

# Union Calendar No. 417

115<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 4377

[Report No. 115-555]

To direct the Secretary of Energy to carry out an upgrade to research equipment and construct research user facilities, and for other purposes.

---

## IN THE HOUSE OF REPRESENTATIVES

NOVEMBER 13, 2017

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

FEBRUARY 13, 2018

Additional sponsors: Mr. FLEISCHMANN and Mrs. NOEM

FEBRUARY 13, 2018

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

# **A BILL**

To direct the Secretary of Energy to carry out an upgrade to research equipment and construct research user facilities, 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 “Accelerating American  
5 Leadership in Science Act of 2017”.

6 **SEC. 2. ADVANCED PHOTON SOURCE UPGRADE.**

7 (a) IN GENERAL.—The Secretary of Energy shall  
8 provide for the upgrade to the Advanced Photon Source  
9 described in the publication approved by the Basic Energy  
10 Sciences Advisory Committee on June 9, 2016, titled “Re-  
11 port on Facility Upgrades”, including the development of  
12 a multi-bend achromat lattice to produce a high flux of  
13 coherent x-rays within the hard x-ray energy region and  
14 a suite of beamlines optimized for this source.

15 (b) DEFINITIONS.—In this section:

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

18 (2) HARD X-RAY.—The term “hard x-ray”  
19 means a photon with energy greater than 20  
20 kiloelectron volts.

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

1 (d) FUNDING.—Out of funds appropriated to the Of-  
2 fice of Science, there shall be made available to the Sec-  
3 retary to carry out the upgrade under this section—

- 4 (1) \$93,000,000 for fiscal year 2018;
- 5 (2) \$130,000,000 for fiscal year 2019;
- 6 (3) \$152,400,000 for fiscal year 2020;
- 7 (4) \$150,000,000 for fiscal year 2021;
- 8 (5) \$73,600,000 for fiscal year 2022; and
- 9 (6) \$20,000,000 for fiscal year 2023.

10 **SEC. 3. LONG-BASELINE NEUTRINO FACILITY FOR DEEP**  
11 **UNDERGROUND NEUTRINO EXPERIMENT.**

12 (a) IN GENERAL.—The Secretary of Energy shall  
13 provide for a Long-Baseline Neutrino Facility to facilitate  
14 the international Deep Underground Neutrino Experiment  
15 to enable a program in neutrino physics to measure the  
16 fundamental properties of neutrinos, explore physics be-  
17 yond the Standard Model, and better clarify the nature  
18 of matter and antimatter.

19 (b) FACILITY CAPABILITIES.—The Secretary shall  
20 ensure that the facility described in subsection (a) will pro-  
21 vide, at a minimum, the following capabilities:

- 22 (1) A broad-band neutrino beam capable of 1.2  
23 megawatts (MW) of beam power and upgradable to  
24 2.4 MW of beam power.

1           (2) Four caverns excavated for a forty kiloton  
2 fiducial detector mass and supporting surface build-  
3 ings and utilities.

4           (3) Neutrino detector facilities at both the Far  
5 Site in South Dakota and the Near Site in Illinois  
6 to categorize and study neutrinos on their 800-mile  
7 journey between the two sites.

8           (4) Cryogenic systems to support neutrino de-  
9 tectors.

10       (c) START OF OPERATIONS.—The Secretary shall, to  
11 the maximum extent practicable, ensure that the start of  
12 full operations of the facility under this section occurs be-  
13 fore December 31, 2026.

14       (d) FUNDING.—Out of funds appropriated to the Of-  
15 fice of Science, there shall be made available to the Sec-  
16 retary to carry out activities, including construction of the  
17 facility, under this section—

18           (1) \$95,000,000 for fiscal year 2018;

19           (2) \$160,000,000 for fiscal year 2019;

20           (3) \$195,000,000 for fiscal year 2020;

21           (4) \$195,000,000 for fiscal year 2021;

22           (5) \$200,000,000 for fiscal year 2022;

23           (6) \$200,000,000 for fiscal year 2023;

24           (7) \$195,000,000 for fiscal year 2024;

25           (8) \$150,000,000 for fiscal year 2025; and

1 (9) \$50,000,000 for fiscal year 2026.

