

115TH CONGRESS  
2D SESSION

# H. R. 4377

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## AN ACT

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

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Accelerating American  
3 Leadership in Science Act of 2018”.

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

5 (a) **IN GENERAL.**—The Secretary of Energy shall  
6 provide for the upgrade to the Advanced Photon Source  
7 described 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 hard x-ray energy region and  
12 a suite of beamlines optimized for this source.

13 (b) **DEFINITIONS.**—In this section:

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

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

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

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

26 (1) \$93,000,000 for fiscal year 2018;

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

6 **SEC. 3. LONG-BASELINE NEUTRINO FACILITY FOR DEEP**  
7 **UNDERGROUND NEUTRINO EXPERIMENT.**

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

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

18 (1) A broad-band neutrino beam capable of 1.2  
19 megawatts (MW) of beam power and upgradable to  
20 2.4 MW of beam power.

21 (2) Four caverns excavated for a 40 kiloton fi-  
22 ducial detector mass and supporting surface build-  
23 ings and utilities.

24 (3) Neutrino detector facilities at both the Far  
25 Site in South Dakota and the Near Site in Illinois

1 to categorize and study neutrinos on their 800-mile  
2 journey between the two sites.

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

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

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

- 13 (1) \$95,000,000 for fiscal year 2018;
- 14 (2) \$160,000,000 for fiscal year 2019;
- 15 (3) \$195,000,000 for fiscal year 2020;
- 16 (4) \$195,000,000 for fiscal year 2021;
- 17 (5) \$200,000,000 for fiscal year 2022;
- 18 (6) \$200,000,000 for fiscal year 2023;
- 19 (7) \$195,000,000 for fiscal year 2024;
- 20 (8) \$150,000,000 for fiscal year 2025; and
- 21 (9) \$50,000,000 for fiscal year 2026.

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

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

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

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

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

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

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

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

4 (1) \$26,000,000 for fiscal year 2018;

5 (2) \$70,800,000 for fiscal year 2019;

6 (3) \$33,500,000 for fiscal year 2020;

7 (4) \$40,500,000 for fiscal year 2021;

8 (5) \$21,100,000 for fiscal year 2022;

9 (6) \$13,200,000 for fiscal year 2023; and

10 (7) \$2,900,000 for fiscal year 2024.

11 **SEC. 5. SPALLATION NEUTRON SOURCE SECOND TARGET**

12 **STATION.**

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

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

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

24 (2) the publication of the Office of Science of  
25 the Department of Energy titled “Four Years Later:

1 An Interim Report on Facilities for the Future of  
2 Science: A Twenty-Year Outlook”, published August  
3 2007; and

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

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

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

- 16 (1) \$5,000,000 for fiscal year 2018;
- 17 (2) \$10,000,000 for fiscal year 2019;
- 18 (3) \$15,000,000 for fiscal year 2020;
- 19 (4) \$25,000,000 for fiscal year 2021;
- 20 (5) \$50,000,000 for fiscal year 2022;
- 21 (6) \$200,000,000 for fiscal year 2023;
- 22 (7) \$275,000,000 for fiscal year 2024;
- 23 (8) \$275,000,000 for fiscal year 2025;
- 24 (9) \$275,000,000 for fiscal year 2026;
- 25 (10) \$250,000,000 for fiscal year 2027; and

1 (11) \$120,000,000 for fiscal year 2028.

2 **SEC. 6. SPENDING LIMITATION.**

3 No additional funds are authorized to be appro-  
4 priated to carry out this Act and the amendments made  
5 by this Act, and this Act and such amendments shall be  
6 carried out using amounts otherwise available for such  
7 purpose.

Passed the House of Representatives February 13,  
2018.

Attest:

*Clerk.*





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