

Transition Charge

I am writing to ask ASCAC to assemble a subcommittee to identify the key elements of the Exascale Computing Project (ECP) that need to be transitioned into ASCR's research program or other new SC/ASCR initiatives after the end of the project to address the opportunities and challenges for future high performance computing capabilities.

The subcommittee should consider ECP lessons learned for managing large collaborations, ASCR's historic fundamental research investments in applied mathematics, computer science and computational partnerships at the National Labs, the Administration's new Research and Development priorities in artificial intelligence, quantum information systems and strategic computing.



Department of Energy
Office of Science
Washington, DC 20585

September 6, 2018

Professor Daniel Reed
Chair, Advanced Scientific Computing Research
Advisory Committee
University of Utah
Salt Lake City, Utah 84112

Dear Professor Reed:

Thank you for your continued service to the Office of Science (SC) as the Chair of the Advanced Scientific Computing Research Advisory Committee (ASCAC). Your reports and recommendations continue to help us improve the management of the Advanced Scientific Computing Research (ASCR) program. ASCAC's studies and reports on the Exascale Computing Initiative's Conceptual Design (2015), Ten Technical Approaches to Address the Challenges of Exascale Computing (2013), DOE Data-intensive Science and Exascale (2012) and the Opportunities and Challenges of Exascale Computing (2007) were instrumental in developing the Department's Exascale Computing Initiative and identified critical research opportunities for applied mathematics, computer science, computational partnerships and advanced networking during the exascale era. The upcoming ASCAC report on the opportunities and challenges for future high performance computing capabilities should further identify areas for ASCR investments in the "Beyond Moore's Law" era.

I am writing to ask ASCAC to assemble a subcommittee to identify the key elements of the Exascale Computing Project (ECP) that need to be transitioned into ASCR's research program or other new SC/ASCR initiatives after the end of the project to address the opportunities and challenges for future high performance computing capabilities. The subcommittee should consider ECP lessons learned for managing large collaborations, ASCR's historic fundamental research investments in applied mathematics, computer science and computational partnerships at the National Labs, the Administration's new Research and Development priorities in artificial intelligence, quantum information systems and strategic computing.

As history has shown, basic research advances have been the bedrock of American innovation and prosperity. These advances often gave rise to new lines of scientific inquiry and led to inventions of new technologies and industries that transformed our society. Breakthrough discoveries emerging from Federal investment can have broader impacts beyond the original field of scope and have made Federal programs, such as ASCR, an essential part of the Nation's science and technology strategy.

By examining ECP, I expect this report to provide guiding strategies and approaches that will be key to ensuring future U.S. leadership, and more generally, U.S. leadership in the full range of

disciplines stewarded by ASCR. With these high-level objectives in mind, the report should provide recommendations for capturing the lessons learned from ECP, supporting the software and hardware technologies and application development from ECP activities and informing ASCR's future investment strategy for its basic research programs.

I would appreciate receiving a written report by September 30, 2019.

Sincerely,


J. Stephen Binkley
Deputy Director for Science Programs

cc: Barbara Helland, SC-21
Christine Chalk, SC-22