

112TH CONGRESS
2^D SESSION

H. R. 6454

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 HOUSE OF REPRESENTATIVES

SEPTEMBER 20, 2012

Mrs. BIGGERT introduced the following bill; which was referred to the
Committee on Science, Space, and Technology

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 Act of 2012”.

6 **SEC. 2. DEFINITIONS.**

7 Section 2 of the Department of Energy High-End
8 Computing Revitalization Act of 2004 (15 U.S.C. 5541)

1 is amended by striking paragraphs (1) through (5) and
2 inserting—

3 (1) CO-DESIGN.—The term “co-design” means
4 the joint development of application algorithms,
5 models, and codes with computer technology archi-
6 tectures and operating systems to maximize effective
7 use of high-end computing systems.

8 (2) DEPARTMENT.—The term “Department”
9 means the Department of Energy.

10 (3) EXASCALE.—The term “exascale” means
11 computing system performance at or near 10 to the
12 18th power floating point operations per second.

13 (4) HIGH-END COMPUTING SYSTEM.—The term
14 “high-end computing system” means a computing
15 system with performance that substantially exceeds
16 that of systems that are commonly available for ad-
17 vanced scientific and engineering applications.

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

22 (6) NATIONAL LABORATORY.—The term “Na-
23 tional Laboratory” means any one of the seventeen
24 laboratories owned by the Department.

1 (7) SECRETARY.—The term “Secretary” means
2 the Secretary of Energy.

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

5 Section 3 of the Department of Energy High-End
6 Computing Revitalization Act of 2004 (15 U.S.C. 5542)
7 is amended—

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

11 (2) in subsection (b)(2), by striking “vector”
12 and all that follows through “architectures” and in-
13 serting “computer technologies that show promise of
14 substantial reductions in power requirements and
15 substantial gains in parallelism of multicore proc-
16 essors, concurrency, memory and storage, band-
17 width, and reliability”; and

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

20 “(d) EXASCALE COMPUTING PROGRAM.—

21 “(1) IN GENERAL.—The Secretary shall con-
22 duct a coordinated research program to develop one
23 or more exascale computing systems to advance the
24 missions of the Department.

1 “(2) EXECUTION.—The Secretary shall through
2 competitive merit review establish two or more Na-
3 tional Laboratory-industry partnerships to conduct
4 integrated research, development, and engineering of
5 one or more prototype exascale systems, and—

6 “(A) conduct mission-related co-design ac-
7 tivities in developing such prototype exascale
8 platforms; and

9 “(B) develop those advancements in hard-
10 ware and software technology required to fully
11 realize the potential of an exascale production
12 system in addressing Department target appli-
13 cations and solving scientific problems involving
14 predictive modeling and simulation and large-
15 scale data analytics and management.

16 “(3) ADMINISTRATION.—In carrying out this
17 program, the Secretary shall—

18 “(A) provide, on a competitive, merit-re-
19 viewed basis, access for researchers in United
20 States industry, institutions of higher edu-
21 cation, National Laboratories, and other Fed-
22 eral agencies to these exascale systems, as ap-
23 propriate; and

24 “(B) conduct outreach programs to in-
25 crease the readiness for the use of such plat-

1 forms by domestic industries, including manu-
2 facturers.

3 “(4) REPORTS.—

4 “(A) INTEGRATED STRATEGY AND PRO-
5 GRAM MANAGEMENT PLAN.—The Secretary
6 shall submit to Congress, not later than 90
7 days after the date of enactment of the Depart-
8 ment of Energy High-End Computing Act of
9 2012, a report outlining an integrated strategy
10 and program management plan, including tar-
11 get dates for prototypical and production
12 exascale platforms, interim milestones to reach-
13 ing these targets, functional requirements, roles
14 and responsibilities of National Laboratories
15 and industry, acquisition strategy, and esti-
16 mated resources required, to achieve this
17 exascale system capability.

18 “(B) STATUS REPORTS.—At the time of
19 the budget submission of the Department for
20 each fiscal year, the Secretary shall submit a
21 report to Congress that describes the status of
22 milestones and costs in achieving the objectives
23 of the exascale computing program.”.

1 **SEC. 4. AUTHORIZATION OF APPROPRIATIONS.**

2 Section 4 of the Department of Energy High-End
3 Computing Revitalization Act of 2004 (15 U.S.C. 5543)
4 is amended—

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

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

9 (A) \$110,000,000 for fiscal year 2013;

10 (B) \$195,000,000 for fiscal year 2014; and

11 (C) \$260,000,000 for fiscal year 2015.

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