

Subsec. (b)(1). Pub. L. 118–67, § 402(2), inserted “and subsection (c)” after “paragraph (2)” in introductory provisions.

Subsec. (c). Pub. L. 118–67, § 402(6), added subsec. (c). Former subsec. (c) redesignated (d).

Pub. L. 118–67, § 402(3), added pars. (1) to (4), redesignated former par. (2) as (5), and struck out former par. (1) which defined “advanced nuclear reactor” and “institution of higher education”.

Subsec. (d). Pub. L. 118–67, § 402(5), redesignated subsec. (c) as (d). Former subsec. (d) redesignated (e).

Subsec. (d)(2). Pub. L. 118–67, § 402(4), struck out “Nuclear Regulatory” before “Commission”.

Subsec. (e). Pub. L. 118–67, § 402(5), redesignated subsec. (d) as (e).

2022—Subsec. (b)(2). Pub. L. 117–167, § 10745(b)(1), inserted “, which may include nontechnical nuclear research.” after “engineering”.

Subsec. (c)(3). Pub. L. 117–167, § 10745(b)(2), added par. (3).

Subsec. (d)(1). Pub. L. 117–167, § 10745(b)(3), substituted “\$45,000,000” for “\$30,000,000”.

2020—Pub. L. 116–260 amended section generally. Prior to amendment, section related to Integrated University Program.

Statutory Notes and Related Subsidiaries

PURPOSE OF 2022 AMENDMENT

Pub. L. 117–167, div. B, title VI, § 10745(a), Aug. 9, 2022, 136 Stat. 1721, provided that: “The purpose of this section [amending this section] is to support a diverse workforce for the complex landscape associated with effective and equitable development of advanced nuclear energy technologies, including interdisciplinary research to enable positive impacts and avoid potential negative impacts across the lifespan of nuclear energy technologies.”

§ 16275. Department of Energy civilian nuclear infrastructure and facilities

(a) In general

The Secretary shall operate and maintain infrastructure and facilities to support the nuclear energy research, development, demonstration, and commercial application programs, including radiological facilities management, isotope production, and facilities management.

(b) Duties

In carrying out this section, the Secretary shall—

(1) develop an inventory of nuclear science and engineering facilities, equipment, expertise, and other assets at all of the National Laboratories;

(2) develop a prioritized list of nuclear science and engineering plant and equipment improvements needed at each of the National Laboratories;

(3) consider the available facilities and expertise at all National Laboratories and emphasize investments which complement rather than duplicate capabilities; and

(4) develop a timeline and a proposed budget for the completion of deferred maintenance on plant and equipment, with the goal of ensuring that Department programs under this part will be generally recognized to be among the best in the world.

(c) Versatile neutron source

(1) Authorization

(A) In general

Not later than December 31, 2017, the Secretary shall provide for a versatile reactor-

based fast neutron source, which shall operate as a national user facility.

(B) Consultations required

In carrying out subparagraph (A), the Secretary shall consult with the private sector, institutions of higher education, the National Laboratories, and relevant Federal agencies to ensure that the user facility described in subparagraph (A) will meet the research needs of the largest practicable majority of prospective users.

(2) Establishment

As soon as practicable after determining the mission need under paragraph (1)(A), the Secretary shall submit to the appropriate committees of Congress a detailed plan for the establishment of the user facility.

(3) Facility requirements

(A) Capabilities

The Secretary shall ensure that the user facility will provide, at a minimum, the following capabilities:

(i) Fast neutron spectrum irradiation capability.

(ii) Capacity for upgrades to accommodate new or expanded research needs.

(B) Considerations

In carrying out the plan submitted under paragraph (2), the Secretary shall consider the following:

(i) Capabilities that support experimental high-temperature testing.

(ii) Providing a source of fast neutrons at a neutron flux, higher than that at which current research facilities operate, sufficient to enable research for an optimal base of prospective users.

(iii) Maximizing irradiation flexibility and irradiation volume to accommodate as many concurrent users as possible.

(iv) Capabilities for irradiation with neutrons of a lower energy spectrum.

(v) Multiple loops for fuels and materials testing in different coolants.

(vi) Additional pre-irradiation and post-irradiation examination capabilities.

(vii) Lifetime operating costs and lifecycle costs.

(4) Deadline for establishment

The Secretary shall, to the maximum extent practicable, complete construction of, and approve the start of operations for, the user facility by not later than December 31, 2026.

(5) Reporting

The Secretary shall include in the annual budget request of the Department an explanation for any delay in the progress of the Department in completing the user facility by the deadline described in paragraph (4).

(6) Coordination

The Secretary shall leverage the best practices for management, construction, and operation of national user facilities from the Office of Science.

