

118TH CONGRESS
2D SESSION

H. R. 8674

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

A BILL

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

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Milestones for Ad-
5 vanced Nuclear Fuel Act”.

6 **SEC. 2. MILESTONE-BASED DEVELOPMENT AND DEM-**
7 **ONSTRATION PROJECTS.**

8 (a) MILESTONE-BASED DEVELOPMENT AND DEM-
9 ONSTRATION PROGRAM.—The Nuclear Fuel Security Act
10 of 2023 (enacted as section 3131 of subtitle C of title

1 XXXI of division C of the National Defense Authorization
2 Act for Fiscal Year 2024 (Public Law 118–31)) is amend-
3 ed—

4 (1) in subsection (d)—

5 (A) by redesignating paragraphs (8), (9),
6 and (10) as paragraphs (9), (10), and (11), re-
7 spectively; and

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

10 “(8) NATIONAL LABORATORY.—The term ‘Na-
11 tional Laboratory’ has the meaning given such term
12 in section 2 of the Energy Policy Act of 2005 (42
13 U.S.C. 15801).”.

14 (2) by adding at the end the following new sub-
15 section:

16 “(q) APPLICATION OF CERTAIN MILESTONE-BASED
17 DEVELOPMENT AND DEMONSTRATION PROJECTS.—

18 “(1) IN GENERAL.—The Secretary shall award
19 milestone-based advanced fuel cycle technologies de-
20 velopment and demonstration projects in accordance
21 with section 9005 of the Energy Act of 2020 (42
22 U.S.C. 7256c; enacted as part of title IX of division
23 Z of the Consolidated Appropriations Act, 2021) in
24 carrying out the Nuclear Fuel Security Program and
25 the HALEU for Advanced Nuclear Reactor Dem-

1 onstration Projects Program (established pursuant
2 to subsection (e), and carried out in accordance with
3 subsections (f) and (h), respectively) in the same
4 manner and to the same extent as such section 9005
5 applies to section 846(g) of the Department of En-
6 ergy Organization Act (42 U.S.C. 7256(g)).

7 “(2) PURPOSE.—In carrying out milestone-
8 based advanced fuel cycle technologies development
9 and demonstration projects referred to in paragraph
10 (1), the Secretary shall support the development and
11 demonstration of an economically competitive, nu-
12 clear fuel supply chain by not later than three years
13 after the date of the enactment of this subsection
14 that includes domestic uranium production, conver-
15 sion, enrichment, deconversion, and waste reduction
16 for advanced fuels, such as HALEU and other ad-
17 vanced nuclear reactor fuels, for the following:

18 “(A) Department research, development,
19 and demonstration projects for advanced nu-
20 clear reactors, including civilian research and
21 experimental reactors.

22 “(B) Advanced nuclear reactors.

23 “(C) Strategic radioactive and stable iso-
24 topes producers, such as energy, medical, space-

1 based heating and power, and national security
2 application, and for basic research.

3 “(D) Interagency and intra-agency part-
4 nerships and collaborations, including with the
5 National Laboratories, the Advanced Research
6 Projects Agency-Energy, the National Aero-
7 nautics and Space Administration, the Depart-
8 ment of Defense, and other relevant Federal
9 and State departments and agencies, as deter-
10 mined appropriate by the Secretary.

11 “(3) ELIGIBILITY.—Any associated entity is eli-
12 gible to participate in the projects under this sub-
13 section if the Secretary has determined such entity
14 has the necessary resources and expertise. In select-
15 ing eligible associated entities, the Secretary shall
16 select, to the maximum extent practicable, associated
17 entities that—

18 “(A) prioritize novel technologies and proc-
19 esses;

20 “(B) utilize technologies and processes
21 that reduce nonproliferation risks; and

22 “(C) leverage matching funds from non-
23 Federal sources.

24 “(4) REQUIREMENTS.—In carrying out such
25 projects, the Secretary shall consult with developers

1 of advanced nuclear reactors and owners and opera-
2 tors of electric utilities to review proposed technical
3 and financial milestones and assist in the develop-
4 ment of such milestones.

5 “(5) SELECTION.—For the associated entities
6 selected under this subsection, the following condi-
7 tions shall apply:

8 “(A) Consistent with the existing authori-
9 ties of the Department, the Secretary may ter-
10 minate an agreement with a selected associated
11 entity for cause during the performance period.

12 “(B) Support under this subsection may
13 not be used to cover any costs or reimburse-
14 ment of expenses that are covered by Federal
15 funding provided through other support, includ-
16 ing awards.

