

# Union Calendar No. 342

108<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

# H. R. 4516

[Report No. 108-578]

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

---

## IN THE HOUSE OF REPRESENTATIVES

JUNE 4, 2004

Mrs. BIGGERT (for herself and Mr. DAVIS of Tennessee) introduced the following bill; which was referred to the Committee on Science

JULY 1, 2004

Additional sponsor: Mr. GORDON

JULY 1, 2004

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in *italic*]

[For text of introduced bill, see copy of bill as introduced on June 4, 2004]

---

## A BILL

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 mean-*  
18 *ing given the term in section 101(a) of the Higher*  
19 *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, and*

1 *shall develop and deploy such systems for advanced sci-*  
2 *entific 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 algorithms,*  
12 *programming environments, tools, languages, and op-*  
13 *erating systems for high-end computing systems, in*  
14 *collaboration with architecture development efforts;*

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

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

23 *(6) ensure that the high-end computing activities*  
24 *of the Department of Energy are coordinated with rel-*  
25 *evant activities in industry and with other Federal*

1        *agencies, including the National Science Foundation,*  
2        *the Defense Advanced Research Projects Agency, the*  
3        *National Security Agency, the National Institutes of*  
4        *Health, the National Aeronautics and Space Admin-*  
5        *istration, the National Oceanic and Atmospheric Ad-*  
6        *ministration, the National Institute of Standards and*  
7        *Technology, and the Environmental Protection Agen-*  
8        *cy.*

9        *(c) LEADERSHIP SYSTEMS FACILITIES.—*

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

13                    *(A) conduct advanced scientific and engi-*  
14                    *neering research and development using Leader-*  
15                    *ship Systems; and*

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

18            *(2) ADMINISTRATION.—In carrying out this sub-*  
19            *section, the Secretary shall provide access to Leader-*  
20            *ship Systems on a competitive, merit-reviewed basis*  
21            *to researchers in United States industry, institutions*  
22            *of higher education, national laboratories, and other*  
23            *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.*

Union Calendar No. 342

108<sup>TH</sup> CONGRESS  
2<sup>D</sup> SESSION

**H. R. 4516**

[Report No. 108-578]

---

---

## **A BILL**

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

---

---

JULY 1, 2004

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed