

112TH CONGRESS
2^D SESSION

S. 3459

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

JULY 31, 2012

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

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.

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 “Department of Energy
5 High-End Computing Improvement Act of 2012”.

6 **SEC. 2. RENAMING OF ACT.**

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

1 (15 U.S.C. 5501 note; Public Law 108–423) is amended
2 by striking “Department of Energy High-End Computing
3 Revitalization Act of 2004” and inserting “Department of
4 Energy High-End Computing Act of 2012”.

5 (b) CONFORMING AMENDMENT.—Section 976(a)(1)
6 of the Energy Policy Act of 2005 (42 U.S.C. 16316(1))
7 is amended by striking “Department of Energy High-End
8 Computing Revitalization Act of 2004” and inserting “De-
9 partment of Energy High-End Computing Act of 2012”.

10 **SEC. 3. DEFINITIONS.**

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

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

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

17 “(1) DEPARTMENT.—The term ‘Department’
18 means the Department of Energy.

19 “(2) EXASCALE COMPUTING.—The term
20 ‘exascale computing’ means computing through the
21 use of a computing machine that performs near or
22 above 10 to the 18th power floating point operations
23 per second.”; and

24 (3) in paragraph (6) (as redesignated by para-
25 graph (1)), by striking “, acting through the Direc-

1 tor of the Office of Science of the Department of
2 Energy”.

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

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

7 (1) in subsection (a)(1), by striking “program”
8 and inserting “coordinated program across the De-
9 partment”;

10 (2) in subsection (b)(2), by striking “, which
11 may” and all that follows through “architectures”;
12 and

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

15 “(d) EXASCALE COMPUTING PROGRAM.—

16 “(1) IN GENERAL.—The Secretary shall con-
17 duct a research program (referred to in this sub-
18 section as the ‘program’) to develop 1 or more
19 exascale computing machines to promote the mis-
20 sions of the Department.

21 “(2) COORDINATION.—In carrying out the pro-
22 gram, the Secretary shall coordinate the develop-
23 ment of 1 or more exascale computing machines
24 across all applicable agencies of the Department.

1 “(3) CODESIGN.—The Secretary shall carry out
2 the program through an integration of application,
3 computer science, and computer hardware architec-
4 ture using public-private partnerships to ensure
5 that, to the maximum extent practicable, 1 or more
6 exascale computing machines are capable of solving
7 Department target applications and scientific prob-
8 lems.

9 “(4) MERIT REVIEW.—The development of 1 or
10 more exascale computing machines shall be con-
11 ducted through a merit review process.

12 “(5) ANNUAL REPORTS.—At the time of the
13 budget submission of the Department for each fiscal
14 year, the Secretary shall submit to Congress a re-
15 port that describes funding for the exascale com-
16 puting program as a whole by functional element of
17 the Department and critical milestones.”.

18 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

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

21 (1) by striking “this Act” and inserting “sec-
22 tion 3(d)”; and

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

25 “(1) \$110,000,000 for fiscal year 2013;

- 1 “(2) \$220,000,000 for fiscal year 2014; and
- 2 “(3) \$300,000,000 for fiscal year 2015.”.

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