallons in annual cellulosic biofuels production by 2015;

(3) ensure biofuels produced after 2015 are cost competitive with gasoline and diesel; and

(4) ensure that small feedstock producers and rural small businesses are full participants in the development of the cellulosic biofuels industry.

(b) Definitions

In this section:

(1) Cellulosic biofuels

The term ''cellulosic biofuels'' means any fuel that is produced from cellulosic feedstocks.

(2) Eligible entity

The term ''eligible entity'' means a producer of fuel from cellulosic biofuels the production facility of which—

(A) is located in the United States;

(B) meets all applicable Federal and State permitting requirements; and

(C) meets any financial criteria established by the Secretary.

(c) Program

(1) Establishment

The Secretary, in consultation with the Secretary of Agriculture, the Secretary of Defense, and the Administrator of the Environmental Protection Agency, shall establish an incentive program for the production of cellulosic biofuels.

(2) Basis of incentives

Under the program, the Secretary shall award production incentives on a per gallon basis of cellulosic biofuels from eligible entities, through—

(A) set payments per gallon of cellulosic biofuels produced in an amount determined by the Secretary, until initiation of the first reverse auction; and

(B) reverse auction thereafter.

(3) First reverse auction

The first reverse auction shall be held on the earlier of—

(A) not later than 1 year after the first year of annual production in the United States of 100,000,000 gallons of cellulosic biofuels, as determined by the Secretary; or

(B) not later than 3 years after August 8, 2005.