



United States Senate Committee on **Energy & Natural Resources**

Chairman Jeff Bingaman

Democrat • New Mexico

Background: In March 2004, Chairman Bingaman introduced the “High-End Computing Revitalization Act” (S. 2176) with Senator Alexander, which became law (PL-108-423). The United States has been a leader in high performance computing (HPC) since Cray-1, one of the earliest supercomputers, was installed at Los Alamos National Laboratory in 1976. Collaborative efforts led by the Department of Energy (DOE) between national labs, academia and industry spawned the technological development necessary to improve HPC and enable a wide range of simulation and analysis that have saved time, money, and energy/fuel, strengthening the U.S. economy and contributing to national security. U.S. leadership in HPC has recently been challenged through significant governmental investment in HPC programs in Japan, China, South Korea, Russia and the European Union, and the race to exascale (10^{18} flops or computers 1000 times faster than the fastest computer today) is on. The DOE has started an exascale initiative which will develop new computer architectures with improved power consumption, memory, reliability, and software – all necessary advances to reach exascale. As with previous generations of HPC systems, the resulting technological advances will further support Federal priorities like research and national security and will be integrated into electronics industries strengthening high-tech competitiveness and driving economic growth.

Purpose: The purpose of The Department of Energy High-End Computing Act of 2012 (S. 3459) is to update the High-End Computing Revitalization Act of 2004 to preserve DOE HPC and to establish the exascale initiative.

The bill makes the following updates:

1. Defines and distinguishes the exascale computing initiative from other high-end computing efforts.
2. Authorizes appropriations for the exascale computing initiative for fiscal years 2013 through 2015.

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