(B) the use of digital prototyping and additive manufacturing to enhance product design.

(8) incorporation of sustainable chemistry and engineering principles, practices, and methodologies, as the Secretary determines appropriate; and

(9) other research or technology areas identified in the Strategic Plan authorized in section 17114 of this title.

(d) Grants, contracts, cooperative agreements, and demonstration projects

(1) Grants

In carrying out the program, the Secretary shall award grants on a competitive basis to eligible entities for projects that the Secretary determines would best achieve the goals of the program.

(2) Contracts and cooperative agreements

In carrying out the program, the Secretary may enter into contracts and cooperative agreements with eligible entities and Federal agencies for projects that the Secretary determines would further the purposes of the program.

(3) Demonstration projects

In supporting technologies developed under this section, the Secretary shall fund demonstration projects that test and validate technologies described in subsection (c).

(4) Application

An entity seeking funding or a contract or agreement under this subsection shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require.

(5) Cost sharing

In awarding funds under this section, the Secretary shall require cost sharing in accordance with section 16352 of this title.

(e) Authorization of appropriations

There are authorized to be appropriated to the Secretary to carry out the demonstration projects authorized in subsection (d)(3)—

(1) $20,000,000 for fiscal year 2021;
(2) $80,000,000 for fiscal year 2022;
(3) $100,000,000 for fiscal year 2023;
(4) $150,000,000 for fiscal year 2024; and
(5) $150,000,000 for fiscal year 2025.

(f) Coordination

The Secretary shall carry out the activities authorized in this section in accordance with section 18631 of this title.

(Pub. L. 110–140, title IV, § 454, as added Pub. L. 116–260, div. Z, title VI, § 6003(a), Dec. 27, 2020, 134 Stat. 2553; amended Pub. L. 117–58, div. D, title V, § 40521(a)(2), Nov. 15, 2021, 135 Stat. 1062.)

Editorial Notes

AMENDMENTS

2021—Subsec. (b)(2)(C). Pub. L. 117–58 substituted ''Future of Industry'' for ''energy-intensive industries''.

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.

PURPOSE

Pub. L. 116–260, div. Z, title VI, § 6001, Dec. 27, 2020, 134 Stat. 2552, provided that: ''The purpose of this title [enacting this section and sections 17114 to 17115a of this title and amending section 6351 of this title] and the amendments made by this title is to encourage the development and evaluation of innovative technologies aimed at increasing—

''(1) the technological and economic competitiveness of industry and manufacturing in the United States; and

''(2) the emissions reduction of nonpower industrial sectors.''

§ 17113a. Low-emissions steel manufacturing research program

(a) Purpose

The purpose of this section is to encourage the research and development of innovative technologies aimed at—

(1) increasing the technological and economic competitiveness of industry and manufacturing in the United States; and

(2) achieving significant net nonwater greenhouse emissions reductions in the production processes for iron, steel, and steel mill products.

(b) Definitions

In this section:

(1) Commercially available steelmaking

The term ''commercially available steelmaking'' means the current production method of iron, steel, and steel mill products.

(2) Critical material

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

(3) Critical mineral

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

(4) Eligible entity

The term ''eligible entity'' means—

(A) an institution of higher education;

(B) an appropriate State or Federal entity, including a federally funded research and development center of the Department;

(C) a nonprofit research institution;

(D) a private entity;

(E) any other relevant entity the Secretary determines appropriate; and

(F) a partnership or consortium of two or more entities described in subparagraphs (A) through (E).

(5) Institution of higher education

The term ''institution of higher education'' has the meaning given the term in section 1001 of title 20.

(6) Low-emissions steel manufacturing

The term ''low-emissions steel manufacturing'' means advanced or commercially available steelmaking with the reduction, to the maximum extent practicable, of net nonwater greenhouse gas emissions to the at-

mosphere from the production of iron, steel, and steel mill products.

(c) In general

Not later than 180 days after August 9, 2022, the Secretary shall establish a program of research, development, demonstration, and commercial application of advanced tools, technologies, and methods for low-emissions steel manufacturing.

(d) Requirements

In carrying out the program under subsection (c), the Secretary shall—

(1) coordinate this program with the programs and activities authorized in title VI of division Z of the Consolidated Appropriations Act, 2021;

(2) coordinate across all relevant program offices of the Department, including the Office of Science, Office of Energy Efficiency and Renewable Energy, the Office of Fossil Energy, and the Office of Nuclear Energy;

(3) leverage, to the extent practicable, the research infrastructure of the Department, including scientific computing user facilities, x-ray light sources, neutron scattering facilities, and nanoscale science research centers; and

(4) conduct research, development, and demonstration of low-emissions steel manufacturing technologies that have the potential to increase domestic production and employment in advanced and commercially available steelmaking.

(e) Strategic plan

(1) In general

Not later than 180 days after August 9, 2022, the Secretary shall develop a 5-year strategic plan identifying research, development, demonstration, and commercial application goals for the program established in subsection (c). The Secretary shall submit this plan to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate.

(2) Contents

The strategic plan submitted under paragraph (1) shall—

(A) identify programs at the Department related to low-emissions steel manufacturing that support the research, development, demonstration, and commercial application activities described in this section, and the demonstration projects under subsection (h);

(B) establish technological and programmatic goals to achieve the requirements of subsection (d); and

(C) include timelines for the accomplishment of goals developed under the plan.

(3) Updates to plan

Not less than once every two years, the Secretary shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate an updated version of the plan under paragraph (1).

