117TH CONGRESS
2d Session
HOUSE OF REPRESENTATIVES
REPORT
117–247

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE ACT OF 2021

FEBRUARY 18, 2022.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Ms. JOHNSON of Texas, from the Committee on Science, Space, and Technology, submitted the following

R E P O R T

[To accompany H.R. 4609]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 4609) to reauthorize the National Institute of Standards and Technology, and for other purposes, having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

CONTENTS

29–006

I. AMENDMENT

The amendment is as follows:
Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

(a) SHORT TITLE.—This Act may be cited as the "National Institute of Standards and Technology for the Future Act of 2021".

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

SEC. 2. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term "Director" means the Director of the National Institute of Standards and Technology.

(2) FRAMEWORK.—The term "Framework" means the Framework for Improving Critical Infrastructure Cybersecurity developed by the National Institute of Standards and Technology and referred to in Executive Order 13800 issued on May 11, 2017 (82 Fed. Reg. 22391 et seq.).

(3) HISTORICALLY BLACK COLLEGES AND UNIVERSITIES.—The term "historically Black colleges and universities" has the same meaning given to the term "part B institutions" in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

(4) INSTITUTE.—The term "Institute" means the National Institute of Standards and Technology.

(5) INSTITUTION OF HIGHER EDUCATION.—The term "institution of higher education" has the meaning given such term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(6) INTERNATIONAL STANDARDS ORGANIZATION.—The term "International Standards Organization" has the meaning given such term in section 451 of the Trade Agreements Act of 1979 (19 U.S.C. 2571).

(7) MINORITY SERVING INSTITUTION.—The term "minority-serving institution'" means a Hispanic-serving institution, an Alaska Native-serving institution, a Native Hawaiian-serving institutions, a Predominantly Black Institution, an Asian American and Native American Pacific Islander-serving institution, or a Native American-serving nontribal institution as described in section 371 of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

(8) SECRETARY.—The term "Secretary" means the Secretary of Commerce.

(9) TECHNICAL STANDARDS.—The term "technical standard" has the meaning given such term in section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995.

TITLE I—APPROPRIATIONS

SEC. 101. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2022.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,409,070,000 for the National Institute of Standards and Technology for fiscal year 2022.

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

(A) $915,570,000 shall be for scientific and technical research and services laboratory activities, of which $9,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs;

(C) $331,500,000 shall be for industrial technology services activities, of which $275,000,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s); and

(D) $22,000,000 shall be for the Director for the purpose of investigating the building collapse that occurred in Surfside, Florida on June 24, 2021, to understand the source of failure, to provide recommendations for how to rectify any shortcomings in existing building standards in order to prevent future similar disasters, and to inform future building codes for similar structures, in coordination with state and local offices and other federal agencies as appropriate, consistent with the Institute's responsibilities under the National Construction Safety Team Act of 2002 (Public Law 107–231).

(b) FISCAL YEAR 2023.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,518,800,000 for the National Institute of Standards and Technology for fiscal year 2023.

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

(A) $979,100,000 shall be for scientific and technical research and services laboratory activities, of which $10,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $339,800,000 shall be for industrial technology services activities, of which $283,300,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(c) FISCAL YEAR 2024.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,595,800,000 for the National Institute of Standards and Technology for fiscal year 2024.

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

(A) $1,047,600,000 shall be for scientific and technical research and services laboratory activities, of which $12,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $348,200,000 shall be for industrial technology services activities, of which $291,700,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(d) FISCAL YEAR 2025.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,677,900,000 for the National Institute of Standards and Technology for fiscal year 2025.

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

(A) $1,120,900,000 shall be for scientific and technical research and services laboratory activities, of which $15,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $357,000,000 shall be for industrial technology services activities, of which $300,500,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(e) FISCAL YEAR 2026.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,765,400,000 for the National Institute of Standards and Technology for fiscal year 2026.

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

(A) $1,199,400,000 shall be for scientific and technical research and services laboratory activities, of which $18,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $366,000,000 shall be for industrial technology services activities, of which $309,500,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 23 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

TITLE II—MEASUREMENT RESEARCH

SEC. 201. ENGINEERING BIOLOGY AND BIOMETROLOGY.

(a) IN GENERAL.—The Director shall—

(1) support basic measurement science, technology research for engineering biology, biomanufacturing, and biometrology to advance—

(A) measurement technologies to support foundational understanding of the mechanisms of conversion of DNA information into cellular function, including both the natural and engineered production of biomolecules;

(B) technologies for measurement of such biomolecular components and for complex engineered biological systems;

(C) new data tools, techniques, and processes to improve engineering biology, biomanufacturing, and biometrology research; and

(D) all other areas deemed by the Director to be critical to the development and deployment of engineering biology, biomanufacturing and biometrology;

(2) support activities to inform and expand the development of measurements infrastructure needed to develop technical standards to establish interoperability and facilitate commercial development of biomolecular measurement technology and engineering biology applications;

(3) convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in engineering biology research and development to develop coordinated technical roadmaps for authoritative measurement of the molecular components of the cell;

(4) provide access to user facilities with advanced or unique equipment, services, materials, and other resources to industry, institutions of higher education, nonprofit organizations, and government agencies to perform research and testing;

(5) establish or expand collaborative partnerships or consortia with other Federal agencies engaged in engineering biology research and development, institutions of higher education, Federal laboratories, and industry to advance engineering biology applications; and

(6) support graduate and post graduate research and training in biometrology, biomanufacturing, and engineering biology.

(b) DEFINITIONS.—For purposes of this section, the term "Engineering Biology" means the application of engineering design principles and practices to biological systems, including molecular and cellular systems, to advance fundamental understanding of complex natural systems and to enable novel or optimize functions and capabilities.

(c) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to alter the policies, processes, or practices of individual Federal agencies in effect on the day before the date of the enactment of this Act relating to the conduct of biomedical research and advanced development, including the solicitation and review of extramural research proposals.

(d) CONTROLS.—In carrying out activities authorized by this section, the Secretary shall ensure proper security controls are in place to protect sensitive information, as appropriate.

SEC. 202. GREENHOUSE GAS MEASUREMENT RESEARCH.

(a) GREENHOUSE GAS MEASUREMENT PROGRAM.—

(1) IN GENERAL.—The Director, in consultation with the Administrator of the National Oceanic and Atmospheric Administration and the Administrator of the Environmental Protection Agency, shall carry out a measurement research program to inform the development of best practices, benchmarks, methodologies, procedures, and technical standards for the measurement of greenhouse gas emissions and to assess and improve the performance of greenhouse gas emissions measurement systems.

(2) ACTIVITIES.—In carrying out such a program, the Director may—

(A) conduct research and testing to improve the accuracy, efficacy, and reliability of the measurement of greenhouse gas emissions at a range of scales that covers direct measurement at the component or process level through atmospheric observations;

(B) conduct research to create novel measurement technologies and techniques for the measurement of greenhouse gas emissions;

(C) convene and engage with relevant Federal agencies and stakeholders to establish common definitions and characterizations for the measurement of greenhouse gas emissions, taking into account any existing United States and international standards and guidance;

(D) conduct outreach and coordination to share technical expertise with relevant industry and non-industry stakeholders and standards development organizations to assist such entities in the development of best practices and technical standards for greenhouse gas emissions measurements; and

(E) in coordination with the Administrator of the National Oceanic and Atmospheric Administration and the Administrator of the Environmental Protection Agency, develop such standard reference materials as the Director determines is necessary to further the development of such technical standards, taking into account any existing United States or international standards.

(3) TEST BEDS.—In coordination with the private sector, institutions of higher education, state and local governments, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, and other Federal agencies as appropriate, the Director may continue to develop and manage testbeds to advance research and standards development for greenhouse gas emissions measurements.

(4) GREENHOUSE GAS MEASUREMENT CENTER OF EXCELLENCE.—

(A) IN GENERAL.—The Director, in collaboration with the Administrator of the National Oceanic and Atmospheric Administration, the Administrator of the Environmental Protection Agency, and the heads of other Federal agencies, as appropriate, shall award to an institution of higher education or an eligible nonprofit organization (or a consortium thereof), on a merit-reviewed, competitive basis, funds to establish a Center of Excellence in Greenhouse Gas Measurement.

(B) COLLABORATIONS.—The Director shall require, as a condition of receipt of the award under this paragraph, that the activities of the Center of Excellence include collaboration among public and private organizations, including institutions of higher education, nonprofit organizations, private sector entities, and State, tribal, territorial, and local officials.

(C) PURPOSE.—The purpose of the Center of Excellence shall be to—

(i) advance measurement science, data analytics, and modeling at a range of scales that covers direct measurement at the component or process level through atmospheric observations to improve the accuracy

of greenhouse gas emissions measurement, validation, and attribution to specific underlying activities and processes;

(ii) test and evaluate the performance of existing capabilities, and inform and improve best practices, benchmarks, methodologies, procedures, and technical standards, for the measurement and validation of greenhouse gas emissions at scales noted in clause (i);

(iii) educate and train students in measurement science, computational science, and systems engineering research relevant to greenhouse gas emissions measurements;

(iv) foster collaboration among academic researchers, private sector stakeholders, and State, tribal, territorial, and local officials;

(v) support Institute test beds as described in subsection (a)(3); and

(vi) collaborate with other Federal agencies to conduct outreach and coordination to share technical expertise with relevant public and private sector stakeholders, including State, tribal, territorial, and local officials, to assist such entities in measuring greenhouse gas emissions.

(D) REQUIREMENTS.—

(i) IN GENERAL.—An institution of higher education or an eligible nonprofit organization (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

(ii) APPLICATIONS.—Each application made under clause (i) shall include a description of—

(I) how the Center will work with other research institutions, industry partners, and State and local officials to identify research, testing, and technical standards needs relevant to greenhouse gas emissions;

(II) how the Center will promote active collaboration among researchers in multiple disciplines involved in the measurement of greenhouse gas emissions; and

(III) how the Center will share technical expertise with relevant public and private sector stakeholders, including state and local officials, to assist such entities in measuring greenhouse gas emissions.

(iii) SELECTION AND DURATION.—Each Center established under this section is authorized to carry out activities for a period of 5 years, renewable for an additional 5 years at the discretion of the Director, in consultation with other Federal agencies as appropriate.

SEC. 203. NIST AUTHORITY FOR CYBERSECURITY AND PRIVACY ACTIVITIES.

Section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272 et seq.) is amended—

(1) in subsection (c)—

(A) in paragraph (16), by striking the period at the end and inserting a semicolon;

(B) by redesignating paragraphs (16) through (27) as paragraphs (21) through (32), respectively; and

(C) by inserting after paragraph (15) the following:

"(16) support information security measures for the development and lifecycle of software and the software supply chain, including development of voluntary, consensus-based technical standards, best practices, frameworks, methodologies, procedures, processes, and software engineering toolkits and configurations;

"(17) support information security measures, including voluntary, consensus-based technical standards, best practices, and guidelines, for the design, adoption and deployment of cloud computing services;

"(18) support research, development, and practical application to improve the usability of cybersecurity processes and technologies;

"(19) facilitate and support the development of a voluntary, consensus-based set of technical standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively ensure appropriate privacy protections for personally identifiable information in systems, technologies, and processes used by both the public and private sector;

"(20) support privacy measures, including voluntary, consensus-based technical standards, best practices, guidelines, metrology, and testbeds for the design, adoption and deployment of privacy enhancing technologies;"; and

(2) in subsection (e)(1)(A)—

(A) in clause (viii), by striking "and" at the end;

(B) by redesignating clause (ix) as clause (x); and

(C) by inserting after clause (viii) the following:

"(ix) conduct reviews of and create impact metrics for cybersecurity solutions and capabilities developed by the Institute for purposes of improvement; and".

SEC. 204. SOFTWARE SECURITY AND AUTHENTICATION.

(a) VULNERABILITIES IN OPEN SOURCE SOFTWARE.—The Director shall assess and assign severity metrics to identified vulnerabilities with open source software and produce voluntary guidance to assist the entities that maintain open source software repositories to discover and mitigate vulnerabilities.

(b) ARTIFICIAL INTELLIGENCE-ENABLED DEFENSES.—The Director shall carry out research and testing to improve the effectiveness of artificial intelligence-enabled cybersecurity, including by generating optimized data sets to train artificial intelligence defense systems and evaluating the performance of varying network architectures at strengthening network security.

(c) AUTHENTICATION OF INSTITUTE SOFTWARE.—The Director shall ensure all software released by the Institute is digitally signed and maintained to enable stakeholders to verify its authenticity and integrity upon installation and execution.

(d) ASSISTANCE TO INSPECTORS GENERAL.—The Director shall provide technical assistance to improve the education and training of individual Federal agency Inspectors General and staff who are responsible for the annual independent evaluation they are required to perform of the information security program and practices of Federal Agencies under section 3555 of title 44, United States Code.

(e) SOFTWARE SUPPLY CHAIN SECURITY PRACTICES.—

(1) IN GENERAL.—The Director shall, in coordination with industry, academia, and other Federal agencies, as appropriate, develop a set of security outcomes and practices, including security controls, control enhancements, supplemental guidance, or other supporting information to enable software developers and operators to identify, assess, and manage cyber risks over the full lifecycle of software products.

(2) OUTREACH.—The Director shall conduct outreach and coordination activities to share technical expertise with Federal agencies, relevant industry stakeholders, and standards development organizations, as appropriate, to encourage the voluntary adoption of the software lifecycle security practices by Federal agencies and industry stakeholders.

SEC. 205. DIGITAL IDENTITY MANAGEMENT RESEARCH.

Section 504 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7464) is amended to read as follows:

"SEC. 504. IDENTITY MANAGEMENT RESEARCH AND DEVELOPMENT.

"(a) IN GENERAL.—The Director shall carry out a program of research to support the development of voluntary, consensus-based technical standards, best practices, benchmarks, methodologies, metrology, testbeds, and conformance criteria for identity management, taking into account appropriate user concerns—

"(1) to improve interoperability and portability among identity management technologies;

"(2) to strengthen identity proofing and verification methods used in identity management systems;

"(3) to improve privacy protection in identity management systems through authentication and security protocols; and

"(4) to monitor and improve the accuracy, usability, and inclusivity of identity management systems.

"(b) DIGITAL IDENTITY TECHNICAL ROADMAP.—The Director, in consultation with other relevant Federal agencies and stakeholders from the private sector, shall develop and maintain a technical roadmap for digital identity management research and development focused on enabling the voluntary use and adoption of modern digital identity solutions that align with the four criteria in subsection (a).

"(c) DIGITAL IDENTITY MANAGEMENT GUIDANCE.—

"(1) IN GENERAL.—The Director shall develop, and periodically update, in collaboration with other public and private sector organizations, common definitions and voluntary guidance for digital identity management systems.

"(2) GUIDANCE.—The Guidance shall—

"(A) align with the four criteria in subsection (a), as practicable;

"(B) provide case studies of implementation of guidance;

"(C) incorporate voluntary technical standards and industry best practices; and

"(D) not prescribe or otherwise require the use of specific technology products or services.

"(3) CONSULTATION.—In carrying out this subsection, the Director shall consult with—

"(A) Federal and State agencies;

"(B) industry;

"(C) potential end-users and individuals that will use services related to digital identity verification; and

"(D) experts with relevant experience in the systems that enable digital identity verification, as determined by the Director.".

SEC. 206. BIOMETRICS RESEARCH AND TESTING.

(a) IN GENERAL.—The Secretary, acting through the Director, shall establish a program to support measurement research to inform the development of best practices, benchmarks, methodologies, procedures, and voluntary, consensus-based technical standards for biometric identification systems, including facial recognition systems, to assess and improve the performance of such systems. In carrying out such program, the Director may—

(1) conduct research to support efforts to improve the performance of biometric identification systems, including in areas related to conformity assessment, image quality and interoperability, contactless biometric capture technologies, and human-in-the-loop biometric identification systems and processes;

(2) convene and engage with relevant stakeholders to establish common definitions and characterizations for biometric identification systems, including accuracy, fairness, bias, privacy, consent, and other properties, taking into account definitions in relevant international technical standards and other publications;

(3) carry out research and testing on a range of biometric modalities, such as fingerprints, voice, iris, face, vein, behavioral biometrics, genetics, multimodal biometrics, and emerging applications of biometric identification technology;

(4) study the use of privacy-enhancing technologies and other technical protective controls to facilitate access to public data sets for biometric research;

(5) conduct outreach and coordination to share technical expertise with relevant industry and non-industry stakeholders and standards development organizations to assist such entities in the development of best practices and voluntary technical standards; and

(6) develop such standard reference artifacts as the Director determines is necessary to further the development of such voluntary technical standards.

(b) BIOMETRICS VENDOR TEST PROGRAM.—

(1) IN GENERAL.—The Secretary, acting through the Director, shall carry out a test program to provide biometrics vendors the opportunity to test biometric identification technologies across a range of modalities.

(2) ACTIVITIES.—In carrying out the program under subsection (a), the Director shall—

(A) conduct research and regular testing to improve and benchmark the accuracy, efficacy, and bias of biometric identification systems, including research and testing on demographic variations, capture devices, presentation attack detection, partially occluded or computer generated images, privacy and security designs and controls, template protection, de-identification, and comparison of algorithm, human, and combined algorithm-human recognition capability;

(B) develop an approach for testing software and cloud-based biometrics applications, including remote systems, in Institute test facilities;

(C) establish reference use cases for biometric applications and performance criteria for assessing each use case, including accuracy and bias metrics;

(D) produce public-facing reports of the findings from such testing for a general audience; and

(E) conduct such other activities as deemed necessary by the Director.

(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other Federal departments and agencies and States and local governments to carry out activities under this subsection.

SEC. 207. FEDERAL BIOMETRIC PERFORMANCE STANDARDS.

Section 20 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–3) is amended in subsection (b)—

(1) in paragraph (2), by striking "and" after the semicolon;

(2) in paragraph (3), by striking the period and inserting "; and"; and

(3) by adding at the end the following:

"(4) performance standards and guidelines for high risk biometric identification systems, including facial recognition systems, accounting for various use cases, types of biometric identification systems, and relevant operational conditions.".

SEC. 208. PROTECTING RESEARCH FROM CYBER THEFT.

Section 2(e)(1)(A) of the National Institute of Standards and Technology Act (15 U.S.C. 272(e)(1)(A)), as amended by section 203(2), is further amended—

(1) in clause (ix), as added by section 203(2)(C), by striking "and" after the semicolon;

(2) by redesignating clause (x), as redesignated by section 203(2)(B), as clause (xi); and

(3) by inserting after clause (ix), as added by section 203(2)(C), the following:

"(x) consider institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)); and".

SEC. 209. DISSEMINATION OF RESOURCES FOR RESEARCH INSTITUTIONS.

(a) DISSEMINATION OF RESOURCES FOR RESEARCH INSTITUTIONS.—

(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act, the Director shall, using the authorities of the Director under subsections (c)(15) and (e)(1)(A)(ix) of section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272), as amended by section 208, disseminate and make publicly available resources to help qualifying institutions identify, assess, manage, and reduce their cybersecurity risk related to conducting research.

(2) REQUIREMENTS.—The Director shall ensure that the resources disseminated pursuant to paragraph (1)—

(A) are generally applicable and usable by a wide range of qualifying institutions;

(B) vary with the nature and size of the qualifying institutions, and the nature and sensitivity of the data collected or stored on the information systems or devices of the qualifying institutions;

(C) include elements that promote awareness of simple, basic controls, a workplace cybersecurity culture, and third-party stakeholder relationships, to assist qualifying institutions in mitigating common cybersecurity risks;

(D) include case studies, examples, and scenarios studies of practical application;

(E) are technology-neutral and can be implemented using technologies that are commercial and off-the-shelf; and

(F) to the extent practicable, are based on international technical standards.

(3) NATIONAL CYBERSECURITY AWARENESS AND EDUCATION PROGRAM.—The Director shall ensure that the resources disseminated under paragraph (1) are consistent with the efforts of the Director under section 303 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7451).

(4) UPDATES.—The Director shall review periodically and update the resources under paragraph (1) as the Director determines appropriate.

(5) VOLUNTARY RESOURCES.—The use of the resources disseminated under paragraph (1) shall be considered voluntary.

(b) OTHER FEDERAL CYBERSECURITY REQUIREMENTS.—Nothing in this section may be construed to supersede, alter, or otherwise affect any cybersecurity requirements applicable to Federal agencies.

(c) DEFINITIONS.—In this section:

(1) QUALIFYING INSTITUTIONS.—The term "qualifying institutions" means institutions of higher education that are classified as either very-high research intensive (R1) or high research intensive (R2) status universities by the Carnegie Classification of Academic Institutions.

(2) RESOURCES.—The term "resources" means guidelines, tools, best practices, technical standards, methodologies, and other ways of providing information.

SEC. 210. ADVANCED COMMUNICATIONS RESEARCH.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended—

(1) by redesignating section 35 as section 36; and

(2) by inserting after section 34 the following:

"SEC. 35. ADVANCED COMMUNICATIONS RESEARCH ACTIVITIES.

"(a) ADVANCED COMMUNICATIONS RESEARCH.—

"(1) IN GENERAL.—The Director, in consultation with the Administrator of the National Telecommunications and Information Administration, the Director of the National Science Foundation, and heads of other Federal agencies, as appro-

priate, shall carry out a program of measurement research to inform the development of common definitions, benchmarks, best practices, methodologies, and voluntary, consensus-based technical standards for advanced communications technologies.

"(2) RESEARCH AREAS.—Research areas may include—

"(A) radio frequency emissions and interference, including technologies and techniques to mitigate such emissions;

"(B) advanced antenna arrays and artificial intelligence systems capable of operating advanced antenna arrays;

"(C) artificial intelligence systems to enable internet of things networks, immersive technology, and other advanced communications technologies;

"(D) network sensing and monitoring technologies;

"(E) technologies to enable spectrum flexibility and agility;

"(F) optical and quantum communications technologies;

"(G) security of advanced communications systems and their supply chains;

"(H) public safety communications;

"(I) resilient internet of things applications for advanced manufacturing; and

"(J) other research areas deemed necessary by the Director.

"(3) TEST BEDS.—In coordination with the private sector and other Federal agencies as appropriate, the Director may develop and manage testbeds for research and development of advanced communications technologies, avoiding duplication of existing testbeds run by other agencies or the private sector.

"(4) OUTREACH.—In carrying out the activities under this subsection, the Director shall seek input from other Federal agencies and from private sector stakeholders, on an ongoing basis, to help inform research and development priorities, including through workshops and other multi-stakeholder activities.

"(5) TECHNICAL ROADMAPS.—In carrying out the activities under this subsection, the Director shall convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in advanced communications research and development to develop, and periodically update, coordinated technical roadmaps for advanced communications research in priority areas, such as those described in paragraph (2).

"(b) NATIONAL ADVANCED SPECTRUM AND COMMUNICATIONS TEST NETWORK.—

"(1) IN GENERAL.—The Director, in coordination with the Administrator of the National Telecommunications and Information Administration and heads of other Federal agencies, as appropriate, shall operate a national network of government, academic, and commercial test capabilities and facilities to be known as the National Advanced Spectrum and Commutations Test Network (referred to in this section as 'NASCTN').

"(2) PURPOSES.—NASCTN shall be for the purposes of facilitating and coordinating the use of intellectual capacity, modeling and simulation, laboratory facilities, and test facilities to meet national spectrum interests and challenges, including—

"(A) measurements and analyses of electromagnetic propagation, radio systems characteristics, and operating techniques affecting the utilization of the electromagnetic spectrum in coordination with specialized, related research and analysis performed by other Federal agencies in their areas of responsibility;

"(B) Conducting research and analysis in the general field of telecommunications sciences in support of the Institute's mission and in support of other Government agencies;

"(C) developing methodologies for testing, measuring, and setting guidelines for interference;

"(D) conducting interference tests to better understand the impact of Federal and commercial spectrum activities;

"(E) conducting research and testing to improve spectrum interference tolerance, flexibility, and agility; and

"(F) other activities as deemed necessary by the Director.

"(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other departments and agencies of the Federal Government, and from the State and local governments, to operate NASCTN under this section.".

SEC. 211. NEUTRON SCATTERING.

(a) STRATEGIC PLAN FOR THE INSTITUTE NEUTRON REACTOR.—The Director shall develop a strategic plan for the future of the Institute Center for Neutron Research after the current neutron reactor is decommissioned, including—

(1) a succession plan for the reactor, including a roadmap with timeline and milestones;

(2) conceptual design of a new reactor and accompanying facilities, as appropriate; and

(3) a plan to minimize disruptions to the user community during the transition.

(b) COORDINATION WITH THE DEPARTMENT OF ENERGY.—The Secretary, acting through the Director, shall coordinate with the Secretary of Energy on issues related to Federal support for neutron science, including estimation of long-term needs for research using neutron sources, and planning efforts for future facilities to meet such needs.

(c) REPORT TO CONGRESS.—Not later than 18 months after the enactment of this Act, the Director shall submit to Congress the plan required under subsection (a), and shall notify Congress of any substantial updates to such plan in subsequent years.

SEC. 212. QUANTUM INFORMATION SCIENCE.

(a) IN GENERAL.—The Director shall continue to prioritize and carry out activities authorized in the National Quantum Initiative Act (15 U.S.C. 8801).

(b) QUANTUM RESEARCH.—Section 201(a) of the National Quantum Initiative Act (15 U.S.C. 8831) is amended—

(1) by redesignating paragraphs (3) through (4) as paragraphs (6) through (7); and

(2) by inserting after paragraph (2) the following:

"(3) shall carry out research to facilitate the development and standardization of quantum cryptography and post-quantum classical cryptography;

"(4) shall carry out research to facilitate the development and standardization of quantum networking and communications technologies and applications, including—

"(A) quantum repeater technology;

"(B) quantum network traffic management;

"(C) quantum transduction;

"(D) long baseline entanglement and teleportation; and

"(E) such other technologies, processes, or applications as the Director considers appropriate;

"(5) shall, for quantum technologies deemed by the Director to be at a readiness level sufficient for standardization, the Director shall provide technical review and assistance to such other Federal agencies as the Director considers appropriate for the development of quantum network infrastructure standards;".

SEC. 213. ARTIFICIAL INTELLIGENCE.

(a) IN GENERAL.—The Director shall continue to support the development of artificial intelligence and data science, and carry out the activities of the National Artificial Intelligence Initiative Act of 2020 authorized in division E of the National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), including through—

(1) expanding the Institute's capabilities, including scientific staff and research infrastructure;

(2) supporting measurement research and development for advanced computer chips and hardware designed for artificial intelligence systems;

(3) supporting the development of technical standards and guidelines that promote safe and trustworthy artificial intelligence systems;

(4) creating a framework for managing risks associated with artificial intelligence systems; and

(5) developing and publishing cybersecurity tools, encryption methods, and best practices for artificial intelligence and data science.

(b) TESTBEDS.—In coordination with other Federal agencies as appropriate, the private sector, and institutions of higher education, the Director may establish testbeds to examine artificial intelligence and machine learning systems in virtual environments for vulnerabilities that may lead to failure, malfunction, or attacks under a wide range of conditions.

SEC. 214. FACILITATING DEVELOPMENT AND DISTRIBUTION OF FORENSIC SCIENCE STANDARDS.

(a) ORGANIZATION OF SCIENTIFIC AREA COMMITTEES FOR FORENSIC SCIENCE.—

(1) ESTABLISHMENT.—The Director shall establish in the Institute an organization to facilitate the development of forensic science standards.

(2) DESIGNATION.—The organization established under paragraph (1) shall be known as the "Organization of Scientific Area Committees for Forensic Science".

(3) COMPOSITION.—The Organization shall be composed of the following:

(A) The Forensic Science and Standards Board established under subsection (b).

(B) Each scientific area committee established under subsection (c).

(4) DUTIES OF THE ORGANIZATION.—The duties of the Organization are as follows:

(A) Facilitating the development and distribution of scientifically sound, consensus-based documentary standards and guidelines for forensic science, including through formal collaboration with nongovernmental standards development organizations.

(B) Establishing a registry of scientifically sound forensic science standards and guidelines approved and endorsed by the Organization.

(C) Establish a process for regularly re-evaluating existing standards and guidelines published for placement on the registry established under subparagraph (B).

(D) Promoting the adoption by the forensic science community of the standards and guidelines described in subparagraph (A) and as included in the registry established under subparagraph (B).

(b) FORENSIC SCIENCE STANDARDS BOARD.—

(1) ESTABLISHMENT.—The Director shall establish in the Organization a board to oversee the operations of the Organization and its committees.

(2) DESIGNATION.—The board established under paragraph (1) shall be known as the "Forensic Science Standards Board".

(3) COMPOSITION.—The Board shall be composed of the following:

(A) Members selected by the Director to serve on the Board from among each of—

(i) members of the forensic science community;

(ii) scientists and engineers with relevant expertise at institutions of higher education and other nonprofit research organizations;

(iii) statisticians;

(iv) a representative of each of the task groups established under subsection (d), as the Director considers appropriate; and

(v) such other communities or sectors as the Director considers appropriate.

(B) The chairpersons of the scientific area committees established under subsection (c).

(4) DUTIES.—The duties of the Board are as follows:

(A) Overseeing all operations of the Organization, including the committees of the Organization.

(B) Establishing governance rules and policies for the Organization.

(C) Facilitating communication within the Organization and between the Organization, the criminal justice community, and the forensic science community.

(D) Overseeing the reviewing and approving process of standards to be added to the registry established under subsection (a)(4)(B).

(5) AUTHORITY TO APPROVE STANDARDS FOR LISTING IN REGISTRY OF FORENSIC SCIENCE STANDARDS AND GUIDELINES.—The Board may approve standards for listing on the registry established under subsection (a)(4)(B).

(c) SCIENTIFIC AREA COMMITTEES.—

(1) ESTABLISHMENT.—The Director shall establish one or more scientific area committees to carry out the work of the Organization.

(2) MEMBERSHIP.—

(A) COMPOSITION.—Each scientific area committee established under paragraph (1) shall be composed of the following:

(i) The chairperson of the scientific area committee.

(ii) The vice chairperson of the scientific area committee.

(iii) The chairperson of each subcommittee established under paragraph (3) for each scientific area committee under paragraph (1).

(B) CHAIRPERSON AND VICE CHAIRPERSON.—

(i) IN GENERAL.—For each scientific area committee established under paragraph (1), the Director shall appoint a chairperson and a vice chairperson for the scientific area committee from among individuals with expertise in the subject area of the scientific area committee.

(ii) SERVICE.—Each chairperson and vice chairperson appointed under clause (i) shall serve as a chairperson or vice chairperson at the pleasure of the Director.

(3) SUBCOMMITTEES.—

(A) ESTABLISHMENT.—The Director may establish such subcommittees in a scientific area committee established under paragraph (1) as the Director considers appropriate to assist in the work of the scientific area committee.

(B) MEMBERSHIP.—Each subcommittee established under subparagraph (A) shall be composed of such members selected by the Director from among the following:

(i) Forensic science practitioners.

(ii) Scientists and engineers at institutions of higher education and other nonprofit research organizations.

(iii) Statisticians.

(iv) Representatives of the legal community.

(v) Such others as the Director considers appropriate for purposes of this section.

(4) DUTIES.—The duties of a scientific area committee established under paragraph (1) shall be as follows:

(A) Coordinating the operation and activities of specific forensic science discipline subcommittees in order to encourage communication across all subject and discipline specific subcommittees.

(B) Providing opportunity to the public to engage the forensic science community in matters relating to priorities, standards, and guidelines.

(C) Address topics of high importance to the forensic community, such as matters relating to the following:

(i) Biology.

(ii) Chemistry, including—

(I) matters relating to seized drugs and toxicology; and

(II) matters relating to trace evidence.

(iii) Scene examination.

(iv) Medicine.

(v) Digital and multimedia.

(vi) Physics and pattern interpretation.

(vii) Computational forensic algorithms.

(D) Furthering the development of standards under subsection (e)(1) and other guidelines.

(d) RESOURCE TASK GROUPS.—

(1) ESTABLISHMENT.—The Director, acting through the Board, shall establish legal, human factors, quality, and statistics task groups to support and assist the Organization with matters relating to questions of law, human factors, ethical and social implications of technology, workflow processes, quality assurance, and statistics.

(2) MEMBERSHIP.—The Director, acting through the Board, shall ensure that each task group established under paragraph (1) is composed of voting members of the subcommittees established under subsection (c)(3) who have relevant expertise.

(3) CHAIRPERSONS.—The Director, acting through the Board, shall appoint a chairperson of each task group established under paragraph (1).

(e) FORENSIC SCIENCE STANDARDS DEVELOPMENT PROCESS.—

(1) STANDARDS DEVELOPMENT PROCESS.—The Director, acting through the Organization, shall implement a process to facilitate the development of scientifically sound, consensus- based forensic standards and guidelines, consistent with the duties described for each entity established under this section.

(2) TECHNICAL REVIEW.—

(A) PROCESS REQUIRED.—The Director shall establish a process for technical peer review to provide feedback on a draft of a standard or guideline to a relevant subcommittee of a scientific area committee before such standard or guideline is submitted to a nongovernmental standards development organization or submitted for inclusion in a registry of forensic standards or guidelines.

