IB

Union Calendar No. 580

118TH CONGRESS
2D SESSION

H. R. 8674

[Report No. 118–686]

To establish milestone-based development and demonstration projects relating to nuclear fuel, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JUNE 7, 2024

Mr. WILLIAMS of New York (for himself and Mr. SORENSEN) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

SEPTEMBER 18, 2024

Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

A BILL

To establish milestone-based development and demonstration projects relating to nuclear fuel, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Milestones for Advanced Nuclear Fuel Act''.

SEC. 2. MILESTONE-BASED DEVELOPMENT AND DEMONSTRATION PROJECTS.

(a) MILESTONE-BASED DEVELOPMENT AND DEMONSTRATION PROGRAM.—The Nuclear Fuel Security Act of 2023 (enacted as section 3131 of subtitle C of title XXXI of division C of the National Defense Authorization Act for Fiscal Year 2024 (Public Law 118–31)) is amended—

(1) in subsection (d)—

(A) by redesignating paragraphs (8), (9), and (10) as paragraphs (9), (10), and (11), respectively; and

(B) by inserting after paragraph (7) the following new paragraph:

''(8) NATIONAL LABORATORY.—The term 'National Laboratory' has the meaning given such term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).''.

(2) by adding at the end the following new subsection:

''(q) APPLICATION OF CERTAIN MILESTONE-BASED DEVELOPMENT AND DEMONSTRATION PROJECTS.—

''(1) IN GENERAL.—The Secretary shall award milestone-based advanced fuel cycle technologies development and demonstration projects in accordance with section 9005 of the Energy Act of 2020 (42 U.S.C. 7256c; enacted as part of title IX of division Z of the Consolidated Appropriations Act, 2021) in carrying out the Nuclear Fuel Security Program and the HALEU for Advanced Nuclear Reactor Demonstration Projects Program (established pursuant to subsection (e), and carried out in accordance with subsections (f) and (h), respectively) in the same manner and to the same extent as such section 9005 applies to section 846(g) of the Department of Energy Organization Act (42 U.S.C. 7256(g)).

''(2) PURPOSE.—In carrying out milestone-based advanced fuel cycle technologies development and demonstration projects referred to in paragraph (1), the Secretary shall support the development and demonstration of an economically competitive, nuclear fuel supply chain by not later than three years after the date of the enactment of this subsection that includes domestic uranium production, conversion, enrichment, deconversion, and waste reduction

for advanced fuels, such as HALEU and other advanced nuclear reactor fuels, for the following:

"(A) Department research, development, and demonstration projects for advanced nuclear reactors, including civilian research and experimental reactors.

"(B) Advanced nuclear reactors.

"(C) Strategic radioactive and stable isotopes producers, such as energy, medical, space-based heating and power, and national security application, and for basic research.

"(D) Interagency and intra-agency partnerships and collaborations, including with the National Laboratories, the Advanced Research Projects Agency-Energy, the National Aeronautics and Space Administration, the Department of Defense, and other relevant Federal and State departments and agencies, as determined appropriate by the Secretary.

"(3) ELIGIBILITY.—Any associated entity is eligible to participate in the projects under this subsection if the Secretary has determined such entity has the necessary resources and expertise. In selecting eligible associated entities, the Secretary shall

select, to the maximum extent practicable, associated entities that—

''(A) prioritize novel technologies and processes;

''(B) utilize technologies and processes that reduce nonproliferation risks; and

''(C) leverage matching funds from non-Federal sources.

''(4) REQUIREMENTS.—In carrying out such projects, the Secretary shall consult with developers of advanced nuclear reactors and owners and operators of electric utilities to review proposed technical and financial milestones and assist in the development of such milestones.

''(5) SELECTION.—For the associated entities selected under this subsection, the following conditions shall apply:

''(A) Consistent with the existing authorities of the Department, the Secretary may terminate an agreement with a selected associated entity for cause during the performance period.

''(B) Support under this subsection may not be used to cover any costs or reimbursement of expenses that are covered by Federal

funding provided through other support, including awards.

''(6) APPLICATIONS.—A project proposal submitted under this subsection shall be evaluated based upon the scientific, technical, and business merits of such proposal, including consideration of waste management benefits, through a peer-review process, which shall include reviewers with appropriate expertise from the private sector, electric utilities, the investment community, and nuclear fuel and supply chain experts.

