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Lamar Smith, Chairman

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Statement from Chairman Randy Weber (R-Texas)

American Leadership in Quantum Technology

Chairman Weber: Good morning and welcome to today's Joint Research and Technology and Energy Subcommittee hearing. Today, we will hear from a panel of experts on the status of America's research in quantum technology, a field positioned to fundamentally change the way we move and process data.

Hearings like today's help remind us of the Science Committee's core focus – the basic research that provides the foundation for technology breakthroughs. Before America ever sees the commercial deployment of a quantum computer, a lot of discovery science must be accomplished.

Quantum technology has the potential to completely reshape our scientific landscape. I won't attempt to explain quantum computing to you, I'll leave that to the experts here today.

But theoretically, quantum computing could allow for the solution of exponentially large problems – things that cannot be accomplished by even the fastest supercomputers today. It could allow us to visualize the structures of complex chemicals and materials, to model highly detailed flows of potential mass evacuations with precise accuracy, and to quantify subatomic interactions on the cutting edge of nuclear research.

Quantum computing may also have profound implications for cybersecurity technology.

With China and Russia focusing their efforts on quantum encryption, which could allow for 100% secure communications, it is imperative that the U.S. maintain its leadership in this field.

In order to achieve this kind of revolutionary improvement in technology, we're going to need foundational knowledge in the advanced computing and materials science required to construct quantum systems. For example, quantum hardware must be equipped to completely isolate quantum processors from outside forces.

Further, because quantum computing differs from today's methods at the most basic level, quantum algorithms must be built from the ground up.

Support for basic research in computer science and for computational partnerships between industry, academia, and the national labs is necessary to develop algorithms needed for future commercial quantum systems.

The Department of Energy (DOE) Office of Science is the leading federal sponsor of basic research in the physical sciences, and funds robust quantum technology research. At Lawrence Berkeley National Lab, the National Energy Research Scientific Computing Center (NERSC) allows scientists to run simulations of quantum architectures. At Argonne National Lab's Center for Nanoscale Materials, researchers study atomic-scale materials in order to engineer the characteristics of quantum information systems.

And at Fermi National Accelerator Laboratory scientists are applying their experience in high energy physics to the study of quantum materials.

DOE must prioritize this kind of ground breaking basic research over grants for technology that is ready for commercial deployment. When the government steps in to push today's technology into the market, it competes against private investors and uses limited resources to do so.

But when the government supports basic research, everyone has the opportunity to access the fundamental knowledge that can lead to the development of future technologies.

I want to thank our accomplished panel of witnesses for testifying today, and I look forward to a productive discussion about the future of American quantum technology research. I think I speak for my fellow members when I say this is a complex topic, and Congress will need to rely on experts like you to chart the course for quantum technologies.

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