(B) PARTICIPANTS.—The process established under subparagraph (A)—

(i) may include members of the Organization; and

(ii) shall include additional volunteer experts from the forensic science community and the academic research community.

(3) PUBLIC COMMENT.—

(A) IN GENERAL.—The Director shall provide for public comment on draft standards prior to inclusion in the registry of forensic science standards and guidelines established under subsection (a)(4)(B).

(B) COMMENTS FROM RESEARCH TASK GROUPS.—The Director shall ensure that—

(i) each resource task group established under subsection (d) may submit, as a group, comments on draft standards described in subparagraph (A); and

(ii) any comments submitted under clause (i), and any adjudication of such comments by the Organization, are made available to the public.

(4) SUBMISSION TO STANDARDS DEVELOPING ORGANIZATION.—The Director shall ensure that standards proposed by the Organization and approved for the registry of forensic science standards and guidelines established under subsection (a)(4)(B) are submitted to a nongovernmental standards development organization for review and formal adoption as standard.

(5) GRANTS.—The Director shall award grants through a competitive process—

(A) to support activities under paragraph (3); and

(B) to ensure that the standards approved for inclusion in the registry of forensic science standards and guidelines required by subsection (a)(4)(B) are submitted to a nongovernmental standards development organization.

(f) FORENSIC STANDARDS FOR AUTHENTICATING DIGITAL EVIDENCE.—

(1) FURTHERING DEVELOPMENT OF STANDARDS.—

(A) IN GENERAL.—The subcommittee addressing digital and multimedia, or any successor thereto, shall develop standards for validating or assessing the authenticity of digital content, including content created by technologies that synthesize or manipulate digital content such as deepfakes.

(B) COLLABORATION.—In carrying out subparagraph (A), the subcommittee described in such subparagraph shall collaborate with the forensic science community and experts who study advanced techniques for digital content manipulation, including those in academia and government entities such as the Defense Advanced Research Projects Agency (DARPA).

(2) RESOURCE DEVELOPMENT.—The Organization shall develop and compile resources and materials for use by the forensic science community in developing standards to authenticate digital materials.

(3) CONGRESSIONAL BRIEFING.—Not later than 1 year after the date of the enactment of this Act, the Director shall provide the appropriate committees of Congress a briefing on the status of efforts undertaken pursuant to this subsection.

SEC. 215. SUSTAINABLE CHEMISTRY RESEARCH AND EDUCATION.

In accordance with section 263 of the National Defense Authorization Act for Fiscal Year 2021, the Director shall carry out activities in support of green and sustainable chemistry, including coordinating and partnering with academia, industry, nonprofits, and other entities in activities to support clean, safe, and economic alternatives, technologies, and methodologies to traditional chemical products and processes.

TITLE III—GENERAL ACTIVITIES

SEC. 301. NIST FACILITIES AND CONSTRUCTION.

(a) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Section 14 of the National Institute of Standards and Technology Act (15 U.S.C. 278d) is amended by adding at the end the following:

"(c) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Within the limits of funds which are appropriated for the Institute, the Secretary is authorized to own, operate, or lease research facilities in locations throughout the United States and its territories in furtherance of its mission, provided that no agreement is entered into to own, operate, or lease without first notifying the appropriate Congressional committees of jurisdiction.".

(b) FACILITIES MODERNIZATION FUND.—Section 14 of such Act (15 U.S.C. 278d), as amended by subsection (a), is further amended by adding at the end the following:

"(d) FACILITIES MODERNIZATION FUND.—

"(1) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be known as the 'NIST Facilities Modernization Fund' (hereafter in this section referred to as the 'Fund').

"(2) USE OF FUNDS.—Amounts in the Fund shall be available to Secretary, acting through the Director, for Capital Projects on the Institute's campuses, and as needed on the Institute's joint institute campuses, for the modernization,

renovation, and construction of research facilities needed to conduct leading edge scientific and technical research.

"(3) CONTENTS OF FUND.—The Funds shall consist of the following amounts:

"(A) Such amounts as may be appropriated by law.

"(B) Interest earned on the balance of the Fund.

"(4) AUTHORIZATION OF FUNDS.—Of the funds authorized to be appropriated in section 302 of the National Institute of Standards and Technology for the Future Act of 2021 for the construction and renovation of facilities, $80,000,000 for each of the fiscal years 2022 through 2026 shall be provided for the Fund established in subsection (a).

"(5) CONTINUING AVAILABILITY OF FUNDS.—Amounts in the Fund are available without regard to fiscal year limitation.

"(6) NOTIFICATION TO COMMITTEES.—Upon making any obligation or expenditure of any amount in the Fund, the Secretary, through the Director, shall notify the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the House of Representatives and the Committee on Appropriations of the Senate of the amount and purpose of the obligation or expenditure.

"(7) NIST FACILITIES MODERNIZATION AND MAINTENANCE PLAN.—

"(A) IN GENERAL.—To carry out the program authorized in subsection (d), the Secretary, acting through the Director, shall develop and submit to Congress a 5-year modernization and maintenance plan for the Institute's campuses.

"(B) TIMING.—The modernization and maintenance plan required in subparagraph (A) shall be submitted to Congress not later than 30 days after the date of enactment of the National Institute of Standards and Technology for the Future Act of 2021, and an update shall be submitted to Congress annually thereafter.

"(C) COMPONENTS.—The plan required in subparagraph (A) shall include, with respect to the 5-year period beginning on the date of the submission or update, the following:

"(i) A list of Capital Construction Projects expected to be undertaken during such period, the core capabilities these facilities will provide, climate-resilience planning efforts, anticipated schedule of construction, and anticipated funding requirements.

"(ii) A list of planned utility infrastructure projects expected to be undertaken during such periods, anticipated schedule of construction, and anticipated funding requirements.

"(iii) A list of planned IT infrastructure projects expected to be undertaken during such period, anticipated schedule of construction, and anticipated funding requirements.

"(iv) A list of the deferred maintenance projects expected to be undertaken during such period, anticipated schedule of construction, anticipated funding requirements, and an evaluation of progress made in reducing the deferred maintenance backlog.".

SEC. 302. EDUCATIONAL OUTREACH AND SUPPORT FOR UNDERREPRESENTED COMMUNITIES.

Section 18 of the National Institute of Standards and Technology Act (15 U.S.C. 278g-1) is amended—

(1) in subsection (a), in the second sentence—

(A) by striking "may" and inserting "shall"; and

(B) by striking "academia" and inserting "diverse types of institutions of higher education, including minority-serving institutions and community colleges"; and

(2) in subsection (e)—

(A) in paragraph (4), by striking "and" at the end;

(B) in paragraph (5), by striking the period at the end and inserting "; and"; and

(C) by inserting after paragraph (5) the following:

"(6) conduct outreach to and develop research collaborations with historically black colleges and universities and minority-serving institutions, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3);

"(7) conduct outreach to and develop research collaborations with community colleges, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3);

"(8) carry out other activities to increase the participation of persons historically underrepresented in STEM in the Institute's programs; and

"(9) conduct outreach to and develop collaborations with nontraditional educational organizations, including those that offer training through non-profit associations and professional associations or professional societies, to engage persons historically underrepresented in STEM through programs developed under this subsection.".

SEC. 303. OTHER TRANSACTIONS AUTHORITY.

Section 2(b)(4) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)(4)) is amended to read as follows:

"(4) to enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of its work and on such terms as it may deem appropriate, in furtherance of the purposes of this Act;".

SEC. 304. COLLABORATIONS WITH GOVERNMENT AGENCIES.

Section 8 of the National Bureau of Standards Authorization of Act for Fiscal Year 1983 (15 U.S.C. 275b) is amended—

(1) in the heading, by adding "AND WITH" after "PERFORMED FOR";

(2) by striking "The Secretary of Commerce" and inserting "(a) IN GENERAL.—The Secretary of Commerce";

(3) by inserting after "(15 U.S.C. 278b(e))." the following: "The Secretary may accept, apply for, use, and spend Federal, State, and non-governmental funds to further the mission of the Institute without regard to the source or the period of availability of these funds as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement."; and

(4) by adding at the end the following:

"(b) REPORT.—For each fiscal year beginning with fiscal year 2022, not later than 90 days after submission of the President's annual budget request for such fiscal year, the Director shall submit to the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives and the Committee on Commerce, Science, and Transportation and the Committee of Appropriations of the Senate a de- scription of any appropriated funds, under this authority, carried over from the year in which such funds were ap- propriated.".

SEC. 305. HIRING CRITICAL TECHNICAL EXPERTS.

Section 6 of the National Institute of Standards and Technology Act is amended to read as follows:

"SEC. 6. HIRING CRITICAL TECHNICAL EXPERTS.

"(a) IN GENERAL.—The officers and employees of the Institute, except the director, shall be appointed by the Secretary of Commerce at such time as their respective services may become necessary.

"(b) HIRING CRITICAL TECHNICAL EXPERTS.—Notwithstanding section 3104 of title 5 or the provisions of any other law relating to the appointment, number, classification, or compensation of employees, the Secretary of Commerce shall have the authority to make appointments of scientific, engineering, and professional personnel, and to fix the basic pay of such personnel at a rate to be determined by the Secretary at rates not in excess of the highest total annual compensation payable at the rate determined under section 104 of title 3. The Director shall appoint not more than 15 personnel under this section.

"(c) SUNSET.—The authority under section (b) shall expire on the date that is 5 years after the date of enactment of this section.".

SEC. 306. INTERNATIONAL STANDARDS DEVELOPMENT.

(a) INTERNATIONAL STANDARDS ENGAGEMENT.—

(1) IN GENERAL.—The Director shall lead information exchange and coordination among Federal agencies and communication from Federal agencies to the private sector of the United States to ensure effective Federal engagement in the development and use of international technical standards.

(2) REQUIREMENTS.—To support private sector-led engagement and ensure effective Federal engagement in the development and use of international technical standards, the Director shall consider—

(A) the role and needs of the Federal Government with respect to international technical standards;

(B) organizations developing international technical standards of interest to the United States, United States representation and influence in these organizations, and key contributors for technical and leadership expertise in these organizations;

(C) support for persons with domain subject matter expertise, especially from small businesses located in the United States, to influence and engage in technical standards leadership positions, working groups and meetings;

(D) opportunities for partnerships for supporting international technical standards from across the Federal Government, federally funded research and development centers, university-affiliated research centers, institutions of higher education, industry, industry associations, nonprofit organizations, and other key contributors;

(E) support for activities to encourage the adoption of technical standards developed in the United States to be adopted by international standards organizations; and

(F) other activities determined by the Director to be necessary to support United States participation in international standards development, economic competitiveness, and national security in the development and use of international technical standards.

(b) CAPACITY BUILDING GUIDANCE.—The Director shall support education and workforce development efforts to promote United States participation in international standards organizations. The Director shall—

(1) identify and create, as appropriate, technical standards education and training resources for interested businesses, industry associations, academia, nonprofits, Federal agencies, and other relevant standards contributors, including activities targeted at integrating standards content into undergraduate and graduate curricula in science, engineering, business, public policy, and law;

(2) conduct outreach, including to private sector leaders, to support engagement by more United States stakeholders in international technical standards development; and

(3) other activities deemed necessary by the Director to support increased engagement, influence, and leadership of United States organizations in the development of international technical standards.

(c) CAPACITY BUILDING PILOT PROGRAM.—

(1) IN GENERAL.—The Director, in coordination with the Director of the National Science Foundation, the Administrator of the Small Business Administration and the heads of other relevant Federal agencies, as appropriate, shall establish a 5-year pilot program to award grants, on a merit-reviewed, competitive basis, to private sector entities or nonprofit institutions based in the United States to support increased participation by small business and academic interests in international standards organizations.

(2) ACTIVITIES.—In carrying out the pilot programs established in subsection (c), the Director shall award competitive, merit-reviewed grants to covered entities to cover the reasonable costs, up to a specified ceiling set by the Director, of activities supporting increased engagement and leadership of employees of small businesses and faculty of institutions of higher education or other nonprofit research institutions with subject matter and technical expertise necessary to be conributers in international standards organizations.

(3) AWARD CRITERIA.—The Director may only provide a grant under this section to an eligible recipient that—

(A) demonstrates deep technical standards expertise;

(B) demonstrates knowledge with the processes of the standards development organization in which the recipient intends to engage using grant funds;

(C) proposes a feasible set of standard deliverables to be completed over the period of the grant;

(D) explains how the recipient will fund the standards work supported by the grant if the grant funds are insufficient to cover all costs of the work; and

(E) commits personnel with appropriate expertise to engage in relevant international organizations responsible for developing technical standards over the period of the grant.

(4) ELIGIBILITY.—A small business concern (as defined in section 3 of the Small Business Act (15 U.S.C. 632) based in the United States, an institution of higher education (as defined by section 102 of the Higher Education Act of 1965 (20 U.S. C. 1002)), or a nonprofit institution as defined in section 4(5) of the Stevenson-Wydler Act (15 U.S.C. 3703) shall be eligible to receive grants under this program.

(5) PRIORITIZATION.—The Director may prioritize grants awarded under this section to eligible recipients proposals for standards development that address clearly defined current or anticipated market needs or gaps that would not be met without the grant.

(6) APPLICATION.—An eligible recipient seeking funding under subsection (c) shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

(7) MERIT REVIEW PROCESS.—Not later than 90 days after the enactment of this Act, the Director shall establish a merit review process, including the creation of merit review panels made of experts from government and the private sector, to evaluate the application under paragraph (6) to ensure applications submitted are reviewed in a fair, competitive, transparent, and in-depth manner.

(8) CONSULTATION.—In carrying out the pilot program established under subsection (c), the Director shall consult with other Federal agencies, private sector organizations, institutions of higher education, and nonprofit organizations to help inform the pilot program, including selection criteria, applicant disclosure requirements, grant amount and duration, and the merit review process.

(9) REPORT TO CONGRESS.—The Director shall brief Congress after the second year of the pilot program and each year following that includes the following:

(A) An assessment of the effectiveness of the pilot program for improving the participation of United States small businesses, United States institutions of higher education, or other nonprofit research institutions in international standards organizations, including—

(i) the type of activities supported, including leadership roles;

(ii) the international standards organizations participated in; and

(iii) the technical areas covered by the activities.

(B) If deemed effective, a plan for permanent implementation of the pilot program.

(d) REAFFIRMING THE IMPORTANCE OF VOLUNTARY CONSENSUS-BASED INTERNATIONAL STANDARDS BODIES.—To the extent applicable, the Institute, when preparing standards, participating in voluntary consensus standard bodies, and engaging in a standards development process that is open to participation from Chinese firms and state-owned enterprises of the People's Republic of China, the process should include the following attributes that are easily accessible, clear, and unambiguous:

(1) Transparency.

(2) Openness.

(3) Impartiality and Consensus.

(4) Effectiveness and Relevance.

(5) Coherence.

(6) Development Dimension.

SEC. 307. STANDARD TECHNICAL UPDATE.

(a) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT UPDATES.—The National Institute of Standards and Technology Act (15 U.S.C. 271) is amended—

(1) in section 15—

(A) in subsection (b), by striking the period at the end and inserting a semicolon;

(B) in subsection (g), by striking "and" after the semicolon; and

(C) by striking the period at the end and inserting "; and (i) the protection of Institute buildings and other plant facilities, equipment, and property, and of employees, associates, or visitors, located therein or associated therewith, notwithstanding any other provision of law, the direction of such of the officers and employees of the Institute as the Secretary deems necessary in the public interest hereafter to carry firearms while in the conduct of their official duties, and the authorization of employees of contractors and subcontractors of the Institute who are engaged in the protection of property owned by the United States, and located at facilities owned by, leased, used or under the control of the United States, to carry firearms while in the conduct of their official duties, and, under regulations prescribed by the Secretary and approved by the Attorney General, the authorization of officers and employees of the Institute and of its contractors and subcontractors authorized to carry firearms hereafter to arrest without warrant for any offense against the United States committed in their presence, or for any felony cognizable under the laws of the United States if they have reasonable grounds to believe that the person to be arrested has committed or is committing such felony, provided that such authority to make arrests may be exercised only while guarding and protecting buildings and other plant facilities, equipment, and property owned or leased by, used or under the control of, the United States under the administration and control of the Secretary."; and

(2) by amending section 17(a) to read as follows:

"(a) The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds, as the Secretary may deem desirable through direct support for activities of international organizations and foreign national metrology institutes with which the Institute cooperates to advance measurement methods, technical standards, and related basic technologies, for official representation, to host official receptions, dinners, and similar events, and to otherwise extend official courtesies, including transportation of foreign dignitaries and representatives of foreign national metrology institutes to and from the Institute, for the purpose of maintaining the standing and prestige of the Department of Commerce and the Institute, through the grant of fellowships or other appropriate form of financial or logistical assistance or support to foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the Institute or participating in the exchange of scientific or technical information at the Institute.".

(b) STEVENSON-WYDLER UPDATES.—The Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701) is amended—

(1) in section 17(c)(1)—

(A) by moving each of subparagraphs (D) and (E) two ems to the left; and

(B) by adding at the end the following:

"(G) Community."; and

(2) in section 23(a)—

(A) by redesignating paragraphs (1) and (2) as paragraphs (2) and (3), respectively; and

(B) by inserting before paragraph (2), as so redesignated, the following:

"(1) accept, apply for, use, and spend Federal, State, and nongovernmental acquisition and assistance funds to further the purposes of this Act as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement: *Provided*, That the approving official may waive statutory and regulatory administrative provisions so that a single agency may administer a joint program, upon mutual agreement;".

(c) AMERICAN INNOVATION AND COMPETITIVENESS ACT UPDATE.—Section 113 of the American Innovation and Competitiveness Act (15 U.S.C. 278e note) is repealed.

(d) CLERICAL AMENDMENT.—The item relating to section 113 in the table of contents in section 1(b) of the American Innovation and Competitiveness Act is repealed.

(e) FEDERAL ENERGY MANAGEMENT IMPROVEMENT ACT UPDATE.—Section 4 of the Federal Energy Management Improvement Act of 1988 (15 U.S.C. 5001) is amended—

(1) by striking "Secretary of Commerce" and "Secretary" each place either such term appears and inserting "Consumer Product Safety Commission";

(2) by redesignating the second subsection (c) as subsection (e); and

(3) in subsection (g), by redesignating clauses (i) and (ii) as paragraphs (1) and (2), respectively.

SEC. 308. GAO STUDY OF NIST RESEARCH SECURITY POLICIES AND PROTOCOLS.

(a) EVALUATION.—Not later than 1 year after the date of enactment of this Act, the Comptroller General of the United States shall conduct a study of the Institute's policies and protocols to protect its research and combat undue foreign influence,

(b) MATTERS TO BE INCLUDED.—The study conducted under subsection (a) shall include, to the extent practicable, the following:

(1) An analysis of steps taken by the Institute to address foreign threats to Institute-funded research over the previous 5 years.

(2) An analysis of the coordination and engagement between the Department of Commerce's Office of Inspector General, the Department of Commerce's Office of Intelligence and the Institute in identifying and addressing concerning findings.

(3) An assessment of the Institute's review process for Foreign National associates.

(4) An assessment of the Institute's policies as it relates to employees and associates participating in foreign talent recruitment programs.

(5) An assessment of the Institute's implementation of conflict-of-interest and disclosure policies and requirements, including the disclosure requirements authorized in Section 223 of the National Defense Authorization Act for Fiscal Year 2021 (public Law 116-283).

(6) An assessment of the Institute's, the Department of Commerce's Office of Security, the Department of Commerce's Office of Intelligence, and the Department of Commerce's Office of Inspector General's ability to monitor and enforce conflict-of-interest and disclosure policies and requirements, including the dis-

closure requirements authorized in Section 223 of the National Defense Authorization Act for Fiscal Year 2021 (public Law 116-283).

(7) An assessment of the Institute's, the Department of Commerce's, and the Department of Commerce's Office of Inspector General's ability to conduct risk assessments of research and development award applications and disclosures to the Institute.

(8) An assessment of the Institute's research security training programs for both internal and externally-supported researchers and associates, including training focused on international collaboration, and international travel, foreign interference, and rules for proper use of funds, disclosure, conflict of commitment, and conflict of interest.

(9) An analysis and summary of incidents of undue foreign influence at Institute-supported research facilities and programs over the past 10 years.

(10) Recommendations for the Institute to bolster its research security policies and protocols.

(11) Other matters the Comptroller General determines appropriate.

(c) CONGRESSIONAL BRIEFING.—Not later than 180 days after the date of enactment of this Act, the Comptroller General shall brief the Committee on Science, Space, and Technology of the House of Representatives and the Committee of Commerce, Science, and Transportation of the Senate on the findings available from the evaluation conducted under subsection (a).

(d) REPORT.—Not later than 18 months after the date of enactment of this Act, the Comptroller General shall submit to the congressional committees specified in subsection (c) a report on the findings and recommendations of the evaluation conducted under subsection (a).

SEC. 309. PREMISE PLUMBING RESEARCH.

(a) IN GENERAL.—The Secretary, acting through the Director, shall create a program for premise plumbing research, including to—

(1) conduct metrology research on premise plumbing in relation to water safety, security, efficiency, sustainability, and resilience; and

(2) coordinate research activities with academia, the private sector, nonprofits, and other Federal agencies.

(b) DEFINITIONS.—For purposes of this section, the term "premise plumbing" means the water distribution system located within the property lines of a property, including all buildings and permanent structures on such property. Such term includes building supply and distribution pipes, fixtures, fittings, water heaters, water-treating and water-using equipment, and all respective joints, connections, devices, and appurtenances.

TITLE IV—HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP

SECTION 401. ESTABLISHMENT OF EXPANSION AWARDS PILOT PROGRAM AS A PART OF THE HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by inserting after section 25A (15 U.S.C. 278k–1) the following:

"SEC. 25B. EXPANSION AWARDS PILOT PROGRAM.

"(a) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25.

"(b) ESTABLISHMENT.—The Director shall establish as a part of the Hollings Manufacturing Extension Partnership a pilot program of expansion awards among participants described in subsection (c) of this section for the purposes described in subsection (e) of this section.

"(c) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

"(d) AWARD AMOUNTS.—Subject to the availability of appropriations, an award for a recipient under this section shall be in an amount equal to the sum of the following:

"(1) Such amount as the Director considers appropriate as a minimum base funding level for each award under this section.

"(2) Such additional amount as the Director considers in proportion to the manufacturing density of the region of the recipient.

"(3) Such supplemental amounts as the Director considers appropriate.

"(e) PURPOSE OF AWARDS.—An award under this section shall be made for one or more of the following purposes:

"(1) To provide coordinating services on employee engagement, including employee ownership and workforce training, including connecting manufacturers with career and technical education entities, institutions of higher education (including community colleges), workforce development boards, labor organizations, and nonprofit job training providers to develop and support training and job placement services, including apprenticeship and online learning platforms, for new and incumbent workers, programming to prevent job losses when adopting new technologies and processes, and development of employee ownership practices.

"(2) To provide services to improve the resiliency of domestic supply chains and to mitigate vulnerabilities to cyberattacks, including helping to offset the cost of cybersecurity projects for small manufacturers.

"(3) To expand advanced technology services to United States-based small- and medium-sized manufacturers, which may include—

"(A) developing advanced technology demonstration laboratories for training and demonstration in areas of supply chain and critical technology needs, including a focus on the demonstration of technologies developed by companies based in the United States;

"(B) services for the adoption of advanced technologies, including smart manufacturing technologies and practices; and

"(C) establishing partnerships, for the development, demonstration, and deployment of advanced technologies, between United States-based small- and medium-sized manufacturers and—

"(i) national laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

"(ii) Federal laboratories;

"(iii) Manufacturing USA institutes (as described in section 34(d)); and

"(iv) institutions of higher education.

"(4) To build capabilities across the Hollings Manufacturing Extension Partnership for domestic supply chain resiliency and optimization, including—

"(A) assessment of domestic manufacturing capabilities, expanded capacity for researching and deploying information on supply chain risk, hidden costs of reliance on offshore suppliers, redesigning products and processes to encourage reshoring, and other relevant topics; and

"(B) expanded services to provide industry-wide support that assists United States manufacturers with reshoring manufacturing to strengthen the resiliency of domestic supply chains, including in critical technology areas and foundational manufacturing capabilities that are key to domestic manufacturing competitiveness and resiliency, including forming, casting, machining, joining, surface treatment, and tooling.

"(f) REIMBURSEMENT.—The Director may reimburse Centers for costs incurred by the Centers under this section.

"(g) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such time, and containing such information as the Director shall require in consultation with the Manufacturing Extension Partnership Advisory Board.

"(h) SELECTION.—

"(1) REVIEWED AND MERIT-BASED.—The Director shall ensure that awards under this section are reviewed and merit-based.

"(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

"(3) CRITERIA.—The Director shall select applications consistent with the purposes identified pursuant to subsection (e) to receive awards that the Director determines will achieve one or more of the following:

"(A) Improvement of the competitiveness of industries in the region in which the Center or Centers are located.

"(B) Creation of jobs or training of newly hired employees.

"(C) Promotion of the transfer and commercialization of research and technology from institutions of higher education, national laboratories, or other federally funded research programs, and nonprofit research institutes.

"(D) Recruitment of a diverse manufacturing workforce, including through outreach to underrepresented populations, including individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b).

"(E) Any other result the Director determines will advance the objective set forth in sections 25(c) or 26.

"(i) PROGRAM CONTRIBUTION.—Recipients of awards under this section shall not be required to provide a matching contribution.

"(j) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, the Director, in consultation with the Manufacturing Extension Partnership Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace.

"(k) DURATION.—The Director shall ensure that the duration of an award under this section is aligned and consistent with a Center's cooperative agreement established in section 25(e).

"(l) REPORT.—After the completion of the pilot program under subsection (b) and not later than October 1, 2024, the Director shall submit to Congress a report that includes—

"(1) a summary description of what activities were funded and the measurable outcomes of such activities;

"(2) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the program under section 25;

"(3) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the competitive awards program under section 25A; and

"(4) a recommendation, supported by a clear explanation, as to whether the pilot program should be continued.".

SEC. 402. UPDATE TO MANUFACTURING EXTENSION PARTNERSHIP.

(a) ACCEPTANCE OF FUNDS.—Section 25(l) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(l)) is amended to read as follows:

"(l) ACCEPTANCE OF FUNDS.—

"(1) IN GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal departments and agencies, as well as funds provided by the private sector pursuant to section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.

"(2) COMPETITIVE AWARDS.—Funds accepted from other Federal departments and agencies and from the private sector under paragraph (1) shall be awarded competitively by the Secretary and by the Director to Manufacturing Extension Partnership Centers, provided that the Secretary and Director may make non-competitive awards, pursuant to this section or section 25A, or as a non-competitive contract, as appropriate, if the Secretary and the Director determine that—

"(A) the manufacturing market or sector targeted is limited geographically or in scope;

"(B) the number of States (or territory, in the case of Puerto Rico) with Manufacturing Extension Partnership Centers serving manufacturers of such market or sector is five or fewer; and

"(C) such Manufacturing Extension Partnership Center or Centers has received a positive evaluation in the most recent evaluation conducted pursuant to subsection (g).".

(b) INCLUSION OF CERTAIN SCHOOLS.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended—

(1) in subsection (c)—

(A) in paragraph (6), by striking "community colleges and area career and technical education schools" and inserting "secondary schools (as defined in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801)), community colleges, and area career and technical education schools, including those in underserved and rural communities,"; and

(B) in paragraph (7)—

(i) by striking "and local colleges" and inserting "local high schools and local colleges, including those in underserved and rural communities,"; and

(ii) by inserting "or other applied learning opportunities" after "apprenticeships"; and

(2) in subsection (d)(3), by striking ", community colleges, and area career and technical education schools," and inserting "and local high schools, community colleges, and area career and technical education schools, including those in underserved and rural communities,".

(c) SUPPORTING AMERICAN MANUFACTURING.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended—

(1) in subsection (a)(5)—

(A) by striking "or consortium thereof,"; and

(B) by inserting "or a consortium thereof" before the period at the end of the sentence;

(2) in subsection (c)(4), by inserting "United States-based" before "industrial";

(3) in subsection (d)—

(A) in paragraph (1), by inserting "at United States-based industrial facilities, including small and medium manufacturing companies" before "based";

(B) in paragraph (2), by inserting "United States-based" before "companies"; and

(C) in paragraph (3), by inserting "United States-based" before "small";

(4) in subsection (f)(5)(B)(i), by inserting "in the United States" before the semicolon at the end of the clause; and

(5) in subsection (n)(1)(A), by inserting "United States-based" before "small".

(d) AMENDING THE MEP COMPETITIVE AWARDS PROGRAM.—Section 25A(c)(2) of the National Institute of Standards and Technology Act (15 U.S.C. 278k-1(c)(2)) is amended by inserting "United States" before "manufacturers".

SEC. 403. NATIONAL SUPPLY CHAIN DATABASE.

(a) ESTABLISHMENT OF NATIONAL SUPPLY CHAIN DATABASE.—The Director of the National Institute of Standards and Technology (referred to in this section as "NIST") shall establish and maintain a National Supply Chain Database.

(b) PURPOSE.—The purpose of the National Supply Chain Database shall be to assist the Federal government and industry sectors in minimizing disruptions to the United States supply chain by having an assessment of United States manufacturers' capabilities.

(c) STUDY ON NATIONAL SUPPLY CHAIN DATABASE.—In establishing the National Supply Chain Database, the Director of NIST shall consider the findings and recommendations from the study authorized in section 9413 of the National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), including measures to secure and protect the National Supply Chain Database from adversarial attacks and vulnerabilities.

(d) DATABASE AND MANUFACTURING EXTENSION PARTNERSHIP.—

(1) IN GENERAL.—The National Supply Chain Database shall be carried out and managed through the Hollings Manufacturing Extension Partnership program and the Director of NIST shall ensure that the Hollings Manufacturing Extension Partnership Centers are connected to the National Supply Chain Database.

(2) CAPABILITIES.—The National Supply Chain Database shall be capable of providing a national view of the supply chain and enable authorized database users to determine in near real-time the United States manufacturing capabilities for critical products, including defense supplies, food, and medical devices, including personal protective equipment.

(3) INDIVIDUAL STATE DATABASES.—Each State's supply chain database maintained by the NIST-recognized Manufacturing Extension Partnership Center within the State shall be complementary in design to the National Supply Chain Database.

(e) MAINTENANCE OF NATIONAL SUPPLY CHAIN DATABASE.—The Director of NIST, acting through the Hollings Manufacturing Extension Partnership program, shall maintain the National Supply Chain Database as an integration of the State level databases from each State's Manufacturing Extension Partnership Center and may be populated with information from past, current, or potential Center clients.

(f) EXEMPT FROM PUBLIC DISCLOSURE.—The National Supply Chain Database and any information related to it not publicly released by NIST shall be exempt from public disclosure under section 552 of title 5, United States Code, and access to non-public content shall be limited to the contributing company and Manufacturing Extension Partnership Center staff who sign an appropriate non-disclosure agreement.

(g) AUTHORIZATION OF APPROPRIATIONS.—Of the funds authorized to the Hollings Manufacturing Extension Partnership Program, $10,000,000 for each of the fiscal years 2022 through 2026 are authorized to carry out this Act.

II. PURPOSE OF THE BILL

The purpose of the bill is to authorize funding for the National Institute of Standards and Technology (NIST) for fiscal years (FY) 2022, 2023, 2024, 2025 and 2026, to provide policy and programmatic direction related to science and engineering research supported by NIST, make technical changes to the agency's authorities, support NIST research infrastructure, and provide guid-

ance on funding trajectories for the agency and its funding accounts.

III. Background and Need for the Legislation

NIST, originally named the National Bureau of Standards, was established by Congress in the National Bureau of Standards Organic Act of 1901 (Public Law 56–177). NIST supports U.S. competitiveness by advancing measurement science, standards, and technology. NIST is housed within the Department of Commerce. NIST laboratories address complex measurement challenges, from physical applications, such as resilient infrastructure, to information technology applications, such as artificial intelligence and cybersecurity. NIST runs user facilities that annually help more than 3,000 scientists from academia and industry advance the state of the art in nanotechnology, bioscience, advanced materials, and other emerging technology areas.

NIST hosts two extramural programs: The Manufacturing USA Network and the Hollings Manufacturing Extension Partnership (MEP). Manufacturing USA is a network of manufacturing innovation institutes coordinated through NIST. These institutes serve as partnerships between companies, academia, and entrepreneurs to develop and deploy manufacturing technologies. The MEP program is a Federal-State-industry partnership made up of centers in all 50 states and Puerto Rico. These centers work with local manufacturing communities to strengthen the U.S. domestic manufacturing base. Together, these programs help U.S. industry develop and implement new technology, develop robust supply chains, and refine their systems for efficiency and effectiveness, all while making them more competitive in the global economy.

