American Super Computing Leadership Act of 2017

[Public Law 108–423]

[As Amended Through P.L. 115–246, Enacted September 28, 2018]

⟦Currency: This publication is a compilation of the text of Public Law 108–423. It was last amended by the public law listed in the As Amended Through note above and below at the bottom of each page of the pdf version and reflects current law through the date of the enactment of the public law listed at https://www.govinfo.gov/app/collection/comps/⟧

[Note: While this publication does not represent an official version of any Federal statute, substantial efforts have been made to ensure the accuracy of its contents. The official version of Federal law is found in the United States Statutes at Large and in the United States Code. The legal effect to be given to the Statutes at Large and the United States Code is established by statute (1 U.S.C. 112, 204).]

AN ACT To require the Secretary of Energy to carry out a program of research and development to advance high-end computing.

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

SECTION 1. [15 U.S.C. 5501 note] SHORT TITLE.

This Act may be cited as the "American Super Computing Leadership Act of 2017".

SEC. 2. [15 U.S.C. 5541] DEFINITIONS.

In this Act:

(1) DEPARTMENT.—The term "Department" means the Department of Energy.

(2) EXASCALE COMPUTING.—The term "exascale computing" means computing through the use of a computing machine that performs near or above 10 to the 18th power operations per second.

(3) HIGH-END COMPUTING SYSTEM.—The term "high-end computing system" means a computing system with performance that substantially exceeds that of systems that are commonly available for advanced scientific and engineering applications.

(4) LEADERSHIP SYSTEM.—The term "Leadership System" means a high-end computing system that is among the most advanced in the world in terms of performance in solving scientific and engineering problems.

(5) INSTITUTION OF HIGHER EDUCATION.—The term "institution of higher education" has the meaning given the term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

(6) SECRETARY.—The term "Secretary" means the Secretary of Energy.

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SEC. 3. [15 U.S.C. 5542] DEPARTMENT OF ENERGY HIGH-END COMPUTING RESEARCH AND DEVELOPMENT PROGRAM.

(a) IN GENERAL.—The Secretary shall—

(1) carry out a coordinated program across the Department of research and development (including development of software and hardware) to advance high-end computing systems; and

(2) develop and deploy high-end computing systems for advanced scientific and engineering applications.

(b) PROGRAM.—The program shall—

(1) support both individual investigators and multidisciplinary teams of investigators;

(2) conduct research in multiple architectures;

(3) conduct research on software for high-end computing systems, including research on algorithms, programming environments, tools, languages, and operating systems for high-end computing systems, in collaboration with architecture development efforts;

(4) provide for sustained access by the research community in the United States to high-end computing systems and to Leadership Systems, including provision of technical support for users of such systems;

(5) support technology transfer to the private sector and others in accordance with applicable law; and

(6) ensure that the high-end computing activities of the Department of Energy are coordinated with relevant activities in industry and with other Federal agencies, including the National Science Foundation, the Defense Advanced Research Projects Agency, the National Nuclear Security Administration, the National Security Agency, the National Institutes of Health, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institutes of Standards and Technology, and the Environmental Protection Agency.

(c) LEADERSHIP SYSTEMS FACILITIES.—

(1) IN GENERAL.—As part of the program carried out under this Act, the Secretary shall establish and operate 1 or more Leadership Systems facilities to—

(A) conduct advanced scientific and engineering research and development using Leadership Systems; and

(B) develop potential advancements in high-end computing system hardware and software.

(2) ADMINISTRATION.—In carrying out this subsection, the Secretary shall provide to Leadership Systems, on a competitive, merit-reviewed basis, access to researchers in United States industry, institutions of higher education, national laboratories, and other Federal agencies.

(d) EXASCALE COMPUTING PROGRAM.—

(1) IN GENERAL.—The Secretary shall conduct a research program (referred to in this subsection as the "Program") for exascale computing, including the development of two or more exascale computing machine architectures, to promote the missions of the Department.