(f) Focus areas

In carrying out the program established in subsection (c), the Secretary shall focus on—

(1) medium- and high-temperature heat generation technologies used for low-emissions steel manufacturing, which may include—

(A) alternative fuels, including hydrogen and biomass;

(B) alternative reducing agents, including hydrogen;

(C) renewable heat generation technology, including solar and geothermal;

(D) electrification of heating processes, including through electrolysis; and

(E) other heat generation sources;

(2) carbon capture technologies for advanced and commercially available steelmaking processes, which may include—

(A) combustion and chemical looping technologies;

(B) use of slag to reduce carbon dioxide emissions;

(C) pre-combustion technologies; and

(D) post-combustion technologies;

(3) smart manufacturing technologies and principles, digital manufacturing technologies, and advanced data analytics to develop advanced technologies and practices in information, automation, monitoring, computation, sensing, modeling, and networking to—

(A) model and simulate manufacturing production lines;

(B) monitor and communicate production line status; and

(C) model, simulate, and optimize the energy efficiency of manufacturing processes;

(4) technologies and practices that minimize energy and natural resource consumption, which may include—

(A) designing products that enable reuse, refurbishment, remanufacturing, and recycling;

(B) minimizing waste from advanced and commercially available steelmaking processes, including through the reuse of waste as resources in other industrial processes for mutual benefit;

(C) increasing resource efficiency; and

(D) increasing the energy efficiency of advanced and commercially available steelmaking processes;

(5) alternative materials and technologies that produce fewer emissions during production and result in fewer emissions during use, which may include—

(A) innovative raw materials;

(B) high-performance lightweight materials;

(C) substitutions for critical materials and critical minerals; and

(D) other technologies that achieve significant carbon emission reductions in low-emissions steel manufacturing, as determined by the Secretary; and

(6) high-performance computing to develop advanced materials and manufacturing processes contributing to the focus areas described in paragraphs (1) through (5), including—

(A) modeling, simulation, and optimization of the design of energy efficient and sustainable products; and

(B) the use of digital prototyping and additive manufacturing to enhance product design.

(g) Testing and validation

The Secretary, in consultation with the Director of the National Institute of Standards and Technology, shall support the development of standardized testing and technical validation of advanced and commercially available steelmaking and low-emissions steel manufacturing through collaboration with one or more National Laboratories, and one or more eligible entities.

(h) Demonstration

(1) Establishment

Not later than 180 days after August 9, 2022, the Secretary, in carrying out the program established in subsection (c), and in collaboration with industry partners, institutions of higher education, and the National Laboratories, shall support an initiative for the demonstration of low-emissions steel manufacturing, as identified by the Secretary, that uses either—

(A) a single technology; or

(B) a combination of multiple technologies.

(2) Selection requirements

Under the initiative established under paragraph (1), the Secretary shall select eligible entities to carry out demonstration projects and to the maximum extent practicable—

(A) encourage regional diversity among eligible entities, including participation by rural States;

(B) encourage technological diversity among eligible entities; and

(C) ensure that specific projects selected—

(i) expand on the existing technology demonstration programs of the Department; and

(ii) prioritize projects that leverage matching funds from non-Federal sources.

(3) Reports

The Secretary shall submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and Natural Resources of the Senate—

(A) not less frequently than once every two years for the duration of the demonstration initiative under this subsection, a report describing the performance of the initiative; and

(B) if the initiative established under this subsection is terminated, an assessment of the success of, and education provided by, the measures carried out by recipients of financial assistance under the initiative.

(i) Additional coordination

(1) Manufacturing U.S.A.

In carrying out this section the Secretary shall consider—

(A) leveraging the resources of relevant existing Manufacturing USA Institutes described in section 278s(d) of title 15;

(B) integrating program activities into a relevant existing Manufacturing USA Institute; or

(C) establishing a new institute focused on low-emissions steel manufacturing.

(2) Other Federal agencies

In carrying out this section, the Secretary shall coordinate with other Federal agencies that are carrying out research and development initiatives to increase industrial competitiveness and achieve significant net nonwater greenhouse emissions reductions through low-emissions steel manufacturing, including the Department of Defense, Department of Transportation, and the National Institute of Standards and Technology.

(Pub. L. 110–140, title IV, § 454A, as added Pub. L. 117–167, div. B, title VI, § 10751(a), Aug. 9, 2022, 136 Stat. 1722.)

Editorial Notes

REFERENCES IN TEXT

Title VI of division Z of the Consolidated Appropriations Act, 2021, referred to in subsec. (d)(1), is title VI of div. Z of Pub. L. 116–260, Dec. 27, 2020, 134 Stat. 2552, which enacted sections 17113 and 17114 to 17115a of this title, amended section 6351 of this title, and enacted provisions set out as a note under section 17113 of this title. For complete classification of title VI to the Code, see Tables.

§ 17113b. Advanced industrial facilities deployment program

(a) Office of Clean Energy Demonstrations

In addition to amounts otherwise available, there is appropriated to the Secretary, acting through the Office of Clean Energy Demonstrations, for fiscal year 2022, out of any money in the Treasury not otherwise appropriated, $5,812,000,000, to remain available through September 30, 2026, to carry out this section.

(b) Financial assistance

The Secretary shall use funds appropriated by subsection (a) to provide financial assistance, on a competitive basis, to eligible entities to carry out projects for—

(1) the purchase and installation, or implementation, of advanced industrial technology at an eligible facility;

(2) retrofits, upgrades to, or operational improvements at an eligible facility to install or implement advanced industrial technology; or

(3) engineering studies and other work needed to prepare an eligible facility for activities described in paragraph (1) or (2).

(c) Application

To be eligible to receive financial assistance under subsection (b), an eligible entity shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary may require, including the expected greenhouse gas emissions reductions to be achieved by carrying out the project.

(d) Priority

In providing financial assistance under subsection (b), the Secretary shall give priority