The last comprehensive reauthorization of NIST was included in the *COMPETES Act of 2010* (Public Law 111–358). Since that time, some individual programs have been addressed through other bills, including the *American Innovation and Competitiveness Act* (Public Law 114–329) and the *Advancing Manufacturing Leadership Act* (Public Law 116–92), and national initiatives focused on specific research or technology areas, including the *National Quantum Initiative Act* (Public Law 115–368) and the *National Artificial Intelligence Initiative Act* (Public Law 116–283).

Although there has been a large growth in NIST's responsibilities, overall funding for the agency has only grown modestly in the decade since the 2010 COMPETES Act. Many of NIST's facilities date to the 1960s, and due to lack of sufficient investment by Congress in NIST's infrastructure, roughly 60 percent of NIST's facilities are in poor to critical condition and the agency has over $800 million in deferred maintenance projects. In the last decade, the global landscape of competition in science and technology has changed, with U.S. leadership no longer a given. There is a renewed focus among policymakers about reinvesting in the U.S. research enterprise to boost competitiveness. Providing increased support for NIST's core mission to advance U.S. competitiveness through measurement and technology research and providing the resources to modernize their facilities will be an important component in maintaining a global lead in advanced technologies.

IV. COMMITTEE HEARINGS

Pursuant to House rule XIII, clause 3(c)(6), the Committee designates the following hearings as having been used to develop or consider the legislation:

On March 11, 2020, the Subcommittee on Research and Technology held a hearing entitled, "Reauthorization of the National Institute of Standards and Technology." The purpose of the hearing was to explore the major areas of research under the National Institute of Standards and Technology laboratory programs, the agency's role in working with industry to advance U.S. competitiveness, and key facilities construction and maintenance issues on the NIST campuses in Maryland and Colorado. The Honorable Walter G. Copan, Undersecretary of Commerce for Standards and Technology and Director, National Institute of Standards and Technology, testified before the Subcommittee.

On April 15, 2021, the Science, Space, and Technology Committee held a hearing entitled, "Reimagining Our Innovation Future." The purpose of the hearing was to examine the current outlook for U.S. leadership in science and technology and discuss how new investments and new, inclusive models of partnership in science and technology can be leveraged to ensure continued leadership and address economic, security, environmental, public health, and other societal challenges from the local to the global level. The hearing witnesses included Mr. Norm Augustine; Dr. Frances H. Arnold, Linus Pauling Professor of Chemical Engineering, Bioengineering and Biochemistry at the California Institute of Technology; The Honorable Ernest J. Moniz, President and Chief Executive Officer of the Energy Futures Initiative and Former Secretary of the U.S. Department of Energy; and Dr. Farnam Jahanian, President of Carnegie Mellon University.

On May 25, 2021, the Investigations and Oversight Subcommittee held a joint hearing with the Research and Technology Subcommittee entitled, "SolarWinds and Beyond: Improving the Cybersecurity of Software Supply Chains." The purpose of the hearing was to examine the causes and impacts of recent supply chain attacks on Federal Agencies, explore how Federal Agencies currently mitigate their software supply chain risks, and consider how best to improve software supply chain security. Hearing witnesses included Mr. Matthew Scholl, Chief, Computer Security Division of the Information Technology Laboratory, NIST; Dr. Trey Herr, Director, Cyber Statecraft Initiative, Atlantic Council; Ms. Katie Moussouris, Founder and CEO, Luta Security; Mr. Vijay D'Souza, Director, Information Technology and Cybersecurity, Government Accountability Office.

On June 9, 2021 the Research and Technology Subcommittee held a hearing entitled, "Building Regional Innovation Economies." The purpose of this hearing was to explore the role of the Department of Commerce, including NIST's extramural manufacturing programs, in supporting the development of regional innovation economies, and the opportunities for and challenges to expanding this role, including in partnership with Federal science agencies. Hearing witnesses include Mr. Dan Berglund, President and CEO, SSTI; Professor Erica R.H. Fuchs, Department of Engineering and Public Policy, Carnegie Mellon University; Ms. Paula Nas, Director,

Office of Economic Development, University of Michigan-Flint; Hon. Elizabeth Hutt Pollard, Secretary of Science and Innovation, State of Oklahoma.

On July 20, 2021 the full Committee held a hearing entitled, "Spectrum Needs for Observational Earth and Space Science." The purpose of this hearing was to review the spectrum needs of relevant science applications within the Committee's purview and consider threats of harmful interference in radio frequency bands used for observations that support weather forecasting and monitoring, climate science, and astronomy. The hearing examined research and development efforts to examine spectral interference, including work at NIST. Hearing witnesses included Mr. Andrew Von Ah, Director, Physical Infrastructure, Government Accountability Office; Mr. David G. Lubar, Senior Project Leader-Civil Spectrum Management, Civil Systems Group, The Aerospace Corporation; Dr. Jordan Gerth, Honorary Fellow, Space Science and Engineering Center, University of Wisconsin-Madison; Mr. Bill Mahoney, NCAR Associate Director and Director and Director of the Research Applications Laboratory (RAL) at the National Center for Atmospheric Research (NCAR); Ms. Jennifer Manner, Senior Vice President of Regulatory Affairs, EchoStar Corporation/Hughes Network Systems LLC.

V. Committee Consideration and Votes

On July 21, 2021, Chairwoman Haley Stevens, and Ranking Member Michael Waltz, Chairwoman Eddie Bernice Johnson, Ranking Member Frank Lucas, introduced H.R. 4609, the *National Institute of Standards and Technology for the Future Act of 2021*. The bill was referred to the House Committee on Science, Space, and Technology.

On July 27, 2021, the Full Committee on Science, Space, and Technology met to consider the bill. Ms. Stevens offered an amendment to make technical changes to the bill and added provisions in response to stakeholder feedback and Committee Member priorities, including updating NIST's hiring authorities, establishing an Expansion Awards Pilot Program in the Manufacturing Extension Partnership, and updating the authorization levels for NIST's Construction and Industrial Technology Services accounts. *The amendment was agreed to on a voice vote*. Mr. Crist offered an amendment to authorize $22 million for NIST to investigate the Surfside building collapse, provide recommendations to address shortcomings, and inform future building codes. *The amendment was agreed to on a voice vote*. Mr. Casten offered an amendment to make technical and clarifying changes to the greenhouse gas measurement section of the bill. *The amendment was agreed to on a voice vote*. Ms. Ross offered an amendment requiring the Director to develop security practices to enable software developers and operators to assess cyber risks over the full lifecycle of software products. *The amendment was agreed to on a voice vote*. Mr. McNerney offered an amendment to establish testbeds to examine the security, safety, and reliability of AI systems. *The amendment was agreed to on a voice vote*. Chairwoman Johnson offered an amendment to establish the structure and processes for the organization at NIST that helps to develop and advance forensic science standards. *The amendment was agreed to on a voice vote*. Ms. Fletcher

offered an amendment to authorize NIST to carry out activities in support of sustainable chemistry. *The amendment was agreed to on a voice vote*. Mr. Perlmutter offered an amendment to allow NIST to use construction funds at its joint institute campuses. *The amendment was agreed to on a voice vote*. Mr. Lamb offered an amendment to authorize NIST to do outreach to community colleges and clarify language to ensure the Institute serves minority-serving institutions. *The amendment was agreed to on a voice vote*. Ms. Kim offered an amendment to authorize NIST to develop educational outreach collaborations with nontraditional education organizations. *The amendment was agreed to on a voice vote*. Mr. Posey offered an amendment to reaffirm the importance of open and transparent principles in international standards bodies in which NIST participates. *The amendment was agreed to on a voice vote*. Mr. Babin offered an amendment to direct GAO to conduct an audit of NIST's research security measures to combat foreign influence. *The amendment was agreed to on a voice vote*. Mr. Babin offered a second amendment to clarify that MEP Centers are specifically focused on supporting American manufacturing. *The amendment was agreed to on a voice vote*. Mr. Tonko offered an amendment to create a premise plumbing research program at NIST. *The amendment was agreed to on a voice vote*. Mr. Meijer offered an amendment to establish a National Supply Chain Database within NIST. *The amendment was agreed to on a voice vote*.

VI. Summary of Major Provisions of the Bill

Authorizes appropriations for NIST of $1,409,070,000 for FY 2022, $1,518,800,000 for FY 2023, $1,595,800,000 for FY 2024, $1,677,900,000 for FY 2025, and $1,765,400,000 for FY 2026.

Provides policy and programmatic direction for the Institute's measurement research programs, supporting activities and partnerships across a range of topics, including engineering biology, greenhouse gas measurement, cybersecurity, privacy, digital identity management, biometrics, advanced communications, quantum information science, artificial intelligence, sustainable chemistry, premise plumbing, and forensic science. Provides direction to NIST regarding additional activities and facilities for cybersecurity, advanced communications, and neutron science.

Establishes a facilities modernization fund to support modernization and renovation of research facilities at the Institute. Updates NIST's authorities for education and outreach, cooperative research and development agreements, collaboration with other agencies, and hiring. Reaffirms NIST's role in standards development, including its leadership role in interagency coordination and its partnership with industry. Establishes a pilot program for expansion awards and a national supply chain database at the Hollings Manufacturing Extension Partnership (MEP).

VII. SECTION-BY-SECTION ANALYSIS (BY TITLE AND SECTION)

Sec. 1. Short Title; Table of Contents

Sec. 2. Definitions

Title 1 (Sec. 101). Authorization of Appropriation

Title 2. Measurement Research

Sec. 201. Engineering Biology and Biometrology.—Authorizes and expands NIST's engineering biology, biomanufacturing, and biometrology research and development of tools and methodologies to measure the molecular components of the cell and engineered systems.

Sec. 202. Greenhouse Gas Measurement Research.—Authorizes and expands NIST's GHG measurement program, including support for testbeds and a center of excellence.

Sec. 203. NIST Authorities for Cybersecurity and Privacy Activities.—Updates cybersecurity and privacy program authorities in the NIST Act, including with specific direction on software and cloud security and privacy enhancing technologies.

Sec. 204. Software Security and Authentication.—Directs NIST to create guidance on the security of the full lifecycle of software and open source software repositories, establishes a program for AI-enabled defense research, and requires NIST to digitally authenticate all software tools developed by the agency.

Sec. 205. Digital Identity Management Research.—Authorizes NIST's digital identity research and requires NIST to develop voluntary guidance for digital identity management.

Sec. 206. Biometrics Research and Testing.—Expands NIST's biometrics identification research and testing program for evaluating the accuracy and bias of biometric technologies.

Sec. 207. Biometrics Performance Standards.—Directs NIST to develop performance standards and guidelines for high-risk Federal biometric identification systems.

Sec. 208. Protecting Research from Cyber Theft.—Requires NIST to consider the needs of institutions of higher education when creating cybersecurity guidance.

Sec. 209. Dissemination of Resources for Research Institutions.—Requires NIST to offer resources and technical assistance to research intensive universities to help them mitigate their cyber risks.

Sec. 210. Advanced Communications Research Activities.—Authorizes NIST's advanced communications research and test beds, including the existing National Advanced Spectrum Communications Test Network (NASCTN) spectrum test network.

Sec. 211. Neutron Scattering.—Requires NIST to develop a strategic plan for the future of the NIST Center for Neutron Research, in coordination with DOE.

Sec. 212. Quantum Information Science.—Amends the National Quantum Initiative Act to expand NIST work with post-quantum encryption and quantum communications.

Sec. 213. Artificial Intelligence.—Provides support for NIST's role in the development of safe and trustworthy artificial intelligence and data science, including establishing test beds.

Sec. 214. Facilitating Development and Distribution of Forensic Science Standards.—Establishes an organization at NIST to facilitate the development of forensic science standards.

Sec. 215. Sustainable Chemistry Research and Education.—Requires NIST to conduct activities in support of sustainable chemistry.

Title 3. General Activities

Sec. 301. NIST Facilities and Construction.—Establishes a NIST facilities modernization fund to help the agency address its construction and maintenance backlog over time. Also allows the Director to operate facilities across the United States, as needed.

Sec. 302. Educational Outreach and Support for Underrepresented Communities.—Expands NIST's educational activities and outreach focused on underrepresented communities.

Sec. 303. Other Transactions Authority.—Gives NIST more flexibility to partner with the private sector on research and development.

Sec. 304. Collaborations with Government Agencies.—Technical fix to address the availability of funds when NIST does work for or in partnership with other agencies.

Sec. 305. Hiring Critical Technical Experts.—Gives NIST the authority to directly hire 15 employees to enable the agency to better compete with the private sector for talent in critical technology areas.

Sec. 306. International Standards Development.—Codifies NIST's role as a convener and federal coordinator in international standard setting; expands NIST's support for standards capacity building, including through a pilot program for grants to small businesses, nonprofits, and universities to participate in international standards setting; and reaffirms the importance of voluntary, consensus-driven policies in international standards setting.

Sec. 307. Standard Technical Update.—Provides several technical and administrative updates to the NIST Act.

Sec. 308. GAO Study of NIST Research Security Policies and Protocols.—Directs GAO to review the security practices of the Institute to guard against foreign interference.

Sec. 309. Premise Plumbing Research.—Authorizes a research program to facilitate the development of metrology for premise plumbing.

Title 4. Hollings Manufacturing Extension Partnership

Sec. 401. Establishment of Expansion Awards Pilot Program.—Establishes a pilot program of expansion awards for MEP centers to provide services for workforce development, resiliency of domestic supply chains, and more.

Sec. 402. Update to Manufacturing Extension Partnership.—Updates MEP to require increased outreach to underserved communities, allows NIST to accept funding from other Federal departments and agencies for competitive MEP grants, and ensures the MEP Centers are specifically focused on supporting American manufacturing.

Sec. 403. National Supply Chain Database.—Establishes a national supply chain database at MEP to track disruptions in U.S. supply chains.

VIII. COMMITTEE VIEWS

Manufacturing USA Institutes—The Committee encourages NIST to use the funds authorized in this Act to competitively award two new Manufacturing USA Institutes under Section 34 of the National Institute of Standards and Technology Act (as amended in Public Law 113 235).

Greenhouse Gas Measurement Research—NIST's greenhouse gas measurement program and test beds have played a critical role in developing the tools and standards necessary to measure and attribute greenhouse gas emissions. The Committee also believes that NOAA, NASA, EPA, and other Federal agencies play a key role in climate measurement and NIST should continue to coordinate its own activities with other agencies, as appropriate.

Cybersecurity and Privacy Activities—The Committee supports NIST's important cybersecurity and privacy activities to strengthen the security of the digital environment. NIST is highly respected for its role in incorporating input from its private and public sector partners to develop effective cybersecurity and privacy standards. Due to new executive orders, administrative updates, and laws, NIST's Information Technology Laboratory is increasingly asked to do more work in a short time span with inadequate resources. The Committee supports the use of funding authorized in this legislation to increase by 50 percent the amounts allocated to the NIST's cybersecurity and privacy activities in Fiscal Year 2022, with appropriate increases thereafter.

The Committee notes many public and private sector organizations have struggled to implement NIST cybersecurity guidance. For example, in December 2020, the Government Accountability Office (GAO) published a report entitled, *Federal Agencies Need to Take Urgent Action to Manage Supply Chain Risks,* which found that none of the agencies surveyed had implemented NIST guidance to protect the cybersecurity of their supply chains. The Committee believes that DHS CISA, NIST, and sector risk management agencies have an important role to play in encouraging Federal cybersecurity, and all agencies should continue to work together to address these challenges. The Committee intends for NIST to expand outreach and coordination efforts to promote the adoption and effective use of cybersecurity tools and guidance by other Federal agencies and the private sector. The Committee also encourages NIST to provide support for the development of easy-to-use software tools, well-defined reference implementations, and automated security controls in common developer tools and software to facilitate adoption of NIST guidance. Further, the Committee encourages NIST to support efforts by third-party organizations to certify the security of common technologies and processes, such as cloud computing and the internet of things.

Open Source Software—The Committee encourages NIST, when it is assessing the vulnerabilities in open source software, to focus on categories of open source software that have the greatest impact on security or privacy, including frequently used, frequently downloaded, or widely disseminated software. The Committee also encourages NIST to work with appropriate Federal and industry stakeholders to develop automated security scanning for open source software repositories.

Biometrics Performance Standards—The Committee believes performance standards for biometric applications will differ significantly based on how the technology is being used, the type of biometric system, and relevant operational conditions. For example, facial recognition systems used for one-to-one matches with government identification in an airport will require different performance standards than those used for stadium security during an event. The Committee encourages NIST to focus on high-risk systems when developing Federal performance standards for biometric applications. The Committee also encourages NIST to use existing technical standards, as appropriate, to develop these standards.

U.S. Leadership in Biometrics Development—The Committee understands that key elements of biometrics technologies are enabled by algorithms derived from artificial intelligence and machine learning (AI–ML). We are concerned that U.S. adversaries have led in recent years as algorithm development has shifted from mathematical computation and researcher-driven models to AI–ML supported development models. A lack of U.S. leadership in modeling responsible biometrics use could cede ground to our adversaries and enable them to establish a standard of practice abroad that undermines human rights. It may also enable them to outperform the United States in future technology innovation.

Advanced Communications Research Activities—NIST conducts fundamental and applied research related to advanced communications technologies and applications to provide public and private sector stakeholders with high-quality trusted measurements and data, as well as access to testing and calibration facilities. NIST has conducted communications research for over 100 years. In 1978, the National Telecommunications and Information Administration was founded, also within the Department of Commerce. NTIA's goals include conducting research related to spectrum and encouraging the development and implementation of new and emerging telecommunications technologies. As such, there are areas in which the missions of the two agencies overlap, leading at times to confusion. Nevertheless, the Committee believes the two agencies have complementary but largely distinct roles and encourages the Department of Commerce to better clarify each agency's respective role with regard to advanced communications technologies. The Committee believes continued coordination and cooperation between these two Department of Commerce agencies to be critical to advancing U.S. competitiveness.

As part of NIST's advanced communications research activities, the Committee also encourages NIST to encourage technology transfer and commercialization activities, including patenting and licensing technologies in such areas.

National Advanced Spectrum and Communications Test Network—To continue to benefit from advances in communications technology in a way that balances demand for commercial broadband uses with the needs of national security and public safety, the United States must develop new capabilities to more efficiently and effectively share and utilize existing electromagnetic spectrum resources. The mission of NASCTN is to provide, through its members' expertise and capabilities, robust test processes and validated measurement data necessary to develop, evaluate, and deploy spectrum sharing technologies that can improve access to

the spectrum by both Federal agencies and non-Federal spectrum users. It is the Committee's intent that NASCTN shall continue to operate as a cooperative network of its members.

Neutron Scattering—The Committee does not intend this legislation to preclude NIST from applying to the NRC to renew the license of the existing neutron reactor or to influence NRC's decision-making process. Extending the license may be necessary to minimize disruptions with the user community during the transition to a new reactor, but the Committee feels it is critical NIST begin planning for the future of the facility and coordinating with the Department of Energy on what Federal facilities will be needed in the future to support neutron science.

International Standards Development—The Committee notes that, in accordance with the American Innovation and Competitiveness Act (Public Law 114–329), the NIST Director serves as the President's principal advisor on standards policy pertaining to the Nation's technological competitiveness and innovation ability. This role includes leading information exchange and coordination across Federal agencies on standards, including international standards, and fostering cooperation between government, industry, and other private organizations involved in standards activities, a role previously codified in the National Technology Transfer and Advancement Act of 1995 (Public Law 104–113). The existing standards development system, involving many different types of standards development organizations producing primarily voluntary, consensus-based and industry-led technical standards, with appropriate support from the standards experts at NIST, is beneficial to U.S. competitiveness. Any effort to disrupt the current system or roles would be harmful. The Committee's intent is to reinforce and better resource the current system, not to disrupt or modify existing processes or roles.

The standards produced by these international standards development organizations are critical to making cutting-edge technological innovations broadly available to billions of consumers and provide a foundation for international trade and new bases for further innovation. Given the central role of technology standards in promoting innovation and enabling United States technology leadership, the Committee believes it is in the United States' interest to ensure that these organizations operate in a manner that is transparent, open, impartial and consensus-based, effective, relevant, and coherent. The development of international technical standards should be based on their technical merit and market relevance.

Without these principles, organizations developing international technical standards may adopt standards based on the parochial interests or biases of particular members, or the industrial policy goals of the countries they represent, to the potential detriment of other participants and to voluntary standardization itself. If left unchecked, such a trend could lead to the Balkanization of technology standards, where home-grown standards come to dominate markets. This would undermine the development of globally relevant standards and make it harder or impossible for United States companies to compete in global markets. The Committee encourages NIST to complete the study authorized in Sec. 9414 of the William M. (Mac) Thornberry National Defense Authorization Act

for Fiscal Year 2021 (P.L. 116–283) on Chinese policies and influence in the development of international standards for emerging technologies and provide an update to the Committee on when it will be completed.

The Committee believes that to boost U.S. competitiveness in advanced technologies, more U.S. stakeholders with appropriate expertise should be at the table helping to set technical standards. To that end, the Committee encourages NIST to expand capacity building activities that encourage U.S. organizations to provide continuous support for technical expert participation and leadership activities in standards organizations, not just temporary or one-time support. To this end, the Committee encourages NIST to help facilitate the development of consortia consisting of small businesses, associations, academia, and research organizations, as appropriate, in emerging technology areas.

The Committee also believes financial support for participants from universities, nonprofits, and small businesses would be beneficial to facilitating increased U.S. participation in international standards. The Committee recognizes that there is a risk to NIST that some may perceive the authorized pilot program as NIST "picking winners and losers" for participation in international standards development. The Committee authorized this as a pilot program with merit-review and extensive consultation requirements to mitigate that risk and so that the agency, stakeholders, and the Committee can iterate and monitor progress and effectiveness closely.

IX. Cost Estimate

Pursuant to clause 3(c)(2) of rule XIII of the Rules of the House of Representatives, the Committee adopts as its own the estimate of new budget authority, entitlement authority, or tax expenditures or revenues contained in the cost estimate prepared by the Director of the Congressional Budget Office pursuant to section 402 of the Congressional Budget Act of 1974.

X. CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

At a Glance

H.R. 4609, National Institute of Standards and Technology for the Future Act of 2021

As ordered reported by the House Committee on Science, Space, and Technology on July 27, 2021

By Fiscal Year, Millions of Dollars	2022	2022-2026	2022-2031
Direct Spending (Outlays)	*	*	*
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	*	*	*
Spending Subject to Appropriation (Outlays)	161	5,841	6,953

		Mandate Effects	
Statutory pay-as-you-go procedures apply?	Yes		
Increases on-budget deficits in any of the four consecutive 10-year periods beginning in 2032?	< $5 billion	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No

* = between zero and $500,000.

The bill would

- Authorize the appropriation of specific amounts for each year from 2022 through 2026 for programs implemented by the National Institute of Standards and Technology (NIST)

Estimated budgetary effects would mainly stem from

- Spending of the authorized amounts by NIST
- Spending of interest accrued in the NIST Facilities Modernization Fund without further appropriation

Bill Summary: H.R. 4609 would reauthorize the National Institute of Standards and Technology (NIST) and would authorize the appropriation of specific amounts in each year from 2022 through 2026. The bill also would codify NIST's research programs in engineering biology, greenhouse gas emissions, and artificial intelligence, among others, and establish the Facilities Modernization Fund.

Estimated Federal Cost: The estimated budgetary effect of H.R. 4609 is shown in Table 1. The costs of the legislation fall within budget function 370 (commerce and housing credit).

TABLE 1.—ESTIMATED BUDGETARY EFFECTS OF H.R. 4609

	By fiscal year, millions of dollars—					
	2022	2023	2024	2025	2026	2022–2026
National Institute of Standards and Technology						
Authorization [a]	395	1,519	1,596	1,678	1,765	6,953
Estimated Outlays	161	1,014	1,405	1,562	1,699	5,841

Enacting the bill would increase direct spending by less than $500,000 in every year and over the 2022–2031 period.

[a] In 2021, the Congress provided a total of $1.0 billion for National Institute of Standards and Technology. Because CBO estimates budgetary effects on an annualized basis, in 2022 CBO assumes that the same amount will be available for those programs under the current continuing resolution (Public Law 117–70). The amount shown in 2022 reflects the difference between the authorized amount and the amount annualized under the continuing resolution.

Basis of Estimate: For this estimate, CBO assumes that the bill will be enacted in fiscal year 2022, that the estimated amounts will

be appropriated each year, and that spending will follow historical patterns.

Spending Subject to Appropriation: H.R. 4609 would authorize the appropriation of specific amounts each year, totaling $8.0 billion for NIST over the 2022–2026 period. In 2021, the Congress provided a total of $1.0 billion for the programs that would be authorized by the bill. Because CBO estimates budgetary effects on an annualized basis, in 2022 CBO assumes that the same amount will be available for those programs under the current continuing resolution (Public Law 117–70). Thus, our estimate for fiscal year 2022 reflects the difference between the authorized amounts and the amount annualized under the continuing resolution for each program. On that basis, CBO estimates that implementing the bill would cost $5.8 billion over the 2022–2026 period (see Table 2) and about $1.1 billion after 2026.

TABLE 2.—ESTIMATED INCREASES IN SPENDING SUBJECT TO APPROPRIATION UNDER H.R. 4609

	By fiscal year, millions of dollars—					
	2022	2023	2024	2025	2026	2022–2026
Scientific and Technical Research and Services [a]						
Authorization	128	979	1,048	1,121	1,199	4,475
Estimated Outlays	98	781	1,015	1,103	1,180	4,177
Construction of Research Facilities [a]						
Authorization	80	200	200	200	200	880
Estimated Outlays	10	35	65	110	161	381
Industrial Technology Services [a]						
Authorization	165	340	348	357	366	1,576
Estimated Outlays	449	189	316	349	358	1,261
Surfside Investigation						
Authorization	422	40	40	40	40	22
Estimated Outlays	44	49	49	40	40	22
Total Changes						
Authorization	395	1,519	1,596	1,678	1,765	6,953
Estimated Outlays	161	1,014	1,405	1,562	1,699	5,841

[a] In 2021, the Congress provided a total of $1.0 billion for these programs. Because CBO estimates budgetary effects on an annualized basis, in 2022 CBO assumes that the same amount will be available under the current continuing resolution (Public Law 117–70). The amounts shown in 2022 reflect the difference between the authorized amount and the amount annualized under the continuing resolution for each program.

Scientific and Technical Research and Services. H.R. 4609 would authorize appropriations totaling $5.3 billion over the 2022–2026 period for scientific and technical research and services. In 2021, NIST received $788 million to support laboratory research in fields such as quantum science, artificial intelligence, and microelectronics. After accounting for the continuing resolution, CBO estimates that implementing this provision would cost $4.2 billion over the 2022–2026 period and $298 million after 2026.

Construction of Research Facilities. H.R. 4609 would authorize appropriations totaling $960 million over the 2022–2026 period for the construction, repair, and maintenance of research facilities. That amount consists of $940 million specified in section 101 and another $20 million in section 301 for the Facilities Modernization Fund for 2022. In 2021, NIST received $80 million for construction activities. After accounting for the continuing resolution, CBO estimates that implementing this provision would cost $381 million over the 2022–2026 period and $499 million after 2026. From those authorized amounts, the bill would set aside $80 million annually

for capital projects to modernize facilities on NIST campuses. The effects of that provision on direct spending are discussed below.

Industrial Technology Services. H.R. 4609 would authorize appropriations totaling $1.7 billion over the 2022–2026 period for industrial technology services. In 2021, NIST received $167 million for that purpose. After accounting for the continuing resolution, CBO estimates that implementing this provision would cost $1.3 billion over the 2022–2026 period and $315 million after 2026. Those funds would support the Manufacturing USA and Hollings Manufacturing Extension Partnership programs.

Surfside Investigation. The bill would authorize the appropriation of $22 million in 2022 to investigate a building that collapsed in Surfside, Florida, on June 24, 2021. CBO estimates that implementing this provision would cost $22 million over the 2022–2026 period.

Direct Spending: H.R. 4609 would set aside $80 million in discretionary funds annually over the 2022–2026 period in the Facilities Modernization Fund to pay for capital projects on NIST campuses. CBO anticipates that each year's unobligated balances would be invested in Treasury securities and that the earnings would be spent without further appropriation on capital projects. CBO estimates that NIST would spend less than $500,000 in accrued interest over the 2022–2031 period.

Pay-As-You-Go Considerations: The Statutory Pay-As-You-Go Act of 2010 establishes budget-reporting and enforcement procedures for legislation affecting direct spending or revenues. The net changes in outlays that are subject to those pay-as-you-go procedures would be less than $500,000 in every year and over the 2022–2031 period.

Increase in Long-Term Deficits: CBO estimates that enacting H.R. 4609 would not increase on-budget deficits by more than $5 billion in any of the four consecutive 10-year periods beginning in 2032.

Mandates: None.

Estimate Prepared By: Federal Costs: David Hughes, Mandates: Rachel Austin.

Estimate Reviewed By: Justin Humphrey, Chief, Finance, Housing, and Education Cost Estimates Unit; H. Samuel Papenfuss, Deputy Director of Budget Analysis; Theresa Gullo, Director of Budget Analysis.

XI. Federal Mandates Statement

H.R. 4609 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

The Committee's oversight findings and recommendations are reflected in the body of this report.

XIII. Statement on General Performance Goals and Objectives

The goals and objectives of H.R. 4609 are to authorize funding for the NIST for fiscal years (FY) 2022, 2023, 2024, 2025 and 2026, to provide policy and programmatic direction related to science and engineering research supported by the Institute, make technical

changes to the agency's authorities, support research infrastructure, and provide guidance on funding trajectories for the agency and its funding accounts.

XIV. Federal Advisory Committee Statement

H.R. 4609 does not authorize an advisory committee.

XV. Duplication of Federal Programs

Pursuant to clause 3(c)(5) of rule XIII of the Rules of the House of Representatives, the Committee finds that no provision of H.R. 4609 establishes or reauthorizes a program of the federal government known to be duplicative of another federal program, including any program that was included in a report to Congress pursuant to section 21 of Public Law 111–139 or the most recent Catalog of Federal Domestic Assistance.

XVI. Earmark Identification

Pursuant to clause 9(e), 9(f), and 9(g) of rule XXI, the Committee finds that H.R. 4609 contains no earmarks, limited tax benefits, or limited tariff benefits.

XVII. Applicability to the Legislative Branch

The Committee finds that H.R. 4609 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVIII. Statement on Preemption of State, Local, or Tribal Law

This bill is not intended to preempt any state, local, or tribal law.

XIX. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italics, and existing law in which no change is proposed is shown in roman):

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT

* * * * * * *

ESTABLISHMENT, FUNCTIONS, AND ACTIVITIES

SEC. 2. (a) There is established within the Department of Commerce a science, engineering, technology, and measurement laboratory to be known as the National Institute of Standards and Technology (hereafter in this Act referred to as the "Institute").

(b) The Secretary of Commerce (hereafter in this Act referred to as the "Secretary") acting through the Director of the Institute (hereafter in this Act referred to as the "Director") is authorized to

serve as the President's principal adviser on standards policy pertaining to the Nation's technological competitiveness and innovation ability and to take all actions necessary and appropriate to accomplish the purposes of this Act, including the following functions of the Institute—

(1) to assist industry in the development of technology and procedures needed to improve quality, to modernize manufacturing processes, to ensure product reliability, manufacturability, functionality, and cost-effectiveness, and to facilitate the more rapid commercialization, especially by small- and medium-sized companies throughout the United States, of products based on new scientific discoveries in fields such as automation, electronics, advanced materials, biotechnology, and optical technologies;

(2) to develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for making measurements consistent with those standards;

(3) to facilitate standards-related information sharing and cooperation between Federal agencies and to coordinate the use by Federal agencies of private sector standards, emphasizing where possible the use of standards developed by private, consensus organizations;

[(4) to enter into contracts, including cooperative research and development arrangements, and grants and cooperative agreements, in furtherance of the purposes of this Act;]

(4) to enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of its work and on such terms as it may deem appropriate, in furtherance of the purposes of this Act;

(5) to provide United States industry, Government, and educational institutions with a national clearinghouse of current information, techniques, and advice for the achievement of higher quality and productivity based on current domestic and international scientific and technical development;

(6) to assist industry in the development of measurements, measurement methods, and basic measurement technology;

(7) to determine, compile, evaluate, and disseminate physical constants and the properties and performance of conventional and advanced materials when they are important to science, engineering, manufacturing, education, commerce, and industry and are not available with sufficient accuracy elsewhere;

(8) to develop a fundamental basis and methods for testing materials, mechanisms, structures, equipment, and systems, including those used by the Federal Government;

(9) to assure the compatibility of United States national measurement standards with those of other nations;

(10) to cooperate with other departments and agencies of the Federal Government, with industry, with State and local governments, with the governments of other nations and international organizations, and with private organizations in establishing standard practices, codes, specifications, and voluntary consensus standards;

(11) to advise government and industry on scientific and technical problems;

(12) to invent, develop, and (when appropriate) promote transfer to the private sector of measurement devices to serve special national needs; and

(13) to coordinate technical standards activities and conformity assessment activities of Federal, State, and local governments with private sector technical standards activities and conformity assessment activities, with the goal of eliminating unnecessary duplication and complexity in the development and promulgation of conformity assessment requirements and measures.

