

# DEPARTMENT OF ENERGY HIGH-END COMPUTING REVITALIZATION ACT OF 2004

Mrs. BIGGERT. Mr. Speaker, I move to suspend the rules and pass the bill (H.R. 4516) to require the Secretary of Energy to carry out a program of research and development to advance high-end computing, as amended.

The Clerk read as follows:

H.R. 4516

*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 Revitalization Act of 2004".

## SEC. 2. DEFINITIONS.

For purposes of this Act:

(1) **HIGH-END COMPUTING SYSTEM.**—The term "high-end computing system" means a computing system with performance that substantially exceeds that of systems that are commonly available for advanced scientific and engineering applications.

(2) **LEADERSHIP SYSTEM.**—The term "Leadership System" means a high-end computing system that is among the most advanced in the world in terms of performance in solving scientific and engineering problems.

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

(4) **SECRETARY.**—The term "Secretary" means the Secretary of Energy.

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

(a) **IN GENERAL.**—The Secretary shall carry out a program of research and development (involving software and hardware) to advance high-end computing systems, and shall develop and deploy such systems for advanced scientific and engineering applications.

(b) **PROGRAM.**—The program shall—

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

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

(3) conduct research on software for high-end computing systems, including research on algorithms, programming environments, tools, languages, and operating systems for high-end computing systems, in collaboration with architecture development efforts;

(4) provide for sustained access by the research community in the United States to high-end computing systems and to Leadership Systems, including provision for technical support for users of such systems;

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

(6) ensure that the high-end computing activities of the Department of Energy are coordinated with relevant activities in industry and with other Federal agencies, including the National Science Foundation, the Defense Advanced Research Projects Agency, the National Security Agency, the National Institutes of Health, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, and the Environmental Protection Agency.

(c) **LEADERSHIP SYSTEMS FACILITIES.**—

(1) **IN GENERAL.**—As part of the program carried out under this Act, the Secretary shall establish and operate Leadership Systems facilities to—

(A) conduct advanced scientific and engineering research and development using Leadership Systems; and

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

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

## SEC. 4. AUTHORIZATION OF APPROPRIATIONS.

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

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

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

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

## SEC. 5. SOCIETAL IMPLICATIONS OF INFORMATION TECHNOLOGY.

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

## SEC. 6. ASTRONOMY AND ASTROPHYSICS ADVISORY COMMITTEE.

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

(1) by striking "and the National Aeronautics and Space Administration" each place it appears in subsections (a) and (b) and inserting ", the National Aeronautics and Space Administration, and the Department of Energy";

(2) in subsection (b)(3), by inserting "the Secretary of Energy," after "the Administrator of the National Aeronautics and Space Administration,";

(3) in subsection (c)—

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

(B) by striking "and" at the end of paragraph (2);

(C) by redesignating paragraph (3) as paragraph (4), and in that paragraph by striking "3" and inserting "2"; and

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

"(3) 3 members selected by the Secretary of Energy; and"; and

(4) in subsection (f), by striking "the advisory bodies of other Federal agencies, such as the Department of Energy, which may engage in related research activities" and inserting "other Federal advisory committees that advise Federal agencies which engage in related research activities".

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

## SEC. 7. REMOVAL OF SUNSET PROVISION FROM SAVINGS IN CONSTRUCTION ACT OF 1996.

Section 14(e) of the Metric Conversion Act of 1975 (15 U.S.C. 205l(e)) is repealed.

The SPEAKER pro tempore. Pursuant to the rule, the gentlewoman from Illinois (Mrs. BIGGERT) and the gentleman from Tennessee (Mr. DAVIS) each will control 20 minutes.

The Chair recognizes the gentlewoman from Illinois (Mrs. BIGGERT).

GENERAL LEAVE

Mrs. BIGGERT. Mr. Speaker, I ask unanimous consent that all Members

may have 5 legislative days in which to revise and extend their remarks and to include extraneous material on H.R. 4516, as amended, the bill now under consideration.

The SPEAKER pro tempore. Is there objection to the request of the gentlewoman from Illinois?

There was no objection.

Mrs. BIGGERT. Mr. Speaker, I yield myself such time as I may consume.

