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(Original Signature of Member)

115TH CONGRESS  
2D SESSION

**H. R.** \_\_\_\_\_

To authorize the programs of the National Institute of Standards and Technology, and for other purposes.

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IN THE HOUSE OF REPRESENTATIVES

M. \_\_\_\_\_ introduced the following bill; which was referred to the  
Committee on \_\_\_\_\_

\_\_\_\_\_  
**A BILL**

To authorize the programs of the National Institute of Standards and Technology, 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,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “National Institute of  
5 Standards and Technology Reauthorization Act of 2018”.

6 **SEC. 2. AUTHORIZATION OF APPROPRIATIONS.**

7 (a) FISCAL YEAR 2018.—

8 (1) IN GENERAL.—There are authorized to be  
9 appropriated to the Secretary of Commerce

1       \$1,198,500,000 for the National Institute of Stand-  
2       ards and Technology for fiscal year 2018.

3           (2) SPECIFIC ALLOCATIONS.—Of the amount  
4       authorized by paragraph (1)—

5           (A) \$724,500,000 shall be for scientific  
6       and technical research and services laboratory  
7       activities;

8           (B) \$319,000,000 shall be for the con-  
9       struction and maintenance of facilities; and

10          (C) \$155,000,000 shall be for industrial  
11       technology services activities, of which  
12       \$140,000,000 shall be for the Manufacturing  
13       Extension Partnership program under sections  
14       25 and 26 of the National Institute of Stand-  
15       ards and Technology Act (15 U.S.C. 278k and  
16       278I) and \$15,000,000 shall be for the Net-  
17       work for Manufacturing Innovation Program  
18       under section 34 of the National Institute of  
19       Standards and Technology Act (15 U.S.C.  
20       278s).

21       (b) FISCAL YEAR 2019.—

22           (1) IN GENERAL.—There are authorized to be  
23       appropriated to the Secretary of Commerce  
24       \$1,115,000,000 for the National Institute of Stand-  
25       ards and Technology for fiscal year 2019.

1           (2) SPECIFIC ALLOCATIONS.—Of the amount  
2           authorized by paragraph (1)—

3           (A) \$850,000,000 shall be for scientific  
4           and technical research and services laboratory  
5           activities, of which—

6           (i) \$109,900,000 shall be for the ad-  
7           vanced communications, networks, and sci-  
8           entific data systems mission area;

9           (ii) \$103,200,000 shall be for the  
10          cybersecurity and privacy mission area;

11          (iii) \$234,000,000 shall be for the  
12          fundamental measurement, quantum  
13          science and measurement dissemination  
14          mission area; and

15          (iv) \$89,800,000 shall be for the  
16          physical infrastructure and resilience mis-  
17          sion area;

18          (B) \$120,000,000 shall be for the con-  
19          struction and maintenance of facilities; and

20          (C) \$145,000,000 shall be for industrial  
21          technology services activities, of which—

22          (i) \$140,000,000 shall be for the  
23          Manufacturing Extension Partnership pro-  
24          gram under sections 25 and 26 of the Na-  
25          tional Institute of Standards and Tech-

1 nology Act (15 U.S.C. 278k and 278I);  
2 and

3 (ii) \$5,000,000 shall be for the Net-  
4 work for Manufacturing Innovation Pro-  
5 gram under section 34 of the National In-  
6 stitute of Standards and Technology Act  
7 (15 U.S.C. 278s).

8 **SEC. 3. QUANTUM INFORMATION SCIENCE.**

9 (a) **RESEARCH ACTIVITIES AND ENGAGEMENT.**—The  
10 Secretary, acting through the Director, shall—

11 (1) continue to support and expand basic quan-  
12 tum information science and technology research  
13 and development of measurement and standards in-  
14 frastructure necessary to advance commercial devel-  
15 opment of quantum applications;

16 (2) use the programs of the Institute, in col-  
17 laboration with other relevant Federal agencies, as  
18 appropriate, to train scientists in quantum informa-  
19 tion science and technology to increase participation  
20 in the quantum fields;

21 (3) establish or expand collaborative ventures or  
22 consortia with other public or private sector entities,  
23 including other Federal agencies engaged in quan-  
24 tum information science research and development,  
25 institutions of higher education, National Labora-

1       tories, and industry, for the purpose of advancing  
2       the field of quantum information science and engi-  
3       neering; and

4           (4) have the authority to enter into and per-  
5       form such contracts on such terms as the Secretary,  
6       acting through the Director, considers appropriate,  
7       including cooperative research and development ar-  
8       rangements and grants and cooperative agreements  
9       or other transactions, as may be necessary in the  
10      conduct of the work of the Institute with respect to  
11      quantum information science and technology.