(c) In carrying out the functions specified in subsection (b), the Secretary, acting through the Director may, among other things—

(1) construct physical standards;

(2) test, calibrate, and certify standards and standard measuring apparatus;

(3) study and improve instruments, measurement methods, and industrial process control and quality assurance techniques;

(4) cooperate with the States in securing uniformity in weights and measures laws and methods of inspection;

(5) cooperate with foreign scientific and technical institutions to understand technological developments in other countries better;

(6) prepare, certify, and sell standard reference materials for use in ensuring the accuracy of chemical analyses and measurements of physical and other properties of materials;

(7) in furtherance of the purposes of this Act, accept research associates, cash donations, and donated equipment from industry, and also engage with industry in research to develop new basic and generic technologies for traditional and new products and for improved production and manufacturing;

(8) study and develop fundamental scientific understanding and improved measurement, analysis, synthesis, processing, and fabrication methods for chemical substances and compounds, ferrous and nonferrous metals, and all traditional and advanced materials, including processes of degradation;

(9) investigate ionizing and nonionizing radiation and radioactive substances, their uses, and ways to protect people, structures, and equipment from their harmful effects;

(10) determine the atomic and molecular structure of matter, through analysis of spectra and other methods, to provide a basis for predicting chemical and physical structures and reactions and for designing new materials and chemical substances, including biologically active macromolecules;

(11) perform research on electromagnetic waves, including optical waves, and on properties and performance of electrical, electronic, and electromagnetic devices and systems and their essential materials, develop and maintain related standards, and disseminate standard signals through broadcast and other means;

(12) develop and test standard interfaces, communication protocols, and data structures for computer and related telecommunications systems;

(13) study computer systems (as that term is defined in section 20(d) of this Act) and their use to control machinery and processes;

(14) perform research to develop standards and test methods to advance the effective use of computers and related systems and to protect the information stored, processed, and transmitted by such systems and to provide advice in support of policies affecting Federal computer and related telecommunications systems;

(15) on an ongoing basis, facilitate and support the development of a voluntary, consensus-based, industry-led set of standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively reduce cyber risks to critical infrastructure (as defined under subsection (e));

(16) support information security measures for the development and lifecycle of software and the software supply chain, including development of voluntary, consensus-based technical standards, best practices, frameworks, methodologies, procedures, processes, and software engineering toolkits and configurations;

(17) support information security measures, including voluntary, consensus-based technical standards, best practices, and guidelines, for the design, adoption and deployment of cloud computing services;

(18) support research, development, and practical application to improve the usability of cybersecurity processes and technologies;

(19) facilitate and support the development of a voluntary, consensus-based set of technical standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively ensure appropriate privacy protections for personally identifiable information in systems, technologies, and processes used by both the public and private sector;

(20) support privacy measures, including voluntary, consensus-based technical standards, best practices, guidelines, metrology, and testbeds for the design, adoption and deployment of privacy enhancing technologies;

[(16)**]** *(21)* perform research to support the development of voluntary, consensus-based, industry-led standards and recommendations on the security of computers, computer networks, and computer data storage used in election systems to ensure voters can vote securely and privately**[**.**]***;*

[(17)**]** *(22)* determine properties of building materials and structural elements, and encourage their standardization and most effective use, including investigation of fire-resisting properties of building materials and conditions under which they may be most efficiently used, and the standardization of types of appliances for fire prevention;

[(18)**]** *(23)* undertake such research in engineering, pure and applied mathematics, statistics, computer science, materials science, and the physical sciences as may be necessary to carry out and support the functions specified in this section;

[(19)**]** *(24)* host, participate in, and support scientific and technical workshops (as defined in section 202 of the American Innovation and Competitiveness Act);

[(20)] *(25)* collect and retain any fees charged by the Secretary for hosting a scientific and technical workshop described in paragraph (19);

[(21)] *(26)* notwithstanding title 31 of the United States Code, use the fees described in paragraph (20) to pay for any related expenses, including subsistence expenses for participants;

[(22)] *(27)* compile, evaluate, publish, and otherwise disseminate general, specific and technical data resulting from the performance of the functions specified in this section or from other sources when such data are important to science, engineering, or industry, or to the general public, and are not available elsewhere;

[(23)] *(28)* collect, create, analyze, and maintain specimens of scientific value;

[(24)] *(29)* operate national user facilities;

[(25)] *(30)* evaluate promising inventions and other novel technical concepts submitted by inventors and small companies and work with other Federal agencies, States, and localities to provide appropriate technical assistance and support for those inventions which are found in the evaluation process to have commercial promise;

[(26)] *(31)* demonstrate the results of the Institute's activities by exhibits or other methods of technology transfer, including the use of scientific or technical personnel of the Institute for part-time or intermittent teaching and training activities at educational institutions of higher learning as part of and incidental to their official duties; and

[(27)] *(32)* undertake such other activities similar to those specified in this subsection as the Director determines appropriate.

(d) In carrying out the extramural funding programs of the Institute, including the programs established under sections 25 and 26 of this Act, the Secretary may retain reasonable amounts of any funds appropriated pursuant to authorizations for these programs in order to pay for the Institute's management of these programs.

(e) CYBER RISKS.—

(1) IN GENERAL.—In carrying out the activities under subsection (c)(15), the Director—

(A) shall—

(i) coordinate closely and regularly with relevant private sector personnel and entities, critical infrastructure owners and operators, and other relevant industry organizations, including Sector Coordinating Councils and Information Sharing and Analysis Centers, and incorporate industry expertise;

(ii) consult with the heads of agencies with national security responsibilities, sector-specific agencies and other appropriate agencies, State and local governments, the governments of other nations, and international organizations;

(iii) identify a prioritized, flexible, repeatable, performance-based, and cost-effective approach, including information security measures and controls, that may be voluntarily adopted by owners and operators of crit-

ical infrastructure to help them identify, assess, and manage cyber risks;

(iv) include methodologies—

(I) to identify and mitigate impacts of the cybersecurity measures or controls on business confidentiality; and

(II) to protect individual privacy and civil liberties;

(v) incorporate voluntary consensus standards and industry best practices;

(vi) align with voluntary international standards to the fullest extent possible;

(vii) prevent duplication of regulatory processes and prevent conflict with or superseding of regulatory requirements, mandatory standards, and related processes;

(viii) consider small business concerns (as defined in section 3 of the Small Business Act (15 U.S.C. 632)); [and]

(ix) conduct reviews of and create impact metrics for cybersecurity solutions and capabilities developed by the Institute for purposes of improvement;

(x) consider institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)); and

[(ix)] *(xi)* include such other similar and consistent elements as the Director considers necessary; and

(B) shall not prescribe or otherwise require—

(i) the use of specific solutions;

(ii) the use of specific information or communications technology products or services; or

(iii) that information or communications technology products or services be designed, developed, or manufactured in a particular manner.

(2) LIMITATION.—Information shared with or provided to the Institute for the purpose of the activities described under subsection (c)(15) shall not be used by any Federal, State, tribal, or local department or agency to regulate the activity of any entity. Nothing in this paragraph shall be construed to modify any regulatory requirement to report or submit information to a Federal, State, tribal, or local department or agency.

(3) DEFINITIONS.—In this subsection:

(A) CRITICAL INFRASTRUCTURE.—The term "critical infrastructure" has the meaning given the term in section 1016(e) of the USA PATRIOT Act of 2001 (42 U.S.C. 5195c(e)).

(B) SECTOR-SPECIFIC AGENCY.—The term "sector-specific agency" means the Federal department or agency responsible for providing institutional knowledge and specialized expertise as well as leading, facilitating, or supporting the security and resilience programs and associated activities of its designated critical infrastructure sector in the all-hazards environment.

* * * * * * *

[SEC. 6. That the officers and employees provided for by this Act, except the director, shall be appointed by the Secretary of the Treasury, at such time as their respective services may become necessary.]

SEC. 6. HIRING CRITICAL TECHNICAL EXPERTS.

(a) IN GENERAL.—The officers and employees of the Institute, except the director, shall be appointed by the Secretary of Commerce at such time as their respective services may become necessary.

(b) HIRING CRITICAL TECHNICAL EXPERTS.—Notwithstanding section 3104 of title 5 or the provisions of any other law relating to the appointment, number, classification, or compensation of employees, the Secretary of Commerce shall have the authority to make appointments of scientific, engineering, and professional personnel, and to fix the basic pay of such personnel at a rate to be determined by the Secretary at rates not in excess of the highest total annual compensation payable at the rate determined under section 104 of title 3. The Director shall appoint not more than 15 personnel under this section.

(c) SUNSET.—The authority under section (b) shall expire on the date that is 5 years after the date of enactment of this section.

* * * * * * *

SEC. 14. (a) IN GENERAL.—Within the limits of funds which are appropriated for the Institute, the Secretary of Commerce is authorized to undertake such construction of buildings and other facilities and to make sure improvements to existing buildings, grounds, and other facilities occupied or used by the Institute as are necessary for the proper and efficient conduct of the activities authorized herein.

(b) RETENTION OF FEES.—The Director is authorized to retain all building use and depreciation surcharge fees collected pursuant to OMB Circular A–25. Such fees shall be collected and credited to the Construction of Research Facilities Appropriation Account for use in maintenance and repair of the Institute's existing facilities.

(c) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Within the limits of funds which are appropriated for the Institute, the Secretary is authorized to own, operate, or lease research facilities in locations throughout the United States and its territories in furtherance of its mission, provided that no agreement is entered into to own, operate, or lease without first notifying the appropriate Congressional committees of jurisdiction.

(d) FACILITIES MODERNIZATION FUND.—

(1) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be known as the "NIST Facilities Modernization Fund" (hereafter in this section referred to as the "Fund").

(2) USE OF FUNDS.—Amounts in the Fund shall be available to Secretary, acting through the Director, for Capital Projects on the Institute's campuses, and as needed on the Institute's joint institute campuses, for the modernization, renovation, and construction of research facilities needed to conduct leading edge scientific and technical research.

(3) CONTENTS OF FUND.—The Funds shall consist of the following amounts:

(A) Such amounts as may be appropriated by law.

(B) Interest earned on the balance of the Fund.

(4) AUTHORIZATION OF FUNDS.—Of the funds authorized to be appropriated in section 302 of the National Institute of Standards and Technology for the Future Act of 2021 for the construction and renovation of facilities, $80,000,000 for each of the fiscal years 2022 through 2026 shall be provided for the Fund established in subsection (a).

(5) CONTINUING AVAILABILITY OF FUNDS.—Amounts in the Fund are available without regard to fiscal year limitation.

(6) NOTIFICATION TO COMMITTEES.—Upon making any obligation or expenditure of any amount in the Fund, the Secretary, through the Director, shall notify the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the House of Representatives and the Committee on Appropriations of the Senate of the amount and purpose of the obligation or expenditure.

(7) NIST FACILITIES MODERNIZATION AND MAINTENANCE PLAN.—

(A) IN GENERAL.—To carry out the program authorized in subsection (d), the Secretary, acting through the Director, shall develop and submit to Congress a 5-year modernization and maintenance plan for the Institute's campuses.

(B) TIMING.—The modernization and maintenance plan required in subparagraph (A) shall be submitted to Congress not later than 30 days after the date of enactment of the National Institute of Standards and Technology for the Future Act of 2021, and an update shall be submitted to Congress annually thereafter.

(C) COMPONENTS.—The plan required in subparagraph (A) shall include, with respect to the 5-year period beginning on the date of the submission or update, the following:

(i) A list of Capital Construction Projects expected to be undertaken during such period, the core capabilities these facilities will provide, climate-resilience planning efforts, anticipated schedule of construction, and anticipated funding requirements.

(ii) A list of planned utility infrastructure projects expected to be undertaken during such periods, anticipated schedule of construction, and anticipated funding requirements.

(iii) A list of planned IT infrastructure projects expected to be undertaken during such period, anticipated schedule of construction, and anticipated funding requirements.

(iv) A list of the deferred maintenance projects expected to be undertaken during such period, anticipated schedule of construction, anticipated funding requirements, and an evaluation of progress made in reducing the deferred maintenance backlog.

SEC. 15. In the performance of the functions of the Institute the Secretary of Commerce is authorized to undertake the following activities: (a) The purchase, repair, and cleaning of uniforms for guards; (b) the care, maintenance, protection, repair, and alteration of Institute buildings and other plant facilities, equipment, and

property[.]*;* (c) the rental of field sites and laboratory, office, and warehouse space; (d) the purchase of reprints from technical journals or other periodicals and the payment of page charges for the publication of research papers and reports in such journals; (e) the furnishing of food and shelter without repayment therefor to employees of the Government at Arctic and Antarctic stations; (f) for the conduct of observations on radio propagation phenomena in the Arctic or Antarctic regions, the appointment of employees at base rates established by the Secretary of Commerce which shall not exceed such maximum rates as may be specified from time to time in the appropriation concerned, and without regard to the civil service and classification laws and titles II and III of the Federal Employees Pay Act of 1945; (g) the erection on leased property of specialized facilities and working and living quarters when the Secretary of Commerce determines that this will best serve the interests of the Government; [and] (h) the provision of transportation services for employees of the Institute between the facilities of the Institute and nearby public transportation, notwithstanding section 1344 of title 31, United States Code[.]*; and (i) the protection of Institute buildings and other plant facilities, equipment, and property, and of employees, associates, or visitors, located therein or associated therewith, notwithstanding any other provision of law, the direction of such of the officers and employees of the Institute as the Secretary deems necessary in the public interest hereafter to carry firearms while in the conduct of their official duties, and the authorization of employees of contractors and subcontractors of the Institute who are engaged in the protection of property owned by the United States, and located at facilities owned by, leased, used or under the control of the United States, to carry firearms while in the conduct of their official duties, and, under regulations prescribed by the Secretary and approved by the Attorney General, the authorization of officers and employees of the Institute and of its contractors and subcontractors authorized to carry firearms hereafter to arrest without warrant for any offense against the United States committed in their presence, or for any felony cognizable under the laws of the United States if they have reasonable grounds to believe that the person to be arrested has committed or is committing such felony, provided that such authority to make arrests may be exercised only while guarding and protecting buildings and other plant facilities, equipment, and property owned or leased by, used or under the control of, the United States under the administration and control of the Secretary.*

* * * * * * *

SEC. 17. [(a) The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds, as the Secretary may deem desirable, through the grant of fellowships or any other form of financial assistance, to defray the expenses of foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the Institute or participating in the exchange of scientific or technical information at the Institute.]

(a) The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds, as the Secretary may deem desirable through direct support for activities of international organizations and foreign national me-

trology institutes with which the Institute cooperates to advance measurement methods, technical standards, and related basic technologies, for official representation, to host official receptions, dinners, and similar events, and to otherwise extend official courtesies, including transportation of foreign dignitaries and representatives of foreign national metrology institutes to and from the Institute, for the purpose of maintaining the standing and prestige of the Department of Commerce and the Institute, through the grant of fellowships or other appropriate form of financial or logistical assistance or support to foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the Institute or participating in the exchange of scientific or technical information at the Institute.

(b) The Congress consents to the acceptance by employees of the Institute of fellowships, lectureships, or other positions for the performance of scientific or engineering activities or for the exchange of scientific or technical information, offered by a foreign government, and to the acceptance and retention by an employee of the Institute of any form of financial or other assistance provided by a foreign government as compensation for or as a means of defraying expenses associated with the performance of scientific or engineering activities or the exchange of scientific or technical information, in any case where the acceptance of such fellowship, lectureship, or position or the acceptance and retention of such assistance is determined by the Secretary to be appropriate and consistent with the interests of the United States. For the purposes of this subsection, the definitions appearing in section 7342(a) of title 5 of the United States Code apply. Civil actions may be brought and penalties assessed against any employee who knowingly accepts and retains assistance from a foreign government not consented to by this subsection in the same manner as is prescribed by section 7342(h) of title 5 of the United States Code.

(c) Provisions of law prohibiting the use of any part of any appropriation for the payment of compensation to any employee or officer of the Government of the United States who is not a citizen of the United States shall not apply to the payment of compensation to scientific or engineering personnel of the Institute.

(d) For any scientific and engineering disciplines for which there is a shortage of suitably qualified and available United States citizens and nationals, the Secretary is authorized to recruit and employ in scientific and engineering fields at the Institute foreign nationals who have been lawfully admitted to the United States for permanent residence under the Immigration and Nationality Act and who intend to become United States citizens. Employment of a person under this paragraph shall not be subject to the provisions of title 5, United States Code, governing employment in the competitive service, or to any prohibition in any other Act against the employment of aliens, or against the payment of compensation to them.

SEC. 18. EDUCATION AND OUTREACH.

(a) IN GENERAL.—The Director is authorized to expend funds appropriated for activities of the Institute in any fiscal year, to support, promote, and coordinate activities and efforts to enhance public awareness and understanding of measurement sciences, standards and technology at the national measurement laboratories and

otherwise in fulfillment of the mission of the Institute. The Director [may] *shall* carry out activities under this subsection, including education and outreach activities to the general public, industry and [academia] *diverse types of institutions of higher education, including minority-serving institutions and community colleges* in support of the Institute's mission.

(b) HIRING.—The Director, in coordination with the Director of the Office of Personnel Management, may revise the procedures the Director applies when making appointments to laboratory positions within the competitive service—

(1) to ensure corporate memory of and expertise in the fundamental ongoing work, and on developing new capabilities in priority areas;

(2) to maintain high overall technical competence;

(3) to improve staff diversity;

(4) to balance emphases on the noncore and core areas; or

(5) to improve the ability of the Institute to compete in the marketplace for qualified personnel.

(c) VOLUNTEERS.—

(1) IN GENERAL.—The Director may establish a program to use volunteers in carrying out the programs of the Institute.

(2) ACCEPTANCE OF PERSONNEL.—The Director may accept, subject to regulations issued by the Office of Personnel Management, voluntary service for the Institute for such purpose if the service—

(A) is to be without compensation; and

(B) will not be used to displace any current employee or act as a substitute for any future full-time employee of the Institute.

(3) FEDERAL EMPLOYEE STATUS.—Any individual who provides voluntary service under this subsection shall not be considered a Federal employee, except for purposes of chapter 81 of title 5, United States Code (relating to compensation for injury), and sections 2671 through 2680 of title 28, United States Code (relating to tort claims).

(d) RESEARCH FELLOWSHIPS.—

(1) IN GENERAL.—The Director may expend funds appropriated for activities of the Institute in any fiscal year, as the Director considers appropriate, for awards of research fellowships and other forms of financial and logistical assistance, including direct stipend awards to—

(A) students at institutions of higher learning within the United States who show promise as present or future contributors to the mission of the Institute; and

(B) United States citizens for research and technical activities of the Institute, including programs.

(2) SELECTION CRITERIA.—The selection of persons to receive such fellowships and assistance shall be made on the basis of ability and of the relevance of the proposed work to the mission and programs of the Institute.

(3) FINANCIAL AND LOGISTICAL ASSISTANCE.—Notwithstanding section 1345 of title 31, United States Code, or any other law to the contrary, the Director may include as a form of financial or logistical assistance under this subsection tem-

porary housing and transportation to and from Institute facilities.

(e) EDUCATIONAL OUTREACH ACTIVITIES.—The Director may—

(1) facilitate education programs for undergraduate and graduate students, postdoctoral researchers, and academic and industry employees;

(2) sponsor summer workshops for STEM kindergarten through grade 12 teachers as appropriate;

(3) develop programs for graduate student internships and visiting faculty researchers;

(4) document publications, presentations, and interactions with visiting researchers and sponsoring interns as performance metrics for improving and continuing interactions with those individuals; [and]

(5) facilitate laboratory tours and provide presentations for educational, industry, and community groups[.]*; and*

(6) conduct outreach to and develop research collaborations with historically black colleges and universities and minority-serving institutions, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3);

(7) conduct outreach to and develop research collaborations with community colleges, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3);

(8) carry out other activities to increase the participation of persons historically underrepresented in STEM in the Institute's programs; and

(9) conduct outreach to and develop collaborations with non-traditional educational organizations, including those that offer training through non-profit associations and professional associations or professional societies, to engage persons historically underrepresented in STEM through programs developed under this subsection.

* * * * * * *

SEC. 20. (a) The Institute shall—

(1) have the mission of developing standards, guidelines, and associated methods and techniques for information systems;

(2) develop standards and guidelines, including minimum requirements, for information systems used or operated by an agency or by a contractor of an agency or other organization on behalf of an agency, other than national security systems (as defined in section 3552(b)(5) of title 44, United States Code);

(3) develop standards and guidelines, including minimum requirements, for providing adequate information security for all agency operations and assets, but such standards and guidelines shall not apply to national security systems;

(4) carry out the responsibilities described in paragraph (3) through the Computer Security Division; and

(5) identify and develop standards and guidelines for improving the cybersecurity workforce for an agency as part of the National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework (NIST Special Publication 800–181), or successor framework.

(b) The standards and guidelines required by subsection (a) shall include, at a minimum—

(1)(A) standards to be used by all agencies to categorize all information and information systems collected or maintained by or on behalf of each agency based on the objectives of providing appropriate levels of information security according to a range of risk levels;

(B) guidelines recommending the types of information and information systems to be included in each such category; and

(C) minimum information security requirements for information and information systems in each such category;

(2) a definition of and guidelines concerning detection and handling of information security incidents; [and]

(3) guidelines developed in coordination with the National Security Agency for identifying an information system as a national security system consistent with applicable requirements for national security systems, issued in accordance with law and as directed by the President[.]*; and*

(4) performance standards and guidelines for high risk biometric identification systems, including facial recognition systems, accounting for various use cases, types of biometric identification systems, and relevant operational conditions.

(c) In developing standards and guidelines required by subsections (a) and (b), the Institute shall—

(1) consult with other agencies and offices (including, but not limited to, the Director of the Office of Management and Budget, the Departments of Defense and Energy, the National Security Agency, the General Accounting Office, and the Secretary of Homeland Security) to assure—

(A) use of appropriate information security policies, procedures, and techniques, in order to improve information security and avoid unnecessary and costly duplication of effort; and

(B) that such standards and guidelines are complementary with standards and guidelines employed for the protection of national security systems and information contained in such systems;

(2) provide the public with an opportunity to comment on proposed standards and guidelines;

(3) submit to the Director of the Office of Management and Budget for promulgation under section 11331 of title 40, United States Code—

(A) standards, as required under subsection (b)(1)(A), no later than 12 months after the date of the enactment of this section; and

(B) minimum information security requirements for each category, as required under subsection (b)(1)(C), no later than 36 months after the date of the enactment of this section;

(4) issue guidelines as required under subsection (b)(1)(B), no later than 18 months after the date of the enactment of this Act;

(5) ensure that such standards and guidelines do not require specific technological solutions or products, including any specific hardware or software security solutions;

(6) ensure that such standards and guidelines provide for sufficient flexibility to permit alternative solutions to provide equivalent levels of protection for identified information security risks; and

(7) use flexible, performance-based standards and guidelines that, to the greatest extent possible, permit the use of off-the-shelf commercially developed information security products.

(d) The Institute shall—

(1) submit standards developed pursuant to subsection (a), along with recommendations as to the extent to which these should be made compulsory and binding, to the Director of the Office of Management and Budget for promulgation under section 11331 of title 40, United States Code;

(2) provide assistance to agencies regarding—

(A) compliance with the standards and guidelines developed under subsection (a);

(B) detecting and handling information security incidents; and

(C) information security policies, procedures, and practices;

(3) conduct research and analysis—

(A) to determine the nature and extent of information security vulnerabilities and techniques for providing cost-effective information security;

(B) to review and determine prevalent information security challenges and deficiencies identified by agencies or the Institute, including any challenges or deficiencies described in any of the annual reports under section 3553 or 3554 of title 44, United States Code, and in any of the reports and the independent evaluations under section 3555 of that title, that may undermine the effectiveness of agency information security programs and practices; and

(C) to evaluate the effectiveness and sufficiency of, and challenges to, Federal agencies' implementation of standards and guidelines developed under this section and policies and standards promulgated under section 11331 of title 40, United States Code;

(4) develop and periodically revise performance indicators and measures for agency information security policies and practices;

(5) evaluate private sector information security policies and practices and commercially available information technologies to assess potential application by agencies to strengthen information security;

(6) evaluate security policies and practices developed for national security systems to assess potential application by agencies to strengthen information security;

(7) periodically assess the effectiveness of standards and guidelines developed under this section and undertake revisions as appropriate;

(8) solicit and consider the recommendations of the Information Security and Privacy Advisory Board, established by section 21, regarding standards and guidelines developed under subsection (a) and submit such recommendations to the Direc-

tor of the Office of Management and Budget with such standards submitted to the Director; and

(9) prepare an annual public report on activities undertaken in the previous year, and planned for the coming year, to carry out responsibilities under this section.

(e) INTRAMURAL SECURITY RESEARCH.—As part of the research activities conducted in accordance with subsection (d)(3), the Institute shall, to the extent practicable and appropriate—

(1) conduct a research program to develop a unifying and standardized identity, privilege, and access control management framework for the execution of a wide variety of resource protection policies and that is amenable to implementation within a wide variety of existing and emerging computing environments;

(2) carry out research associated with improving the security of information systems and networks;

(3) carry out research associated with improving the testing, measurement, usability, and assurance of information systems and networks;

(4) carry out research associated with improving security of industrial control systems;

(5) carry out research associated with improving the security and integrity of the information technology supply chain; and

(6) carry out any additional research the Institute determines appropriate.

(f) As used in this section—

(1) the term "agency" has the same meaning as provided in section 3502(1) of title 44, United States Code;

(2) the term "information security" has the same meaning as provided in section 3532(1) of such title;

(3) the term "information system" has the same meaning as provided in section 3502(8) of such title;

(4) the term "information technology" has the same meaning as provided in section 11101 of title 40, United States Code; and

(5) the term "national security system" has the same meaning as provided in section 3532(b)(2) of such title.

* * * * * * *

SEC. 25. HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.

(a) DEFINITIONS.—In this section:

(1) APPROPRIATE COMMITTEES OF CONGRESS.—The term "appropriate committees of Congress" means—

(A) the Committee on Commerce, Science, and Transportation of the Senate; and

(B) the Committee on Science, Space, and Technology of the House of Representatives.

(2) AREA CAREER AND TECHNICAL EDUCATION SCHOOL.—The term "area career and technical education school" has the meaning given the term in section 3 of the Vocational Education Act of 1963 (20 U.S.C. 2302).

(3) CENTER.—The term "Center" means a manufacturing extension center that—

(A) is created under subsection (b); and

(B) is affiliated with an eligible entity that applies for and is awarded financial support under subsection (e).

(4) COMMUNITY COLLEGE.—The term "community college" means an institution of higher education (as defined under section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a))) at which the highest degree that is predominately awarded to students is an associate's degree.

(5) ELIGIBLE ENTITY.—The term "eligible entity" means a United States-based nonprofit institution, [or consortium thereof,] an institution of higher education, or a State, United States territory, local, or tribal government *or a consortium thereof*.

(6) HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP OR PROGRAM.—The term "Hollings Manufacturing Extension Partnership" or "Program" means the program established under subsection (b).

(7) MEP ADVISORY BOARD.—The term "MEP Advisory Board" means the Manufacturing Extension Partnership Advisory Board established under subsection (n).

(b) ESTABLISHMENT AND PURPOSE.—The Secretary, acting through the Director and, if appropriate, through other Federal officials, shall establish a program to provide assistance for the creation and support of manufacturing extension centers for the transfer of manufacturing technology and best business practices.

(c) OBJECTIVE.—The objective of the Program shall be to enhance competitiveness, productivity, and technological performance in United States manufacturing through—

(1) the transfer of manufacturing technology and techniques developed at the Institute to Centers and, through them, to manufacturing companies throughout the United States;

(2) the participation of individuals from industry, institutions of higher education, State governments, other Federal agencies, and, when appropriate, the Institute in cooperative technology transfer activities;

(3) efforts to make new manufacturing technology and processes usable by United States-based small and medium-sized companies;

(4) the active dissemination of scientific, engineering, technical, and management information about manufacturing to *United States-based* industrial firms, including small and medium-sized manufacturing companies;

(5) the utilization, when appropriate, of the expertise and capability that exists in Federal agencies, other than the Institute, and federally-sponsored laboratories;

(6) the provision to [community colleges and area career and technical education schools] *secondary schools (as defined in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801)), community colleges, and area career and technical education schools, including those in underserved and rural communities,* of information about the job skills needed in manufacturing companies, including small and medium-sized manufacturing businesses in the regions they serve;

(7) the promotion and expansion of certification systems offered through industry, associations, [and local colleges] *local high schools and local colleges, including those in underserved*

and rural communities, when appropriate, including efforts such as facilitating training, supporting new or existing apprenticeships *or other applied learning opportunities*, and providing access to information and experts, to address workforce needs and skills gaps in order to assist small- and medium-sized manufacturing businesses; and

(8) the growth in employment and wages at United States-based small and medium-sized companies.

(d) ACTIVITIES.—The activities of a Center shall include—

(1) the establishment of automated manufacturing systems and other advanced production technologies, *at United States-based industrial facilities, including small and medium manufacturing companies* based on Institute-supported research, for the purpose of demonstrations and technology transfer;

(2) the active transfer and dissemination of research findings and Center expertise to a wide range of *United States-based* companies and enterprises, particularly small and medium-sized manufacturers; and

(3) the facilitation of collaborations and partnerships between *United States-based* small and medium-sized manufacturing companies[, community colleges, and area career and technical education schools,] *and local high schools, community colleges, and area career and technical education schools, including those in underserved and rural communities,* to help those entities better understand the specific needs of manufacturers and to help manufacturers better understand the skill sets that students learn in the programs offered by such colleges and schools.

(e) FINANCIAL ASSISTANCE.—

(1) AUTHORIZATION.—Except as provided in paragraph (2), the Secretary may provide financial assistance for the creation and support of a Center through a cooperative agreement with an eligible entity.

(2) COST SHARING.—The Secretary may not provide more than 50 percent of the capital and annual operating and maintenance funds required to establish and support a Center.

(3) RULE OF CONSTRUCTION.—For purposes of paragraph (2), any amount received by an eligible entity for a Center under a provision of law other than paragraph (1) shall not be considered an amount provided under paragraph (1).

(4) REGULATIONS.—The Secretary may revise or promulgate such regulations as necessary to carry out this subsection.

(f) APPLICATIONS.—

(1) IN GENERAL.—An eligible entity shall submit an application to the Secretary at such time, in such manner, and containing such information as the Secretary may require.

(2) PROGRAM DESCRIPTION.—The Secretary shall establish and update, as necessary—

(A) a description of the Program;

(B) the application procedures;

(C) performance metrics;

(D) criteria for determining qualified applicants; and

(E) criteria for choosing recipients of financial assistance from among the qualified applicants.

(F) procedures for determining allowable cost share contributions; and

(G) such other program policy objectives and operational procedures as the Secretary considers necessary.

(3) COST SHARING.—

(A) IN GENERAL.—To be considered for financial assistance under this section, an applicant shall provide adequate assurances that the applicant and if applicable, the applicant's partnering organizations, will obtain funding for not less than 50 percent of the capital and annual operating and maintenance funds required to establish and support the Center from sources other than the financial assistance provided under subsection (e).

(B) AGREEMENTS WITH OTHER ENTITIES.—In meeting the cost-sharing requirement under subparagraph (A), an eligible entity may enter into an agreement with 1 or more other entities, such as a private industry, institutions of higher education, or a State, United States territory, local, or tribal government for the contribution by that other entity of funding if the Secretary determines the agreement—

(i) is programmatically reasonable;

(ii) will help accomplish programmatic objectives; and

(iii) is allocable under Program procedures under subsection (f)(2).

(4) LEGAL RIGHTS.—Each applicant shall include in the application a proposal for the allocation of the legal rights associated with any intellectual property which may result from the activities of the Center.

(5) MERIT REVIEW OF APPLICATIONS.—

(A) IN GENERAL.—The Secretary shall subject each application to merit review.

(B) CONSIDERATIONS.—In making a decision whether to approve an application and provide financial assistance under subsection (e), the Secretary shall consider, at a minimum—

(i) the merits of the application, particularly those portions of the application regarding technology transfer, training and education, and adaptation of manufacturing technologies to the needs of particular industrial sectors *in the United States*;

(ii) the quality of service to be provided;

(iii) the geographical diversity and extent of the service area; and

(iv) the type and percentage of funding and in-kind commitment from other sources under paragraph (3).

(g) EVALUATIONS.—

(1) THIRD AND EIGHTH YEAR EVALUATIONS BY PANEL.—

(A) IN GENERAL.—The Secretary shall ensure that each Center is evaluated during its third and eighth years of operation by an evaluation panel appointed by the Secretary.

(B) COMPOSITION.—The Secretary shall ensure that each evaluation panel appointed under subparagraph (A) is composed of—

(i) private experts, none of whom are connected with the Center evaluated by the panel; and

(ii) Federal officials.

(C) CHAIRPERSON.—For each evaluation panel appointed under subparagraph (B), the Secretary shall appoint a chairperson who is an official of the Institute.

(2) FIFTH YEAR EVALUATIONS BY SECRETARY.—In the fifth year of operation of a Center, the Secretary shall conduct a review of the Center.