2 **SEC. 4. SPALLATION NEUTRON SOURCE PROTON POWER**  
3 **UPGRADE.**

4 (a) IN GENERAL.—The Secretary of Energy shall  
5 provide for a proton power upgrade to the Spallation Neu-  
6 tron Source.

7 (b) DEFINITION OF PROTON POWER UPGRADE.—  
8 For the purposes of this section, the term “proton power  
9 upgrade” means the Spallation Neutron Source power up-  
10 grade described in—

11 (1) the publication of the Office of Science of  
12 the Department of Energy titled “Facilities for the  
13 Future of Science: A Twenty-Year Outlook”, pub-  
14 lished December 2003;

15 (2) the publication of the Office of Science of  
16 the Department of Energy titled “Four Years Later:  
17 An Interim Report on Facilities for the Future of  
18 Science: A Twenty-Year Outlook”, published August  
19 2007; and

20 (3) the publication approved by the Basic En-  
21 ergy Sciences Advisory Committee on June 9, 2016,  
22 titled “Report on Facility Upgrades”.

23 (c) START OF OPERATIONS.—The Secretary shall, to  
24 the maximum extent practicable, ensure that the start of

1 full operations of the upgrade under this section occurs  
2 before December 31, 2025.

3 (d) FUNDING.—Out of funds appropriated to the Of-  
4 fice of Science, there shall be made available to the Sec-  
5 retary to carry out the upgrade under this section—

6 (1) \$26,000,000 for fiscal year 2018;

7 (2) \$70,800,000 for fiscal year 2019;

8 (3) \$33,500,000 for fiscal year 2020;

9 (4) \$40,500,000 for fiscal year 2021;

10 (5) \$21,100,000 for fiscal year 2022;

11 (6) \$13,200,000 for fiscal year 2023; and

12 (7) \$2,900,000 for fiscal year 2024.

13 **SEC. 5. SPALLATION NEUTRON SOURCE SECOND TARGET**  
14 **STATION.**

15 (a) IN GENERAL.—The Secretary of Energy shall  
16 provide for a second target station for the Spallation Neu-  
17 tron Source.

18 (b) DEFINITION OF SECOND TARGET STATION.—For  
19 the purposes of this section, the term “second target sta-  
20 tion” means the Spallation Neutron Source second target  
21 station described in—

22 (1) the publication of the Office of Science of  
23 the Department of Energy titled “Facilities for the  
24 Future of Science: A Twenty-Year Outlook”, pub-  
25 lished December 2003;

1           (2) the publication of the Office of Science of  
2           the Department of Energy titled “Four Years Later:  
3           An Interim Report on Facilities for the Future of  
4           Science: A Twenty-Year Outlook”, published August  
5           2007; and

6           (3) the publication approved by the Basic En-  
7           ergy Sciences Advisory Committee on June 9, 2016,  
8           titled “Report on Facility Upgrades”.

9           (c) START OF OPERATIONS.—The Secretary shall, to  
10          the maximum extent practicable, ensure that the start of  
11          full operations of the second target station under this sec-  
12          tion occurs before December 31, 2030, with the option for  
13          early operation in 2028.

14          (d) FUNDING.—Out of funds appropriated to the Of-  
15          fice of Science, there shall be made available to the Sec-  
16          retary to carry out activities, including construction, under  
17          this section—

18                 (1) \$5,000,000 for fiscal year 2018;

19                 (2) \$10,000,000 for fiscal year 2019;

20                 (3) \$15,000,000 for fiscal year 2020;

21                 (4) \$25,000,000 for fiscal year 2021;

22                 (5) \$50,000,000 for fiscal year 2022;

23                 (6) \$200,000,000 for fiscal year 2023;

24                 (7) \$275,000,000 for fiscal year 2024;

25                 (8) \$275,000,000 for fiscal year 2025;



- 1 (9) \$275,000,000 for fiscal year 2026;
- 2 (10) \$250,000,000 for fiscal year 2027; and
- 3 (11) \$120,000,000 for fiscal year 2028.

Union Calendar No. 417

115<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

**H. R. 4377**

[Report No. 115-555]

---

---

**A BILL**

To direct the Secretary of Energy to carry out an upgrade to research equipment and construct research user facilities, and for other purposes.

---

---

FEBRUARY 13, 2018

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