''(7) PROJECT MANAGEMENT.—In carrying out projects under this subsection and assessing the completion of the milestones developed pursuant to paragraph (4), the Secretary shall consult with nuclear fuel and supply experts representing diverse perspectives and professional experiences, including developers of advanced nuclear reactor owners and operators of electric utilities, to ensure a complete and thorough review.

''(8) ANNUAL BRIEFING.—As part of the annual budget request submitted for each fiscal year, the Secretary shall provide the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Energy and

Natural Resources of the Senate a briefing describing the selected projects under this subsection during the previous fiscal year, the benefits and drawbacks of milestone-based projects as compared to traditional project structure funding models, and lessons-leaned from project operations.''.

(b) NUCLEAR FUEL RECYCLING AND VIABILITY TO SUPPORT EXISTING AND FUTURE REACTORS.—Section 953 of the Energy Policy Act of 2005 (42 U.S.C. 16273) is amended by adding at the end the following new subsections:

''(c) MILESTONE-BASED DEMONSTRATIONS PROJECTS.—The Secretary shall carry out demonstration projects under this section as a milestone-based demonstration project in the same manner and to the same extent as under section 9005 of the Energy Act of 2020 (42 U.S.C. 7256c; enacted as part of title IX of division Z of the Consolidated Appropriations Act, 2021), with priority placed on awarding milestone-based awards to projects that increase domestic fabrication and recycling capacity of spent nuclear fuel for advanced fuels.

''(d) REPORT.—Not later than 180 days after the date of the date of the enactment of this subsection, the Secretary, acting through the Assistant Secretary for Nuclear Energy, shall complete and make publicly available

a study that analyzes the practicability, potential benefits, including relating to waste reduction through separation of high- and low-level waste or utilization of transuranic materials, and estimated lifecycle costs of the following:

''(1) Dedicated recycling facilities, and co-location with other nuclear energy infrastructure, that utilize spent nuclear fuel from existing nuclear reactors and future advanced nuclear reactors into usable nuclear fuel for the following:

''(A) Commercial light water reactors.

''(B) Advanced nuclear reactors.

''(C) Space-based heating and power.

''(D) Research reactors.

''(E) Nuclear battery applications.

''(F) Such other applications as determined appropriate by the Secretary.

''(2) Dedicated recycling facilities, and co-location with other nuclear energy infrastructure, to utilize high-assay low-enriched uranium (HALEU) (as such term is defined in section 2001(d) of the Energy Act of 2020 (42 U.S.C. 16281(d)), or other feedstocks, such as uranium and transuranic materials, into usable nuclear fuel for the following:

''(A) Commercial light water reactors.

''(B) Advanced nuclear reactors.

''(C) Space-based power.

''(D) Research reactors.

''(E) Nuclear battery applications.

''(F) Such other applications as determined appropriate by the Secretary.

''(3) Utilizing recycled fuel in advanced nuclear reactors or existing light water reactors as compared to non-recycled fuel.

''(4) Dedicated spent nuclear fuel reprocessing facilities, and co-location with other nuclear energy infrastructure, to extract certain radioactive and stable isotopes needed for domestic and international use, including for the following:

''(A) Advanced nuclear reactors.

''(B) Medical, industrial, space-based power, and nuclear battery applications.

''(C) Such other applications as determined appropriate by the Secretary.

''(5) Commercial associated entities acquiring spent fuel from operating or shutdown reactors and any contract or policy revisions that could better facilitate such transactions.

''(6) Private sector associated entities that take title of spent nuclear fuel from commercial nuclear reactor sites for any of the following:

''(A) Research or reuse.

''(B) Recycling.

''(C) Strategic radioactive or stable isotope extraction.

''(7) Comprehensive cost-benefit analysis associated with spent fuel recycling, including considerations of net reduction in spent fuel inventory, separation of high- and low-level waste with new storage requirements, disposal of byproducts from spent fuel recycling, supply chain impacts, and list of industries that would benefit from spent fuel recycling byproducts.

''(8) Policy, legal, or regulatory changes to support the safe and secure development and deployment of recycling and waste utilizing reactor technologies, and any impacts such changes would have on domestic storage of spent nuclear fuel and disposal through the recycling of spent nuclear fuel.''.

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