(3) PERFORMANCE MEASUREMENT.—In evaluating a Center an evaluation panel or the Secretary, as applicable, shall measure the performance of the Center against—

(A) the objective specified in subsection (c);

(B) the performance metrics under subsection (f)(2)(C); and

(C) such other criterion as considered appropriate by the Secretary.

(4) POSITIVE EVALUATIONS.—If an evaluation of a Center is positive, the Secretary may continue to provide financial assistance for the Center—

(A) in the case of an evaluation occurring in the third year of a Center, through the fifth year of the Center;

(B) in the case of an evaluation occurring in the fifth year of a Center, through the eighth year of the Center; and

(C) in the case of an evaluation occurring in the eighth year of a Center, through the tenth year of the Center.

(5) OTHER THAN POSITIVE EVALUATIONS.—

(A) PROBATION.—If an evaluation of a Center is other than positive, the Secretary shall put the Center on probation during the period beginning on the date that the Center receives notice under subparagraph (B)(i) and ending on the date that the reevaluation is complete under subparagraph (B)(iii).

(B) NOTICE AND REEVALUATION.—If a Center receives an evaluation that is other than positive, the evaluation panel or Secretary, as applicable, shall—

(i) notify the Center of the reason, including any deficiencies in the performance of the Center identified during the evaluation;

(ii) assist the Center in remedying the deficiencies by providing the Center, not less frequently than once every 3 months, an analysis of the Center, if considered appropriate by the panel or Secretary, as applicable; and

(iii) reevaluate the Center not later than 1 year after the date of the notice under clause (i).

(C) CONTINUED SUPPORT DURING PERIOD OF PROBATION.—

(i) IN GENERAL.—The Secretary may continue to provide financial assistance under subsection (e) for a Center during the probation period.

(ii) POST PROBATION.—After the period of probation, the Secretary shall not provide any financial assistance unless the Center has received a positive evaluation under subparagraph (B)(iii).

(6) FAILURE TO REMEDY.—

(A) IN GENERAL.—If a Center fails to remedy a deficiency or to show significant improvement in performance before the end of the probation period under paragraph (5), the Secretary shall conduct a competition to select an operator for the Center under subsection (h).

(B) TREATMENT OF CENTERS SUBJECT TO NEW COMPETITION.—Upon the selection of an operator for a Center under subsection (h), the Center shall be considered a new Center and the calculation of the years of operation of that Center for purposes of paragraphs (1) through (5) of this subsection and subsection (h)(1) shall start anew.

(h) REAPPLICATION COMPETITION FOR FINANCIAL ASSISTANCE AFTER 10 YEARS.—

(1) IN GENERAL.—If an eligible entity has operated a Center under this section for a period of 10 consecutive years, the Secretary shall conduct a competition to select an eligible entity to operate the Center in accordance with the process plan under subsection (i).

(2) INCUMBENT ELIGIBLE ENTITIES.—An eligible entity that has received financial assistance under this section for a period of 10 consecutive years and that the Secretary determines is in good standing shall be eligible to compete in the competition under paragraph (1).

(3) TREATMENT OF CENTERS SUBJECT TO REAPPLICATION COMPETITION.—Upon the selection of an operator for a Center under paragraph (1), the Center shall be considered a new Center and the calculation of the years of operation of that Center for purposes of paragraphs (1) through (5) of subsection (g) shall start anew.

(i) PROCESS PLAN.—Not later than 180 days after the date of the enactment of the American Innovation and Competitiveness Act, the Secretary shall implement and submit to Congress a plan for how the Institute will conduct an evaluation, competition, and reapplication competition under this section.

(j) OPERATIONAL REQUIREMENTS.—

(1) PROTECTION OF CONFIDENTIAL INFORMATION OF CENTER CLIENTS.—The following information, if obtained by the Federal Government in connection with an activity of a Center or the Program, shall be exempt from public disclosure under section 552 of title 5, United States Code:

(A) Information on the business operation of any participant in the Program or of a client of a Center.

(B) Trade secrets of any client of a Center.

(k) OVERSIGHT BOARDS.—

(1) IN GENERAL.—As a condition on receipt of financial assistance for a Center under subsection (e), an eligible entity shall establish a board to oversee the operations of the Center.

(2) STANDARDS.—

(A) IN GENERAL.—The Director shall establish appropriate standards for each board described under paragraph (1).

(B) CONSIDERATIONS.—In establishing the standards, the Director shall take into account the type and organizational structure of an eligible entity.

(C) REQUIREMENTS.—The standards shall address—

(i) membership;

(ii) composition;

(iii) term limits;

(iv) conflicts of interest; and

(v) such other requirements as the Director considers necessary.

(3) MEMBERSHIP.—

(A) IN GENERAL.—Each board established under paragraph (1) shall be composed of members as follows:

(i) The membership of each board shall be representative of stakeholders in the region in which the Center is located.

(ii) A majority of the members of the board shall be selected from among individuals who own or are employed by small or medium-sized manufacturers.

(B) LIMITATION.—A member of a board established under paragraph (1) may not serve on more than 1 board established under that paragraph.

(4) BYLAWS.—

(A) IN GENERAL.—Each board established under paragraph (1) shall adopt and submit to the Director bylaws to govern the operation of the board.

(B) CONFLICTS OF INTEREST.—Bylaws adopted under subparagraph (A) shall include policies to minimize conflicts of interest, including such policies relating to disclosure of relationships and recusal as may be necessary to minimize conflicts of interest.

[(l) ACCEPTANCE OF FUNDS.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal departments and agencies and from the private sector under section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.]

(l) ACCEPTANCE OF FUNDS.—

(1) IN GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal departments and agencies, as well as funds provided by the private sector pursuant to section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.

(2) COMPETITIVE AWARDS.—Funds accepted from other Federal departments and agencies and from the private sector under paragraph (1) shall be awarded competitively by the Secretary and by the Director to Manufacturing Extension Partnership Centers, provided that the Secretary and Director may

make non-competitive awards, pursuant to this section or section 25A, or as a non-competitive contract, as appropriate, if the Secretary and the Director determine that—

(A) the manufacturing market or sector targeted is limited geographically or in scope;

(B) the number of States (or territory, in the case of Puerto Rico) with Manufacturing Extension Partnership Centers serving manufacturers of such market or sector is five or fewer; and

(C) such Manufacturing Extension Partnership Center or Centers has received a positive evaluation in the most recent evaluation conducted pursuant to subsection (g).

(m) MEP ADVISORY BOARD.—

(1) ESTABLISHMENT.—There is established within the Institute a Manufacturing Extension Partnership Advisory Board.

(2) MEMBERSHIP.—

(A) COMPOSITION.—

(i) IN GENERAL.—The MEP Advisory Board shall consist of not fewer than 10 members appointed by the Director and broadly representative of stakeholders.

(ii) REQUIREMENTS.—Of the members appointed under clause (i)—

(I) at least 2 members shall be employed by or on an advisory board for a Center;

(II) at least 5 members shall be from United States small businesses in the manufacturing sector; and

(III) at least 1 member shall represent a community college.

(iii) LIMITATION.—No member of the MEP Advisory Board shall be an employee of the Federal Government.

(B) TERM.—Except as provided in subparagraph (C), the term of office of each member of the MEP Advisory Board shall be 3 years.

(C) VACANCIES.—Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.

(D) SERVING CONSECUTIVE TERMS.—Any person who has completed 2 consecutive full terms of service on the MEP Advisory Board shall thereafter be ineligible for appointment during the 1-year period following the expiration of the second such term.

(3) MEETINGS.—The MEP Advisory Board shall—

(A) meet not less than biannually; and

(B) provide to the Director—

(i) advice on the activities, plans, and policies of the Program;

(ii) assessments of the soundness of the plans and strategies of the Program; and

(iii) assessments of current performance against the plans of the Program.

(4) FACA APPLICABILITY.—

(A) IN GENERAL.—In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act (5 U.S.C. App.).

(B) EXCEPTION.—Section 14 of the Federal Advisory Committee Act shall not apply to the MEP Advisory Board.

(5) ANNUAL REPORT.—

(A) IN GENERAL.—At a minimum, the MEP Advisory Board shall transmit an annual report to the Secretary for transmittal to Congress not later than 30 days after the submission to Congress of the President's annual budget under section 1105 of title 31, United States Code.

(B) CONTENTS.—The report shall address the status of the Program and describe the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23 (15 U.S.C. 278i).

(n) SMALL MANUFACTURERS.—

(1) EVALUATION OF OBSTACLES.—As part of the Program, the Director shall—

(A) identify obstacles that prevent *United States-based* small manufacturers from effectively competing in the global market;

(B) implement a comprehensive plan to train the Centers to address the obstacles identified in paragraph (2); and

(C) facilitate improved communication between the Centers to assist such manufacturers in implementing appropriate, targeted solutions to the obstacles identified in paragraph (2).

(2) DEVELOPMENT OF OPEN ACCESS RESOURCES.—As part of the Program, the Secretary shall develop open access resources that address best practices related to inventory sourcing, supply chain management, manufacturing techniques, available Federal resources, and other topics to further the competitiveness and profitability of small manufacturers.

SEC. 25A. COMPETITIVE AWARDS PROGRAM.

(a) ESTABLISHMENT.—The Director shall establish within the Hollings Manufacturing Extension Partnership under section 25 (15 U.S.C. 278k) and section 26 (15 U.S.C. 278l) a program of competitive awards among participants described in subsection (b) of this section for the purposes described in subsection (c).

(b) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

(c) PURPOSE, THEMES, AND REIMBURSEMENT.—

(1) PURPOSE.—The purpose of the program established under subsection (a) is to add capabilities to the Hollings Manufacturing Extension Partnership, including the development of projects to solve new or emerging manufacturing problems as determined by the Director, in consultation with the Director of the Hollings Manufacturing Extension Partnership, the MEP Advisory Board, other Federal agencies, and small and medium-sized manufacturers.

(2) THEMES.—The Director may identify 1 or more themes for a competition carried out under this section, which may vary from year to year, as the Director considers appropriate after assessing the needs of *United States* manufacturers and the success of previous competitions.

(3) REIMBURSEMENT.—Centers may be reimbursed for costs incurred by the Centers under this section.

(d) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such time, and containing such information as the Director shall require in consultation with the MEP Advisory Board.

(e) SELECTION.—

(1) PEER REVIEW AND COMPETITIVELY AWARDED.—The Director shall ensure that awards under this section are peer reviewed and competitively awarded.

(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

(3) CRITERIA.—The Director shall select applications to receive awards that the Director determines will achieve 1 or more of the following:

(A) Improve the competitiveness of industries in the region in which the Center or Centers are located.

(B) Create jobs or train newly hired employees.

(C) Promote the transfer and commercialization of research and technology from institutions of higher education, national laboratories or other federally funded research programs, and nonprofit research institutes.

(D) Recruit a diverse manufacturing workforce, including through outreach to underrepresented populations, including individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b).

(E) Such other result as the Director determines will advance the objective set forth in section 25(c) (15 U.S.C. 278k) or in section 26 (15 U.S.C. 278l).

(f) PROGRAM CONTRIBUTION.—Recipients of awards under this section shall not be required to provide a matching contribution.

(g) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, the Director, in consultation with the MEP Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace.

(h) DURATION.—The duration of an award under this section shall be for not more than 3 years.

(i) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25 (15 U.S.C. 278k).

SEC. 25B. EXPANSION AWARDS PILOT PROGRAM.

(a) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25.

(b) ESTABLISHMENT.—The Director shall establish as a part of the Hollings Manufacturing Extension Partnership a pilot program of expansion awards among participants described in subsection (c) of this section for the purposes described in subsection (e) of this section.

(c) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

(d) AWARD AMOUNTS.—Subject to the availability of appropriations, an award for a recipient under this section shall be in an amount equal to the sum of the following:

(1) Such amount as the Director considers appropriate as a minimum base funding level for each award under this section.

(2) Such additional amount as the Director considers in proportion to the manufacturing density of the region of the recipient.

(3) Such supplemental amounts as the Director considers appropriate.

(e) PURPOSE OF AWARDS.—An award under this section shall be made for one or more of the following purposes:

(1) To provide coordinating services on employee engagement, including employee ownership and workforce training, including connecting manufacturers with career and technical education entities, institutions of higher education (including community colleges), workforce development boards, labor organizations, and nonprofit job training providers to develop and support training and job placement services, including apprenticeship and online learning platforms, for new and incumbent workers, programming to prevent job losses when adopting new technologies and processes, and development of employee ownership practices.

(2) To provide services to improve the resiliency of domestic supply chains and to mitigate vulnerabilities to cyberattacks, including helping to offset the cost of cybersecurity projects for small manufacturers.

(3) To expand advanced technology services to United States-based small- and medium-sized manufacturers, which may include—

(A) developing advanced technology demonstration laboratories for training and demonstration in areas of supply chain and critical technology needs, including a focus on the demonstration of technologies developed by companies based in the United States;

(B) services for the adoption of advanced technologies, including smart manufacturing technologies and practices; and

(C) establishing partnerships, for the development, demonstration, and deployment of advanced technologies, between United States-based small- and medium-sized manufacturers and—

(i) national laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

(ii) Federal laboratories;

(iii) Manufacturing USA institutes (as described in section 34(d)); and

(iv) institutions of higher education.

(4) To build capabilities across the Hollings Manufacturing Extension Partnership for domestic supply chain resiliency and optimization, including—

(A) assessment of domestic manufacturing capabilities, expanded capacity for researching and deploying informa-

tion on supply chain risk, hidden costs of reliance on offshore suppliers, redesigning products and processes to encourage reshoring, and other relevant topics; and

(B) expanded services to provide industry-wide support that assists United States manufacturers with reshoring manufacturing to strengthen the resiliency of domestic supply chains, including in critical technology areas and foundational manufacturing capabilities that are key to domestic manufacturing competitiveness and resiliency, including forming, casting, machining, joining, surface treatment, and tooling.

(f) REIMBURSEMENT.—The Director may reimburse Centers for costs incurred by the Centers under this section.

(g) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such time, and containing such information as the Director shall require in consultation with the Manufacturing Extension Partnership Advisory Board.

(h) SELECTION.—

(1) REVIEWED AND MERIT-BASED.—The Director shall ensure that awards under this section are reviewed and merit-based.

(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

(3) CRITERIA.—The Director shall select applications consistent with the purposes identified pursuant to subsection (e) to receive awards that the Director determines will achieve one or more of the following:

(A) Improvement of the competitiveness of industries in the region in which the Center or Centers are located.

(B) Creation of jobs or training of newly hired employees.

(C) Promotion of the transfer and commercialization of research and technology from institutions of higher education, national laboratories, or other federally funded research programs, and nonprofit research institutes.

(D) Recruitment of a diverse manufacturing workforce, including through outreach to underrepresented populations, including individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b).

(E) Any other result the Director determines will advance the objective set forth in sections 25(c) or 26.

(i) PROGRAM CONTRIBUTION.—Recipients of awards under this section shall not be required to provide a matching contribution.

(j) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, the Director, in consultation with the Manufacturing Extension Partnership Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace.

(k) DURATION.—The Director shall ensure that the duration of an award under this section is aligned and consistent with a Center's cooperative agreement established in section 25(e).

(l) REPORT.—After the completion of the pilot program under subsection (b) and not later than October 1, 2024, the Director shall submit to Congress a report that includes—

(1) a summary description of what activities were funded and the measurable outcomes of such activities;

(2) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the program under section 25;

(3) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the competitive awards program under section 25A; and

(4) a recommendation, supported by a clear explanation, as to whether the pilot program should be continued.

* * * * * * *

SEC. 35. ADVANCED COMMUNICATIONS RESEARCH ACTIVITIES.

(a) ADVANCED COMMUNICATIONS RESEARCH.—

(1) IN GENERAL.—The Director, in consultation with the Administrator of the National Telecommunications and Information Administration, the Director of the National Science Foundation, and heads of other Federal agencies, as appropriate, shall carry out a program of measurement research to inform the development of common definitions, benchmarks, best practices, methodologies, and voluntary, consensus-based technical standards for advanced communications technologies.

(2) RESEARCH AREAS.—Research areas may include—

(A) radio frequency emissions and interference, including technologies and techniques to mitigate such emissions;

(B) advanced antenna arrays and artificial intelligence systems capable of operating advanced antenna arrays;

(C) artificial intelligence systems to enable internet of things networks, immersive technology, and other advanced communications technologies;

(D) network sensing and monitoring technologies;

(E) technologies to enable spectrum flexibility and agility;

(F) optical and quantum communications technologies;

(G) security of advanced communications systems and their supply chains;

(H) public safety communications;

(I) resilient internet of things applications for advanced manufacturing; and

(J) other research areas deemed necessary by the Director.

(3) TEST BEDS.—In coordination with the private sector and other Federal agencies as appropriate, the Director may develop and manage testbeds for research and development of advanced communications technologies, avoiding duplication of existing testbeds run by other agencies or the private sector.

(4) OUTREACH.—In carrying out the activities under this subsection, the Director shall seek input from other Federal agencies and from private sector stakeholders, on an ongoing basis, to help inform research and development priorities, including through workshops and other multi-stakeholder activities.

(5) TECHNICAL ROADMAPS.—In carrying out the activities under this subsection, the Director shall convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in advanced communications research and development to develop, and peri-

odically update, coordinated technical roadmaps for advanced communications research in priority areas, such as those described in paragraph (2).

(b) NATIONAL ADVANCED SPECTRUM AND COMMUNICATIONS TEST NETWORK.—

(1) IN GENERAL.—The Director, in coordination with the Administrator of the National Telecommunications and Information Administration and heads of other Federal agencies, as appropriate, shall operate a national network of government, academic, and commercial test capabilities and facilities to be known as the National Advanced Spectrum and Commutations Test Network (referred to in this section as 'NASCTN').

(2) PURPOSES.—NASCTN shall be for the purposes of facilitating and coordinating the use of intellectual capacity, modeling and simulation, laboratory facilities, and test facilities to meet national spectrum interests and challenges, including—

(A) measurements and analyses of electromagnetic propagation, radio systems characteristics, and operating techniques affecting the utilization of the electromagnetic spectrum in coordination with specialized, related research and analysis performed by other Federal agencies in their areas of responsibility;

(B) Conducting research and analysis in the general field of telecommunications sciences in support of the Institute's mission and in support of other Government agencies;

(C) developing methodologies for testing, measuring, and setting guidelines for interference;

(D) conducting interference tests to better understand the impact of Federal and commercial spectrum activities;

(E) conducting research and testing to improve spectrum interference tolerance, flexibility, and agility; and

(F) other activities as deemed necessary by the Director.

(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other departments and agencies of the Federal Government, and from the State and local governments, to operate NASCTN under this section.

SEC. [35.] *36.* This Act may be cited as the National Institute of Standards and Technology Act.

CYBERSECURITY ENHANCEMENT ACT OF 2014

* * * * * * *

TITLE V—ADVANCEMENT OF CYBERSECURITY TECHNICAL STANDARDS

* * * * * * *

[SEC. 504. IDENTITY MANAGEMENT RESEARCH AND DEVELOPMENT.

[The Director shall continue a program to support the development of voluntary and cost-effective technical standards, metrology,

testbeds, and conformance criteria, taking into account appropriate user concerns—

[(1) to improve interoperability among identity management technologies;

[(2) to strengthen authentication methods of identity management systems;

[(3) to improve privacy protection in identity management systems, including health information technology systems, through authentication and security protocols; and

[(4) to improve the usability of identity management systems.]

SEC. 504. IDENTITY MANAGEMENT RESEARCH AND DEVELOPMENT.

(a) IN GENERAL.—The Director shall carry out a program of research to support the development of voluntary, consensus-based technical standards, best practices, benchmarks, methodologies, metrology, testbeds, and conformance criteria for identity management, taking into account appropriate user concerns—

(1) to improve interoperability and portability among identity management technologies;

(2) to strengthen identity proofing and verification methods used in identity management systems;

(3) to improve privacy protection in identity management systems through authentication and security protocols; and

(4) to monitor and improve the accuracy, usability, and inclusivity of identity management systems.

(b) DIGITAL IDENTITY TECHNICAL ROADMAP.—The Director, in consultation with other relevant Federal agencies and stakeholders from the private sector, shall develop and maintain a technical roadmap for digital identity management research and development focused on enabling the voluntary use and adoption of modern digital identity solutions that align with the four criteria in subsection (a).

(c) DIGITAL IDENTITY MANAGEMENT GUIDANCE.—

(1) IN GENERAL.—The Director shall develop, and periodically update, in collaboration with other public and private sector organizations, common definitions and voluntary guidance for digital identity management systems.

(2) GUIDANCE.—The Guidance shall—

(A) align with the four criteria in subsection (a), as practicable;

(B) provide case studies of implementation of guidance;

(C) incorporate voluntary technical standards and industry best practices; and

(D) not prescribe or otherwise require the use of specific technology products or services.

(3) CONSULTATION.—In carrying out this subsection, the Director shall consult with—

(A) Federal and State agencies;

(B) industry;

(C) potential end-users and individuals that will use services related to digital identity verification; and

(D) experts with relevant experience in the systems that enable digital identity verification, as determined by the Director.

---

* * * * * * *

TITLE II—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY QUANTUM ACTIVITIES

SEC. 201. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACTIVITIES AND QUANTUM CONSORTIUM.

(a) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACTIVITIES.—As part of the Program, the Director of the National Institute of Standards and Technology—

(1) shall continue to support and expand basic and applied quantum information science and technology research and development of measurement and standards infrastructure necessary to advance commercial development of quantum applications;

(2) shall use the existing programs of the National Institute of Standards and Technology, in collaboration with other Federal departments and agencies, as appropriate, to train scientists in quantum information science and technology to increase participation in the quantum fields;

(3) shall carry out research to facilitate the development and standardization of quantum cryptography and post-quantum classical cryptography;

(4) shall carry out research to facilitate the development and standardization of quantum networking and communications technologies and applications, including—

(A) quantum repeater technology;

(B) quantum network traffic management;

(C) quantum transduction;

(D) long baseline entanglement and teleportation; and

(E) such other technologies, processes, or applications as the Director considers appropriate;

(5) shall, for quantum technologies deemed by the Director to be at a readiness level sufficient for standardization, the Director shall provide technical review and assistance to such other Federal agencies as the Director considers appropriate for the development of quantum network infrastructure standards;

[(3)**]** *(6)* shall establish or expand collaborative ventures or consortia with other public or private sector entities, including industry, universities, and Federal laboratories for the purpose of advancing the field of quantum information science and engineering; and

[(4)**]** *(7)* may enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of the work of the National Institute of Standards and Technology and on such terms as the Director considers appropriate, in furtherance of the purposes of this Act.

(b) QUANTUM CONSORTIUM.—

(1) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Director of the National Institute of Standards and Technology shall convene a consortium of stakeholders to identify the future measurement, standards, cybersecurity, and other appropriate needs for supporting the development of a robust quantum information science and technology industry in the United States.

(2) GOALS.—The goals of the consortium shall be—

(A) to assess the current research on the needs identified in paragraph (1);

(B) to identify any gaps in the research necessary to meet the needs identified in paragraph (1); and

(C) to provide recommendations on how the National Institute of Standards and Technology and the Program can address the gaps in the necessary research identified in subparagraph (B).

(3) REPORT TO CONGRESS.—Not later than 2 years after the date of enactment of this Act, the Director of the National Institute of Standards and Technology shall 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 summarizing the findings of the consortium.

(c) FUNDING.—The Director of the National Institute of Standards and Technology shall allocate up to $80,000,000 to carry out the activities under this section for each of fiscal years 2019 through 2023, subject to the availability of appropriations. Amounts made available to carry out this section shall be derived from amounts appropriated or otherwise made available to the National Institute of Standards and Technology.

* * * * * * *

NATIONAL BUREAU OF STANDARDS AUTHORIZATION OF ACT FOR FISCAL YEAR 1983

ACTIVITIES PERFORMED FOR *AND WITH* OTHER AGENCIES

SEC. 8. [The Secretary of Commerce] *(a) IN GENERAL.—The Secretary of Commerce* shall charge for any service performed by the Bureau, at the request of another Government agency, in compliance with any statute, enacted before, on, or after the date of enactment of this Act, which names the Secretary or the Bureau as a consultant to another Government agency, or calls upon the Secretary or the Bureau to support or perform any activity for or on behalf of another Government agency, or to cooperate with any Government agency in the performance by that agency of any activity, regardless of whether the statute specifically requires reimbursement to the Secretary or the Bureau by such other Government agency for such service, unless funds are specifically appropriated to the Secretary or the Bureau to perform such service. The Secretary may, however, waive any charge where the service rendered by the Bureau is such that the Bureau will incur only nominal costs in performing it. Costs shall be determined in accordance with section 12(e) of the Act of March 3, 901, as amended (15

U.S.C. 278b(e)). *The Secretary may accept, apply for, use, and spend Federal, State, and non-governmental funds to further the mission of the Institute without regard to the source or the period of availability of these funds as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement.*

(b) REPORT.—For each fiscal year beginning with fiscal year 2022, not later than 90 days after submission of the President's annual budget request for such fiscal year, the Director shall submit to the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives and the Committee on Commerce, Science, and Transportation and the Committee of Appropriations of the Senate a description of any appropriated funds, under this authority, carried over from the year in which such funds were appropriated.

STEVENSON-WYDLER TECHNOLOGY INNOVATION ACT OF 1980

* * * * * * *

SEC. 17. MALCOLM BALDRIGE NATIONAL QUALITY AWARD.

(a) ESTABLISHMENT.—There is hereby established the Malcolm Baldrige National Quality Award, which shall be evidenced by a medal bearing the inscriptions "Malcolm Baldrige National Quality Award" and "The Quest for Excellence". The medal shall be of such design and materials and bear such additional inscriptions as the Secretary may prescribe.

(b) MAKING AND PRESENTATION OF AWARD.—(1) The President (on the basis of recommendations received from the Secretary), or the Secretary, shall periodically make the award to companies and other organizations which in the judgment of the President or the Secretary have substantially benefited the economic or social well-being of the United States through improvements in the quality of their goods or services resulting from the effective practice of quality management, and which as a consequence are deserving of special recognition.

(2) The presentation of the award shall be made by the President or the Secretary with such ceremonies as the President or the Secretary may deem proper.

(3) An organization to which an award is made under this section, and which agrees to help other American organizations improve their quality management, may publicize its receipt of such award and use the award in its advertising, but it shall be ineligible to receive another such award in the same category for a period of 5 years.

(c) CATEGORIES IN WHICH AWARD MAY BE GIVEN.—(1) Subject to paragraph (2), separate awards shall be made to qualifying organizations in each of the following categories—

(A) Small businesses.

(B) Companies or their subsidiaries.

(C) Companies which primarily provide services.

(D) Health care providers.

(E) Education providers.

(F) Nonprofit organizations.

(G) Community.

(2) The Secretary may at any time expand, subdivide, or otherwise modify the list of categories within which awards may be made as initially in effect under paragraph (1), and may establish separate awards for other organizations including units of government, upon a determination that the objectives of this section would be better served thereby; except that any such expansion, subdivision, modification, or establishment shall not be effective unless and until the Secretary has submitted a detailed description thereof to the Congress and a period of 30 days has elapsed since that submission.

(3) In any year, not more than 18 awards may be made under this section to recipients who have not previously received an award under this section, and no award shall be made within any category described in paragraph (1) if there are no qualifying enterprises in that category.

(d) CRITERIA FOR QUALIFICATION.—(1) An organization may qualify for an award under this section only if it—

(A) applies to the Director of the National Institute of Standards and Technology in writing, for the award,

(B) permits a rigorous evaluation of the way in which its business and other operations have contributed to improvements in the quality of goods and services, and

(C) meets such requirements and specifications as the Secretary, after receiving recommendations from the Board of Overseers established under paragraph (2)(B) and the Director of the National Institute of Standards and Technology, determines to be appropriate to achieve the objectives of this section.

In applying the provisions of subparagraph (C) with respect to any organization, the Director of the National Institute of Standards and Technology shall rely upon an intensive evaluation by a competent board of examiners which shall review the evidence submitted by the organization and, through a site visit, verify the accuracy of the quality improvements claimed. The examination should encompass all aspects of the organization's current practice of quality management, as well as the organization's provision for quality management in its future goals. The award shall be given only to organizations which have made outstanding improvements in the quality of their goods or services (or both) and which demonstrate effective quality management through the training and involvement of all levels of personnel in quality improvement.

(2)(A) The Director of the National Institute of Standards and Technology shall, under appropriate contractual arrangements, carry out the Director's responsibilities under subparagraphs (A) and (B) of paragraph (1) through one or more broad-based nonprofit entities which are leaders in the field of quality management and which have a history of service to society.

(B) The Secretary shall appoint a board of overseers for the award, consisting of at least five persons selected for their preeminence in the field of quality management. This board shall meet annually to review the work of the contractor or contractors and make such suggestions for the improvement of the award process as they deem necessary. The board shall report the results of the award activities to the Director of the National Institute of Stand-

ards and Technology each year, along with its recommendations for improvement of the process.

(e) INFORMATION AND TECHNOLOGY TRANSFER PROGRAM.—The Director of the National Institute of Standards and Technology shall ensure that all program participants receive the complete results of their audits as well as detailed explanations of all suggestions for improvements. The Director shall also provide information about the awards and the successful quality improvement strategies and programs of the award-winning participants to all participants and other appropriate groups.

(f) FUNDING.—The Secretary is authorized to seek and accept gifts from public and private sources to carry out the program under this section. If additional sums are needed to cover the full cost of the program, the Secretary shall impose fees upon the organizations applying for the award in amounts sufficient to provide such additional sums. The Director is authorized to use appropriated funds to carry out responsibilities under this Act.

(g) REPORT.—The Secretary shall prepare and submit to the President and the Congress, within 3 years after the date of the enactment of this section, a report on the progress, findings, and conclusions of activities conducted pursuant to this section along with recommendations for possible modifications thereof.

* * * * * * *

SEC. 23. USE OF PARTNERSHIP INTERMEDIARIES.

(a) AUTHORITY.—Subject to the approval of the Secretary or head of the affected department or agency, the Director of a Federal laboratory, or in the case of a federally funded research and development center, the Federal employee who is the contract officer, may—

(1) accept, apply for, use, and spend Federal, State, and nongovernmental acquisition and assistance funds to further the purposes of this Act as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement: Provided, That the approving official may waive statutory and regulatory administrative provisions so that a single agency may administer a joint program, upon mutual agreement;

[(1)] *(2)* enter into a contract or memorandum of understanding with a partnership intermediary that provides for the partnership intermediary to perform services for the Federal laboratory that increase the likelihood of success in the conduct of cooperative or joint activities of such Federal laboratory with small business firms, institutions of higher education as defined in section 1201(a) of the Higher Education Act of 1965 (20 U.S.C. 1141(a)), or educational institutions within the meaning of section 2194 of title 10, United States Code; and

[(2)] *(3)* pay the Federal costs of such contract or memorandum of understanding out of funds available for the support of the technology transfer function pursuant to section 11(b) of this Act.

(b) PARTNERSHIP PROGRESS REPORTS.—The Secretary shall include in each triennial report required under section 6(d) of this Act a discussion and evaluation of the activities carried out pursuant to this section during the period covered by the report.

(c) DEFINITION.—For purposes of this section, the term "partnership intermediary" means an agency of a State or local government, or a nonprofit entity owned in whole or in part by, chartered by, funded in whole or in part by, or operated in whole or in part by or on behalf of a State or local government, that assists, counsels, advises, evaluates, or otherwise cooperates with small business firms, institutions of higher education as defined in section 1201(a) of the Higher Education Act of 1965 (20 U.S.C. 1141(a)), or educational institutions within the meaning of section 2194 of title 10, United States Code, that need or can make demonstrably productive use of technology-related assistance from a Federal laboratory, including State programs receiving funds under cooperative agreements entered into under section 5121(b) of the Omnibus Trade and Competitiveness Act of 1988 (15 U.S.C. 2781 note).

* * * * * * *

AMERICAN INNOVATION AND COMPETITIVENESS ACT

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the "American Innovation and Competitiveness Act".

(b) TABLE OF CONTENTS.—The table of contents of this Act is as follows:

TITLE I—MAXIMIZING BASIC RESEARCH

* * * * * * *

[SEC. 113. NIST CAMPUS SECURITY.

[(a) SUPERVISORY AUTHORITY.—The Department of Commerce Office of Security shall directly manage the law enforcement and site security programs of NIST through an assigned Director of Security for NIST without increasing the number of full-time equivalent employees of the Department of Commerce, including NIST.

[(b) REPORTS.—The Director of Security for NIST shall provide an activities and security report on a quarterly basis for the first year after the date of enactment of this Act, and on an annual basis thereafter, to the Under Secretary for Standards and Technology and the appropriate committees of Congress.]

* * * * * * *

SECTION 4 OF THE FEDERAL ENERGY MANAGEMENT IMPROVEMENT ACT OF 1988

SEC. 4. PENALTIES FOR ENTERING INTO COMMERCE OF IMITATION FIREARMS.