Mr. Speaker, in light of the bill just considered by this body, I am sure many of our colleagues are wondering why we are considering another high-performance computing bill and what the difference is between this bill and the one just approved. In a nutshell, the bill we are considering right now, H.R. 4516, the Department of Energy High-End Computing Revitalization Act of 2004, authorizes specific research and development activities that the Department of Energy will need to undertake to meet the mandates laid out in H.R. 4218, the bill just considered by the House.

H.R. 4516 strengthens the interagency planning process for high-performance computing R&D. It also makes clear that the Department of Energy, through its Office of Science and the National Science Foundation, are the two lead agencies within the Federal Government responsible for providing U.S. researchers with access to the most advanced computing facilities in the world.

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The bill under consideration now complements H.R. 4218 by spelling out in detail the R&D that the Department of Energy should be doing to help ensure that America remains a leader in the development and use of super computers.

More specifically, H.R. 4516 does three things. First, it requires the Secretary of Energy to establish and operate high-end computing facilities involving leadership-class machines that are among the most elite in the world.

Second, the bill directs the Secretary to conduct advanced scientific and engineering R&D using these leadership-class systems and to continue to advance the capabilities of high-end computing hardware and software.

Finally, the bill requires that these computing facilities be made available on a competitive, peer-reviewed basis to researchers from U.S. industry, institutions of higher education, national laboratories, and other Federal agencies.

Mr. Speaker, last fall the Department of Energy's Office of Science released its 20-year facility plan, a prioritized list of the most important facilities needed to advance multiple fields of scientific endeavor over the next 2 decades. The second-highest priority identified on the Department's list was ultra-scale computing. Ultra-scale or high-end computing ranks high on the Department of Energy's priority list, because these computers are essential tools for achieving the next

generation of scientific breakthroughs in a variety of fields central to the Department of Energy's mission.

In many cases, dramatic breakthroughs will require increasing computing power by a factor of a hundred or in some cases by a factor of a thousand. While attaining these increases may seem daunting, the history of computer development has taught us that, with a sustained commitment to research, such gains are within our reach. That is why Secretary Abraham recently announced the selection of a team including Argonne National Laboratory, Oak Ridge National Laboratory, IBM, Cray and other partners to develop and build a new high-end computing facility.

When completed, this new user facility will outpace the world's current number one computer, Japan's Earth Simulator. H.R. 4516 supports this new initiative of the Department of Energy and ensures that the Department can fulfill its responsibility to help lead the Federal Government's supercomputing R&D efforts.

Mr. Speaker, by renewing our commitment to high-end computing research and development at the Department of Energy, the United States can regain its competitive edge in the development and use of supercomputers and recapture the distinction of being home to the world's most powerful computer. Again, our Nation's scientific enterprise and our economy will be the stronger for it.

Mr. Speaker, I reserve the balance of my time.

Mr. DAVIS of Tennessee. Mr. Speaker, I yield myself such time as I may consume.

Mr. Speaker, the gentlewoman from Illinois (Mrs. BIGGERT) and I are pleased to bring H.R. 4516, the Department of Energy High-End Computing Revitalization Act of 2004, for consideration in the House today.

H.R. 4516 authorizes the Department of Energy to advance high-end computing, and the House Committee on Science has held several hearings that have emphasized its importance to achieve progress in many fields of science and engineering.

The gentlewoman from Illinois (Mrs. BIGGERT) and I also introduced H.R. 4218 that we just considered to strengthen existing interagency planning and budgeting mechanisms for high-end computing.

In response to the needs for greater resource and focus, we have introduced this bill, H.R. 4516. This legislation focuses on activities at the Department of Energy, which has been a major player in the development of supercomputing since its earliest days.

Tennessee's Oak Ridge National Lab will lead a partnership supported by DOE to build the world's most powerful supercomputer by 2007. I am thrilled that the Center for Computational Science at Oak Ridge will soon be the new home of the world's largest and fastest computer.

H.R. 4516 authorizes research and development activities needed to develop future supercomputing systems and, equally important, provides for the sustained development and deployment of the most capable computing system for use by U.S. researchers for academia, industry, and Federal labs.

These computing systems will truly be national resources that will address important problems related to national security, economic competitiveness, health care, and environmental protection.

