118TH CONGRESS
1ST SESSION

S. _____

To improve coordination between the Department of Energy and the National Science Foundation on activities carried out under the National Quantum Initiative Program, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mrs. BLACKBURN (for herself and Mr. PETERS) introduced the following bill; which was read twice and referred to the Committee on _____

A BILL

To improve coordination between the Department of Energy and the National Science Foundation on activities carried out under the National Quantum Initiative Program, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. COORDINATION BETWEEN DEPARTMENT OF ENERGY AND NATIONAL SCIENCE FOUNDATION ON ACTIVITIES UNDER NATIONAL QUANTUM INITIATIVE.

(a) IN GENERAL.—Section 102 of the National Quantum Initiative Act (15 U.S.C. 8812) is amended—

(1) by redesignating subsection (c) as subsection (d); and

(2) by inserting after subsection (b) the following:

''(c) LIAISON BETWEEN DEPARTMENT OF ENERGY AND NATIONAL SCIENCE FOUNDATION.—The Director of the Coordination Office shall appoint a member of the staff of the Coordination Office to serve as a liaison between the Department of Energy and the National Science Foundation to ensure the coordination, and avoid unnecessary duplication, of the Department and the Foundation activities under the Program.''.

(b) SENSE OF CONGRESS.—It is the sense of Congress that activities and research carried out by the Department of Energy and the National Science Foundation should include, to the extent practicable, all quantum information science technologies, as well as critical quantum-enabling technologies, including—

(1) gate-based quantum computing;

(2) annealing-based quantum computing;

(3) quantum bit (qubit) technologies, including those based on—

(A) topological materials;

(B) photons;

(C) trapped ions;

(D) neutral atoms;

(E) silicon;

(F) superconducting devices; and

(G) any other viable quantum technology; and

(4) quantum-enabling technologies, including—

(A) single photon sources;

(B) lasers;

(C) radio frequency, microwave, and other electronics;

(D) electron spin;

(E) cryogenic technologies;

(F) low-disorder or low-defect materials development and fabrication; and

(G) any other critical enabling technology.

SEC. 2. ESTABLISHMENT OF MANUFACTURING USA INSTITUTE FOR QUANTUM MANUFACTURING.

(a) DEFINITION OF MANUFACTURING USA INSTITUTE.—In this section, the term ''Manufacturing USA institute'' has the meaning given such term in section 34(d) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(d)).

(b) ESTABLISHMENT OF MANUFACTURING USA INSTITUTE.—The Secretary of Commerce, acting through the Director of the National Institute of Standards and

Technology, and in consultation with the Secretary of Energy, shall—

(1) determine the manufacturing capabilities necessary to produce reliable quantum components and systems at scale and the gaps in access to such capabilities; and

(2) establish, or award financial assistance, under section 34(e)(1) of the National Institute of Standards and Technology Act (15 U.S.C. 278s(e)(1)) to plan, establish, or support, a Manufacturing USA institute that—

(A) provides an end-to-end manufacturing ecosystem addressing quantum computing, quantum sensing, and quantum communication;

(B) includes within the end-to-end ecosystem provided pursuant to paragraph (1) the capability to design, fabricate, and test materials, devices, structures, and manufacturing processes for quantum technologies or systems, as well as the capacity to develop and create jobs for a coordinated advanced manufacturing and quantum engineering workforce;

(C) provides access to prototyping, both at research scale and commercial scale, for researchers and developers working on quantum

component technologies and systems and manufacturing process innovations to facilitate the transition into scalable, cost-effective, and high-performing manufacturing capabilities;

(D) supports the development of a resilient quantum supply chain with an emphasis on key components and supply from allies of the United States, that enables quantum technologies, and increases the domestic production of goods critical to national security and economic competitiveness; and

(E) supports development of a workforce with skills relevant to manufacture of quantum components and systems.

SEC. 3. STUDIES RELATING TO NATIONAL QUANTUM INITIATIVE PROGRAM.

(a) INDEPENDENT STUDY ON PROGRESS MADE BY NATIONAL QUANTUM INITIATIVE PROGRAM.—

(1) AGREEMENT.—The Director of the Office of Science and Technology Policy shall seek to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine (in this subsection the ''National Academies'') to perform the services covered by this section.

(2) INDEPENDENT STUDY.—Under an agreement between the Director and the National Academies under this subsection, the National Academies shall carry out an independent study to assess the progress made by the National Quantum Initiative Program in achieving the purposes set forth under section 3 of the National Quantum Initiative Act (15 U.S.C. 8802) and the goals of the Program, including with respect to sensing, communications, computing, and workforce development for near-term development and quantum applications.

(b) STUDY ON IMPEDIMENTS TO COLLABORATION UNDER NATIONAL QUANTUM INITIATIVE PROGRAM.—

(1) STUDY AND REPORT.—Not later than 180 days after the date of the enactment of this Act, the consortium convened by the Director of the National Institute of Standards and Technology pursuant to section 201(b)(1) of the National Quantum Initiative Act (15 U.S.C. 8831(b)(1)) shall—

(A) conduct a study—

(i) on the impediments to collaboration under the National Quantum Initiative Program implemented pursuant to section 101(a) of such Act (15 U.S.C. 8811(a)) between Multidisciplinary Centers

for Quantum Research and Education established under section 302(a) of such Act (15 U.S.C. 8842(a)), National Quantum Information Science Research Centers established and operated pursuant to section 402(a)(1) of such Act (15 U.S.C. 8852(a)(1)), industry, and academia; and

(ii) to develop recommendations for legislative action to eliminate or mitigate such impediments; and

(B) submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report on the findings of the consortium with respect to the study conducted pursuant to paragraph (1).

(2) CONTENTS.—The report submitted under paragraph (1)(B) shall include the following:

(A) An overview of the current state of research being conducted under the National Quantum Initiative Program.

(B) A breakdown of the funding under the Program for near-term quantum applications development, disaggregated by different quan-

tum technologies, including computing (annealing and gate-model with the different types of qubit technologies), sensing, communication, and networking.

(C) Identification of potential risks in the research funded under the Program.