

115TH CONGRESS
2D SESSION

H. R. 6229

IN THE SENATE OF THE UNITED STATES

SEPTEMBER 26, 2018

Received; read twice and referred to the Committee on Commerce, Science,
and Transportation

AN ACT

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,*

1 **SECTION 1. SHORT TITLE.**

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

4 **SEC. 2. AUTHORIZATION OF APPROPRIATIONS.**

5 (a) FISCAL YEAR 2018.—

6 (1) IN GENERAL.—There are authorized to be
7 appropriated to the Secretary of Commerce
8 \$1,198,500,000 for the National Institute of Stand-
9 ards and Technology for fiscal year 2018.

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

12 (A) \$724,500,000 shall be for scientific
13 and technical research and services laboratory
14 activities;

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

17 (C) \$155,000,000 shall be for industrial
18 technology services activities.

19 (b) FISCAL YEAR 2019.—

20 (1) IN GENERAL.—There are authorized to be
21 appropriated to the Secretary of Commerce
22 \$1,125,000,000 for the National Institute of Stand-
23 ards and Technology for fiscal year 2019.

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

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

(i) \$109,900,000 shall be for the advanced communications, networks, and scientific data systems mission area;

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

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

(iv) \$89,800,000 shall be for the physical infrastructure and resilience mission area;

(B) \$120,000,000 shall be for the construction and maintenance of facilities; and

(C) \$155,000,000 shall be for industrial technology services activities.

SEC. 3. QUANTUM INFORMATION SCIENCE.

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

(1) continue to support and expand basic quantum information science and technology research and development of measurement and standards in-

1 frastructure necessary to advance commercial devel-
2 opment of quantum applications;

3 (2) use the programs of the Institute, in col-
4 laboration with other relevant Federal agencies, as
5 appropriate, to train scientists in quantum informa-
6 tion science and technology to increase participation
7 in the quantum fields;

8 (3) establish or expand collaborative ventures or
9 consortia with other public or private sector entities,
10 including other Federal agencies engaged in quan-
11 tum information science research and development,
12 institutions of higher education, National Labora-
13 tories, and industry, for the purpose of advancing
14 the field of quantum information science and engi-
15 neering; and

16 (4) have the authority to enter into and per-
17 form such contracts on such terms as the Secretary,
18 acting through the Director, considers appropriate,
19 including cooperative research and development ar-
20 rangements and grants and cooperative agreements
21 or other transactions, as may be necessary in the
22 conduct of the work of the Institute with respect to
23 quantum information science and technology.

24 (b) QUANTUM WORKSHOP.—

1 (1) IN GENERAL.—Not later than 1 year after
2 the date of the enactment of this Act, the Secretary,
3 acting through the Director, shall convene a work-
4 shop of stakeholders to discuss the future measure-
5 ment, standards, cybersecurity, and other issues that
6 relate to development of quantum information
7 science in the United States. The goals of the work-
8 shop shall be—

9 (A) assessment of the Institute’s quantum
10 information science and technology research
11 work, including areas that may need additional
12 Institute investment in order to support devel-
13 opment of quantum information science and
14 technology in the United States; and

15 (B) consideration of recommendations and
16 priority issues for the Institute’s participation
17 in the proposed National Quantum Initiative
18 Program.

19 (2) REPORT TO CONGRESS.—Not later than 2
20 years after the date of enactment of this Act, the
21 Secretary, acting through the Director, shall trans-
22 mit to the Committee on Science, Space, and Tech-
23 nology and the Committee on Appropriations of the
24 House of Representatives and the Committee on
25 Commerce, Science, and Transportation and the

1 Committee on Appropriations of the Senate a sum-
2 mary report containing the findings of the workshop
3 convened under this subsection.

4 (c) FUNDING.—The Secretary of Commerce shall de-
5 vote \$80,000,000 to carry out this section for fiscal year
6 2019, subject to the availability of appropriations, to come
7 from amounts made available pursuant to section
8 2(b)(2)(A)(iii) of this Act. This section shall be carried
9 out using funds otherwise appropriated by law after the
10 date of enactment of this Act.

11 **SEC. 4. CYBERSECURITY RESEARCH.**

12 (a) RESEARCH.—The Secretary, acting through the
13 Director, shall expand the fundamental and applied re-
14 search carried out by the Institute to address key ques-
15 tions relating the measurement of privacy, security, and
16 vulnerability of software tools and communications net-
17 works, including through—

18 (1) the development of research and engineering
19 capabilities to provide practical solutions, including
20 measurement techniques and engineering toolkits, to
21 solve cybersecurity challenges such as human fac-
22 tors, identity management, network security, pri-
23 vacy, and software;

24 (2) investment in tools to help private and pub-
25 lic sector organizations measure their cybersecurity,

1 manage their risks and ensure workforce prepared-
2 ness for new cybersecurity challenges; and

3 (3) investment in programs to prepare the
4 United States with strong cybersecurity and
5 encryption technologies to apply to emerging tech-
6 nologies such as artificial intelligence, the internet of
7 things, and quantum computing.

