

115TH CONGRESS
2D SESSION

H. R. 4376

IN THE SENATE OF THE UNITED STATES

FEBRUARY 14, 2018

Received; read twice and referred to the Committee on Energy and Natural
Resources

AN ACT

To direct the Secretary of Energy to carry out certain up-grades to research equipment and the construction of a research user facility, 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,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Department of Energy
3 Research Infrastructure Act of 2018”.

4 **SEC. 2. ADVANCED LIGHT SOURCE UPGRADE.**

5 (a) IN GENERAL.—The Secretary of Energy shall
6 provide for the upgrade to the Advanced Light Source de-
7 scribed in the publication approved by the Basic Energy
8 Sciences Advisory Committee on June 9, 2016, titled “Re-
9 port on Facility Upgrades”, including the development of
10 a multi-bend achromat lattice to produce a high flux of
11 coherent x-rays within the soft x-ray energy region.

12 (b) DEFINITIONS.—In this section:

13 (1) FLUX.—The term “flux” means the rate of
14 flow of photons.

15 (2) SOFT X-RAY.—The term “soft x-ray” means
16 a photon with energy in the range from 50 to 2,000
17 electron volts.

18 (c) START OF OPERATIONS.—The Secretary shall, to
19 the maximum extent practicable, ensure that the start of
20 full operations of the upgrade under this section occurs
21 before December 31, 2026.

22 (d) FUNDING.—There are authorized to be appro-
23 priated to the Secretary for the Office of Science to carry
24 out to completion the upgrade under this section—

25 (1) \$20,000,000 for fiscal year 2018;

26 (2) \$50,000,000 for fiscal year 2019;

- 1 (3) \$80,000,000 for fiscal year 2020;
- 2 (4) \$80,000,000 for fiscal year 2021;
- 3 (5) \$52,000,000 for fiscal year 2022;
- 4 (6) \$22,000,000 for fiscal year 2023; and
- 5 (7) \$6,000,000 for fiscal year 2024.

6 **SEC. 3. LINAC COHERENT LIGHT SOURCE II HIGH ENERGY**
7 **UPGRADE.**

8 (a) IN GENERAL.—The Secretary of Energy shall
9 provide for the upgrade to the Linac Coherent Light
10 Source II facility described in the publication approved by
11 the Basic Energy Sciences Advisory Committee on June
12 9, 2016, titled “Report on Facility Upgrades”, including
13 the development of experimental capabilities for high en-
14 ergy x-rays to reveal fundamental scientific discoveries.
15 The Secretary shall ensure the upgrade under this section
16 enables the production and use of high energy, ultra-short
17 pulse x-rays delivered at a high repetition rate.

18 (b) DEFINITIONS.—In this section:

19 (1) HIGH ENERGY X-RAY.—The term a “high
20 energy x-ray” means a photon with an energy at or
21 exceeding 12 kiloelectron volts.

22 (2) HIGH REPETITION RATE.—The term “high
23 repetition rate” means the delivery of x-ray pulses
24 up to one million pulses per second.

1 (3) ULTRA-SHORT PULSE X-RAYS.—The term
2 “ultra-short pulse x-rays” means x-ray bursts capa-
3 ble of durations of less than 100 femtoseconds.

4 (c) START OF OPERATIONS.—The Secretary shall, to
5 the maximum extent practicable, ensure that the start of
6 full operations of the upgrade under this section occurs
7 before December 31, 2025.

8 (d) FUNDING.—There are authorized to be appro-
9 priated to the Secretary for the Office of Science to carry
10 out to completion the upgrade under this section—

11 (1) \$20,000,000 for fiscal year 2018;

12 (2) \$55,000,000 for fiscal year 2019;

13 (3) \$80,000,000 for fiscal year 2020;

14 (4) \$80,000,000 for fiscal year 2021;

15 (5) \$54,000,000 for fiscal year 2022; and

16 (6) \$31,000,000 for fiscal year 2023.

17 **SEC. 4. FACILITY FOR RARE ISOTOPE BEAMS.**

18 (a) IN GENERAL.—The Secretary of Energy shall
19 provide for a Facility for Rare Isotope Beams to advance
20 the understanding of rare nuclear isotopes and the evo-
21 lution of the cosmos.

22 (b) FACILITY CAPABILITIES.—In carrying out sub-
23 section (a), the Secretary shall ensure that the user facility
24 will provide, at a minimum, the following:

1 (1) A rare isotope beam facility capable of 400
2 kW of beam power.

3 (2) Scientific instruments, which may include a
4 gamma-ray energy tracking array, a particle spec-
5 trometer with high rigidity, and a beta-decay detec-
6 tion system.

7 (c) **START OF OPERATIONS.**—The Secretary shall, to
8 the maximum extent practicable, ensure that the start of
9 full operations of the facility under this section occurs be-
10 fore June 30, 2022, with early operation in 2018.

11 (d) **FUNDING.**—There are authorized to be appro-
12 priated to the Secretary for the Office of Science to carry
13 out to completion the construction of the facility under
14 this section—

15 (1) \$101,200,000 for fiscal year 2018;

16 (2) \$86,000,000 for fiscal year 2019;

17 (3) \$64,000,000 for fiscal year 2020;

18 (4) \$36,300,000 for fiscal year 2021;

19 (5) \$24,000,000 for fiscal year 2022;

20 (6) \$15,000,000 for fiscal year 2023; and

21 (7) \$15,000,000 for fiscal year 2024.

22 **SEC. 5. SPENDING LIMITATION.**

23 No additional funds are authorized to be appro-
24 priated to carry out this Act and the amendments made
25 by this Act, and this Act and such amendments shall be

1 carried out using amounts otherwise available for such
2 purpose.

Passed the House of Representatives February 13,
2018.

Attest:

KAREN L. HAAS,

Clerk.