

108TH CONGRESS
2D SESSION

H. R. 4516

IN THE SENATE OF THE UNITED STATES

JULY 8, 2004

Received; read twice and referred to the Committee on Energy and Natural
Resources

AN ACT

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

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Department of Energy
3 High-End Computing Revitalization Act of 2004”.

4 **SEC. 2. DEFINITIONS.**

5 For purposes of this Act:

6 (1) **HIGH-END COMPUTING SYSTEM.**—The term
7 “high-end computing system” means a computing
8 system with performance that substantially exceeds
9 that of systems that are commonly available for ad-
10 vanced scientific and engineering applications.

11 (2) **LEADERSHIP SYSTEM.**—The term “Leader-
12 ship System” means a high-end computing system
13 that is among the most advanced in the world in
14 terms of performance in solving scientific and engi-
15 neering problems.

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

20 (4) **SECRETARY.**—The term “Secretary” means
21 the Secretary of Energy.

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

24 (a) **IN GENERAL.**—The Secretary shall carry out a
25 program of research and development (involving software
26 and hardware) to advance high-end computing systems,

1 and shall develop and deploy such systems for advanced
2 scientific and engineering applications.

3 (b) PROGRAM.—The program shall—

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

6 (2) conduct research in multiple architectures,
7 which may include vector, reconfigurable logic,
8 streaming, processor-in-memory, and multithreading
9 architectures;

10 (3) conduct research on software for high-end
11 computing systems, including research on algo-
12 rithms, programming environments, tools, languages,
13 and operating systems for high-end computing sys-
14 tems, in collaboration with architecture development
15 efforts;

16 (4) provide for sustained access by the research
17 community in the United States to high-end com-
18 puting systems and to Leadership Systems, includ-
19 ing provision for technical support for users of such
20 systems;

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

24 (6) ensure that the high-end computing activi-
25 ties of the Department of Energy are coordinated

1 with relevant activities in industry and with other
2 Federal agencies, including the National Science
3 Foundation, the Defense Advanced Research
4 Projects Agency, the National Security Agency, the
5 National Institutes of Health, the National Aero-
6 nautics and Space Administration, the National Oce-
7 anic and Atmospheric Administration, the National
8 Institute of Standards and Technology, and the En-
9 vironmental Protection Agency.

10 (c) LEADERSHIP SYSTEMS FACILITIES.—

11 (1) IN GENERAL.—As part of the program car-
12 ried out under this Act, the Secretary shall establish
13 and operate Leadership Systems facilities to—

14 (A) conduct advanced scientific and engi-
15 neering research and development using Lead-
16 ership Systems; and

17 (B) develop potential advancements in
18 high-end computing system hardware and soft-
19 ware.

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

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

2 In addition to amounts otherwise made available for
3 high-end computing, there are authorized to be appro-
4 priated to the Secretary to carry out this Act—

5 (1) \$50,000,000 for fiscal year 2005;

6 (2) \$55,000,000 for fiscal year 2006; and

7 (3) \$60,000,000 for fiscal year 2007.

8 **SEC. 5. SOCIETAL IMPLICATIONS OF INFORMATION TECH-**
9 **NOLOGY.**

10 In carrying out its programs on the social, economic,
11 legal, ethical, and cultural implications of information
12 technology, the National Science Foundation shall support
13 research into the implications of computers (including
14 both hardware and software) that would be capable of
15 mimicking human abilities to learn, reason, and make de-
16 cisions.

17 **SEC. 6. ASTRONOMY AND ASTROPHYSICS ADVISORY COM-**
18 **MITTEE.**

19 (a) AMENDMENTS.—Section 23 of the National
20 Science Foundation Authorization Act of 2002 (42 U.S.C.
21 1862n–9) is amended—

22 (1) by striking “and the National Aeronautics
23 and Space Administration” each place it appears in
24 subsections (a) and (b) and inserting “, the National
25 Aeronautics and Space Administration, and the De-
26 partment of Energy”;

1 (2) in subsection (b)(3), by inserting “the Sec-
2 retary of Energy,” after “the Administrator of the
3 National Aeronautics and Space Administration,”;

4 (3) in subsection (c)—

5 (A) by striking “5” in each of paragraphs
6 (1) and (2) and inserting “4”;

7 (B) by striking “and” at the end of para-
8 graph (2);

9 (C) by redesignating paragraph (3) as
10 paragraph (4), and in that paragraph by strik-
11 ing “3” and inserting “2”; and

12 (D) by inserting after paragraph (2) the
13 following new paragraph:

14 “(3) 3 members selected by the Secretary of
15 Energy; and”; and

16 (4) in subsection (f), by striking “the advisory
17 bodies of other Federal agencies, such as the De-
18 partment of Energy, which may engage in related
19 research activities” and inserting “other Federal ad-
20 visory committees that advise Federal agencies
21 which engage in related research activities”.

22 (b) EFFECTIVE DATE.—The amendments made by
23 subsection (a) shall take effect on March 15, 2005.

1 **SEC. 7. REMOVAL OF SUNSET PROVISION FROM SAVINGS**
2 **IN CONSTRUCTION ACT OF 1996.**

3 Section 14(e) of the Metric Conversion Act of 1975
4 (15 U.S.C. 2051(e)) is repealed.

Passed the House of Representatives July 7, 2004.

Attest: **JEFF TRANDAHL,**
Clerk.