(2) EXECUTION.—

(A) IN GENERAL.—In carrying out the Program, the Secretary shall—

(i) establish two or more National Laboratory partnerships with industry partners and institutions of higher education for the research and development of two or more exascale computing architectures across all applicable organizations of the Department;

(ii) conduct mission-related codesign activities in developing the exascale computing architectures under clause (i);

(iii) develop such advancements in hardware and software technology as are required to fully realize the potential of an exascale production system in addressing Department target applications and solving scientific problems involving predictive modeling and simulation and large scale data analytics and management;

(iv) explore the use of exascale computing technologies to advance a broad range of science and engineering; and

(v) provide, as appropriate, on a competitive, merit-reviewed basis, access for researchers in industries in the United States, institutions of higher education, National Laboratories, and other Federal agencies to the exascale computing systems developed pursuant to clause (i).

(B) SELECTION OF PARTNERS.—The Secretary shall select the partnerships with the computing facilities of the Department under subparagraph (A) through a competitive, peer-review process.

(3) CODESIGN AND APPLICATION DEVELOPMENT.—

(A) IN GENERAL.—The Secretary shall—

(i) carry out the Program through an integration of applications, computer science, applied mathematics, and computer hardware architecture using the partnerships established pursuant to paragraph (2) to ensure that, to the maximum extent practicable, two or more exascale computing machine architectures are capable of solving Department target applications and broader scientific problems, including predictive modeling and simulation and large scale data analytics and management; and

(ii) conduct outreach programs to increase the readiness for the use of such platforms by domestic industries, including manufacturers.

(B) REPORT.—The Secretary shall submit to Congress a report describing—

(i) how the integration under subparagraph (A) is furthering application science data and computational workloads across application interests, including national security, material science, physical science, cybersecurity, biological science, the Materials Genome and BRAIN Initiatives of the President, advanced manufacturing, and the national electric grid; and

(ii) the roles and responsibilities of National Laboratories and industry, including the definition of the roles and responsibilities within the Department to ensure an integrated program across the Department.

(4) PROJECT REVIEW.—

(A) IN GENERAL.—The exascale architectures developed pursuant to partnerships established pursuant to paragraph (2) shall be reviewed through a project review process.

(B) REPORT.—Not later than 90 days after the date of enactment of this subsection, the Secretary shall submit to Congress a report on—

(i) the results of the review conducted under subparagraph (A); and

(ii) the coordination and management of the Program to ensure an integrated research program across the Department.

(5) ANNUAL REPORTS.—At the time of the budget submission of the Department for each fiscal year, the Secretary, in consultation with the members of the partnerships established pursuant to paragraph (2), shall submit to Congress a report that describes funding for the Program as a whole by functional element of the Department and critical milestones.

〔Section 4 was repealed by section 105(u) of Public Law 114–329.〕

SEC. 5. ASTRONOMY AND ASTROPHYSICS ADVISORY COMMITTEE.

(a) AMENDMENTS.—Section 23 of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n-9) is amended—

(1) in subsection (a) and paragraphs (1) and (2) of subsection (b), by striking "and the National Aeronautics and Space Administration" and inserting ", the National Aeronautics and Space Administration, and the Department of Energy";

(2) in subsection (b)(3), by striking "Administration, and" and inserting "Administration, the Secretary of Energy, ";

(3) in subsection (c)—

(A) in paragraphs (1) and (2), by striking "5" and inserting "4";

(B) in paragraph (2), by striking "and" at the end;

(C) by redesignating paragraph (3) as paragraph (4), and in that paragraph by striking "3" and inserting "2"; and

(D) by inserting after paragraph (2) the following:

"(3) 3 members selected by the Secretary of Energy;"and

(4) in subsection (f), by striking "the advisory bodies of other Federal agencies, such as the Department of Energy, which may engage in related research activities" and inserting "other Federal advisory committees that advise Federal agencies that engage in related research activities".

(b) 〔42 U.S.C. 1862n-9 note〕 EFFECTIVE DATE.—The amendments made by subsection (a) take effect on March 15, 2005.

SEC. 6. REMOVAL OF SUNSET PROVISION FROM SAVINGS IN CON-STRUCTION ACT OF 1996.

Section 14 of the Metric Conversion Act of 1975 (15 U.S.C. 205*l*) is amended by striking subsection (e).