17 “(6) APPLICATIONS.—A project proposal sub-
18 mitted under this subsection shall be evaluated
19 based upon the scientific, technical, and business
20 merits of such proposal, including consideration of
21 waste management benefits, through a peer-review
22 process, which shall include reviewers with appro-
23 priate expertise from the private sector, electric utili-
24 ties, the investment community, and nuclear fuel
25 and supply chain experts.

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

10 “(8) ANNUAL BRIEFING.—As part of the an-
11 nual budget request submitted for each fiscal year,
12 the Secretary shall provide the Committee on
13 Science, Space, and Technology of the House of
14 Representatives and the Committee on Energy and
15 Natural Resources of the Senate a briefing describ-
16 ing the selected projects under this subsection dur-
17 ing the previous fiscal year, the benefits and draw-
18 backs of milestone-based projects as compared to
19 traditional project structure funding models, and les-
20 sons-learned from project operations.”.

21 (b) NUCLEAR FUEL RECYCLING AND VIABILITY TO
22 SUPPORT EXISTING AND FUTURE REACTORS.—Section
23 953 of the Energy Policy Act of 2005 (42 U.S.C. 16273)
24 is amended by adding at the end the following new sub-
25 sections:

1 “(c) MILESTONE-BASED DEMONSTRATIONS
2 PROJECTS.—The Secretary shall carry out demonstration
3 projects under this section as a milestone-based dem-
4 onstration project in the same manner and to the same
5 extent as under section 9005 of the Energy Act of 2020
6 (42 U.S.C. 7256c; enacted as part of title IX of division
7 Z of the Consolidated Appropriations Act, 2021), with pri-
8 ority placed on awarding milestone-based awards to
9 projects that increase domestic fabrication and recycling
10 capacity of spent nuclear fuel for advanced fuels.

11 “(d) REPORT.—Not later than 180 days after the
12 date of the date of the enactment of this subsection, the
13 Secretary, acting through the Assistant Secretary for Nu-
14 clear Energy, shall complete and make publicly available
15 a study that analyzes the practicability, potential benefits,
16 including relating to waste reduction through separation
17 of high- and low-level waste or utilization of transuranic
18 materials, and estimated lifecycle costs of the following:

19 “(1) Dedicated recycling facilities, and co-locat-
20 tion with other nuclear energy infrastructure, that
21 utilize spent nuclear fuel from existing nuclear reac-
22 tors and future advanced nuclear reactors into usa-
23 ble nuclear fuel for the following:

24 “(A) Commercial light water reactors.

25 “(B) Advanced nuclear reactors.

1 “(C) Space-based heating and power.

2 “(D) Research reactors.

3 “(E) Nuclear battery applications.

4 “(F) Such other applications as deter-
5 mined appropriate by the Secretary.

6 “(2) Dedicated recycling facilities, and co-locat-
7 tion with other nuclear energy infrastructure, to uti-
8 lize high-assay low-enriched uranium (HALEU) (as
9 such term is defined in section 2001(d) of the En-
10 ergy Act of 2020 (42 U.S.C. 16281(d)), or other
11 feedstocks, such as uranium and transuranic mate-
12 rials, into usable nuclear fuel for the following:

13 “(A) Commercial light water reactors.

14 “(B) Advanced nuclear reactors.

15 “(C) Space-based power.

16 “(D) Research reactors.

17 “(E) Nuclear battery applications.

18 “(F) Such other applications as deter-
19 mined appropriate by the Secretary.

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

23 “(4) Dedicated spent nuclear fuel reprocessing
24 facilities, and co-location with other nuclear energy
25 infrastructure, to extract certain radioactive and sta-

1 ble isotopes needed for domestic and international
2 use, including for the following:

3 “(A) Advanced nuclear reactors.

4 “(B) Medical, industrial, space-based
5 power, and nuclear battery applications.

6 “(C) Such other applications as deter-
7 mined appropriate by the Secretary.

8 “(5) Commercial associated entities acquiring
9 spent fuel from operating or shutdown reactors and
10 any contract or policy revisions that could better fa-
11 cilitate such transactions.

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

15 “(A) Research or reuse.

16 “(B) Recycling.

17 “(C) Strategic radioactive or stable isotope
18 extraction.

19 “(7) Comprehensive cost-benefit analysis associ-
20 ated with spent fuel recycling, including consider-
21 ations of net reduction in spent fuel inventory, separa-
22 tion of high- and low-level waste with new storage
23 requirements, disposal of byproducts from spent fuel
24 recycling, supply chain impacts, and list of indus-

1 tries that would benefit from spent fuel recycling by-
2 products.

3 “(8) Policy, legal, or regulatory changes to sup-
4 port the safe and secure development and deploy-
5 ment of recycling and waste utilizing reactor tech-
6 nologies, and any impacts such changes would have
7 on domestic storage of spent nuclear fuel and dis-
8 posal through the recycling of spent nuclear fuel.”.

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