tablishing and, if feasible, is authorized to establish'' for ''shall evaluate the technical and economic feasibility of the establishment of''.

Subsec. (a)(4). Pub. L. 117–167, §10110(b)(1), redesignated par. (2) as (4) and transferred it to appear after par. (3).

2020—Pub. L. 116–260 amended section generally. Prior to amendment, section related to nuclear energy research programs.

2018—Subsecs. (c) to (e). Pub. L. 115–248 redesignated subsecs. (d) and (e) as (c) and (d), respectively, and struck out former subsec. (c) which related to establishment and administration of a Nuclear Power 2010 Program.

§ 16273. Fuel cycle research, development, demonstration, and commercial application

(a) Used nuclear fuel research, development, demonstration, and commercial application

(1) In general

The Secretary shall conduct an advanced fuel cycle research, development, demonstration, and commercial application program to improve fuel cycle performance, minimize environmental and public health and safety impacts, and support a variety of options for used nuclear fuel storage, use, and disposal, including advanced nuclear reactor and nonreactor concepts (such as radioisotope power systems), which may include—

(A) dry cask storage;

(B) consolidated interim storage;

(C) deep geological storage and disposal, including mined repository, and other technologies;

(D) used nuclear fuel transportation;

(E) integrated waste management systems;

(F) vitrification;

(G) fuel recycling and transmutation technologies, including advanced reprocessing technologies such as electrochemical and molten salt technologies, and advanced redox extraction technologies;

(H) advanced materials to be used in subparagraphs (A) through (G); and

(I) other areas as determined by the Secretary.

(2) Requirements

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

(A) ensure all activities and designs incorporate state of the art safeguards technologies and techniques to reduce risk of proliferation;

(B) consult with the Administrator of the National Nuclear Security Administration to integrate safeguards and security by design;

(C) consider the potential benefits and other impacts of those activities for civilian nuclear applications, environmental health and safety, and national security, including consideration of public consent; and

(D) consider the economic viability of all activities and designs.

(3) Authorization of appropriations

There are authorized to be appropriated to the Secretary to carry out the program under this subsection $60,000,000 for each of fiscal years 2021 through 2025.

(b) Advanced fuels

(1) In general

The Secretary shall conduct an advanced fuels research, development, demonstration, and commercial application program on next-generation light water reactor and advanced reactor fuels that demonstrate the potential for improved—

(A) performance;

(B) accident tolerance;

(C) proliferation resistance;

(D) use of resources;

(E) environmental impact; and

(F) economics.

(2) Requirements

In carrying out the program under this subsection, the Secretary shall focus on the development of advanced technology fuels, including fabrication techniques, that offer improved accident-tolerance and economic performance with the goal of initial commercial application by December 31, 2025.

(3) Report

Not later than 180 days December 27, 2020, 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 report that describes how the technologies and concepts studied under this program would impact reactor economics, the fuel cycle, operations, safety, proliferation, and the environment.

(4) Authorization of appropriations

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

(Pub. L. 109–58, title IX, §953, Aug. 8, 2005, 119 Stat. 886; Pub. L. 115–248, §2(c), Sept. 28, 2018, 132 Stat. 3155; Pub. L. 116–260, div. Z, title II, §2003(b), Dec. 27, 2020, 134 Stat. 2462.)

Editorial Notes

AMENDMENTS

2020—Pub. L. 116–260 amended section generally. Prior to amendment, section related to advanced fuel cycle initiative.

2018—Subsec. (a). Pub. L. 115–248 struck out '', acting through the Director of the Office of Nuclear Energy, Science and Technology,'' after ''The Secretary''.

§ 16274. Nuclear science and engineering support

(a) University nuclear science and engineering support

(1) In general

The Secretary shall conduct a program to invest in human resources and infrastructure in the nuclear sciences and related fields, including health physics, nuclear engineering, and radiochemistry, consistent with missions of the Department related to civilian nuclear research, development, demonstration, and commercial application.

(2) Requirements

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

(A) conduct a graduate and undergraduate fellowship program to attract new and talented students, which may include fellowships for students to spend time at National Laboratories in the areas of nuclear science, engineering, and health physics with a member of the National Laboratory staff acting as a mentor;

(B) conduct a junior faculty research initiation grant program to assist universities in recruiting and retaining new faculty in the nuclear sciences and engineering by awarding grants to junior faculty for research on issues related to nuclear energy engineering and science;

(C) support fundamental nuclear sciences, engineering, and health physics research through a nuclear engineering education and research program;

(D) promote collaborations, partnerships, and knowledge sharing between institutions of higher education, National Laboratories, other Federal agencies, industry, and associated labor unions; and

(E) support communication and outreach related to nuclear science, engineering, and health physics.