8 (b) **AUTHORITY.**—The Secretary, acting through the
9 Director, shall have the authority to enter into and per-
10 form such contracts on such terms as the Secretary con-
11 siders to be appropriate, including cooperative research
12 and development arrangements, grants, and cooperative
13 agreements or other transactions, as may be necessary in
14 the conduct of the work of the Institute with respect to
15 cybersecurity.

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

17 (a) **RESEARCH.**—The Secretary, acting through the
18 Director, shall implement the recommendations contained
19 in the December 2017 report entitled “Road Mapping
20 Workshop Report on Overcoming Barriers to Adoption of
21 Composites in Sustainable Infrastructure”, as appro-
22 priate, to help facilitate the adoption of composite tech-
23 nology in infrastructure in the United States. In imple-
24 menting such recommendations, the Secretary, acting

1 through the Director shall, with respect to the use of com-
2 posite technology in infrastructure—

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

8 (2) develop methods and resources required for
9 testing an evaluation of safe and appropriate uses of
10 composite materials for infrastructure, including—

11 (A) conditioning protocols, procedures and
12 models;

13 (B) screening and acceptance tools; and

14 (C) minimum allowable design data sets
15 that can be converted into design tools.

16 (b) STANDARDS COORDINATION.—The Secretary,
17 acting through the Director, shall assure that the appro-
18 priate Institute staff consult regularly with standards de-
19 velopers, members of the composites industry, institutions
20 of higher education, and other stakeholders in order to fa-
21 cilitate the adoption of standards for use of composite ma-
22 terials in infrastructure that are based on the research and
23 testing results and other information developed by the In-
24 stitute.

1 (c) FUNDING.—The Secretary of Commerce shall de-
2 vote \$11,000,000 to carry out this section for fiscal year
3 2019, subject to the availability of appropriations, to come
4 from amounts made available pursuant to section
5 2(b)(2)(A)(iv) of this Act. This section shall be carried out
6 using funds otherwise appropriated by law after the date
7 of enactment of this Act.

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

9 The Secretary, acting through the Director, shall con-
10 tinue to support the development of artificial intelligence
11 and data science, including through—

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

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

17 (3) the development of machine learning and
18 other artificial intelligence applications to support
19 measurement science research programs and take
20 steps to modernize the Institute’s research infra-
21 structure; and

22 (4) the development and publication of new cy-
23 bersecurity tools, encryption methods, and best prac-
24 tices for artificial intelligence and data science.

1 **SEC. 7. INTERNET OF THINGS.**

2 The Secretary, acting through the Director, shall con-
3 tinue to conduct research with respect to and support the
4 expanded connectivity, interoperability, and security of
5 interconnected systems and other aspects of the internet
6 of things, including through—

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

9 (2) the development of technologies to address
10 network congestion and device interference, such as
11 the development of testing tools for next generation
12 wireless communications, internet of things proto-
13 cols, coexistence of wireless communications systems,
14 and spectrum sharing;

15 (3) convening experts in the public and private
16 sectors to develop recommendations for accelerating
17 the adoption of sound interoperability standards,
18 guidelines, and best practices for the internet of
19 things; and

20 (4) the development and publication of new cy-
21 bersecurity tools, encryption methods, and best prac-
22 tices for internet of things security.

23 **SEC. 8. HIRING AND MANAGEMENT.**

24 (a) **DIRECT HIRE AUTHORITY.**—The Secretary, act-
25 ing through the Director, may—

1 (1) appoint, without regard to the provisions of
2 subchapter I of chapter 33 of title 5, United States
3 Code (other than sections 3303, 3328, and 3330e of
4 such chapter), qualified candidates to scientific, en-
5 gineering, and professional positions for carrying out
6 research and development functions which require
7 the services of specially qualified personnel relating
8 to cybersecurity and quantum information science
9 and technology and such other areas of national re-
10 search priorities as the Secretary, acting through the
11 Director, may determine; and

12 (2) fix the rate of basic pay of any individual
13 appointed under paragraph (1), at a rate not in ex-
14 cess of the basic rate of pay of the Vice President
15 under section 104 of title 3, United States Code,
16 without regard to title 5, United States Code.

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

19 (c) SUNSET.—The authority under this section shall
20 expire on the date that is 5 years after the date of enact-
21 ment of this Act.

22 **SEC. 9. DEFINITIONS.**

23 In this Act:

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

1 (2) The term “Framework” means the Frame-
2 work for Improving Critical Infrastructure Cyberse-
3 curity developed by the National Institute of Stand-
4 ards and Technology and referred to in Executive
5 Order 13800 issued on May 11, 2017 (82 Fed. Reg.
6 22391 et seq.).

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

9 (4) The term “institution of higher education”
10 has the meaning given such term in section 101 of
11 the Higher Education Act of 1965 (20 U.S.C.
12 1001).

13 (5) The term “Secretary” means the Secretary
14 of Commerce.

Passed the House of Representatives September 25,
2018.

Attest:

KAREN L. HAAS,

Clerk.