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(Original Signature of Member)

116TH CONGRESS
2D SESSION

H. R. _____

To establish and support advanced nuclear research and development programs and infrastructure at the Department of Energy, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

Mr. WEBER of Texas introduced the following bill; which was referred to the Committee on _____

A BILL

To establish and support advanced nuclear research and development programs and infrastructure at the Department of Energy, 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 “Nuclear Energy for
5 the Future Act”.

1 **SEC. 2. NUCLEAR ENERGY RESEARCH AND DEVELOPMENT.**

2 Section 952 of the Energy Policy Act of 2005 (42
3 U.S.C. 16272) is amended by adding at the end the fol-
4 lowing:

5 “(e) **ADVANCED REACTOR TECHNOLOGIES RE-**
6 **SEARCH AND DEVELOPMENT PROGRAM.**—

7 “(1) **IN GENERAL.**—The Secretary shall carry
8 out a program under which the Secretary shall con-
9 duct research relating to the development of ad-
10 vanced nuclear energy technologies that may offer
11 improved safety, functionality, and affordability.

12 “(2) **REQUIREMENTS.**—The program under this
13 subsection shall—

14 “(A) support efforts to reduce long-term
15 technical barriers for advanced nuclear energy
16 systems; and

17 “(B) be carried out in consultation with
18 the Nuclear Regulatory Commission to ensure
19 identification of any relevant concerns.

20 “(3) **PUBLIC-PRIVATE PARTNERSHIPS.**—

21 “(A) **IN GENERAL.**—In carrying out the
22 program under this subsection, the Secretary
23 shall, to the maximum extent practicable and
24 consistent with national security, make avail-
25 able nuclear energy research infrastructure to
26 industry partners in order to achieve faster and

1 cost-effective development of advanced nuclear
2 energy technologies toward commercial readi-
3 ness. The Secretary shall make available—

4 “(i) experimental capabilities and test-
5 ing facilities;

6 “(ii) computational capabilities, mod-
7 eling, and simulation tools;

8 “(iii) access to existing datasets and
9 data validation tools; and

10 “(iv) land use and site information for
11 demonstration facilities.

12 “(B) SELECTION.—

13 “(i) IN GENERAL.—The Secretary
14 shall select industry partners for awards
15 on a competitive merit-reviewed basis.

16 “(ii) CONSIDERATIONS.—In selecting
17 industry partners under clause (i), the Sec-
18 retary shall consider—

19 “(I) the information disclosed by
20 the Department as described in sub-
21 paragraph (A); and

22 “(II) any existing facilities the
23 Department will provide for public-
24 private partnership activities.

1 “(C) TERM.—An award made to an indus-
2 try partner under this subsection shall be for a
3 period of not more than 5 years, subject to the
4 availability of appropriations, after which the
5 award may be renewed, subject to a rigorous
6 merit review.

7 “(4) DEFINITION OF ADVANCED NUCLEAR EN-
8 ERGY.—In this subsection, the term ‘advanced nu-
9 clear energy’ means energy provided by—

10 “(A) a nuclear fission reactor, including a
11 prototype plant (as defined in sections 50.2 and
12 52.1 of title 10, Code of Federal Regulations
13 (or successor regulations)), with significant im-
14 provements compared to the most recent gen-
15 eration of fission reactors, including improve-
16 ments such as—

17 “(i) additional inherent safety fea-
18 tures;

19 “(ii) lower waste yields;

20 “(iii) improved fuel performance;

21 “(iv) increased tolerance to loss of
22 fuel cooling;

23 “(v) enhanced reliability;

24 “(vi) increased proliferation resist-
25 ance;

1 “(vii) increased thermal efficiency;

2 “(viii) reduced consumption of cooling
3 water;

4 “(ix) the ability to integrate into elec-
5 tric applications and nonelectric applica-
6 tions;

7 “(x) modular sizes to allow for deploy-
8 ment that corresponds with the demand
9 for electricity; or

10 “(xi) operational flexibility to respond
11 to changes in demand for electricity and to
12 complement integration with intermittent
13 renewable energy; or

14 “(B) a fusion reactor.”.

15 **SEC. 3. VERSATILE NEUTRON SOURCE.**

16 Section 955(c) of the Energy Policy Act of 2005 (42
17 U.S.C. 16275(c)) is amended to read as follows:

18 “(c) VERSATILE NEUTRON SOURCE.—

19 “(1) IN GENERAL.—In order to advance the re-
20 search and development of domestic advanced, af-
21 fordable, secure, and clean nuclear energy, the Sec-
22 retary shall construct a versatile reactor-based fast
23 neutron source, which shall operate as a national
24 user facility. The Secretary shall consult with the
25 private sector, universities, National Laboratories,

1 and relevant Federal agencies to ensure that such
2 facility is capable of meeting Federal research needs
3 for neutron irradiation services.

4 “(2) FACILITY CAPABILITIES.—

5 “(A) CAPABILITIES.—The Secretary shall
6 ensure that the facility described in paragraph
7 (1) will provide, at a minimum, the following
8 capabilities:

9 “(i) Fast neutron spectrum irradiation
10 capability.

11 “(ii) Capacity for upgrades to accom-
12 modate new or expanded research needs.

13 “(B) CONSIDERATIONS.—In carrying out
14 subparagraph (A), the Secretary shall consider
15 the following:

16 “(i) Capabilities that support experi-
17 mental high-temperature testing.

18 “(ii) Providing a source of fast neu-
19 trons, at a neutron flux higher than that
20 at which existing research facilities oper-
21 ate, sufficient to enable research for an op-
22 timal base of prospective users.

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

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

3 “(v) Multiple loops for fuels and ma-
4 terials testing of different coolants.

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

7 “(vii) Lifetime operating costs and
8 lifecycle costs.

9 “(3) START OF OPERATIONS.—The Secretary
10 shall, to the maximum extent practicable, ensure
11 that the start of full operations of the facility de-
12 scribed in paragraph (1) occurs before December 31,
13 2026.

14 “(4) REPORTING.—The Secretary shall include
15 in the annual budget request of the Department an
16 explanation for any delay in the process of the De-
17 partment in completing the facility described in
18 paragraph (1) by the deadline described in para-
19 graph (3).

20 “(5) COORDINATION.—The Secretary shall le-
21 verage the best practices for management, construc-
22 tion, and operation of national user facilities from
23 the Office of Science.

24 “(6) AUTHORIZATION OF APPROPRIATIONS.—
25 There are authorized to be appropriated to the Sec-

1 retary for the Office of Nuclear Energy to carry out
2 to completion the construction of the facility under
3 this subsection—

4 “(A) \$300,000,000 for fiscal year 2021;

5 “(B) \$550,000,000 for fiscal year 2022;

6 “(C) \$638,000,000 for fiscal year 2023;

7 “(D) \$765,000,000 for fiscal year 2024;

8 and

9 “(E) \$763,000,000 for fiscal year 2025.”.

10 **SEC. 4. HIGH-PERFORMANCE COMPUTATION COLLABO-**
11 **RATIVE RESEARCH PROGRAM.**

12 Section 957 of the Energy Policy Act of 2005 (42
13 U.S.C. 16277) is amended by adding at the end the fol-
14 lowing:

15 “(d) DUPLICATION.—The Secretary shall ensure the
16 coordination of, and avoid unnecessary duplication of, the
17 activities of the program under subsection (a) with the ac-
18 tivities of—

19 “(1) other research entities of the Department,
20 including the National Laboratories, the Advanced
21 Research Projects Agency–Energy, and the Ad-
22 vanced Scientific Computing Research program; and

23 “(2) industry.”.