H.R. 4516 responds to an identified national need for Federal support of supercomputing. I commend this bill to my colleagues and ask for their support.

Mr. Speaker, I commend the gentlewoman from Illinois (Mrs. BIGGERT) and the Committee on Science for their work on developing and bringing this bill to the floor for the consideration of the members of the subcommittees of the House of Representatives.

Mr. Speaker, I have no further requests for time, and I yield back the balance of my time.

Mrs. BIGGERT. Mr. Speaker, I yield myself such time as I may consume.

Mr. Speaker, in closing, I would like to thank my colleague, the gentleman from Tennessee (Mr. DAVIS), once more for his work as a lead sponsor of this legislation, and I would also like to thank the minority and the majority staff of the Committee on Science for their time and effort and ideas. With the passage of this legislation, the Department of Energy will continue to revolutionize the use of supercomputers, ensuring the competitiveness of American science and industry. I would urge my colleagues to support this bill.

Mr. Speaker, I have no further requests for time, and I yield back the balance of my time.

The SPEAKER pro tempore (Mr. MURPHY). The question is on the motion offered by the gentlewoman from Illinois (Mrs. BIGGERT) that the House suspend the rules and pass the bill, H.R. 4516, as amended.

The question was taken; and (two-thirds having voted in favor thereof) the rules were suspended and the bill, as amended, was passed.

A motion to reconsider was laid on the table.

#### NATIONAL WINDSTORM IMPACT REDUCTION ACT OF 2004

Mr. NEUGEBAUER. Mr. Speaker, I move to suspend the rules and pass the bill (H.R. 3980) to establish a National Windstorm Impact Reduction Program, as amended.

The Clerk read as follows:

H.R. 3980

*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 "National Windstorm Impact Reduction Act of 2004".

#### SEC. 2. FINDINGS.

The Congress finds the following:

(1) Hurricanes, tropical storms, tornadoes, and thunderstorms can cause significant loss of life, injury, destruction of property, and economic and social disruption. All States and regions are vulnerable to these hazards.

(2) The United States currently sustains several billion dollars in economic damages each year due to these windstorms. In recent decades, rapid development and population growth in high-risk areas has greatly increased overall vulnerability to windstorms.

(3) Improved windstorm impact reduction measures have the potential to reduce these losses through—

(A) cost-effective and affordable design and construction methods and practices;

(B) effective mitigation programs at the local, State, and national level;

(C) improved data collection and analysis and impact prediction methodologies;

(D) engineering research on improving new structures and retrofitting existing ones to better withstand windstorms, atmospheric-related research to better understand the behavior and impact of windstorms on the built environment, and subsequent application of those research results; and

(E) public education and outreach.

(4) There is an appropriate role for the Federal Government in supporting windstorm impact reduction. An effective Federal program in windstorm impact reduction will require interagency coordination, and input from individuals, academia, the private sector, and other interested non-Federal entities.

#### SEC. 3. DEFINITIONS.

In this Act:

(1) The term "Director" means the Director of the Office of Science and Technology Policy.

(2) The term "State" means each of the States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the United States Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and any other territory or possession of the United States.

(3) The term "windstorm" means any storm with a damaging or destructive wind component, such as a hurricane, tropical storm, tornado, or thunderstorm.

#### SEC. 4. NATIONAL WINDSTORM IMPACT REDUCTION PROGRAM.

(a) ESTABLISHMENT.—There is established the National Windstorm Impact Reduction Program (in this Act referred to as the "Program").

(b) OBJECTIVE.—The objective of the Program is the achievement of major measurable reductions in losses of life and property from windstorms. The objective is to be achieved through a coordinated Federal effort, in cooperation with other levels of government, academia, and the private sector, aimed at improving the understanding of windstorms and their impacts and developing and encouraging implementation of cost-effective mitigation measures to reduce those impacts.

(c) INTERAGENCY WORKING GROUP.—Not later than 90 days after the date of enactment of this Act, the Director shall establish an Interagency Working Group consisting of representatives of the National Science Foundation, the National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, the Federal Emergency Management Agency, and other Federal agencies as appropriate. The Director shall designate an agency to serve as Chair of the Working Group and be responsible for the planning, management, and coordination of the Program, including budget coordination. Specific agency roles and responsibilities under the Program shall