12      (b) QUANTUM WORKSHOP.—

13           (1) IN GENERAL.—Not later than 1 year after  
14      the date of the enactment of this Act, the Secretary,  
15      acting through the Director, shall convene a work-  
16      shop of stakeholders to discuss the future measure-  
17      ment, standards, cybersecurity, and other issues that  
18      relate to development of quantum information  
19      science in the United States. The goals of the work-  
20      shop shall be—

21           (A) assessment of the Institute’s quantum  
22      information science and technology research  
23      work, including areas that may need additional  
24      Institute investment in order to support devel-

1           opment of quantum information science and  
2           technology in the United States; and

3           (B) consideration of recommendations and  
4           priority issues for the Institute's participation  
5           in the proposed National Quantum Initiative  
6           Program.

7           (2) REPORT TO CONGRESS.—Not later than 2  
8           years after the date of enactment of this Act, the  
9           Secretary, acting through the Director, shall trans-  
10          mit to the Committee on Science, Space, and Tech-  
11          nology and the Committee on Appropriations of the  
12          House of Representatives and the Committee on  
13          Commerce, Science, and Transportation and the  
14          Committee on Appropriations of the Senate a sum-  
15          mary report containing the findings of the workshop  
16          convened under this subsection.

17          (c) FUNDING.—The Secretary of Commerce shall de-  
18          vote \$80,000,000 to carry out this section for fiscal year  
19          2019, subject to the availability of appropriations, to come  
20          from amounts made available pursuant to section  
21          2(b)2(A)(iii) of this Act. This section shall be carried out  
22          using funds otherwise appropriated by law after the date  
23          of enactment of this Act.

1 **SEC. 4. CYBERSECURITY.**

2 (a) ASSISTANCE TO FEDERAL AGENCIES.—The Sec-  
3 retary, acting through the Director, shall enhance and ex-  
4 pand the Institute’s guidance and assistance to Federal  
5 agencies to help such agencies effectively use the Frame-  
6 work, including by providing technical guidance and edu-  
7 cation and training of—

8 (1) agency staff responsible for cybersecurity,  
9 consultative services, and other assistance at such  
10 agencies; and

11 (2) individual inspectors general and staff of  
12 such agencies who are responsible for the annual  
13 independent evaluation required under section 3555  
14 of title 44, United States Code.

15 (b) REPORT.—Not later than 12 months after the  
16 date of the enactment of this Act, the Secretary shall sub-  
17 mit to the Committee on Science, Space, and Technology  
18 of the House of Representatives and the Committee on  
19 Commerce, Science, and Transportation of the Senate a  
20 report describing the implementation of the activities de-  
21 scribed in this section in as much detail as possible, includ-  
22 ing the identification of Federal agencies assisted pursu-  
23 ant to subsection (a) and the types of consultative services,  
24 education, guidance, assistance, and training provided to  
25 such agencies and inspectors general of such agencies pur-  
26 suant to such subsection.

1 (c) RESEARCH.—The Secretary, acting through the  
2 Director, shall expand the fundamental and applied re-  
3 search carried out by the Institute to address key ques-  
4 tions relating the measurement of privacy, security, and  
5 vulnerability of software tools and communications net-  
6 works, including through—

7 (1) the development of research and engineering  
8 capabilities to provide practical solutions, including  
9 measurement techniques and engineering toolkits, to  
10 solve cybersecurity challenges such as human fac-  
11 tors, identity management, network security, pri-  
12 vacy, and software;

13 (2) investment in tools to help private and pub-  
14 lic sector organizations measure their cybersecurity,  
15 manage their risks and ensure workforce prepared-  
16 ness for new cybersecurity challenges; and

17 (3) investment in programs to prepare the  
18 United States with strong cybersecurity and  
19 encryption technologies to apply to emerging tech-  
20 nologies such as artificial intelligence, the internet of  
21 things, and quantum computing.

22 (d) AUTHORITY.—The Secretary, acting through the  
23 Director, shall have the authority to enter into and per-  
24 form such contracts on such terms as the Secretary con-  
25 siders to be appropriate, including cooperative research

1 and development arrangements, grants, and cooperative  
2 agreements or other transactions, as may be necessary in  
3 the conduct of the work of the Institute with respect to  
4 cybersecurity.

