

Department of Energy (DOE) Quantum Leadership Act of 2024

As R&D advances in quantum science, engineering, and technology, DOE will continue to play a leading role in our quantum research and commercial enterprise. The field of quantum presents complex workforce, security, technology, and commercialization challenges. These challenges warrant a reinvigoration of the *National Quantum Initiative Act of 2018*, and the *Department of Energy Quantum Leadership Act of 2024* will achieve just that.

The bill reauthorizes and expands R&D activities across DOE through 2029; builds upon the foundational work of DOE's five National Research Centers; directs DOE to study and address quantum supply chain challenges and reduce barriers to commercialization; increases interagency and industry coordination; and establishes new programs to support the workforce demands of the growing quantum R&D and commercial ecosystems.

Section 1: Short Title – *Department of Energy Quantum Leadership Act of 2024*

Section 2: DOE Quantum Information Science Research Program

- Reauthorizes DOE quantum R&D activities at \$775M over five years
- Broadens the programs scope beyond fundamental research to include science, technology, engineering, development, and demonstration activities
- Expands DOE engagement with private industry, especially for small- and medium-sized businesses specializing in quantum technologies
- Instructs DOE to author a 10-year strategic Quantum High Performance Computing plan
- Establishes a program for early-stage quantum supercomputing testbeds and prototypes
- Instructs DOE to conduct a study to identify quantum supply chain challenges
- Creates a quantum traineeship program to address workforce development needs
- Requires interagency coordination to prevent duplication of efforts

Section 3: DOE Quantum Instrumentation and Foundry Program

- Authorizes \$250M over five years for a new R&D, design, and procurement program

Section 4: National Quantum Information Science Research Centers

- Authorizes \$875M for the five DOE Quantum Research Centers and encourages coordination between these centers and NSF's quantum education activities

Sections 5: DOE Quantum Network Infrastructure Research and Development Program

- Expands upon the Quantum Network program authorized by *CHIPS* to support the buildout of a quantum internet and quantum networking and communications research

Section 6: DOE Quantum User Expansion for Science and Technology Program

- Expands upon the QUEST program authorized by the *CHIPS and Science Act*, which works to establish public-private partnerships to provide greater access to quantum hardware and computing clouds