(7) Authorization of appropriations

There are authorized to be appropriated to the Secretary to carry out to completion the

construction of the facility under this section—

- (A) \$295,000,000 for fiscal year 2021;
- (B) \$348,000,000 for fiscal year 2022;
- (C) \$525,000,000 for fiscal year 2023;
- (D) \$534,000,000 for fiscal year 2024; and
- (E) \$584,000,000 for fiscal year 2025.

(d) Gateway for Accelerated Innovation in Nuclear

(1) In general

In carrying out the programs under this part, the Secretary is authorized to establish a new initiative to be known as the Gateway for Accelerated Innovation in Nuclear (GAIN). The initiative shall, to the maximum extent practicable and consistent with national security, provide the nuclear energy industry with access to cutting edge research and development along with the technical, regulatory, and financial support necessary to move innovative nuclear energy technologies toward commercialization in an accelerated and cost-effective fashion. The Secretary shall make available, as a minimum—

- (A) experimental capabilities and testing facilities;
- (B) computational capabilities, modeling, and simulation tools;
- (C) access to existing datasets and data validation tools; and
- (D) technical assistance with guidance or processes as needed.

(2) Selection

(A) In general

The Secretary shall select industry partners for awards on a competitive merit-reviewed basis.

(B) Considerations

In selecting industry partners under subparagraph (A), the Secretary shall consider—

- (i) the information disclosed by the Department as described in paragraph (1); and
- (ii) any existing facilities the Department will provide for public private partnership activities.

(Pub. L. 109–58, title IX, §955, Aug. 8, 2005, 119 Stat. 887; Pub. L. 115–248, §2(e), Sept. 28, 2018, 132 Stat. 3156; Pub. L. 116–260, div. Z, title II, §2003(f), Dec. 27, 2020, 134 Stat. 2466.)

Editorial Notes

AMENDMENTS

2020—Subsec. (c)(1). Pub. L. 116–260, §2003(f)(1)(A), substituted “Authorization” for “Mission need” in heading.

Subsec. (c)(1)(A). Pub. L. 116–260, §2003(f)(1)(B), substituted “provide” for “determine the mission need”.

Subsec. (c)(4). Pub. L. 116–260, §2003(f)(3), substituted “2026” for “2025”.

Subsec. (c)(7). Pub. L. 116–260, §2003(f)(2), added par. (7).

Subsec. (d). Pub. L. 116–260, §2003(f)(4), added subsec. (d).

2018—Subsecs. (c), (d). Pub. L. 115–248 added subsec. (c) and struck out former subsecs. (c) and (d) which required development of a comprehensive plan for the fa-

cilities at the Idaho National Laboratory and transmittal of the plan to Congress.

§ 16276. Security of nuclear facilities

The Secretary shall conduct a research and development program on cost-effective technologies for increasing—

- (1) the safety of nuclear facilities from natural phenomena; and
- (2) the security of nuclear facilities from deliberate attacks.

(Pub. L. 109–58, title IX, §956, Aug. 8, 2005, 119 Stat. 888; Pub. L. 115–248, §2(f), Sept. 28, 2018, 132 Stat. 3157.)

Editorial Notes

AMENDMENTS

2018—Pub. L. 115–248 struck out “, acting through the Director of the Office of Nuclear Energy, Science and Technology,” after “The Secretary” in introductory provisions.

§ 16277. High-performance computation and supportive research

(a) Modeling and simulation

The Secretary shall carry out a program to enhance the capabilities of the United States to develop new reactor technologies through high-performance computation modeling and simulation techniques.

(b) Coordination

In carrying out the program under subsection (a), the Secretary shall coordinate with relevant Federal agencies as described by the National Strategic Computing Initiative established by Executive Order 13702 (80 Fed. Reg. 46177 (July 29, 2015)), while taking into account the following objectives:

- (1) Using expertise from the private sector, institutions of higher education, and the National Laboratories to develop computational software and capabilities that prospective users may access to accelerate research and development of advanced nuclear reactor systems and reactor systems for space exploration.

- (2) Developing computational tools to simulate and predict nuclear phenomena that may be validated through physical experimentation.

- (3) Increasing the utility of the research infrastructure of the Department by coordinating with the Advanced Scientific Computing Research program within the Office of Science.

- (4) Leveraging experience from the Energy Innovation Hub for Modeling and Simulation.

- (5) Ensuring that new experimental and computational tools are accessible to relevant research communities, including private sector entities engaged in nuclear energy technology development.

(c) Supportive research activities

The Secretary shall consider support for additional research activities to maximize the utility of the research facilities of the Department, including physical processes—

- (1) to simulate degradation of materials and behavior of fuel forms; and