

**Suspend the Rules and Pass the Bill, H.R. 4376, with an Amendment**

**(The amendment strikes all after the enacting clause and inserts a new text)**

115TH CONGRESS  
2D SESSION

# H. R. 4376

To direct the Secretary of Energy to carry out certain upgrades to research equipment and the construction of a research user facility, and for other purposes.

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## IN THE HOUSE OF REPRESENTATIVES

NOVEMBER 13, 2017

Mr. KNIGHT (for himself, Mr. LIPINSKI, Mr. SMITH of Texas, Mr. WEBER of Texas, and Mr. HULTGREN) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

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## A BILL

To direct the Secretary of Energy to carry out certain upgrades 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,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Department of Energy  
5 Research Infrastructure Act of 2017”.

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

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

9 (b) DEFINITIONS.—In this section:

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

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

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

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

22 (1) \$20,000,000 for fiscal year 2018;

23 (2) \$50,000,000 for fiscal year 2019;

24 (3) \$80,000,000 for fiscal year 2020;

25 (4) \$80,000,000 for fiscal year 2021;

26 (5) \$52,000,000 for fiscal year 2022;

1 (6) \$22,000,000 for fiscal year 2023; and

2 (7) \$6,000,000 for fiscal year 2024.

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

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

15 (b) DEFINITIONS.—In this section:

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

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

22 (3) ULTRA-SHORT PULSE X-RAYS.—The term  
23 “ultra-short pulse x-rays” means x-ray bursts capa-  
24 ble of durations of less than one hundred  
25 femtoseconds.

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

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

8 (1) \$20,000,000 for fiscal year 2018;

9 (2) \$55,000,000 for fiscal year 2019;

10 (3) \$80,000,000 for fiscal year 2020;

11 (4) \$80,000,000 for fiscal year 2021;

12 (5) \$54,000,000 for fiscal year 2022; and

13 (6) \$31,000,000 for fiscal year 2023.

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

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

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

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

24 (2) Scientific instruments, which may include a  
25 gamma-ray energy tracking array, a particle spec-

1 trometer with high rigidity, and a beta-decay detec-  
2 tion system.

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

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

11 (1) \$101,200,000 for fiscal year 2018;

12 (2) \$86,000,000 for fiscal year 2019;

13 (3) \$64,000,000 for fiscal year 2020;

14 (4) \$36,300,000 for fiscal year 2021;

15 (5) \$24,000,000 for fiscal year 2022;

16 (6) \$15,000,000 for fiscal year 2023; and

17 (7) \$15,000,000 for fiscal year 2024.

18 **SEC. 5. SPENDING LIMITATION.**

19 No additional funds are authorized to be appro-  
20 priated to carry out this Act and the amendments made  
21 by this Act, and this Act and such amendments shall be  
22 carried out using amounts otherwise available for such  
23 purpose.