112TH CONGRESS
2D SESSION

S. _____

To amend the Department of Energy High-End Computing Revitalization Act of 2004 to improve the high-end computing research and development program of the Department of Energy, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. BINGAMAN (for himself, Mr. ALEXANDER, and Mr. DURBIN) introduced the following bill; which was read twice and referred to the Committee on _____

A BILL

To amend the Department of Energy High-End Computing Revitalization Act of 2004 to improve the high-end computing research and development program of the Department of Energy, 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 ''Department of Energy High-End Computing Improvement Act of 2012''.

SEC. 2. RENAMING OF ACT.

(a) IN GENERAL.—Section 1 of the Department of Energy High-End Computing Revitalization Act of 2004

(15 U.S.C. 5501 note; Public Law 108–423) is amended by striking ''Department of Energy High-End Computing Revitalization Act of 2004'' and inserting ''Department of Energy High-End Computing Act of 2012''.

(b) CONFORMING AMENDMENT.—Section 976(a)(1) of the Energy Policy Act of 2005 (42 U.S.C. 16316(1)) is amended by striking ''Department of Energy High-End Computing Revitalization Act of 2004'' and inserting ''Department of Energy High-End Computing Act of 2012''.

SEC. 3. DEFINITIONS.

Section 2 of the Department of Energy High-End Computing Act of 2012 (15 U.S.C. 5541) is amended—

(1) by redesignating paragraphs (2) through (5) as paragraphs (3) through (6), respectively;

(2) by striking paragraph (1) and inserting the following:

''(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 floating point operations per second.''; and

(3) in paragraph (6) (as redesignated by paragraph (1)), by striking '', acting through the Direc-

tor of the Office of Science of the Department of Energy''.

SEC. 4. DEPARTMENT OF ENERGY HIGH-END COMPUTING RESEARCH AND DEVELOPMENT PROGRAM.

Section 3 of the Department of Energy High-End Computing Act of 2012 (15 U.S.C. 5542) is amended—

(1) in subsection (a)(1), by striking ''program'' and inserting ''coordinated program across the Department'';

(2) in subsection (b)(2), by striking '', which may'' and all that follows through ''architectures''; and

(3) by striking subsection (d) and inserting the following:

''(d) EXASCALE COMPUTING PROGRAM.—

''(1) IN GENERAL.—The Secretary shall conduct a research program (referred to in this subsection as the 'program') to develop 1 or more exascale computing machines to promote the missions of the Department.

''(2) COORDINATION.—In carrying out the program, the Secretary shall coordinate the development of 1 or more exascale computing machines across all applicable agencies of the Department.

''(3) CODESIGN.—The Secretary shall carry out the program through an integration of application, computer science, and computer hardware architecture using public-private partnerships to ensure that, to the maximum extent practicable, 1 or more exascale computing machines are capable of solving Department target applications and scientific problems.

''(4) MERIT REVIEW.—The development of 1 or more exascale computing machines shall be conducted through a merit review process.

''(5) ANNUAL REPORTS.—At the time of the budget submission of the Department for each fiscal year, the Secretary shall submit to Congress a report that describes funding for the exascale computing program as a whole by functional element of the Department and critical milestones.''.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

Section 4 of the Department of Energy High-End Computing Act of 2012 (15 U.S.C. 5543) is amended—

(1) by striking ''this Act'' and inserting ''section 3(d)''; and

(2) by striking paragraphs (1) through (3) and inserting the following:

''(1) $110,000,000 for fiscal year 2013;

"(2) $220,000,000 for fiscal year 2014; and

"(3) $300,000,000 for fiscal year 2015.".