Opening Statement
Ranking Member Eric Swalwell
House Committee on Science, Space, and Technology
Hearing of the Energy Subcommittee
America's Next Generation Supercomputer: The Exascale Challenge

2318 Rayburn House Office Building

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Thank you Chairman Lummis for holding this hearing today, and I also want to thank the witnesses for being here – even the ones from outside of the 15th District of California!

I am excited to learn more about the great work that the Department of Energy in partnership with industry and our national laboratories, including both Lawrence Livermore and Lawrence Berkeley National Laboratories in particular, are carrying out to maintain and advance U.S. leadership in the critical area of high performance computing.

As I'm sure the witnesses will describe in more detail, this capability enables our best and brightest scientists to gain new insights into societal concerns ranging from Alzheimer's disease to climate change. Other examples of both industrial and academic research that benefit from our advanced high-end computing capabilities include: high temperature superconductivity to significantly reduce energy losses in transmitting electricity; aerodynamic modeling for aircraft and vehicle design; pharmaceutical development; next generation nuclear reactor design; fusion plasma modeling; and combustion simulation to guide the design of fuel-efficient clean engines, such as work being carried out at the Sandia National Laboratories' Combustion Research Facility.

A focus of today's hearing is the development of an exascale computing capability. Now, my understanding is that "exascale" is often used interchangeably with "extreme scale" to refer to the next generation of supercomputers in general, but it also refers to a computing system that would be able to carry out a million trillion operations per second. (Yes, a million trillion, or a 1 with 18 zeros after it.) That's about 500 times faster than the world's fastest computers at today. Such a system would be critical to meeting that nation's needs in a number of important research areas like combustion science, climate science, modeling of the human brain, and ensuring the reliability of our nuclear weapons stockpile.

That said, as we pursue the next generation of supercomputing capabilities – which I fully support – I also want to ensure that the nation is getting the most bang per buck out of our current world-leading facilities. It is noteworthy that while Lawrence Livermore, Argonne, and Oak Ridge National Laboratories are 3 of the most powerful supercomputers in the world, and they are addressing incredibly important scientific issues that really require their advanced computing capabilities, Lawrence Berkeley's National Energy Research Scientific Computing Center actually serves thousands of more users with only a fraction of those leadership machines' computing power. The point is, not every computational research effort requires the

fastest, most sophisticated system we can possibly build, and I think we also need to do more to make what's sometimes called "capacity" supercomputing more accessible to both the academic and industrial research communities that could benefit.

With that, I look forward to discussing these important issues with each of you today, and I yield back the balance of my time.