

**STATEMENT BY**  
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**BEFORE THE SENATE ENERGY AND NATURAL RESOURCES COMMITTEE**  
**ON THE ROLE OF DOE LEADERSHIP IN RESEARCH, DEVELOPMENT,**  
**DEMONSTRATION AND DEPLOYMENT**  
**APRIL 15, 2021**

Chairman Manchin, Ranking Member Barrasso, and Members of the Committee, I am honored to discuss the role of the Department of Energy's leadership role in the research, development, and deployment of technologies to advance the country.

I would like to start by thanking this Committee for its leadership on the historical high investment in DOE and National Lab complex. Your passage of the Energy Act of 2020, Office of Science re-authorization, and National Quantum Initiative, have made large differences in discovery and innovation. America is pushed forward by those on the frontier, and my colleagues at the Complex are able to do that every day thanks to your leadership.

But rather than discuss the past, I would like to comment about the future. During this session there have been proposals for further investment in the nation's R&D, to support economic growth and national security.

This week, all the former Under Secretaries for Science including myself wrote a letter to this committee supporting further R&D investment. With proposals before the Senate, including Leader Schumer's, proposals from the House, and the President, we wanted to add our voices in support of that.

But in addition to support for broad R&D increases, to better position ourselves globally from the likes of Communist China, we also advocated for DOE having a leadership role in any proposal passed.

As you are very aware, DOE was stood up from the Manhattan Project and successor organizations, and as a result, mission-driven science has been at the core of DOE and the Complex.

Most of the areas targeted for further investment, including Artificial Intelligence, High Performance Computing, Quantum, Genomics, Cybersecurity, Materials, and Advanced Energy, are areas that DOE has been a leader, if not the clear leader.

Highlights of DOE leadership:

- In 2019, the U.S. became a net energy exporter, for the first time since the 1950's, while concurrently driving down energy costs for the American people, and leading the world in emissions reductions. These dramatic accomplishments were driven by American innovation, supported by DOE and the National Labs, including in nuclear power, solar, and enhanced oil & gas production. DOE supported researchers won the Nobel prize for lithium-ion chemistry, leading to revolutions for electric vehicles and grid scale batteries. And DOE has the successful ARPA-E program, with its recent large success of QuantumScape, a solid state battery company first funded by ARPA-E, now worth \$17 billion.
- DOE has held global leadership in High Performance Computing for decades – examples include the commissioning of the then global #1 and #2 Summit and Sierra supercomputers, and the Exascale program.
- DOE is the largest funding agency for the National Quantum Initiative, building on decades at National Labs in high energy physics, computing and materials.
- DOE provides cybersecurity and cyberoperations leadership, as the lead agency for the power sector, and well as support for national security.
- DOE has had a very important role in biotechnology and genomics, including the founding of the Human Genome Initiative, leading to the Human Genome Project. BerkeleyLab was an early funder of Nobel-prize-winning work in gene editing by Dr. Doudna, and her efforts were supported by DOE light sources.

DOE has significant experience in driving discovery-to-applications, and has provided significant leadership in most of the areas in the Endless Frontier Act.

And DOE, is already moving forward with leadership in these areas, including carbon capture, post-Exascale high performance computing, fusion, and first quantum networks.

We therefore urge that the final bill includes DOE leadership, along with Commerce and NSF, in the new efforts.

In addition, the ability of DOE to manage both open science and classified applications concurrently will be very valuable. DOE has a long history of managing many dual use technologies. Given HPC, Quantum, AI, and most others proposed have significant classified aspects, DOE is best positioned to balance those areas.

Finally, I would recommend that this committee have a direct responsibility for authorizing and oversight of new efforts from labs such as NETL, or areas such as nuclear power, or oil & gas technologies.

As you consider this topic further within your committee and with other members in the Senate, I ask you to find a role for DOE continued leadership.