(3) University-National Laboratory interactions

The Secretary shall conduct—

(A) a fellowship program for professors at universities to spend sabbaticals at National Laboratories in the areas of nuclear science and technology; and

(B) a visiting scientist program in which National Laboratory staff can spend time in academic nuclear science and engineering departments.

(4) Strengthening university research and training reactors and associated infrastructure

(A) IN GENERAL.—In carrying out the program under this subsection, the Secretary may support—

(i) converting research reactors from high-enrichment fuels to low-enrichment fuels and upgrading operational instrumentation;

(ii) revitalizing and upgrading existing nuclear science and engineering infrastructure that support the development of advanced nuclear technologies and applications;

(iii) regional or subregional university-led consortia to—

(I) broaden access to university research reactors;

(II) enhance existing university-based nuclear science and engineering infrastructure; and

(III) provide project management, technical support, quality engineering and inspections, manufacturing, and nuclear material support;

(iv) student training programs, in collaboration with the United States nuclear industry, in relicensing and upgrading reactors, including through the provision of technical assistance; and

(v) reactor improvements that emphasize research, training, and education, including through the Innovations in Nuclear Infrastructure and Education Program or any similar program.

(B) Of any amounts appropriated to carry out the program under this subsection, there is authorized to be appropriated to the Secretary to carry out clauses (ii) and (iii) of subparagraph (A) $55,000,000 for each of fiscal years 2023 through 2027.

(5) Advanced nuclear research infrastructure enhancement

(A) In general

The Secretary shall carry out a subprogram to be known as the Advanced Nuclear Research Infrastructure Enhancement Subprogram in order to—

(i) demonstrate various advanced nuclear reactor and nuclear microreactor concepts;

(ii) establish medical isotope production reactors or other specialized applications; and

(iii) advance other research infrastructure that, in the determination of the Secretary, is consistent with the mission of the Department.

(B) New nuclear science and engineering facilities

In carrying out the subprogram, the Secretary shall establish—

(i) not more than 4 new research reactors; and

(ii) new nuclear science and engineering facilities, as required to address research demand and identified infrastructure gaps.

(C) Locations

New research reactors and facilities established under subparagraph (B) shall be established in a manner that—

(i) supports the regional or subregional consortia described in paragraph (4)(C);[1] and

(ii) encourages the participation of—

(I) historically Black colleges and universities;

(II) Tribal colleges or universities;

(III) minority-serving institutions;

(IV) EPSCoR universities; and

(V) junior or community colleges.

(D) Fuel requirements

New research reactors established under subparagraph (B) shall not use high-enriched uranium, as defined in section 16281 of this title.

(E) Fuel services

The Research Reactor Infrastructure subprogram within the Radiological Facilities Management program of the Department, as authorized by paragraph (6), shall be expanded to provide fuel services to research reactors established by this paragraph.

(F) Authorization of appropriations

Of any amounts appropriated to carry out the program under this section, there are au-

[1] So in original. Probably means ''paragraph (4)(A)(iii)''.

thorized to be appropriated to the Secretary to carry out the subprogram under this paragraph—

(i) $45,000,000 for fiscal year 2023;
(ii) $60,000,000 for fiscal year 2024;
(iii) $65,000,000 for fiscal year 2025;
(iv) $80,000,000 for fiscal year 2026; and
(v) $140,000,000 for fiscal year 2027.

(6) Radiological facilities management

(A) In general

The Secretary shall carry out a program under which the Secretary shall provide project management, technical support, quality engineering and inspection, and nuclear material handling support to research reactors located at universities.

(B) Authorization of appropriations

Of any amounts appropriated to carry out the program under this subsection, there are authorized to be appropriated to the Secretary to carry out the program under this paragraph $20,000,000 for each of fiscal years 2021 through 2025.

(7) Nuclear energy university program

In carrying out the programs under this section, the Department shall, to the maximum extent practicable, allocate 20 percent of funds appropriated to nuclear energy research and development programs annually, excluding funds appropriated for the Advanced Reactor Demonstration Program of the Department, to fund university-led research and university infrastructure projects through an open, competitive solicitation process.

(8) Operations and maintenance

Funding for a project provided under this subsection may be used for a portion of the operating and maintenance costs of a research reactor at a university used in the project.

(9) Definitions

In this subsection:

(A) Junior faculty

The term ''junior faculty'' means a faculty member who was awarded a doctorate less than 10 years before receipt of an award from the grant program described in paragraph (2)(B).

(B) Junior or community college

The term ''junior or community college'' means—

(i) a public institution of high education, including additional locations, at which the highest awarded degree, or the predominantly awarded degree, is an associate degree; or

(ii) any Tribal college or university (as defined in section 1059c of title 20).

(C) EPSCoR university

The term ''EPSCoR university'' means an institution of higher education located in a State eligible to participate in the program defined in section 502 of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 1862p note).

