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115TH CONGRESS
1ST SESSION

# H. R. 4377

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

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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

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# 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.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

**SECTION 1. SHORT TITLE.**

This Act may be cited as the ''Accelerating American Leadership in Science Act of 2017''.

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

(a) IN GENERAL.—The Secretary of Energy shall provide for the upgrade to the Advanced Photon Source described in the publication approved by the Basic Energy

Sciences Advisory Committee on June 9, 2016, titled ''Report on Facility Upgrades'', including the development of a multi-bend achromat lattice to produce a high flux of coherent x-rays within the hard x-ray energy region and a suite of beamlines optimized for this source.

(b) DEFINITIONS.—In this section:

(1) FLUX.—The term ''flux'' means the rate of flow of photons.

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

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

(d) FUNDING.—Out of funds appropriated to the Office of Science, there shall be made available to the Secretary to carry out the upgrade under this section—

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

(2) $130,000,000 for fiscal year 2019;

(3) $152,400,000 for fiscal year 2020;

(4) $150,000,000 for fiscal year 2021;

(5) $73,600,000 for fiscal year 2022; and

(6) $20,000,000 for fiscal year 2023.

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

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

(b) FACILITY CAPABILITIES.—The Secretary shall ensure that the facility described in subsection (a) will provide, at a minimum, the following capabilities:

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

(2) Four caverns excavated for a forty kiloton fiducial detector mass and supporting surface buildings and utilities.

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

(4) Cryogenic systems to support neutrino detectors.

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

full operations of the facility under this section occurs before December 31, 2026.

(d) FUNDING.—Out of funds appropriated to the Office of Science, there shall be made available to the Secretary to carry out activities, including construction of the facility, under this section—

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

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

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

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

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

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

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

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

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

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

(a) IN GENERAL.—The Secretary of Energy shall provide for a proton power upgrade to the Spallation Neutron Source.

(b) DEFINITION OF PROTON POWER UPGRADE.—For the purposes of this section, the term ''proton power upgrade'' means the Spallation Neutron Source power upgrade described in—

(1) the publication of the Office of Science of the Department of Energy titled ''Facilities for the Future of Science: A Twenty-Year Outlook'', published December 2003;

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

(3) the publication approved by the Basic Energy Sciences Advisory Committee on June 9, 2016, titled ''Report on Facility Upgrades''.

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

(d) FUNDING.—Out of funds appropriated to the Office of Science, there shall be made available to the Secretary to carry out the upgrade under this section—

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

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

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

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

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

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

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

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

(a) IN GENERAL.—The Secretary of Energy shall provide for a second target station for the Spallation Neutron Source.

(b) DEFINITION OF SECOND TARGET STATION.—For the purposes of this section, the term ''second target station'' means the Spallation Neutron Source second target station described in—

(1) the publication of the Office of Science of the Department of Energy titled ''Facilities for the Future of Science: A Twenty-Year Outlook'', published December 2003;

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

(3) the publication approved by the Basic Energy Sciences Advisory Committee on June 9, 2016, titled ''Report on Facility Upgrades''.

(c) START OF OPERATIONS.—The Secretary shall, to the maximum extent practicable, ensure that the start of full operations of the second target station under this sec-

tion occurs before December 31, 2030, with the option for early operation in 2028.

(d) FUNDING.—Out of funds appropriated to the Office of Science, there shall be made available to the Secretary to carry out activities, including construction, under this section—

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

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

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

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

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

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

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

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

(9) $275,000,000 for fiscal year 2026;

(10) $250,000,000 for fiscal year 2027; and

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

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