(a) It shall be unlawful for any person to manufacture, enter into commerce, ship, transport, or receive any toy, look-alike, or imitation firearm unless such firearm contains, or has affixed to it, a marking approved by the [Secretary of Commerce] *Consumer Product Safety Commission*, as provided in subsection (b).

(b)(1) Except as provided in paragraph (2) or (3), each toy, look-alike, or imitation firearm shall have as an integral part, permanently affixed, a blaze orange plug inserted in the barrel of such toy, look-alike, or imitation firearm. Such plug shall be recessed no more than 6 millimeters from the muzzle end of the barrel of such firearm.

(2) The [Secretary of Commerce] *Consumer Product Safety Commission* may provide for an alternate marking or device for any toy, look-alike, or imitation firearm not capable of being marked as provided in paragraph (1) and may waive the requirement of any such marking or device for any toy, lookalike, or imitation firearm that will only be used in the theatrical, movie or television industry.

(3) The [Secretary] *Consumer Product Safety Commission* is authorized to make adjustments and changes in the marking system provided for by this section, after consulting with interested persons.

(c) For purposes of this section, the term "look-alike firearm" means any imitation of any original firearm which was manufactured, designed, and produced since 1898, including and limited to toy guns, water guns, replica nonguns, and air-soft guns firing nonmetallic projectiles. Such term does not include any look-alike, nonfiring, collector replica of an antique firearm developed prior to 1898, or traditional B-B, paint-ball, or pellet-firing air guns that expel a projectile through the force of air pressure.

(d) The Director of the Bureau of Justice Statistics is authorized and directed to conduct a study of the criminal misuse of toy, lookalike and imitation firearms, including studying police reports of such incidences and shall report on such incidences relative to marked and unmarked firearms.

[(c)] *(e)* The Director of National Institute of Justice is authorized and directed to conduct a technical evaluation of the marking systems provided for in subsection (b) to determine their effectiveness in police combat situations. The Director shall begin the study within 3 months after the date of enactment of this section and such study shall be completed within 9 months after such date of enactment.

(f) This section shall become effective on the date 6 months after the date of its enactment and shall apply to toy, look-alike, and imitation firearms manufactured or entered into commerce after such date of enactment.

(g) The provisions of this section shall supersede any provision of State or local laws or ordinances which provide for markings or identification inconsistent with provisions of this section provided that no State shall—

[(i)] *(1)* prohibit the sale or manufacture of any look-alike, nonfiring, collector replica of an antique firearm developed prior to 1898, or

[(ii)] *(2)* prohibit the sale (other than prohibiting the sale to minors) of traditional B-B, paint ball, or pellet-firing air guns that expel a projectile through the force of air pressure.

XX. PROCEEDINGS OF THE COMMITTEE MARKUP

MARKUPS: H.R. 4609, THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE ACT OF 2021; H.R. 3858, THE NATIONAL SCIENCE AND TECHNOLOGY STRATEGY ACT OF 2021; H.R. 4588; THE REGIONAL INNOVATION ACT OF 2021; H.R. 4606, THE ENERGIZING TECHNOLOGY TRANSFER ACT, AND H.R. 4599, THE STEEL UPGRADING PARTNERSHIPS AND EMISSIONS REDUCTION ACT OR SUPER ACT OF 2021

MARKUP

BEFORE THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

JULY 27, 2021

Serial No. CP: 117–7

Printed for the use of the Committee on Science, Space, and Technology

Available via the World Wide Web: http://science.house.gov

MARKUPS: H.R. 4609, THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE ACT OF 2021; H.R. 3858, THE NATIONAL SCIENCE AND TECHNOLOGY STRATEGY ACT OF 2021; H.R. 4588; THE REGIONAL INNOVATION ACT OF 2021; H.R. 4606, THE ENERGIZING TECHNOLOGY TRANSFER ACT, AND H.R. 4599, THE STEEL UPGRADING PARTNERSHIPS AND EMISSIONS REDUCTION ACT OR SUPER ACT OF 2021

MARKUP

BEFORE THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

FIRST SESSION

JULY 27, 2021

Serial No. CP: 117–7

Printed for the use of the Committee on Science, Space, and Technology

Available via the World Wide Web: http://science.house.gov

U.S. GOVERNMENT PUBLISHING OFFICE

45–196PDF WASHINGTON : 2021

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HON. EDDIE BERNICE JOHNSON, Texas, *Chairwoman*

ZOE LOFGREN, California
SUZANNE BONAMICI, Oregon
AMI BERA, California
HALEY STEVENS, Michigan,
Vice Chair
MIKIE SHERRILL, New Jersey
JAMAAL BOWMAN, New York
MELANIE A. STANSBURY, New Mexico
BRAD SHERMAN, California
ED PERLMUTTER, Colorado
JERRY MCNERNEY, California
PAUL TONKO, New York
BILL FOSTER, Illinois
DONALD NORCROSS, New Jersey
DON BEYER, Virginia
CHARLIE CRIST, Florida
SEAN CASTEN, Illinois
CONOR LAMB, Pennsylvania
DEBORAH ROSS, North Carolina
GWEN MOORE, Wisconsin
DAN KILDEE, Michigan
SUSAN WILD, Pennsylvania
LIZZIE FLETCHER, Texas

FRANK LUCAS, Oklahoma,
Ranking Member
MO BROOKS, Alabama
BILL POSEY, Florida
RANDY WEBER, Texas
BRIAN BABIN, Texas
ANTHONY GONZALEZ, Ohio
MICHAEL WALTZ, Florida
JAMES R. BAIRD, Indiana
DANIEL WEBSTER, Florida
MIKE GARCIA, California
STEPHANIE I. BICE, Oklahoma
YOUNG KIM, California
RANDY FEENSTRA, Iowa
JAKE LATURNER, Kansas
CARLOS A. GIMENEZ, Florida
JAY OBERNOLTE, California
PETER MEIJER, Michigan
VACANCY
VACANCY

C O N T E N T S

Tuesday, July 27, 2021

H.R. 4609, THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY FOR THE FUTURE ACT OF 2021

H.R. 3858, THE NATIONAL SCIENCE AND TECHNOLOGY STRATEGY ACT OF 2021

H.R. 4588, THE REGIONAL INNOVATION ACT OF 2021

H.R. 4606, THE ENERGIZING TECHNOLOGY TRANSFER ACT

H.R. 4599, THE STEEL UPGRADING PARTNERSHIPS AND EMISSIONS REDUCTION ACT OR SUPER ACT OF 2021

TUESDAY, JULY 27, 2021

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
Washington, D.C.

The Subcommittee met, pursuant to notice, at 10:01 a.m., in room 2318 of the Rayburn House Office Building, Hon. Eddie Bernice Johnson [Chairwoman of the Committee] presiding.

Chairwoman JOHNSON. Good morning. The Committee will come to order, and, without objection, the Chair is authorized to declare recess at any time. Pursuant to Committee Rules and House Rule 11, the Chair now set—to postpone roll call votes at any time. Today the Committee is meeting virtually and in person. I want to announce a couple of reminders to the Members about the conduct of the meeting. First, Members attending remotely should keep their video feed on as long as they're present in the meeting, and Members are responsible for their own microphones. Please also keep your microphones muted until you are speaking. And, finally, if Members have documents they wish to submit to the record, please e-mail them to the Committee Clerk, whose e-mail address was circulated prior to the meeting. Pursuant to notice, the Com-

mittee meets to consider the following measures. H.R. 4609, the *National Institute of Standards and Technology for the Future Act of 2021*, H.R. 3858, the *National Science and Technology Strategy Act of 2021*, H.R. 4588, the *Regional Innovation Act of 2021*, and H.R. 4606, the *Emerging Technology Transfer Act*, and finally, H.R. 4599, the *Steel Upgrading Partnerships and Emissions Reduction Act*, or *SUPER Act, of 2021.*

Good morning, and welcome to today's markup of five excellent bipartisan bills. All of these bills will help to ensure that our Nation remains a leader in innovation. Importantly, these bills also help to ensure that the whole Nation participates in the innovation economy, and that the whole Nation reaps the economic fruits of that participation. The first bill we will take up today is Representative Stevens and Waltz's *National Institute of Standards and Technology for the Future Act,* and I'm proud to co-sponsor this bill, and I want to thank my colleagues on both sides of the aisle for their thoughtful engagement and enthusiastic support for this critical agency.

The *NIST for the Future Act* is a comprehensive 5 year reauthorization for the agency. These accounts fund important measures, measurements, and technology research, as well as NIST's (National Institute of Standards and Technology's) instrumental manufacturing programs. The bill would also support NIST's infrastructure needs at a time when many of its buildings are in poor to critical condition. In total, the legislation authorizes $7.9 billion over 5 years, allowing for growth that is both ambitious and sustainable. These investments are necessary to support a critical Federal agency charged with helping to advance U.S. competitiveness and innovation.

The next bill that we will consider is H.R. 3858, the *National Science and Technology Strategy Act of 2021.* I want to thank Representative Waltz and Ross for their work on this legislation. This bill directs the White House Office of Science and Technology Policy, or OSTP, to undertake a comprehensive review of the Nation's innovation landscape. The bill also directs OSTP to use this analysis to develop a national science and technology strategy.

The next bill that we will be considering is H.R. 4588, the *Regional Innovation Act of 2021.* I want to thank my colleagues, Representative Wild and Baird, for their important work on this legislation. Over the last 2 decades, much of the science and technology funding and capacity in this country has been concentrated in a few cities and regions. This bill would establish programs at both the Commerce and Energy Departments to address this imbalance. It would create more shared prosperity from our Federal R&D (research and development) dollars by creating regional technology and innovation hubs across the country.

And next we will consider H.R. 4606, the *Emerging Technology Transfer Act.* This bill is an updated version of a bipartisan bill that I and Representative Fleischmann introduced last year. It authorizes programs and funding to support the Department of Energy (DOE) technology transfer activities. These activities are critical to bringing the fruits of our public investment in clean energy research, development, and demonstration projects into the hands of America's communities. The bill also includes provisions to sup-

port the next generation of innovators, inventors, and entrepreneurs, and I want to thank Congresswoman Ross and Congressman Meijer for leading this important piece of legislation.

The last bill on the roster today is the *Steel Upgrading Partnerships and Emissions Reduction Act*, which is sponsored by Representative Gonzalez and Representative Lamb. This bill authorizes a program at the Department of Energy to advance technologies that will help reduce emissions from the steel manufacturing sector, allowing American steel manufacturers access to advanced and innovative technologies will ensure that the domestic steel manufacturing industry will remain competitive through the 21st century.

I look forward to a productive markup today, and I now recognize our Ranking Member, Mr. Lucas, for his opening remarks.

[The prepared statement of Chairwoman Johnson follows:]

Good morning, and welcome to today's markup of 5 excellent bipartisan bills. All of these bills will help to ensure that our Nation remains a leader in innovation. Importantly, these bills also help to ensure that the whole Nation participates in that innovation economy, and that the whole Nation reaps the economic fruits of that participation.

The first bill we will take up today is Representatives Stevens' and Waltz's *National Institute of Standards and Technology for the Future Act*. I am proud to cosponsor this bill, and I want to thank my colleagues on both sides of the aisle for their thoughtful engagement and enthusiastic support for this critical agency. The *NIST for the Future Act* is a comprehensive 5 year reauthorization for the agency.

These accounts fund important measurement and technology research, as well as NIST's extramural manufacturing programs. The bill would also support NIST's infrastructure needs at a time when many of its buildings are in poor to critical condition. In total, the legislation authorizes $7.9 billion over 5 years, allowing for growth that is both ambitious and sustainable. These investments are necessary to support a critical federal agency charged with helping to advance U.S. competitiveness and innovation.

The next bill that we will consider is H.R. 3858, the *National Science and Technology Strategy Act of 2021*. I want to thank Representatives Waltz and Ross for their work on this legislation. This bill directs the White House Office of Science and Technology Policy, or OSTP, to undertake a comprehensive review of the Nation's innovation landscape. The bill also directs OSTP to use this analysis to develop a national science and technology strategy.

The next bill that we will be considering is H.R. 4588, the *Regional Innovation Act of 2021*. I want to thank my colleagues, Representatives Wild and Baird, for their important work on this legislation. Over the last few decades, much of the science and technology funding and capacity in this country has been concentrated in a few cities and regions. This bill would establish programs at both the Commerce and Energy Departments to address this imbalance. It will create more shared prosperity from our federal R&D dollars by creating regional technology and innovation hubs across the country.

Next we will consider H.R. 4606, the *Energizing Technology Transfer Act*. This bill is an updated version of a bipartisan bill that I and Representative Fleischmann introduced last year.It authorizes programs and funding to support Department of Energy technology transfer activities. These activities are critical to bringing the fruits of our public investments in clean energy research, development, and demonstration projects into the hands of America's communities. The bill also includes provisions to support the next generation of inventors and entrepreneurs, and I want to thank Congresswoman Ross and Congressman Meijer for leading this important piece of legislation.

The last bill on the roster today is the *Steel Upgrading Partnerships and Emissions Reduction Act* which is sponsored by Representative Gonzalez and Representative Lamb. This bill authorizes a program at the Department of Energy to advance technologies that will help reduce emissions from the steel manufacturing sector.

Allowing American steel manufacturers access to advanced and innovative technologies will ensure that the domestic steel manufacturing industry will remain competitive through the 21st Century.

I look forward to a productive markup today.

Mr. LUCAS. Thank you, Chairwoman Johnson, for holding today's markup. The bills we're considering today are a continuation of the important and bipartisan work we've been doing on American scientific competitiveness. Last month the House overwhelmingly passed our legislation to redouble our investments in the National Science Foundation and the Department of Energy Office of Science. These bills are the cornerstones of our blueprint to buildup America's research and technology enterprise. Today we're filling out the blueprint with the rest of the elements needed to shore up the Nation's technological success. First among those is reauthorizing the National Institute of Standard and Technology.

NIST is the most important government agency that most Americans have never heard of. As industry's laboratory, NIST's work to promote U.S. innovation supports roughly half of our gross domestic product. NIST gives businesses the measurement science, standards, and guidance they need to produce exceptional products that can be globally competitive. The *NIST for the Future Act* invests in the emerging technologies needed to drive progress, including cybersecurity, quantum sciences, artificial intelligence (AI), and advanced manufacturing. It also prioritizes scientific and technical research services, expands our support for American manufacturers, and upgrades outdated NIST facilities. Finally, it prioritizes our participation and leadership in international standard-setting bodies. As new technologies grow and spread, it's critical that we are able to influence the standards and specifications that guide their development. This investment in NIST will go far to support American competitiveness, and expand the resources available to American businesses. I want to thank Chairwoman Johnson, Chairwoman Stevens, and Ranking Member Walsh for working with me on this important bill.

Next we'll consider the *National Science and Technology Strategic Act* by Representative Waltz. This bill creates a strategic whole of government approach to research and development, ensuring better coordination between Federal agencies, and a more strategic plan for achieving U.S. research and development goals. Additionally, the bill requires the President to submit an annual report to Congress on national research priorities and activities, as well as global trends in science and technology, including potential threats to U.S. scientific leadership. A competitive, strategic approach to American research and development is more important now than ever, especially as we pass legislation to increase our investments in our Federal scientific enterprise. This bill ensures we are regularly reviewing and updating our research priorities so we're maximizing taxpayer dollars, and investing in the most critical areas of technological advancement.

Following that, we'll debate H.R. 4588, the *Regional Innovation Act*. This bill establishes innovation hubs across the country, ensuring technological development isn't limited solely to the coasts. I talk a lot about the value of taking advantage of talent across America, and giving diverse communities a chance to contribute to

important scientific work. This bill guarantees that we build out our technological capacity as we are driving innovation in geographically diverse areas, with at least 1/3 of the newly created regional innovation hubs in rural or underserved areas.

Next up is H.R. 4606, the *Energizing Technology Transfer Act*. This legislation is an important complement to the *DOE Science for the Future Act* because it helps turn the discoveries we make from basic research into useful technologies that private—the private sector can commercialize. Finally, we'll consider H.R. 4599, the *Steel Upgrading Partnerships and Emissions Reduction Act*, or the *SUPER Act*, for short. This bill is from Representatives Anthony Gonzalez and Conor Lamb, will support R&D into clean steel production use. This will help reduce carbon emissions, while supporting American manufacturing and production.

Together, these five bills address key components of American competitiveness. They were all developed with extensive stakeholder input through a bipartisan process. They're all intended to catalyze our scientific growth. The threat we face from China is real, and growing every day. It threatens American jobs, cybersecurity, and national security. But our plan to ensure our competitiveness is not about top-down planning, like the Communist Chinese Party (CCP). It's about coordinating our own strengths, bringing together all Federal agencies, and all sectors of the U.S. innovation economy together, to coordinate and ensure that the oxen are pulling the cart in the same direction.

The bills we're considering today, along with the *NSF for the Future Act*, and *DOE Science for the Future Act*, represent a thoughtful vision for American science and technology development that is strategic, comprehensive, and, importantly, workable. I'm very proud of the work this Committee and our staff has done, and I'd like to thank all my colleagues, particularly Chairwoman Johnson, for the work that went into these bills. I'm eager to mark them up today and pass them out of Committee. I believe we have a strong starting point for a competitive legislative package on American competitiveness, and I look forward to finalizing our policies into law. And with that, I yield back, Madam Chair.

[The prepared statement of Mr. Lucas follows:]

Thank you, Chairwoman Johnson, for holding today's markup. The bills we're considering today are a continuation of the important and bipartisan work we've been doing on American scientific competitiveness.

Last month, the House overwhelmingly passed our legislation to redouble our investment in the National Science Foundation and the Department of Energy Office of Science. These bills are the cornerstones of our blueprint to build up America's research and technology enterprise. Today we're filling out that blueprint with the rest of the elements needed to shore up our nation's technological success. First among those is reauthorizing the National Institute of Standards and Technology (NIST).

NIST is the most important government agency that most Americans have never heard of. As "industry's laboratory," NIST's work to promote U.S. innovation supports roughly half of our gross domestic product. NIST gives businesses the measurement science, standards, and guidance they need to produce exceptional products that can be globally competitive.

The *NIST for the Future Act* invests in the emerging technologies needed to drive progress, including cybersecurity, quantum sciences, artificial intelligence, and advanced manufacturing. It also prioritizes scientific and technical research services, expands our support for American manufacturers, and upgrades outdated NIST facilities. Finally, it prioritizes our participation and leadership in international standards-setting bodies. As new technologies grow and spread, it's critical that we

are able to influence the standards and specifications that guide their development. This investment in NIST will go far to support American competitiveness and expand the resources available to American businesses. I want to thank Chairwoman Johnson, Chairwoman Stevens, and Ranking Member Waltz for working with me on this important bill.

Next up we'll consider the *National Science and Technology Strategy Act* led by Ranking Member Waltz. This bill creates a strategic, whole-of-government approach to research and development, ensuring better coordination between federal agencies and a more strategic plan for achieving U.S. research and development goals. Additionally, the bill requires the President to submit an annual report to Congress on national research priorities and activities, as well as global trends in science and technology, including potential threats to U.S. scientific leadership. A comprehensive, strategic approach to American research and development is more important now than ever, especially as we pass legislation to increase our investments in our federal scientific enterprise. This bill ensures we are regularly reviewing and updating our research priorities so we're maximizing taxpayer dollars and investing in the most critical areas for technological advancement.

Following that, we'll debate H.R. 4588, the *Regional Innovation Act*. This bill establishes innovation hubs across the country, ensuring technological development isn't limited solely to the coasts. I talk a lot about the value of taking advantage of talent across America and giving diverse communities a chance to contribute to important scientific work. This bill guarantees that as we build out our technical capacity, we are driving innovation in geographically diverse areas, with at least one-third of the newly created regional innovation hubs in rural or under-served areas.

Next up is H.R. 4606, the *Energizing Technology Transfer Act*. This legislation is an important complement to the *DOE Science for the Future Act* because it helps turn the discoveries we make from basic research into useful technologies that the private sector can commercialize.

Finally, we'll consider H.R. 4599, the *Steel Upgrading Partnerships and Emissions Reduction Act*, or the SUPER Act for short. This bill, from Representatives Anthony Gonzalez and Conor Lamb, will support R&D into clean steel production and use. This will help reduce carbon emissions while supporting American manufacturing and production.

Together, these five bills address key components of American competitiveness. They were all developed with extensive stakeholder input through a bipartisan process, and they're all intended to catalyze our scientific growth.

The threat we face from China is real and growing every day. It threatens American jobs, cybersecurity, and national security. But our plan to ensure our competitiveness is not about top-down planning, like the Chinese Community Party. It's about coordinating our own strengths—bringing together all federal agencies, and all sectors of the U.S. innovation economy together to coordinate and ensure the oxen are pulling the cart in the same direction. The bills we are considering today, along with the *NSF for the Future Act* and *DOE Science for the Future Act*, represent a thoughtful vision for American science and technology development that is strategic, comprehensive, and—importantly—workable.

I'm very proud of the work this Committee and our staff have done. I'd like to thank all of my colleagues—particularly Chairwoman Johnson—for the work that went into these bills. I'm eager to mark them up today and pass them out of Committee. I believe we have a strong starting point for a comprehensive legislative package on American competitiveness, and I look forward to finalizing our policies into law.

Chairwoman JOHNSON. Thank you very much. We'll now consider H.R. 4609, the *NIST for the Future Act*, and the Clerk will report the bill.

The CLERK. H.R. 4609, a bill to reauthorize the National Institute of Standards and Technology, and for other purposes.

[The bill follows:]

.....

(Original Signature of Member)

117TH CONGRESS
1ST SESSION

H. R. _____

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

IN THE HOUSE OF REPRESENTATIVES

Ms. Stevens of Michigan introduced the following bill; which was referred to the Committee on _____

A BILL

To reauthorize the National Institute of Standards and Technology, 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. SHORT TITLE.

(a) SHORT TITLE.—This Act may be cited as the "National Institute of Standards and Technology For the Future Act of 2021".

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

SEC. 2. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term "Director" means the Director of the National Institute of Standards and Technology.

(2) FRAMEWORK.—The term "Framework" means the Framework for Improving Critical Infrastructure Cybersecurity developed by the National Institute of Standards and Technology and referred to in Executive Order 13800 issued on May 11, 2017 (82 Fed. Reg. 22391 et seq.).

(3) HISTORICALLY BLACK COLLEGES AND UNIVERSITIES.—The term "historically Black colleges

and universities'' has the same meaning given to the term ''part B institutions'' in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

(4) INSTITUTE.—The term ''Institute'' means the National Institute of Standards and Technology.

(5) INSTITUTION OF HIGHER EDUCATION.—The term ''institution of higher education'' has the meaning given such term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(6) INTERNATIONAL STANDARDS ORGANIZATION.—The term ''International Standards Organization'' has the meaning given such term in section 451 of the Trade Agreements Act of 1979 (19 U.S.C. 2571).

(7) MINORITY SERVING INSTITUTION.—The term ''minority-serving institution'' means a Hispanic-serving institution, an Alaska Native-serving institution, a Native Hawaiian-serving institutions, a Predominantly Black Institution, an Asian American and Native American Pacific Islander-serving institution, or a Native American-serving nontribal institution as described in section 371 of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

(8) SECRETARY.—The term ''Secretary'' means the Secretary of Commerce.

(9) TECHNICAL STANDARDS.—The term "technical standard" has the meaning given such term in section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995.

TITLE I—APPROPRIATIONS

SEC. 101. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2022.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,267,070,000 for the National Institute of Standards and Technology for fiscal year 2022.

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

(A) $915,570,000 shall be for scientific and technical research and services laboratory activities, of which $9,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs; and

(C) $211,500,000 shall be for industrial technology services activities, of which $155,000,000 shall be for the Manufacturing Extension Partnership program under sections

25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(b) FISCAL YEAR 2023.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,335,200,000 for the National Institute of Standards and Technology for fiscal year 2023.

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

(A) $979,100,000 shall be for scientific and technical research and services laboratory activities, of which $10,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $216,200,000 shall be for industrial technology services activities, of which $159,700,000 shall be for the Manufacturing

Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(c) FISCAL YEAR 2024.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,408,520,000 for the National Institute of Standards and Technology for fiscal year 2024.

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

(A) $1,047,600,000 shall be for scientific and technical research and services laboratory activities, of which $12,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $220,900,000 shall be for industrial technology services activities, of which

$164,400,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(d) FISCAL YEAR 2025.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,486,800,000 for the National Institute of Standards and Technology for fiscal year 2025.

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

(A) $1,120,900,000 shall be for scientific and technical research and services laboratory activities, of which $15,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $225,900,000 shall be for industrial technology services activities, of which $169,400,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(e) FISCAL YEAR 2026.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,570,340,000 for the National Institute of Standards and Technology for fiscal year 2026.

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

(A) $1,199,400,000 shall be for scientific and technical research and services laboratory activities, of which $18,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity,

Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $231,000,000 shall be for industrial technology services activities, of which $174,500,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 23 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

TITLE II—MEASUREMENT RESEARCH

SEC. 201. ENGINEERING BIOLOGY AND BIOMETROLOGY.

(a) IN GENERAL.—The Director shall—

(1) support basic measurement science, technology research for engineering biology, biomanufacturing, and biometrology to advance—

(A) measurement technologies to support foundational understanding of the mechanisms of conversion of DNA information into cellular function, including both the natural and engineered production of biomolecules;

(B) technologies for measurement of such biomolecular components and for complex engineered biological systems;

(C) new data tools, techniques, and processes to improve engineering biology, biomanufacturing, and biometrology research; and

(D) all other areas deemed by the Director to be critical to the development and deployment of engineering biology, biomanufacturing and biometrology;

(2) support activities to inform and expand the development of measurements infrastructure needed to develop technical standards to establish interoperability and facilitate commercial development of biomolecular measurement technology and engineering biology applications;

(3) convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in engineering biology research and development to develop coordinated technical roadmaps for authoritative measurement of the molecular components of the cell;

(4) provide access to user facilities with advanced or unique equipment, services, materials, and other resources to industry, institutions of higher

education, nonprofit organizations, and government agencies to perform research and testing;

(5) establish or expand collaborative partnerships or consortia with other Federal agencies engaged in engineering biology research and development, institutions of higher education, Federal laboratories, and industry to advance engineering biology applications; and

(6) support graduate and post graduate research and training in biometrology, biomanufacturing, and engineering biology.

(b) DEFINITIONS.—For purposes of this section, the term "Engineering Biology" means the application of engineering design principles and practices to biological systems, including molecular and cellular systems, to advance fundamental understanding of complex natural systems and to enable novel or optimize functions and capabilities.

(c) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to alter the policies, processes, or practices of individual Federal agencies in effect on the day before the date of the enactment of this Act relating to the conduct of biomedical research and advanced development, including the solicitation and review of extramural research proposals.

(d) CONTROLS.—In carrying out activities authorized by this section, the Secretary shall ensure proper security controls are in place to protect sensitive information, as appropriate.

SEC. 202. GREENHOUSE GAS MEASUREMENT RESEARCH.

(a) GREENHOUSE GAS MEASUREMENT PROGRAM.—

(1) IN GENERAL.—The Director, in consultation with the Administrator of the National Oceanic and Atmospheric Administration and the Administrator of the Environmental Protection Agency, shall carry out a measurement research program to inform the development of best practices, benchmarks, methodologies, procedures, and technical standards for the measurement of greenhouse gas emissions and to assess and improve the performance of greenhouse gas measurement systems.

(2) ACTIVITIES.—In carrying out such a program, the Director may—

(A) conduct research and testing to improve the accuracy, efficacy, and reliability of the measurement of greenhouse gas emissions;

(B) conduct research to create novel measurement technologies and techniques for the measurement of greenhouse gases;

(C) convene and engage with relevant Federal agencies and stakeholders to establish common definitions and characterizations for the measurement of greenhouse gas emissions;

(D) conduct outreach and coordination to share technical expertise with relevant industry and non-industry stakeholders and standards development organizations to assist such entities in the development of best practices and technical standards for greenhouse gas measurements; and

(E) in coordination with the Administrator of the National Oceanic and Atmospheric Administration and the Administrator of the Environmental Protection Agency, develop such standard reference materials as the Director determines is necessary to further the development of such technical standards.

(3) TEST BEDS.—In coordination with the private sector, institutions of higher education, state and local governments, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, and other Federal agencies as appropriate, the Director may continue to develop and manage testbeds to advance measurement research

and standards development for greenhouse gas emissions.

(4) GREENHOUSE GAS MEASUREMENT CENTER OF EXCELLENCE.—

(A) IN GENERAL.—The Director, in collaboration with the Administrator of the National Oceanic and Atmospheric Administration, the Administrator of the Environmental Protection Agency, and the heads of other Federal agencies, as appropriate, shall award to an institution of higher education or an eligible nonprofit organization (or a consortium thereof), on a merit-reviewed, competitive basis, funds to establish a Center of Excellence in Greenhouse Gas Measurement.

(B) COLLABORATIONS.—The Director shall require, as a condition of receipt of the award under this paragraph, that the activities of the Center of Excellence include collaboration among public and private organizations, including institutions of higher education, nonprofit organizations, private sector entities, and State, tribal, territorial, and local officials.

(C) PURPOSE.—The purpose of the Center of Excellence shall be to—

(i) advance measurement science, data analytics, and modeling to improve the accuracy of greenhouse gas emissions measurement, validation, and attribution;

(ii) test and evaluate the performance of existing capabilities for the measurement and validation of greenhouse gas emissions;

(iii) educate and train students in measurement science, computational science, and systems engineering research relevant to greenhouse gas measurements;

(iv) foster collaboration among academic researchers, private sector stakeholders, and State, tribal, territorial, and local officials;

(v) support Institute test beds as described in subsection (a)(3); and

(vi) collaborate with other Federal agencies to conduct outreach and coordination to share technical expertise with relevant public and private sector stakeholders, including State, tribal, territorial, and local officials, to assist such entities in measuring greenhouse gas emissions.

(D) REQUIREMENTS.—

(i) IN GENERAL.—An institution of higher education or an eligible nonprofit organization (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

(ii) APPLICATIONS.—Each application made under clause (i) shall include a description of—

(I) how the Center will work with other research institutions, industry partners, and State and local officials to identify research, testing, and technical standards needs relevant to greenhouse gas emissions;

(II) how the Center will promote active collaboration among researchers in multiple disciplines involved in the measurement of greenhouse gas emissions; and

(III) how the Center will share technical expertise with relevant pub-

lic and private sector stakeholders, including state and local officials, to assist such entities in measuring greenhouse gas emissions.

(iii) SELECTION AND DURATION.—Each Center established under the section is authorized to carry out activities for a period of 5 years, renewable for an additional 5 years at the discretion of the Director, in consultation with other Federal agencies as appropriate.

SEC. 203. NIST AUTHORITY FOR CYBERSECURITY AND PRIVACY ACTIVITIES.

Section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272 et seq.) is amended—

(1) in subsection (c)—

(A) in paragraph (16), by striking the period at the end and inserting a semicolon;

(B) by redesignating paragraphs (16) through (27) as paragraphs (21) through (32), respectively; and

(C) by inserting after paragraph (15) the following:

"(16) support information security measures for the development and lifecycle of software and the

software supply chain, including development of best practices, technical standards, frameworks, methodologies, procedures, processes, and software engineering toolkits and configurations;

"(17) support information security measures, including best practices, guidelines, and technical standards, for the design, adoption and deployment of cloud computing services;

"(18) support research, development, and practical application to improve the usability of cybersecurity processes and technologies;

"(19) facilitate and support the development of a voluntary, consensus-based set of technical standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively ensure appropriate privacy protections for personally identifiable information in systems, technologies, and processes used by both the public and private sector;

"(20) support privacy measures, including best practices, guidelines, technical standards, metrology, and testbeds for the design, adoption and deployment of privacy enhancing technologies;"; and

(2) in subsection (e)(1)(A)—

(A) in clause (viii), by striking "and" at the end;

(B) by redesignating clause (ix) as clause (x); and

(C) by inserting after clause (viii) the following:

"(ix) conduct reviews of and create impact metrics for cybersecurity solutions and capabilities developed by the Institute for purposes of improvement; and".

SEC. 204. SOFTWARE SECURITY AND AUTHENTICATION.

(a) VULNERABILITIES IN OPEN SOURCE SOFTWARE.—The Director shall assess assign severity metrics to identified vulnerabilities with open source software and produce voluntary guidance to assist the entities that maintain open source software repositories to discover and mitigate vulnerabilities.

(b) ARTIFICIAL INTELLIGENCE-ENABLED DEFENSES.—The Director shall carry out research and testing to improve the effectiveness of artificial intelligence-enabled cybersecurity, including by generating optimized data sets to train artificial intelligence defense systems and evaluating the performance of varying network architectures at strengthening network security.

(c) AUTHENTICATION OF INSTITUTE SOFTWARE.—The Director shall ensure all software released by the Institute is digitally signed and maintained to enable stake-

holders to verify its authenticity and integrity upon installation and execution.

(d) ASSISTANCE TO INSPECTORS GENERAL.—The Director shall provide technical assistance to improve the education and training of individual Federal agency Inspectors General and staff who are responsible for the annual independent evaluation they are required to perform of the information security program and practices of Federal Agencies under section 3555 of title 44, United States Code.