(D) Historically Black college or university

The term ''historically Black college or university'' has the meaning given the term ''part B institution'' in section 1061 of title 20.

(E) Minority-serving institution

The term ''minority-serving institution'' means a Hispanic-serving institution, an Alaska Native-serving institution, a Native Hawaiian-serving institution, a Predominantly Black Institution, an Asian American and Native American Pacific Islander-serving institution, or a Native American-serving nontribal institution as described in section 1067q of title 20.

(F) Tribal College or University

The term ''Tribal College or University'' has the meaning given such term in section 1059c of title 20.

(b) Nuclear energy traineeship subprogram

(1) Establishment

In carrying out the program under subsection (a), the Secretary shall establish a nuclear energy traineeship subprogram under which the Secretary shall competitively award traineeships in coordination with universities to provide focused, advanced training to meet critical mission needs of the Department, including in industries that are represented by skilled labor unions.

(2) Requirements

In carrying out the subprogram under this subsection, the Secretary shall—

(A) encourage appropriate partnerships among National Laboratories, affected universities, community colleges, trade schools, registered apprenticeship programs, pre-apprenticeship programs, and industry; and

(B) on an annual basis, evaluate the needs of the nuclear energy community to implement traineeships for focused topical areas addressing mission-specific workforce needs.

(A) FOCUS AREAS.—[2]In carrying out the subprogram under this subsection, the Secretary may implement traineeships in focus areas that, in the determination of the Secretary, are necessary to support the nuclear energy sector in the United States, including—

(i) research and development;
(ii) construction and operation;
(iii) associated supply chains; and
(iv) workforce training and retraining to support transitioning workforces.

(4) Authorization of appropriations[3]

There are authorized to be appropriated to the Secretary to carry out the subprogram under this subsection $5,000,000 for each of fiscal years 2023 through 2027.

(Pub. L. 109–58, title IX, § 954, Aug. 8, 2005, 119 Stat. 886; Pub. L. 115–248, § 2(d), Sept. 28, 2018, 132 Stat. 3155; Pub. L. 116–260, div. Z, title II, § 2003(c), Dec. 27, 2020, 134 Stat. 2463; Pub. L. 117–58, div. D, title X, § 41002(b)(2), Nov. 15, 2021, 135 Stat. 1128; Pub. L. 117–167, div. B, title VI, §§ 10743, 10744, Aug. 9, 2022, 136 Stat. 1718, 1719;

[2] So in original. There are two subpars. (A). Probably should be designated par. (3).

[3] So in original. There is no par. (3).

Pub. L. 117–263, div. E, title LIX, § 5914(2), Dec. 23, 2022, 136 Stat. 3449; Pub. L. 118–31, div. C, title XXXI, § 3131(p)(2), Dec. 22, 2023, 137 Stat. 803.)

Editorial Notes

REFERENCES IN TEXT

Section 502 of the America COMPETES Reauthorization Act of 2010, referred to in subsec. (a)(9)(C), is section 502 of Pub. L. 111–358, which is set out as a note under section 1862p of this title.

AMENDMENTS

2023—Subsec. (b). Pub. L. 118–31, § 3131(p)(2)(A), struck out ''graduate'' before ''traineeship'' in heading.

Subsec. (b)(1). Pub. L. 118–31, § 3131(p)(2)(B), struck out ''graduate'' before ''traineeship'' and before ''traineeships''.

Subsec. (b)(2)(A). Pub. L. 118–31, § 3131(p)(2)(F), added subpar. (A) relating to focus areas. Amendment directing addition of subpar. (A) ''after paragraph (2)'' was executed by adding subpar. (A) at end of par. (2).

Pub. L. 118–31, § 3131(p)(2)(C), inserted ''community colleges, trade schools, registered apprenticeship programs, pre-apprenticeship programs,'' after ''affected universities,'' in subpar. (A) relating to appropriate partnerships among National Laboratories.

Subsec. (b)(2)(B). Pub. L. 118–31, § 3131(p)(2)(B), struck out ''graduate'' before ''traineeships''.

Subsec. (b)(3), (4). Pub. L. 118–31, § 3131(p)(2)(D), (E), substituted ''2023 through 2027'' for ''2021 through 2025'' in par. (3) and then redesignated par. (3) as (4).

2022—Subsec. (a)(2)(D). Pub. L. 117–167, § 10743(1), amended subpar. (D) generally. Prior to amendment, subpar. (D) read as follows: ''encourage collaborative nuclear research among industry, National Laboratories, and universities; and''.