5 **SEC. 5. COMPOSITES RESEARCH.**

6 (a) RESEARCH.—The Secretary, acting through the  
7 Director, shall implement the recommendations contained  
8 in the December 2017 report entitled “Road Mapping  
9 Workshop Report on Overcoming Barriers to Adoption of  
10 Composites in Sustainable Infrastructure”, as appro-  
11 priate, to help facilitate the adoption of composite tech-  
12 nology in infrastructure in the United States. In imple-  
13 menting such recommendations, the Secretary, acting  
14 through the Director shall, with respect to the use of com-  
15 posite technology in infrastructure—

16 (1) not later than 6 months after the date of  
17 enactment of this Act, establish a design data clear-  
18 inghouse to identify, gather, validate, and dissemi-  
19 nate existing design criteria, tools, guidelines, and  
20 standards; and

21 (2) develop methods and resources required for  
22 testing an evaluation of safe and appropriate uses of  
23 composite materials for infrastructure, including—

24 (A) conditioning protocols, procedures and  
25 models;

1 (B) screening and acceptance tools; and

2 (C) minimum allowable design data sets  
3 that can be converted into design tools.

4 (b) STANDARDS COORDINATION.—The Secretary,  
5 acting through the Director, shall assure that the appro-  
6 priate Institute staff consult regularly with standards de-  
7 velopers, members of the composites industry, institutions  
8 of higher education, and other stakeholders in order to fa-  
9 cilitate the adoption of standards for use of composite ma-  
10 terials in infrastructure that are based on the research and  
11 testing results and other information developed by the In-  
12 stitute.

13 (c) FUNDING.—The Secretary of Commerce shall de-  
14 vote \$11,000,000 to carry out this section for fiscal year  
15 2019, subject to the availability of appropriations, to come  
16 from amounts made available pursuant to section  
17 2(b)(2)(A)(iv) of this Act. This section shall be carried out  
18 using funds otherwise appropriated by law after the date  
19 of enactment of this Act.

20 **SEC. 6. ARTIFICIAL INTELLIGENCE AND DATA SCIENCE.**

21 The Secretary, acting through the Director, shall con-  
22 tinue to support the development of artificial intelligence  
23 and data science, including through—

24 (1) the expansion of the Institute’s capabilities,  
25 including scientific staff and research infrastructure;

1           (2) the implementation of rigorous scientific  
2           testing to support the development of trustworthy  
3           and safe artificial intelligence and data systems; and

4           (3) the development of machine learning and  
5           other artificial intelligence applications to support  
6           measurement science research programs and take  
7           steps to modernize the Institute's research infra-  
8           structure.

9   **SEC. 7. INTERNET OF THINGS.**

10          The Secretary, acting through the Director, shall con-  
11          tinue to conduct research with respect to and support the  
12          expanded connectivity, interoperability, and security of  
13          interconnected systems and other aspects of the internet  
14          of things, including through—

15               (1) the development of new tools and meth-  
16               odologies for cybersecurity of the internet of things;

17               (2) the development of technologies to address  
18               network congestion and device interference, such as  
19               the development of testing tools for next generation  
20               wireless communications, internet of things proto-  
21               cols, coexistence of wireless communications systems,  
22               and spectrum sharing;

23               (3) convening experts in the public and private  
24               sectors to develop recommendations for accelerating  
25               the adoption of sound interoperability standards,

1 guidelines, and best practices for the internet of  
2 things; and

3 (4) the development and publication of new  
4 cybersecurity tools, encryption methods, and best  
5 practices for internet of things security.

6 **SEC. 8. HIRING AND MANAGEMENT.**

7 (a) APPOINTMENTS.—The Secretary, acting through  
8 the Director shall have the authority to—

9 (1) make appointments of scientific, engineer-  
10 ing, and professional personnel without regard to the  
11 civil service laws as the Secretary, acting through  
12 the Director determines necessary for carrying out  
13 research and development functions which require  
14 the services of specially qualified personnel relating  
15 to cybersecurity and quantum information science  
16 and technology and such other areas of national re-  
17 search priorities as the Secretary, acting through the  
18 Director may determine; and

19 (2) fix the basic pay of such personnel at a rate  
20 to be determined by the Secretary, acting through  
21 the Director at rates not in excess of the basic rate  
22 of pay of the Vice President under section 104 of  
23 title 3, United States Code, without regard to the  
24 civil service laws.

1 (b) LIMITATION.—The Director may appoint not  
2 more than 10 individuals under this section.

3 **SEC. 9. DEFINITIONS.**

4 In this Act:

5 (1) The term “Director” means the Director of  
6 the National Institute of Standards and Technology.

7 (2) The term “Framework” means the Frame-  
8 work for Improving Critical Infrastructure  
9 Cybersecurity developed by the National Institute of  
10 Standards and Technology and referred to in Execu-  
11 tive Order 13800 issued on May 11, 2017 (82 Fed.  
12 Reg. 22391 et seq.).

13 (3) The term “Institute” means the National  
14 Institute of Standards and Technology.

15 (4) The term “institution of higher education”  
16 has the meaning given such term in section 101 of  
17 the Higher Education Act of 1965 (20 U.S.C.  
18 1001).

19 (5) The term “Secretary” means the Secretary  
20 of Commerce.