SEC. 205. DIGITAL IDENTITY MANAGEMENT RESEARCH.

Section 504 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7464) is amended to read as follows:

"SEC. 504. IDENTITY MANAGEMENT RESEARCH AND DEVELOPMENT.

"(a) IN GENERAL.—The Director shall carry out a program of research to support the development of voluntary, consensus-based technical standards, best practices, benchmarks, methodologies, metrology, testbeds, and conformance criteria for identify management, taking into account appropriate user concerns—

"(1) to improve interoperability and portability among identity management technologies;

"(2) to strengthen identity proofing and verification methods used in identity management systems;

"(3) to improve privacy protection in identity management systems through authentication and security protocols; and

"(4) to monitor and improve the accuracy, usability, and inclusivity of identity management systems.

"(b) DIGITAL IDENTITY TECHNICAL ROADMAP.—The Director, in consultation with other relevant Federal agencies and stakeholders from the private sector, shall develop and maintain a technical roadmap for digital identity management research and development focused on enabling the use and adoption of modern digital identity solutions that align with the four criteria in subsection (a).

"(c) DIGITAL IDENTITY MANAGEMENT GUIDANCE.—

"(1) IN GENERAL.—The Director shall develop, and periodically update, in collaboration with other public and private sector organizations, common definitions and voluntary guidance for digital identity management systems.

"(2) GUIDANCE.—The Guidance shall—

"(A) align with the four criteria in subsection (a), as practicable;

"(B) provide case studies of implementation of guidance;

"(C) incorporate voluntary technical standards and industry best practices; and

"(D) not prescribe or otherwise require the use of specific technology products or services.

"(3) CONSULTATION.—In carrying out this subsection, the Director shall consult with—

"(A) Federal and State agencies;

"(B) industry;

"(C) potential end-users and individuals that will use services related to digital identity verification; and

"(D) experts with relevant experience in the systems that enable digital identity verification, as determined by the Director.".

SEC. 206. BIOMETRICS RESEARCH AND TESTING.

(a) IN GENERAL.—The Secretary, acting through the Director, shall establish a program to support measurement research to inform the development of best practices, benchmarks, methodologies, procedures, and voluntary technical standards for biometric identification systems, including facial recognition systems, to assess and improve the performance of such systems. In carrying out such program, the Director may—

(1) conduct research to support efforts to improve the performance of biometric identification systems, including in areas related to conformity assessment, image quality and interoperability, contactless biometric capture technologies, and human-in-the-loop biometric identification systems and processes;

(2) convene and engage with relevant stakeholders to establish common definitions and characterizations for biometric identification systems, including accuracy, fairness, bias, privacy, consent, and other properties, taking into account definitions in relevant international technical standards and other publications;

(3) carry out research and testing on a range of biometric modalities, such as fingerprints, voice, iris, face, vein, behavioral biometrics, genetics, multimodal biometrics, and emerging applications of biometric identification technology;

(4) study the use of privacy-enhancing technologies and other technical protective controls to facilitate access to public data sets for biometric research;

(5) conduct outreach and coordination to share technical expertise with relevant industry and non-

industry stakeholders and standards development organizations to assist such entities in the development of best practices and voluntary standards; and

(6) develop such standard reference artifacts as the Director determines is necessary to further the development of such technical standards.

(b) BIOMETRICS VENDOR TEST PROGRAM.—

(1) IN GENERAL.—The Secretary, acting through the Director, shall carry out a test program to provide biometrics vendors the opportunity to test biometric identification technologies across a range of modalities.

(2) ACTIVITIES.—In carrying out the program under subparagraph (A), the Director shall—

(A) conduct research and regular testing to improve and benchmark the accuracy, efficacy, and bias of biometric identification systems, including research and testing on demographic variations, capture devices, presentation attack detection, partially occluded or computer generated images, privacy and security designs and controls, template protection, de-identification, and comparison of algorithm, human, and combined algorithm-human recognition capability;

(B) develop an approach for testing software and cloud-based biometrics applications, including remote systems, in Institute test facilities;

(C) establish reference use cases for biometric applications and performance criteria for assessing each use case, including accuracy and bias metrics;

(D) produce public-facing reports of the findings from such testing for a general audience; and

(E) conduct such other activities as deemed necessary by the Director.

(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other Federal departments and agencies and States and local governments to carry out activities under this subsection.

SEC. 207. FEDERAL BIOMETRIC PERFORMANCE STANDARDS.

Section 20 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–3) is amended in subsection (b)—

(1) in paragraph (2), by striking "and" after the semicolon;

(2) in paragraph (3), by striking the period and inserting "; and";

(3) by adding at the end the following:

"(4) performance standards and guidelines for high risk biometric identification systems, including facial recognition systems, accounting for various use cases, type of biometric identification systems, and relevant operational conditions.".

SEC. 208. PROTECTING RESEARCH FROM CYBER THEFT.

Section 2(e)(1)(A) of the National Institute of Standards and Technology Act (15 U.S.C. 272(e)(1)(A)), as amended by section 203(2), is further amended—

(1) in clause (ix), as added by section 203(2)(C), by striking "and" after the semicolon;

(2) by redesignating clause (x), as redesignated by section 203(2)(B), as clause (xi); and

(3) by inserting after clause (ix), as added by section 203(2)(C), the following:

"(x) consider institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)); and".

SEC. 209. DISSEMINATION OF RESOURCES FOR RESEARCH INSTITUTIONS.

(a) DISSEMINATION OF RESOURCES FOR RESEARCH INSTITUTIONS.—

(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act, the Director shall, using the authorities of the Director under subsections (c)(15) and (e)(1)(A)(ix) of section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272), as amended by section 208, disseminate and make publicly available resources to help qualifying institutions identify, assess, manage, and reduce their cybersecurity risk related to conducting research.

(2) REQUIREMENTS.—The Director shall ensure that the resources disseminated pursuant to paragraph (1)—

(A) are generally applicable and usable by a wide of qualifying institutions;

(B) vary with the nature and size of the qualifying institutions, and the nature and sensitivity of the data collected or stored on the information systems or devices of the qualifying institutions;

(C) include elements that promote awareness of simple, basic controls, a workplace cy-

bersecurity culture, and third-party stakeholder relationships, to assist qualifying institutions in mitigating common cybersecurity risks;

(D) include case, examples, and scenarios studies of practical application;

(E) are technology-neutral and can be implemented using technologies that are commercial and off-the-shelf; and

(F) to the extent practicable, are based on international technical standards.

(3) NATIONAL CYBERSECURITY AWARENESS AND EDUCATION PROGRAM.—The Director shall ensure that the resources disseminated under paragraph (1) are consistent with the efforts of the Director under section 401 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7451).

(4) UPDATES.—The Director shall review periodically and update the resources under paragraph (1) as the Director determines appropriate.

(5) VOLUNTARY RESOURCES.—The use of the resources disseminated under paragraph (1) shall be considered voluntary.

(b) OTHER FEDERAL CYBERSECURITY REQUIREMENTS.—Nothing in this section may be construed to su-

persede, alter, or otherwise affect any cybersecurity requirements applicable to Federal agencies.

(c) DEFINITIONS.—In this section:

(1) QUALIFYING INSTITUTIONS.—The term "qualifying institutions" means institutions of higher education that are classified as either very-high research intensive (R1) or high research intensive (R2) status universities by the Carnegie Classification of Academic Institutions.

(2) RESOURCES.—The term "resources" means guidelines, tools, best practices, technical standards, methodologies, and other ways of providing information.

SEC. 210. ADVANCED COMMUNICATIONS RESEARCH.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended—

(1) by redesignating section 35 as section 36; and

(2) by inserting after section 34 the following:

"SEC. 35. ADVANCED COMMUNICATIONS RESEARCH ACTIVITIES.

"(a) ADVANCED COMMUNICATIONS RESEARCH.—

"(1) IN GENERAL.—The Director of the National Institute of Standards and Technology, in consultation with the Administrator of the National

Telecommunications and Information Administration, the Director of the National Science Foundation, and heads of other Federal agencies, as appropriate, shall carry out a program of measurement research to inform the development of common definitions, benchmarks, best practices, methodologies, and technical standards for advanced communications technologies.

"(2) RESEARCH AREAS.—Research areas may include—

"(A) radio frequency emissions and interference, including technologies and techniques to mitigate such emissions;

"(B) advanced antenna arrays and artificial intelligence systems capable of operating advanced antenna arrays;

"(C) artificial intelligence systems to enable internet of things networks, immersive technology, and other advanced communications technologies;

"(D) network sensing and monitoring technologies;

"(E) technologies to enable spectrum flexibility and agility;

"(F) optical and quantum communications technologies;

"(G) security of advanced communications systems and their supply chains;

"(H) public safety communications;

"(I) resilient internet of things applications for advanced manufacturing; and

"(J) other research areas deemed necessary by the Director.

"(3) TEST BEDS.—In coordination with the private sector and other Federal agencies as appropriate, the Director may develop and manage testbeds for research and development of advanced communications technologies.

"(4) OUTREACH.—In carrying out the activities under this subsection, the Director shall seek input from other Federal agencies and from private sector stakeholders, on an ongoing basis, to help inform research and development priorities, including through workshops and other multi-stakeholder activities.

"(5) TECHNICAL ROADMAPS.—In carrying out the activities under this subsection, the Director shall convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in advanced

communications research and development to develop, and periodically update, coordinated technical roadmaps for advanced communications research in priority areas, such as those described in paragraph (2).

"(b) NATIONAL ADVANCED SPECTRUM AND COMMUNICATIONS TEST NETWORK.—

"(1) IN GENERAL.—The Director, in coordination with the Administrator of the National Telecommunications and Information Administration and heads of other Federal agencies, as appropriate, shall operate a national network of test facilities, including operating or coordinating the use of intellectual capacity, modeling and simulation, laboratories, test ranges and test beds, to be known as the National Advanced Spectrum and Commutations Test Network (referred to in this section as 'NASCTN').

"(2) PURPOSES.—NASCTN shall be for the purposes of—

"(A) developing methodologies for testing, measuring interference, and setting guidelines for interference;

"(B) conducting interference tests to better understand the impact of Federal and commercial spectrum activities;

"(C) conducting research and testing to improve spectrum interference tolerance, flexibility, and agility; and

"(D) other activities as deemed necessary by the Director.

"(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other departments and agencies of the Federal Government, and from the State and local governments, to operate the national network under this section.".

SEC. 211. NEUTRON SCATTERING.

(a) STRATEGIC PLAN FOR THE INSTITUTE NEUTRON REACTOR.—The Director shall develop a strategic plan for the future of the Institute Center for Neutron Research after the current neutron reactor is decommissioned, including—

(1) a succession plan for the reactor, including a roadmap with timeline and milestones;

(2) conceptual design of a new reactor and accompanying facilities, as appropriate; and

(3) a plan to minimize disruptions to the user community during the transition.

(b) COORDINATION WITH THE DEPARTMENT OF ENERGY.—The Secretary, acting through the Director, shall coordinate with the Secretary of Energy on issues related to Federal support for neutron science, including estimation of long-term needs for research using neutron sources, and planning efforts for future facilities to meet such need.

(c) REPORT TO CONGRESS.—Not later than 18 months after the enactment of this Act, the Director shall submit to Congress the plan required under subsection (a), and shall notify Congress of any substantial updates to such plan in subsequent years.

SEC. 212. QUANTUM INFORMATION SCIENCE.

(a) IN GENERAL.—The Director shall continue to prioritize and carry out activities authorized in the National Quantum Initiative Act (15 U.S.C. 8801).

(b) QUANTUM RESEARCH.—Section 201(a) of the National Quantum Initiative Act (15 U.S.C. 8831) is amended—

(1) in paragraph (3), by striking "and" at the end;

(2) in paragraph (4), striking the period at the end and inserting a semicolon;

(3) by redesignating paragraphs (3) through (4) as paragraphs (6) through (7); and

(4) by inserting after paragraph (2) the following:

"(3) shall carry out research to facilitate the development and standardization of quantum cryptography and post-quantum classical cryptography;

"(4) shall carry out research to facilitate the development and standardization of quantum networking and communications technologies and applications, including—

"(A) quantum repeater technology;

"(B) quantum network traffic management;

"(C) quantum transduction;

"(D) long baseline entanglement and teleportation; and

"(E) such other technologies, processes, or applications as the Under Secretary considers appropriate;

"(5) shall, for quantum technologies deemed by the Director to be at a readiness level sufficient for standardization, the Director shall provide technical review and assistance to such other Federal agencies as the Director considers appropriate for the development of quantum network infrastructure standards;".

SEC. 213. ARTIFICIAL INTELLIGENCE.

The Director shall continue to support the development of artificial intelligence and data science, and carry out the activities of the National Artificial Intelligence Initiative Act of 2020 authorized in division E of the National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), including through—

(1) expanding the Institute's capabilities, including scientific staff and research infrastructure;

(2) supporting measurement research and development for advanced computer chips and hardware designed for artificial intelligence systems;

(3) supporting the development of technical standards and guidelines that promote safe and trustworthy artificial intelligence systems;

(4) creating a framework for managing risks associated with artificial intelligence systems; and

(5) developing and publishing cybersecurity tools, encryption methods, and best practices for artificial intelligence and data science.

TITLE III—GENERAL ACTIVITIES

SEC. 301. NIST FACILITIES AND CONSTRUCTION.

(a) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Section 14 of the National Institute of Standards and Technology Act (15 U.S.C. 278d) is amended by adding at the end the following:

"(e) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Within the limits of funds which are appropriated for the Institute, the Secretary is authorized to own, operate, or lease research facilities in locations throughout the United States and its territories in furtherance of its mission, provided that no agreement is entered into to own, operate, or lease without first notifying the appropriate Congressional Committees of jurisdiction.".

(b) FACILITIES MODERNIZATION FUND.—Section 14 of such Act (15 U.S.C. 278d), as amended by subsection (a), is further amended by adding at the end the following:

"(d) FACILITIES MODERNIZATION FUND.—

"(1) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be known as the 'NIST Facilities Modernization Fund' (hereafter in this section referred to as the 'Fund').

"(2) USE OF FUNDS.—Amounts in the Fund shall be available to Secretary, acting through the Director, for Capital Projects on the Institute's campuses for the modernization and construction of research facilities needed to conduct leading edge scientific and technical research.

"(3) CONTENTS OF FUND.—The Funds shall consist of the following amounts:

"(A) Such amounts as may be appropriated by law.

"(B) Interest earned on the balance of the Fund.

"(4) AUTHORIZATION OF FUNDS.—Of the funds authorized to be appropriated in section 302 of the National Institute of Standards and Technology For the Future Act of 2021 for the construction and renovation of facilities, $80,000,000 for each of the fiscal years 2022 through 2026 shall be provided for the Fund established in subsection (a).

"(5) CONTINUING AVAILABILITY OF FUNDS.—Amounts in the Fund are available without regard to fiscal year limitation.

"(6) NOTIFICATION TO COMMITTEES.—Upon making any obligation or expenditure of any amount in the Fund, the Secretary, through the Director, shall notify the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the House of Representatives and the Committee on Appropriations of the Senate of the amount and purpose of the obligation or expenditure.

"(7) NIST FACILITIES MODERNIZATION AND MAINTENANCE PLAN.—

"(A) IN GENERAL.—To carry out the program authorized in subsection (a), the Secretary, acting through the Director, shall develop and submit to Congress a 5-year modernization and maintenance plan for the National Institute of Standards and Technology's campuses.

"(B) TIMING.—The modernization and maintenance plan required in paragraph (1) shall be submitted to Congress not later than 30 days after the date of enactment of the National Institute of Standards and Technology For the Future Act of 2021, and an update shall be submitted to Congress annually thereafter.

"(C) COMPONENTS.—The plan required in paragraph (1) shall include, with respect to the 5-year period beginning on the date of the submission or update, the following:

"(i) A list of Capital Construction Projects expected to be undertaken during such period, the core capabilities these facilities will provide, climate-resilience plan-

ning efforts, anticipated schedule of construction, and anticipated funding requirements.

"(ii) A list of planned utility infrastructure projects expected to be undertaken during such periods, anticipated schedule of construction, and anticipated funding requirements.

"(iii) A list of planned IT infrastructure projects expected to be undertaken during such period, anticipated schedule of construction, and anticipated funding requirements.

"(iv) A list of the deferred maintenance projects expected to be undertaken during such period, anticipated schedule of construction, anticipated funding requirements, and an evaluation of progress made in reducing the deferred maintenance backlog.".

SEC. 302. EDUCATIONAL OUTREACH AND SUPPORT FOR UNDERREPRESENTED COMMUNITIES.

Section 18 of the National Institute of Standards and Technology Act (15 U.S.C. 278g-1) is amended—

(1) in subsection (a), in the second sentence—

(A) by striking "may" and inserting "shall"; and

(B) by striking "academia" and inserting "diverse types of institutions of higher education"; and

(2) in subsection (e)—

(A) in paragraph (4), by striking "and" at the end;

(B) in paragraph (5), by striking the period at the end and inserting "; and"; and

(C) by inserting after paragraph (5) the following:

"(6) conduct outreach to and develop research collaborations with historically black colleges and universities and minority-serving institutions, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3); and

"(7) carry out other activities to increase the participation of persons historically underrepresented in STEM in the Institute's programs.".

SEC. 303. OTHER TRANSACTIONS AUTHORITY.

Section 2(b)(4) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)(4)) is amended to read as follows:

"(4) to enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of its work and on such terms as it may deem appropriate, in furtherance of the purposes of this Act;".

SEC. 304. INTERNATIONAL STANDARDS DEVELOPMENT.

(a) INTERNATIONAL STANDARDS ENGAGEMENT.—

(1) IN GENERAL.—The Director shall lead information exchange and coordination among Federal agencies and communication from Federal agencies to the private sector of the United States to ensure effective Federal engagement in the development and use of international technical standards.

(2) REQUIREMENTS.—To support private sector-led engagement and ensure effective Federal engagement in the development and use of international technical standards, the Director shall consider—

(A) the role and needs of the Federal Government with respect to international technical standards;

(B) organizations developing international technical standards of interest to the United

States, United States representation and influence in these organizations, and key contributors for technical and leadership expertise in these organizations;

(C) support for persons with domain subject matter expertise, especially from small businesses located in the United States, to influence and engage in technical standards leadership positions, working groups and meetings;

(D) opportunities for partnerships for supporting international technical standards from across the Federal Government, federally funded research and development centers, university-affiliated research centers, institutions of higher education, industry, industry associations, nonprofit organizations, and other key contributors;

(E) support for activities to encourage the adoption of technical standards developed in the United States to be adopted by international standards organizations; and

(F) other activities determined by the Director to be necessary to support United States participation in international standards development, economic competitiveness, and national

security in the development and use of international technical standards.

(b) CAPACITY BUILDING GUIDANCE.—The Director shall support education and workforce development efforts to promote United States participation in international standards organizations. The Director shall—

(1) identify and create, as appropriate, technical standards education and training resources for interested businesses, industry associations, academia, nonprofits, Federal agencies, and other relevant standards contributors, including activities targeted at integrating standards content into undergraduate and graduate curricula in science, engineering, business, public policy, and law;

(2) conduct outreach, including to private sector leaders, to support engagement by more United States stakeholders in international technical standards development; and

(3) other activities deemed necessary by the Director to support increased engagement, influence, and leadership of United States organizations in the development of international technical standards.

(c) CAPACITY BUILDING PILOT PROGRAM.—

(1) IN GENERAL.—The Director, in coordination with the Director of the National Science Foun-

dation, the Administrator of the Small Business Administration and the heads of other relevant Federal agencies, as appropriate, shall establish a 5-year pilot program to award grants, on a merit-reviewed, competitive basis, to private sector entities, nonprofit institutions, and based in the United States to support increased participation by small business and academic interests in international standards organizations.

(2) ACTIVITIES.—In carrying out the grants established in subsection (c), the Director shall award competitive, merit-reviewed grants to covered entities to cover the reasonable costs, up to a specified ceiling set by the Director, of activities supporting increased engagement and leadership of employees of small businesses and faculty of institutions of higher education or other nonprofit research institutions with subject matter expertise in international standards organizations.

(3) AWARD CRITERIA.—The Director may only provide a grant under this section to an eligible recipient that—

(A) demonstrates deep technical standards expertise;

(B) demonstrates facility with the processes of the standards development organization in which the recipient intends to engage using grant funds;

(C) proposes a feasible set of standard deliverables to be completed over the period of the grant;

(D) explains how the recipient will fund the standards work supported by the grant if the grant funds are insufficient to cover all costs of the work; and

(E) commits personnel with appropriate expertise to engage in relevant international organizations responsible for developing technical standards over the period of the grant.

(4) ELIGIBILITY.—A small business concern (as defined in section 3 of the Small Business Act (15 U.S.C. 632) based in the United States, an institution of higher education (as defined by section 102 of the Higher Education Act of 1965 (20 U.S. C. 1002)), or a nonprofit institution as defined in section 4(5) of the Stevenson-Wydler Act (15 U.S.C. 3703) shall be eligible to receive grants under this program.

(5) PRIORITIZATION.—The Director may prioritize grants awarded under this section to eligible recipients proposals for standards development that address clearly defined current or anticipated market needs or gaps that would not be met without the grant.

(6) APPLICATION.—An eligible recipient seeking funding under subsection (c) shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

(7) MERIT REVIEW PROCESS.—Not later than 90 days after the enactment of this Act, the Director shall establish a merit review process, including the creation of merit review panels made of experts from government and the private sector, to evaluate the application under paragraph (5) to ensure applications submitted are reviewed in a fair, competitive, transparent, and in-depth manner.

(8) CONSULTATION.—In carrying out the pilot program established under subsection (c), the Director shall consult with other Federal agencies, private sector organizations, institutions of higher education, and nonprofit organizations to help inform the pilot program, including selection criteria, appli-

cant disclosure requirements, grant amount and duration, and the merit review process.

(9) REPORT TO CONGRESS.—The Director shall brief Congress after the second year of the pilot program and each year following that includes the following:

(A) An assessment of the effectiveness of the pilot program for improving the participation of United States small businesses, United States institutions of higher education, or other nonprofit research institutions in international standards organizations, including—

(i) the type of activities supported, including leadership roles;

(ii) the international standards organizations participated in; and

(iii) the technical areas covered by the activities.

(B) If deemed effective, a plan for permanent implementation of the pilot program.

SEC. 305. UPDATE TO MANUFACTURING EXTENSION PARTNERSHIP.

(a) ACCEPTANCE OF FUNDS.—Section 25(l) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(l)) is amended to read as follows:

"(l) ACCEPTANCE OF FUNDS.—

"(1) IN GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal departments and agencies, as well as funds provided by the private sector pursuant to section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.

"(2) COMPETITIVE AWARDS.—Funds accepted from other Federal departments and agencies and from the private sector under paragraph (1) shall be awarded competitively by the Secretary and by the Director to Manufacturing Extension Partnership Centers, provided that the Secretary and Director may make non-competitive awards, pursuant to this section or section 25A, or as a non-competitive contract, as appropriate, if the Secretary and the Director determine that—

"(A) the manufacturing market or sector targeted is limited geographically or in scope;

"(B) the number of States (or territory, in the case of Puerto Rico) with Manufacturing Extension Partnership Centers serving manu-

facturers of such market or sector is five or fewer; and

"(C) such Manufacturing Extension Partnership Center or Centers has received a positive evaluation in the most recent evaluation conducted pursuant to subsection (g).".

(b) INCLUSION OF CERTAIN SCHOOLS.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended—

(1) in subsection (c)—

(A) in paragraph (6), by striking "community colleges and area career and technical education schools" and inserting "secondary schools (as defined in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801)), community colleges, and area career and technical education schools, including those in underserved and rural communities,"; and

(B) in paragraph (7)—

(i) by striking "and local colleges" and inserting "local high schools and local colleges, including those in underserved and rural communities,"; and

(ii) by inserting "or other applied learning opportunities" after "apprenticeships"; and

(2) in subsection (d)(3), by striking ", community colleges, and area career and technical education schools," and inserting "and local high schools, community colleges, and area career and technical education schools, including those in underserved and rural communities,".

SEC. 306. STANDARD TECHNICAL UPDATE.

(a) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT UPDATES.—The National Institute of Standards and Technology Act (15 U.S.C. 271) is amended—

(1) in section 15—

(A) in subsection (b), by striking the period at the end and inserting a semicolon;

(B) in subsection (g), by striking "and" after the semicolon; and

(C) by striking the period at the end and inserting "; and (i) the protection of Institute buildings and other plant facilities, equipment, and property, and of employees, associates, or visitors, located therein or associated therewith, notwithstanding any other provision of law, the

direction of such of the officers and employees of the Institute as the Secretary deems necessary in the public interest hereafter to carry firearms while in the conduct of their official duties, and the authorization of employees of contractors and subcontractors of the Institute who are engaged in the protection of property owned by the United States, and located at facilities owned by, leased, used or under the control of the United States, to carry firearms while in the conduct of their official duties, and, under regulations prescribed by the Secretary and approved by the Attorney General, the authorization of officers and employees of the Institute and of its contractors and subcontractors authorized to carry firearms hereafter to arrest without warrant for any offense against the United States committed in their presence, or for any felony cognizable under the laws of the United States if they have reasonable grounds to believe that the person to be arrested has committed or is committing such felony, provided that such authority to make arrests may be exercised only while guarding and protecting buildings and other plant facilities,

equipment, and property owned or leased by, used or under the control of, the United States under the administration and control of the Secretary."; and

(2) by amending section 17(a) to read as follows:

"(a) The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds, as the Secretary may deem desirable through direct support for activities of international organizations and foreign national metrology institutes with which the Institute cooperates to advance measurement methods, technical standards, and related basic technologies, for official representation, to host official receptions, dinners, and similar events, and to otherwise extend official courtesies, including transportation of foreign dignitaries and representatives of foreign national metrology institutes to and from the Institute, for the purpose of maintaining the standing and prestige of the Department of Commerce and the Institute, through the grant of fellowships or other appropriate form of financial or logistical assistance or support to foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the

Institute or participating in the exchange of scientific or technical information at the Institute.".

(b) STEVENSON-WYDLER UPDATES.—The Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701) is amended—

(1) in section 17(c)(1)—

(A) by moving each of subparagraphs (D) and (E) two ems to the left; and

(B) by adding at the end the following:

"(G) Community."; and

(2) in section 23(a)—

(A) by redesignating paragraphs (1) and (2) as paragraphs (2) and (3), respectively; and

(B) by inserting before paragraph (2), as so redesignated, the following:

"(1) accept, apply for, use, and spend Federal, State, and nongovernmental acquisition and assistance funds to further the purposes of this Act as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement: *Provided*, That the approving official may waive statutory and regulatory administrative provisions so that a single agency may administer a joint program, upon mutual agreement;".

(c) AMERICAN INNOVATION AND COMPETITIVENESS ACT UPDATE.—Section 113 of the American Innovation and Competitiveness Act (15 U.S.C. 278e note) is repealed.

(d) FEDERAL ENERGY MANAGEMENT IMPROVEMENT ACT UPDATE.—Section 4 of the Federal Energy Management Improvement Act of 1988 (15 U.S.C. 5001) is amended by striking "Secretary of Commerce" and "Secretary" each place either such term appears and inserting "Consumer Product Safety Commission".

Chairwoman JOHNSON. Without objection, the bill is considered as read, and open to amendment at any point. Does anyone wish to be recognized to speak on this underlying bill?

Ms. STEVENS. Madam Chair, I move to strike the last word.

Chairwoman JOHNSON. The Chair recognizes Ms. Stevens.

Ms. STEVENS. Thank you, Madam Chair. It is certainly an exciting moment for this Committee, some might say a pinch me moment, as we get ready to mark up the NIST reauthorization, the *NIST for the Future Act*, H.R. 4609, a bill that I am so proud to have introduced that will direct long overdue investments in one of the most important and relevant agencies to our Nation's innovation enterprise and economic capabilities. I certainly want to thank you, Madam Chair. I want to thank Ranking Member Lucas, as well as the Ranking Member of the Research and Technology Subcommittee, Mr. Waltz, for joining me in introducing this legislation to reauthorize NIST.

As a—as we reflect, NIST is a critical agency that supports U.S. competitiveness by advancing measurement science, standards, and technology. NIST does essential work in supporting important industries of the future, including artificial intelligence, quantum technologies, and biotechnology, and it makes improvements in cybersecurity across the Nation. The agency has also played a critical and essential role in dozens of activities that are less attention grabbing, but just as important. NIST reference materials, technical standards, measurement and calibration services, and technical guidance help validate the safety and function of most of the objects around us in both our homes and our businesses. The work helps us track and understand contaminants in our water, in our air, and helps us construct buildings that are more resilient to natural hazards.

As Congress considers a significant package of legislation to advance science and technology, and bolster U.S. competitiveness, it must not overlook NIST. Congress has not reauthorized this agency since 2010, and in that time its budget has only grown modestly, and little has been done to modernize it. But yet NIST has the capability to do more with less, and the incredible workforce that comprises NIST, not only in Gaithersburg, but also in their outposts across the Nation, is truly of note and remarkable.

The bill authorizes a significant, but sustainable, increase in NIST's budget to ensure the agency can boldly advance industries of the future, while continuing to invest across all its important areas of research. We are looking at specifically the development of activities in advanced communications, artificial intelligence, biometrics, cybersecurity, engineering biology, greenhouse gas measurement, privacy, and so much more. The funding and programs authorized through this legislation will enable the agency to better support U.S. industry jobs and advancing American interests in international standards settings across the world.

It will also address longstanding challenges that have slowed the agency's work, like its maintenance backlog and inflexible authorities. The *NIST for the Future Act* continues to strengthen and grow NIST's important extramural programs, the Hollings Manufacturing Extension Partnership (MEP), and the Manufacturing USA Network. The bill bolsters the Manufacturing USA network by au-

thorizing funding for two new competitively selected institutes. We know that NIST is on the forefront of our semiconductor chip shortage crisis that is deeply impacting industries across America, including our beloved automotive industry. The new institutes have created tremendous value not only since they were authorized, and this is within Manufacturing USA, but during the Nation's toughest times. We know that the Manufacturing Extension Partnership Centers have played a role in addressing the impacts of COVID–19. They have worked with 90 partners throughout the country to connect supply chains, and keep our essential workers safe, and implement safety components that were new to the time.

I am so proud of this bill, and the transparent bipartisan and deliberative process that continues to make it even better. Thank you to every single person on this Committee for being a part of this bill, but I also want to urge all of you to support it here today. I'm going to ask, Madam Chair, for unanimous consent to submit to the record letters of support for the NIST for the Future from IBM, the Telecommunications Industry Association, the Security Industry Association, the Information Systems Audit and Control Association, that—which is part of the NIST coalition, and, of course, the U.S. Chamber of Commerce. And with that, I yield back.

[The information referred to follows:]

********** COMMITTEE INSERT **********

Chairwoman JOHNSON. Thank you. Without objection, so ordered. Mr. Bera is recognized. I'm sorry, Mr. Waltz is recognized.

Mr. WALTZ. Thank you, Madam Chairwoman. And thank you for holding today's markup considering these important pieces of legislation. First up is a bill I'm very proud to be an original co-sponsor with, with Chairwoman Stevens, and you can certainly hear and see her passion for these bills. And I want to thank you, Chairwoman Stevens, Chairwoman Johnson, Ranking Member Lucas, for working with me on H.R. 4606, the *National Institute of Standards and Technology for the Future Act of 2021*. Frankly, I don't think a lot of Members fully understand, and a lot of Americans fully understand, how critical NIST is to what we do in our everyday lives and to our economy.

Interestingly, NIST is the only Federal research agency whose authority comes directly from the Constitution. Article 1, Section 8 of the Constitution grants Congress the power to "fix the standard of weights and measurement", and since 1901 it has been in the forefront of setting the standards for weight and measurements in the United States and the world. Almost every Federal agency and the U.S. industry sector uses the standards, measurements, and certification services that NIST labs provide. These services provide the foundation for the fairness and efficiency of sales in the U.S. and around the world, underpinning nearly half of the U.S. economy.

NIST contributes to countless products and services. They enhance our national and economic security, improve Americans' quality of life. And, for example, thousands of law enforcement officers' lives are saved as a result of NIST developed standards for ballistic resistant body armor. As a veteran of the Army, and within the Army, nearly 60,000 different types of equipment regularly

require NIST calibration tests to ensure their systems perform properly on the battlefield.

The Nasdaq relies on NIST's Internet Time Service to timestamp billions of dollars' worth of stock trades and other financial transactions every business day. Currently NIST is playing a critical role in my home State of Florida by leading an investigation into the collapse of the Champlain Towers in Surfside, Florida. The American people, and especially the residents of Surfside, and especially the families of those that we've lost, need answers, and deserve answers, on how this tragedy took place, and through this investigation, we will gain an understanding of how this happened, how to prevent tragedies like this in the future. I look forward to supporting Representative Crist's amendment, of which I'm also a co-sponsor, to ensure this study is fully authorized as part of this bill. I was recently at the Surfside collapse, and I just cannot—words cannot convey how devastated that community is, and, frankly, how scared many of the residents in the surrounding buildings are, so we need answers, and I look forward to supporting that.

