

118TH CONGRESS  
1ST SESSION

# H. R. 6016

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.

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## IN THE HOUSE OF REPRESENTATIVES

OCTOBER 20, 2023

Mr. OBERNOLTE (for himself and Mr. MULLIN) introduced the following bill

OCTOBER 25, 2023

Referred to the Committee on Science, Space, and Technology

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## 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.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. COORDINATION BETWEEN DEPARTMENT OF**  
2 **ENERGY AND NATIONAL SCIENCE FOUNDA-**  
3 **TION ON ACTIVITIES UNDER NATIONAL**  
4 **QUANTUM INITIATIVE.**

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

7 (1) by redesignating subsection (c) as sub-  
8 section (d); and

9 (2) by inserting after subsection (b) the fol-  
10 lowing:

11 “(c) LIAISON BETWEEN DEPARTMENT OF ENERGY  
12 AND NATIONAL SCIENCE FOUNDATION.—The Director of  
13 the Coordination Office shall appoint a member of the  
14 staff of the Coordination Office to serve as a liaison be-  
15 tween the Department of Energy and the National Science  
16 Foundation to ensure the coordination, and avoid unneces-  
17 sary duplication, of the Department and the Foundation  
18 activities under the Program.”.

19 (b) SENSE OF CONGRESS.—It is the sense of Con-  
20 gress that activities and research carried out by the De-  
21 partment of Energy and the National Science Foundation  
22 should include, to the extent practicable, all quantum in-  
23 formation science technologies, as well as critical quan-  
24 tum-enabling technologies, including—

25 (1) gate-based quantum computing;

26 (2) annealing-based quantum computing;

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

3           (A) topological materials;

4           (B) photons;

5           (C) trapped ions;

6           (D) neutral atoms;

7           (E) silicon;

8           (F) superconducting devices; and

9           (G) any other viable quantum technology;

10          and

11          (4) quantum-enabling technologies, including—

12           (A) single photon sources;

13           (B) lasers;

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

16           (D) electron spin;

17           (E) cryogenic technologies;

18           (F) low-disorder or low-defect materials de-  
19          velopment and fabrication; and

20           (G) any other critical enabling technology.

21 **SEC. 2. ESTABLISHMENT OF MANUFACTURING USA INSTI-**  
22 **TUTE FOR QUANTUM MANUFACTURING.**

23          (a) DEFINITION OF MANUFACTURING USA INSTI-  
24 TUTE.—In this section, the term “Manufacturing USA in-  
25 stitute” has the meaning given such term in section 34(d)

1 of the National Institute of Standards and Technology Act  
2 (15 U.S.C. 278s(d)).

3 (b) ESTABLISHMENT OF MANUFACTURING USA IN-  
4 STITUTE.—The Secretary of Commerce, acting through  
5 the Director of the National Institute of Standards and  
6 Technology, and in consultation with the Secretary of En-  
7 ergy, shall—

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

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

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

20 (B) includes within the end-to-end eco-  
21 system provided pursuant to paragraph (1) the  
22 capability to design, fabricate, and test mate-  
23 rials, devices, structures, and manufacturing  
24 processes for quantum technologies or systems,  
25 as well as the capacity to develop and create

1 jobs for a coordinated advanced manufacturing  
2 and quantum engineering workforce;

3 (C) provides access to prototyping, both at  
4 research scale and commercial scale, for re-  
5 searchers and developers working on quantum  
6 component technologies and systems and manu-  
7 facturing process innovations to facilitate the  
8 transition into scalable, cost-effective, and high-  
9 performing manufacturing capabilities;

10 (D) supports the development of a resilient  
11 quantum supply chain with an emphasis on key  
12 components and supply from allies of the  
13 United States, that enables quantum tech-  
14 nologies, and increases the domestic production  
15 of goods critical to national security and eco-  
16 nomic competitiveness; and

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

20 **SEC. 3. STUDIES RELATING TO NATIONAL QUANTUM INI-**  
21 **TIATIVE PROGRAM.**

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

24 (1) AGREEMENT.—The Director of the Office of  
25 Science and Technology Policy shall seek to enter

1 into an agreement with the National Academies of  
2 Sciences, Engineering, and Medicine (in this sub-  
3 section the “National Academies”) to perform the  
4 services covered by this section.

5 (2) INDEPENDENT STUDY.—Under an agree-  
6 ment between the Director and the National Acad-  
7 emies under this subsection, the National Academies  
8 shall carry out an independent study to assess the  
9 progress made by the National Quantum Initiative  
10 Program in achieving the purposes set forth under  
11 section 3 of the National Quantum Initiative Act (15  
12 U.S.C. 8802) and the goals of the Program, includ-  
13 ing with respect to sensing, communications, com-  
14 puting, and workforce development for near-term de-  
15 velopment and quantum applications.

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

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

24 (A) conduct a study—

1 (i) on the impediments to collabora-  
2 tion under the National Quantum Initia-  
3 tive Program implemented pursuant to sec-  
4 tion 101(a) of such Act (15 U.S.C.  
5 8811(a)) between Multidisciplinary Centers  
6 for Quantum Research and Education es-  
7 tablished under section 302(a) of such Act  
8 (15 U.S.C. 8842(a)), National Quantum  
9 Information Science Research Centers es-  
10 tablished and operated pursuant to section  
11 402(a)(1) of such Act (15 U.S.C.  
12 8852(a)(1)), industry, and academia; and

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

16 (B) submit to the Committee on Com-  
17 merce, Science, and Transportation of the Sen-  
18 ate and the Committee on Science, Space, and  
19 Technology of the House of Representatives a  
20 report on the findings of the consortium with  
21 respect to the study conducted pursuant to  
22 paragraph (1).

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

1           (A) An overview of the current state of re-  
2           search being conducted under the National  
3           Quantum Initiative Program.

4           (B) A breakdown of the funding under the  
5           Program for near-term quantum applications  
6           development, disaggregated by different quan-  
7           tum technologies, including computing (anneal-  
8           ing and gate-model with the different types of  
9           qubit technologies), sensing, communication,  
10          and networking.

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

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