Subsec. (a)(4). Pub. L. 117–167, § 10743(2), amended par. (4) generally. Prior to amendment, text read as follows: ''In carrying out the program under this subsection, the Secretary may support—

''(A) converting research reactors from high-enrichment fuels to low-enrichment fuels and upgrading operational instrumentation;

''(B) consortia of universities to broaden access to university research reactors;

''(C) student training programs, in collaboration with the United States nuclear industry, in relicensing and upgrading reactors, including through the provision of technical assistance; and

''(D) reactor improvements that emphasize research, training, and education, including through the Innovations in Nuclear Infrastructure and Education Program or any similar program.''

Subsec. (a)(5). Pub. L. 117–167, § 10744(2), added par. (5). Former par. (5) redesignated (6)

Subsec. (a)(5)(E), (F). Pub. L. 117–263 added subpar. (E) and redesignated former subpar. (E) as (F).

Subsec. (a)(6) to (8). Pub. L. 117–167, § 10744(1), resignated pars. (5) to (7) as (6) to (8), respectively. Former par. (8) redesignated (9).

Subsec. (a)(9). Pub. L. 117–167, § 10744(1), (3), redesignated par. (8) as (9) and amended it generally. Prior to amendment, par. defined ''junior faculty''.

2021—Subsec. (a)(6). Pub. L. 117–58 inserted '', excluding funds appropriated for the Advanced Reactor Demonstration Program of the Department,'' after ''annually''.

2020—Pub. L. 116–260, § 2003(c)(1), substituted ''Nuclear'' for ''University nuclear'' in section catchline.

Subsec. (a). Pub. L. 116–260, § 2003(c)(10), designated existing provisions as subsec. (a) and inserted heading.

Pub. L. 116–260, § 2003(c)(9), added pars. (5) and (6).

Subsec. (b). Pub. L. 116–260, § 2003(c)(11), added subsec. (b).

Pub. L. 116–260, § 2003(c)(7), redesignated subsec. (b) as par. (2).

Pub. L. 116–260, § 2003(c)(2), substituted ''this subsection'' for ''this section'' in introductory provisions, redesignated pars. (1) to (5) as subpars. (A) to (E), respectively, and realigned margins.

Subsec. (c). Pub. L. 116–260, § 2003(c)(7), redesignated subsec. (c) as par. (3).

Pub. L. 116–260, § 2003(c)(3), redesignated pars. (1) and (2) as subpars. (A) and (B), respectively, and realigned margins.

Subsec. (d). Pub. L. 116–260, § 2003(c)(7), redesignated subsec. (d) as par. (4).

Pub. L. 116–260, § 2003(c)(4), substituted ''this subsection'' for ''this section'' in introductory provisions, redesignated pars. (1) to (4) as subpars. (A) to (D), respectively, and realigned margins.

Subsec. (e). Pub. L. 116–260, § 2003(c)(8), redesignated subsec. (e) as par. (7). Margins realigned to reflect the probable intent of Congress.

Pub. L. 116–260, § 2003(c)(5), substituted ''this subsection'' for ''this section''.

Subsec. (f). Pub. L. 116–260, § 2003(c)(8), redesignated subsec. (f) as par. (8). Margins realigned to reflect the probable intent of Congress.

Pub. L. 116–260, § 2003(c)(6), substituted ''this subsection'' for ''this section'' and ''paragraph (2)(B)'' for ''subsection (b)(2)''.

2018—Subsec. (d)(4). Pub. L. 115–248 substituted ''that emphasize'' for ''as part of a taking into consideration effort that emphasizes''.

Statutory Notes and Related Subsidiaries

PURPOSES

Pub. L. 117–167, div. B, title VI, § 10742, Aug. 9, 2022, 136 Stat. 1718, provided that: ''The purposes of this subtitle [subtitle L (§§ 10741–10745) of title VI of div. B of Pub. L. 117–167, amending this section and section 16274a of this title and enacting provisions set out as notes under sections 15801 and 16274a of this title] are—

''(1) to upgrade the nuclear research capabilities of universities in the United States to meet the research requirements of advanced nuclear energy systems;

''(2) to ensure the continued operation of university research reactors;

''(3) to coordinate available resources to enable the establishment, including the start and efficient completion of construction, of new nuclear science and engineering facilities; and

''(4) to support—

''(A) workforce development critical to maintaining United States leadership in nuclear science and engineering and related disciplines; and

''(B) the establishment or enhancement of nuclear science and engineering capabilities and other, related capabilities at historically Black colleges and universities, Tribal colleges or universities, minority-serving institutions, EPSCoR universities, junior or community colleges, and associate-degree-granting colleges.''

[For definitions of terms used in section 10742 of div. B of Pub. L. 117–167, set out above, see section 18901 of this title.]

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.

§ 16274a. University Nuclear Leadership Program

(a) In general

The Secretary of Energy, the Administrator of the National Nuclear Security Administration, and the Chairman of the Commission shall jointly establish a program, to be known as the ''University Nuclear Leadership Program''.