Also important to Florida, especially during hurricane season, are building codes to ensure resilience to wind and flooding events. NIST assists the International Code Council with providing modern codes and standards to mitigate damages from natural disasters. NIST research is a key component to positioning U.S. in technology at the leading edge of innovation. This legislation ensures that NIST has the world-class research facilities and expertise necessary to properly contribute to the industries of the future, including quantum science, cybersecurity, AI, advanced communications, and engineering biology.

The bill builds on congressional investments in domestic semiconductor manufacturing, or the *CHIPS Act*, that we signed into law in the *National Defense Authorization Act*. We are currently seeing a global chip shortage. The average new car has over 1,000 chips. We in the United States, we in the West, cannot be reliant on the Chinese Communist Party for semiconductors that are essential to modern defense systems and electronics.

NIST's cybersecurity research and training programs are also vital to protecting the Nation from the cyber threats that we are facing today. Its cybersecurity technical standards and risk management frameworks are widely regarded among the best and most comprehensive around the world. Finally, this bill also directs NIST to develop guidance for research universities in adopting a cybersecurity framework for properly assessing and addressing cybersecurity vulnerabilities across their campuses.

So thank you again, Chairwoman Stevens, Chairwoman Johnson, Ranking Member Lucas, for working with me on this important piece of legislation, ushering this bill through the Science Community on a bipartisan basis. NIST's work is the foundation on which U.S. competitiveness grows, and this legislation makes the necessary investments to ensure we can combat the challenges coming for our—from our adversaries, like the CCP. I encourage my colleagues to vote yes on this legislation. I yield back the balance of my time.

Chairwoman JOHNSON. Thank you very much. Does anyone else wish to be recognized to speak on this bill? Mr. Foster.

Mr. FOSTER. I'd like to strike the last word.

Chairwoman JOHNSON. You're recognized.

Mr. FOSTER. Thank you, Madam Chairwoman. I would like to thank Subcommittee Chair Stevens for introducing this crucial bill, and to the Chair and Ranking Member for their support of the National Institute of Standards and Technology. Last month this Committee worked together on a bipartisan basis to provide a substantial increase in science funding for the DOE Office of Science and for NSF, and today we have the opportunity to build on that great work by providing increased funding for NIST, whose work undergirds almost all technology, including new innovations that will arise from the newly authorized spending at NSF and the DOE Office of Science.

If we wish to continue to encourage scientific advancement and discovery across the U.S., all sections of our Federal science infrastructure must be properly funded, and this legislation puts us one step closer to that goal. I'd like to take a moment to talk about one important piece of NIST's mission that often gets overlooked, which is developing standards for secure digital identification. The lack of a secure way for individuals to authenticate themselves online and offline has left us open to identity theft, financial fraud, and without the means to distinguish fraudulent from legitimate online activity, and the lack of a secure digital ID is a key cybersecurity vulnerability that's been flagged again, and again, and again. Incidents of identity theft and identity fraud continue to rise in the United States, where identity theft is at an all-time high, with over 1.3 million reports of consumer identity fraud to the FTC (Federal Trade Commission) in 2020, and tens of billions of dollars of fraudulent or mistaken payments by the Federal Government.

The inadequacy of current systems of digital identity degrades our security, and degrades privacy for all Americans, and next generation solutions are needed to improve both security and privacy. So I'm proud to have my *Strengthening Digital Identity Act* essentially incorporated into this bill to address this problem. My bill directs NIST to create robust standards and guidance for the implementation of digital identification. NIST's work in identity research and standards is one of the best in the world, and, given that adversaries continue to exploit weaknesses in our digital identity systems to conduct successful cyberattacks, additional NIST resources are needed to help government and industry secure people's identity in cyberspace.

Digital identification's a long overdue and a necessary tool for the United States economy to transition into the digital age, while preventing fraud, ensuring privacy, and improving equity. A privacy-preserving and secure digital identity would allow Americans to sign up for government benefits, make a withdrawal from their bank, or view their medical records, or dozens of other uses, all with near-zero risk of identity theft or fraud. Reducing identity fraud would not only provide tremendous savings to individual consumers and businesses, but it would also create massive savings for our government. However, it's important to get this right, and this legislation is an important first step in ensuring that NIST

keeps us ahead of the curve in establishing standards and guidance for a safe, secure, and privacy preserving digital identification. So I urge my colleagues to support this legislation, and yield back.

Chairwoman JOHNSON. Thank you. Anyone else seeking recognition? OK. We will now proceed with the amendments in the order that's on the roster. The first amendment on the roster is an amendment offered by the gentlelady from Michigan. The Clerk will report the amendment.

The CLERK. Amendment No. 1, amendment in the nature of a substitute (ANS) to H.R. 4609, offered by Ms. Stevens of Michigan.

[The amendment of Ms. Stevens follows:]

AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MS. STEVENS OF MICHIGAN

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

(a) SHORT TITLE.—This Act may be cited as the "National Institute of Standards and Technology for the Future Act of 2021".

(b) TABLE OF CONTENTS.—The table of contents for this Act is as follows:

SEC. 2. DEFINITIONS.

In this Act:

(1) DIRECTOR.—The term "Director" means the Director of the National Institute of Standards and Technology.

(2) FRAMEWORK.—The term "Framework" means the Framework for Improving Critical Infrastructure Cybersecurity developed by the National Institute of Standards and Technology and referred to in Executive Order 13800 issued on May 11, 2017 (82 Fed. Reg. 22391 et seq.).

(3) HISTORICALLY BLACK COLLEGES AND UNIVERSITIES.—The term "historically Black colleges and universities" has the same meaning given to the term "part B institutions" in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

(4) INSTITUTE.—The term "Institute" means the National Institute of Standards and Technology.

(5) INSTITUTION OF HIGHER EDUCATION.—The term "institution of higher education" has the

meaning given such term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).

(6) INTERNATIONAL STANDARDS ORGANIZATION.—The term "International Standards Organization" has the meaning given such term in section 451 of the Trade Agreements Act of 1979 (19 U.S.C. 2571).

(7) MINORITY SERVING INSTITUTION.—The term "minority-serving institution'" means a Hispanic-serving institution, an Alaska Native-serving institution, a Native Hawaiian-serving institutions, a Predominantly Black Institution, an Asian American and Native American Pacific Islander-serving institution, or a Native American-serving nontribal institution as described in section 371 of the Higher Education Act of 1965 (20 U.S.C. 1067q(a)).

(8) SECRETARY.—The term "Secretary" means the Secretary of Commerce.

(9) TECHNICAL STANDARDS.—The term "technical standard" has the meaning given such term in section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995.

TITLE I—APPROPRIATIONS

SEC. 101. AUTHORIZATION OF APPROPRIATIONS.

(a) FISCAL YEAR 2022.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,387,070,000 for the National Institute of Standards and Technology for fiscal year 2022.

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

(A) $915,570,000 shall be for scientific and technical research and services laboratory activities, of which $9,000,000 may be transferred to the Working Capital Fund;

(B) $140,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs; and

(C) $331,500,000 shall be for industrial technology services activities, of which $275,000,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(b) FISCAL YEAR 2023.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,518,800,000 for the National Institute of Standards and Technology for fiscal year 2023.

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

(A) $979,100,000 shall be for scientific and technical research and services laboratory activities, of which $10,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $339,800,000 shall be for industrial technology services activities, of which $283,300,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(c) FISCAL YEAR 2024.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,595,800,000 for the National Institute of Standards and Technology for fiscal year 2024.

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

(A) $1,047,600,000 shall be for scientific and technical research and services laboratory activities, of which $12,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $348,200,000 shall be for industrial technology services activities, of which $291,700,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under

section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(d) FISCAL YEAR 2025.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,677,900,000 for the National Institute of Standards and Technology for fiscal year 2025.

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

(A) $1,120,900,000 shall be for scientific and technical research and services laboratory activities, of which $15,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $357,000,000 shall be for industrial technology services activities, of which $300,500,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and 278l) and $56,500,000 shall be for the Network

for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

(e) FISCAL YEAR 2026.—

(1) IN GENERAL.—There are authorized to be appropriated to the Secretary of Commerce $1,765,400,000 for the National Institute of Standards and Technology for fiscal year 2026.

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

(A) $1,199,400,000 shall be for scientific and technical research and services laboratory activities, of which $18,000,000 may be transferred to the Working Capital Fund;

(B) $200,000,000 shall be for the construction and maintenance of facilities, of which $80,000,000 shall be for Safety, Capacity, Maintenance, and Major Repairs, including $20,000,000 for IT infrastructure; and

(C) $366,000,000 shall be for industrial technology services activities, of which $309,500,000 shall be for the Manufacturing Extension Partnership program under sections 25 and 26 of the National Institute of Standards and Technology Act (15 U.S.C. 278k and

23 278l) and $56,500,000 shall be for the Network for Manufacturing Innovation Program under section 34 of the National Institute of Standards and Technology Act (15 U.S.C. 278s).

TITLE II—MEASUREMENT RESEARCH

SEC. 201. ENGINEERING BIOLOGY AND BIOMETROLOGY.

(a) IN GENERAL.—The Director shall—

(1) support basic measurement science, technology research for engineering biology, biomanufacturing, and biometrology to advance—

(A) measurement technologies to support foundational understanding of the mechanisms of conversion of DNA information into cellular function, including both the natural and engineered production of biomolecules;

(B) technologies for measurement of such biomolecular components and for complex engineered biological systems;

(C) new data tools, techniques, and processes to improve engineering biology, biomanufacturing, and biometrology research; and

(D) all other areas deemed by the Director to be critical to the development and deploy-

ment of engineering biology, biomanufacturing and biometrology;

(2) support activities to inform and expand the development of measurements infrastructure needed to develop technical standards to establish interoperability and facilitate commercial development of biomolecular measurement technology and engineering biology applications;

(3) convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in engineering biology research and development to develop coordinated technical roadmaps for authoritative measurement of the molecular components of the cell;

(4) provide access to user facilities with advanced or unique equipment, services, materials, and other resources to industry, institutions of higher education, nonprofit organizations, and government agencies to perform research and testing;

(5) establish or expand collaborative partnerships or consortia with other Federal agencies engaged in engineering biology research and development, institutions of higher education, Federal laboratories, and industry to advance engineering biology applications; and

(6) support graduate and post graduate research and training in biometrology, biomanufacturing, and engineering biology.

(b) DEFINITIONS.—For purposes of this section, the term "Engineering Biology" means the application of engineering design principles and practices to biological systems, including molecular and cellular systems, to advance fundamental understanding of complex natural systems and to enable novel or optimize functions and capabilities.

(c) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to alter the policies, processes, or practices of individual Federal agencies in effect on the day before the date of the enactment of this Act relating to the conduct of biomedical research and advanced development, including the solicitation and review of extramural research proposals.

(d) CONTROLS.—In carrying out activities authorized by this section, the Secretary shall ensure proper security controls are in place to protect sensitive information, as appropriate.

SEC. 202. GREENHOUSE GAS MEASUREMENT RESEARCH.

(a) GREENHOUSE GAS MEASUREMENT PROGRAM.—

(1) IN GENERAL.—The Director, in consultation with the Administrator of the National Oceanic and Atmospheric Administration and the Adminis-

trator of the Environmental Protection Agency, shall carry out a measurement research program to inform the development of best practices, benchmarks, methodologies, procedures, and technical standards for the measurement of greenhouse gas emissions and to assess and improve the performance of greenhouse gas measurement systems.

(2) ACTIVITIES.—In carrying out such a program, the Director may—

(A) conduct research and testing to improve the accuracy, efficacy, and reliability of the measurement of greenhouse gas emissions;

(B) conduct research to create novel measurement technologies and techniques for the measurement of greenhouse gases;

(C) convene and engage with relevant Federal agencies and stakeholders to establish common definitions and characterizations for the measurement of greenhouse gas emissions;

(D) conduct outreach and coordination to share technical expertise with relevant industry and non-industry stakeholders and standards development organizations to assist such entities in the development of best practices and

technical standards for greenhouse gas measurements; and

(E) in coordination with the Administrator of the National Oceanic and Atmospheric Administration and the Administrator of the Environmental Protection Agency, develop such standard reference materials as the Director determines is necessary to further the development of such technical standards.

(3) TEST BEDS.—In coordination with the private sector, institutions of higher education, state and local governments, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, and other Federal agencies as appropriate, the Director may continue to develop and manage testbeds to advance measurement research and standards development for greenhouse gas emissions.

(4) GREENHOUSE GAS MEASUREMENT CENTER OF EXCELLENCE.—

(A) IN GENERAL.—The Director, in collaboration with the Administrator of the National Oceanic and Atmospheric Administration, the Administrator of the Environmental Protection Agency, and the heads of other Federal

agencies, as appropriate, shall award to an institution of higher education or an eligible nonprofit organization (or a consortium thereof), on a merit-reviewed, competitive basis, funds to establish a Center of Excellence in Greenhouse Gas Measurement.

(B) COLLABORATIONS.—The Director shall require, as a condition of receipt of the award under this paragraph, that the activities of the Center of Excellence include collaboration among public and private organizations, including institutions of higher education, nonprofit organizations, private sector entities, and State, tribal, territorial, and local officials.

(C) PURPOSE.—The purpose of the Center of Excellence shall be to—

(i) advance measurement science, data analytics, and modeling to improve the accuracy of greenhouse gas emissions measurement, validation, and attribution;

(ii) test and evaluate the performance of existing capabilities for the measurement and validation of greenhouse gas emissions;

(iii) educate and train students in measurement science, computational science, and systems engineering research relevant to greenhouse gas measurements;

(iv) foster collaboration among academic researchers, private sector stakeholders, and State, tribal, territorial, and local officials;

(v) support Institute test beds as described in subsection (a)(3); and

(vi) collaborate with other Federal agencies to conduct outreach and coordination to share technical expertise with relevant public and private sector stakeholders, including State, tribal, territorial, and local officials, to assist such entities in measuring greenhouse gas emissions.

(D) REQUIREMENTS.—

(i) IN GENERAL.—An institution of higher education or an eligible nonprofit organization (or a consortium thereof) seeking funding under this subsection shall submit an application to the Director at such time, in such manner, and containing

such information as the Director may require.

(ii) APPLICATIONS.—Each application made under clause (i) shall include a description of—

(I) how the Center will work with other research institutions, industry partners, and State and local officials to identify research, testing, and technical standards needs relevant to greenhouse gas emissions;

(II) how the Center will promote active collaboration among researchers in multiple disciplines involved in the measurement of greenhouse gas emissions; and

(III) how the Center will share technical expertise with relevant public and private sector stakeholders, including state and local officials, to assist such entities in measuring greenhouse gas emissions.

(iii) SELECTION AND DURATION.—Each Center established under this section is authorized to carry out activities for a

period of 5 years, renewable for an additional 5 years at the discretion of the Director, in consultation with other Federal agencies as appropriate.

SEC. 203. NIST AUTHORITY FOR CYBERSECURITY AND PRIVACY ACTIVITIES.

Section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272 et seq.) is amended—

(1) in subsection (c)—

(A) in paragraph (16), by striking the period at the end and inserting a semicolon;

(B) by redesignating paragraphs (16) through (27) as paragraphs (21) through (32), respectively; and

(C) by inserting after paragraph (15) the following:

"(16) support information security measures for the development and lifecycle of software and the software supply chain, including development of voluntary, consensus-based technical standards, best practices, frameworks, methodologies, procedures, processes, and software engineering toolkits and configurations;

"(17) support information security measures, including voluntary, consensus-based technical

standards, best practices, and guidelines, for the design, adoption and deployment of cloud computing services;

"(18) support research, development, and practical application to improve the usability of cybersecurity processes and technologies;

"(19) facilitate and support the development of a voluntary, consensus-based set of technical standards, guidelines, best practices, methodologies, procedures, and processes to cost-effectively ensure appropriate privacy protections for personally identifiable information in systems, technologies, and processes used by both the public and private sector;

"(20) support privacy measures, including voluntary, consensus-based technical standards, best practices, guidelines, metrology, and testbeds for the design, adoption and deployment of privacy enhancing technologies;"; and

(2) in subsection (e)(1)(A)—

(A) in clause (viii), by striking "and" at the end;

(B) by redesignating clause (ix) as clause (x); and

(C) by inserting after clause (viii) the following:

"(ix) conduct reviews of and create impact metrics for cybersecurity solutions and capabilities developed by the Institute for purposes of improvement; and".

SEC. 204. SOFTWARE SECURITY AND AUTHENTICATION.

(a) VULNERABILITIES IN OPEN SOURCE SOFTWARE.—The Director shall assess and assign severity metrics to identified vulnerabilities with open source software and produce voluntary guidance to assist the entities that maintain open source software repositories to discover and mitigate vulnerabilities.

(b) ARTIFICIAL INTELLIGENCE-ENABLED DEFENSES.—The Director shall carry out research and testing to improve the effectiveness of artificial intelligence-enabled cybersecurity, including by generating optimized data sets to train artificial intelligence defense systems and evaluating the performance of varying network architectures at strengthening network security.

(c) AUTHENTICATION OF INSTITUTE SOFTWARE.—The Director shall ensure all software released by the Institute is digitally signed and maintained to enable stakeholders to verify its authenticity and integrity upon installation and execution.

(d) ASSISTANCE TO INSPECTORS GENERAL.—The Director shall provide technical assistance to improve the

education and training of individual Federal agency Inspectors General and staff who are responsible for the annual independent evaluation they are required to perform of the information security program and practices of Federal Agencies under section 3555 of title 44, United States Code.

SEC. 205. DIGITAL IDENTITY MANAGEMENT RESEARCH.

Section 504 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7464) is amended to read as follows:

"SEC. 504. IDENTITY MANAGEMENT RESEARCH AND DEVELOPMENT.

"(a) IN GENERAL.—The Director shall carry out a program of research to support the development of voluntary, consensus-based technical standards, best practices, benchmarks, methodologies, metrology, testbeds, and conformance criteria for identity management, taking into account appropriate user concerns—

"(1) to improve interoperability and portability among identity management technologies;

"(2) to strengthen identity proofing and verification methods used in identity management systems;

"(3) to improve privacy protection in identity management systems through authentication and security protocols; and

"(4) to monitor and improve the accuracy, usability, and inclusivity of identity management systems.

"(b) DIGITAL IDENTITY TECHNICAL ROADMAP.—The Director, in consultation with other relevant Federal agencies and stakeholders from the private sector, shall develop and maintain a technical roadmap for digital identity management research and development focused on enabling the voluntary use and adoption of modern digital identity solutions that align with the four criteria in subsection (a).

"(c) DIGITAL IDENTITY MANAGEMENT GUIDANCE.—

"(1) IN GENERAL.—The Director shall develop, and periodically update, in collaboration with other public and private sector organizations, common definitions and voluntary guidance for digital identity management systems.

"(2) GUIDANCE.—The Guidance shall—

"(A) align with the four criteria in subsection (a), as practicable;

"(B) provide case studies of implementation of guidance;

"(C) incorporate voluntary technical standards and industry best practices; and

"(D) not prescribe or otherwise require the use of specific technology products or services.

"(3) CONSULTATION.—In carrying out this subsection, the Director shall consult with—

"(A) Federal and State agencies;

"(B) industry;

"(C) potential end-users and individuals that will use services related to digital identity verification; and

"(D) experts with relevant experience in the systems that enable digital identity verification, as determined by the Director.".

SEC. 206. BIOMETRICS RESEARCH AND TESTING.

(a) IN GENERAL.—The Secretary, acting through the Director, shall establish a program to support measurement research to inform the development of best practices, benchmarks, methodologies, procedures, and voluntary, consensus-based technical standards for biometric identification systems, including facial recognition systems, to assess and improve the performance of such systems. In carrying out such program, the Director may—

(1) conduct research to support efforts to improve the performance of biometric identification systems, including in areas related to conformity assessment, image quality and interoperability,

contactless biometric capture technologies, and human-in-the-loop biometric identification systems and processes;

(2) convene and engage with relevant stakeholders to establish common definitions and characterizations for biometric identification systems, including accuracy, fairness, bias, privacy, consent, and other properties, taking into account definitions in relevant international technical standards and other publications;

(3) carry out research and testing on a range of biometric modalities, such as fingerprints, voice, iris, face, vein, behavioral biometrics, genetics, multimodal biometrics, and emerging applications of biometric identification technology;

(4) study the use of privacy-enhancing technologies and other technical protective controls to facilitate access to public data sets for biometric research;

(5) conduct outreach and coordination to share technical expertise with relevant industry and non-industry stakeholders and standards development organizations to assist such entities in the development of best practices and voluntary technical standards; and

(6) develop such standard reference artifacts as the Director determines is necessary to further the development of such voluntary technical standards.

(b) BIOMETRICS VENDOR TEST PROGRAM.—

(1) IN GENERAL.—The Secretary, acting through the Director, shall carry out a test program to provide biometrics vendors the opportunity to test biometric identification technologies across a range of modalities.

(2) ACTIVITIES.—In carrying out the program under subsection (a), the Director shall—

(A) conduct research and regular testing to improve and benchmark the accuracy, efficacy, and bias of biometric identification systems, including research and testing on demographic variations, capture devices, presentation attack detection, partially occluded or computer generated images, privacy and security designs and controls, template protection, de-identification, and comparison of algorithm, human, and combined algorithm-human recognition capability;

(B) develop an approach for testing software and cloud-based biometrics applications, including remote systems, in Institute test facilities;

(C) establish reference use cases for biometric applications and performance criteria for assessing each use case, including accuracy and bias metrics;

(D) produce public-facing reports of the findings from such testing for a general audience; and

(E) conduct such other activities as deemed necessary by the Director.

(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other Federal departments and agencies and States and local governments to carry out activities under this subsection.

SEC. 207. FEDERAL BIOMETRIC PERFORMANCE STANDARDS.

Section 20 of the National Institute of Standards and Technology Act (15 U.S.C. 278g–3) is amended in subsection (b)—

(1) in paragraph (2), by striking "and" after the semicolon;

(2) in paragraph (3), by striking the period and inserting "; and";

(3) by adding at the end the following:

"(4) performance standards and guidelines for high risk biometric identification systems, including facial recognition systems, accounting for various use cases, types of biometric identification systems, and relevant operational conditions.".

SEC. 208. PROTECTING RESEARCH FROM CYBER THEFT.

Section 2(e)(1)(A) of the National Institute of Standards and Technology Act (15 U.S.C. 272(e)(1)(A)), as amended by section 203(2), is further amended—

(1) in clause (ix), as added by section 203(2)(C), by striking "and" after the semicolon;

(2) by redesignating clause (x), as redesignated by section 203(2)(B), as clause (xi); and

(3) by inserting after clause (ix), as added by section 203(2)(C), the following:

"(x) consider institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)); and".

SEC. 209. DISSEMINATION OF RESOURCES FOR RESEARCH INSTITUTIONS.

(a) DISSEMINATION OF RESOURCES FOR RESEARCH INSTITUTIONS.—

(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act, the Director shall, using the authorities of the Director under subsections (c)(15) and (e)(1)(A)(ix) of section 2 of the National Institute of Standards and Technology Act (15 U.S.C. 272), as amended by section 208, disseminate and make publicly available resources to help qualifying institutions identify, assess, manage, and reduce their cybersecurity risk related to conducting research.

(2) REQUIREMENTS.—The Director shall ensure that the resources disseminated pursuant to paragraph (1)—

(A) are generally applicable and usable by a wide range of qualifying institutions;

(B) vary with the nature and size of the qualifying institutions, and the nature and sensitivity of the data collected or stored on the information systems or devices of the qualifying institutions;

(C) include elements that promote awareness of simple, basic controls, a workplace cybersecurity culture, and third-party stakeholder relationships, to assist qualifying institutions in mitigating common cybersecurity risks;

(D) include case studies, examples, and scenarios studies of practical application;

(E) are technology-neutral and can be implemented using technologies that are commercial and off-the-shelf; and

(F) to the extent practicable, are based on international technical standards.

(3) NATIONAL CYBERSECURITY AWARENESS AND EDUCATION PROGRAM.—The Director shall ensure that the resources disseminated under paragraph (1) are consistent with the efforts of the Director under section 303 of the Cybersecurity Enhancement Act of 2014 (15 U.S.C. 7451).

(4) UPDATES.—The Director shall review periodically and update the resources under paragraph (1) as the Director determines appropriate.

(5) VOLUNTARY RESOURCES.—The use of the resources disseminated under paragraph (1) shall be considered voluntary.

(b) OTHER FEDERAL CYBERSECURITY REQUIREMENTS.—Nothing in this section may be construed to supersede, alter, or otherwise affect any cybersecurity requirements applicable to Federal agencies.

(c) DEFINITIONS.—In this section:

(1) QUALIFYING INSTITUTIONS.—The term "qualifying institutions" means institutions of higher education that are classified as either very-high research intensive (R1) or high research intensive (R2) status universities by the Carnegie Classification of Academic Institutions.

(2) RESOURCES.—The term "resources" means guidelines, tools, best practices, technical standards, methodologies, and other ways of providing information.

SEC. 210. ADVANCED COMMUNICATIONS RESEARCH.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended—

(1) by redesignating section 35 as section 36; and

(2) by inserting after section 34 the following:

"SEC. 35. ADVANCED COMMUNICATIONS RESEARCH ACTIVITIES.

"(a) ADVANCED COMMUNICATIONS RESEARCH.—

"(1) IN GENERAL.—The Director, in consultation with the Administrator of the National Telecommunications and Information Administration, the Director of the National Science Foundation, and heads of other Federal agencies, as appropriate, shall carry out a program of measurement research

to inform the development of common definitions, benchmarks, best practices, methodologies, and voluntary, consensus-based technical standards for advanced communications technologies.

"(2) RESEARCH AREAS.—Research areas may include—

"(A) radio frequency emissions and interference, including technologies and techniques to mitigate such emissions;

"(B) advanced antenna arrays and artificial intelligence systems capable of operating advanced antenna arrays;

"(C) artificial intelligence systems to enable internet of things networks, immersive technology, and other advanced communications technologies;

"(D) network sensing and monitoring technologies;

"(E) technologies to enable spectrum flexibility and agility;

"(F) optical and quantum communications technologies;

"(G) security of advanced communications systems and their supply chains;

"(H) public safety communications;

"(I) resilient internet of things applications for advanced manufacturing; and

"(J) other research areas deemed necessary by the Director.

"(3) TEST BEDS.—In coordination with the private sector and other Federal agencies as appropriate, the Director may develop and manage testbeds for research and development of advanced communications technologies, avoiding duplication of existing testbeds run by other agencies or the private sector.

"(4) OUTREACH.—In carrying out the activities under this subsection, the Director shall seek input from other Federal agencies and from private sector stakeholders, on an ongoing basis, to help inform research and development priorities, including through workshops and other multi-stakeholder activities.

"(5) TECHNICAL ROADMAPS.—In carrying out the activities under this subsection, the Director shall convene industry, institutions of higher education, nonprofit organizations, Federal laboratories, and other Federal agencies engaged in advanced communications research and development to develop, and periodically update, coordinated technical roadmaps for advanced communications research in

priority areas, such as those described in paragraph (2).

"(b) NATIONAL ADVANCED SPECTRUM AND COMMUNICATIONS TEST NETWORK.—

"(1) IN GENERAL.—The Director, in coordination with the Administrator of the National Telecommunications and Information Administration and heads of other Federal agencies, as appropriate, shall operate a national network of government, academic, and commercial test capabilities and facilities to be known as the National Advanced Spectrum and Commutations Test Network (referred to in this section as 'NASCTN').

"(2) PURPOSES.—NASCTN shall be for the purposes of facilitating and coordinating the use of intellectual capacity, modeling and simulation, laboratory facilities, and test facilities to meet national spectrum interests and challenges, including—

"(A) measurements and analyses of electromagnetic propagation, radio systems characteristics, and operating techniques affecting the utilization of the electromagnetic spectrum in coordination with specialized, related research and analysis performed by other Federal agencies in their areas of responsibility;

"(B) Conducting research and analysis in the general field of telecommunications sciences in support of the Institute's mission and in support of other Government agencies;

"(C) developing methodologies for testing, measuring, and setting guidelines for interference;

"(D) conducting interference tests to better understand the impact of Federal and commercial spectrum activities;

"(E) conducting research and testing to improve spectrum interference tolerance, flexibility, and agility; and

"(F) other activities as deemed necessary by the Director.

"(3) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—In addition to such sums as may be authorized to be appropriated or otherwise made available to carry out this section, the Director may accept funds from other departments and agencies of the Federal Government, and from the State and local governments, to operate NASCTN under this section.".

SEC. 211. NEUTRON SCATTERING.

(a) STRATEGIC PLAN FOR THE INSTITUTE NEUTRON REACTOR.—The Director shall develop a strategic plan for the future of the Institute Center for Neutron Research after the current neutron reactor is decommissioned, including—

(1) a succession plan for the reactor, including a roadmap with timeline and milestones;

(2) conceptual design of a new reactor and accompanying facilities, as appropriate; and

(3) a plan to minimize disruptions to the user community during the transition.

(b) COORDINATION WITH THE DEPARTMENT OF ENERGY.—The Secretary, acting through the Director, shall coordinate with the Secretary of Energy on issues related to Federal support for neutron science, including estimation of long-term needs for research using neutron sources, and planning efforts for future facilities to meet such needs.

(c) REPORT TO CONGRESS.—Not later than 18 months after the enactment of this Act, the Director shall submit to Congress the plan required under subsection (a), and shall notify Congress of any substantial updates to such plan in subsequent years.

SEC. 212. QUANTUM INFORMATION SCIENCE.

(a) IN GENERAL.—The Director shall continue to prioritize and carry out activities authorized in the National Quantum Initiative Act (15 U.S.C. 8801).

(b) QUANTUM RESEARCH.—Section 201(a) of the National Quantum Initiative Act (15 U.S.C. 8831) is amended—

(1) in paragraph (3), by striking "and" at the end;

(2) in paragraph (4), striking the period at the end and inserting a semicolon;

(3) by redesignating paragraphs (3) through (4) as paragraphs (6) through (7); and

(4) by inserting after paragraph (2) the following:

"(3) shall carry out research to facilitate the development and standardization of quantum cryptography and post-quantum classical cryptography;

"(4) shall carry out research to facilitate the development and standardization of quantum networking and communications technologies and applications, including—

"(A) quantum repeater technology;

"(B) quantum network traffic management;

"(C) quantum transduction;

"(D) long baseline entanglement and teleportation; and

"(E) such other technologies, processes, or applications as the Director considers appropriate;

"(5) shall, for quantum technologies deemed by the Director to be at a readiness level sufficient for standardization, the Director shall provide technical review and assistance to such other Federal agencies as the Director considers appropriate for the development of quantum network infrastructure standards;".

SEC. 213. ARTIFICIAL INTELLIGENCE.

The Director shall continue to support the development of artificial intelligence and data science, and carry out the activities of the National Artificial Intelligence Initiative Act of 2020 authorized in division E of the National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), including through—

(1) expanding the Institute's capabilities, including scientific staff and research infrastructure;

(2) supporting measurement research and development for advanced computer chips and hardware designed for artificial intelligence systems;

(3) supporting the development of technical standards and guidelines that promote safe and trustworthy artificial intelligence systems;

(4) creating a framework for managing risks associated with artificial intelligence systems; and

(5) developing and publishing cybersecurity tools, encryption methods, and best practices for artificial intelligence and data science.

TITLE III—GENERAL ACTIVITIES

SEC. 301. NIST FACILITIES AND CONSTRUCTION.

(a) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Section 14 of the National Institute of Standards and Technology Act (15 U.S.C. 278d) is amended by adding at the end the following:

"(c) OWNERSHIP, OPERATION, AND LEASING OF FACILITIES.—Within the limits of funds which are appropriated for the Institute, the Secretary is authorized to own, operate, or lease research facilities in locations throughout the United States and its territories in furtherance of its mission, provided that no agreement is entered into to own, operate, or lease without first notifying the appropriate Congressional Committees of jurisdiction.".

(b) FACILITIES MODERNIZATION FUND.—Section 14 of such Act (15 U.S.C. 278d), as amended by subsection (a), is further amended by adding at the end the following:

"(d) FACILITIES MODERNIZATION FUND.—

"(1) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be known as the 'NIST Facilities Modernization Fund' (hereafter in this section referred to as the 'Fund').

"(2) USE OF FUNDS.—Amounts in the Fund shall be available to Secretary, acting through the Director, for Capital Projects on the Institute's campuses for the modernization, renovation, and construction of research facilities needed to conduct leading edge scientific and technical research.

"(3) CONTENTS OF FUND.—The Funds shall consist of the following amounts:

"(A) Such amounts as may be appropriated by law.

"(B) Interest earned on the balance of the Fund.

"(4) AUTHORIZATION OF FUNDS.—Of the funds authorized to be appropriated in section 302 of the National Institute of Standards and Technology for the Future Act of 2021 for the construction and renovation of facilities, $80,000,000 for each of the

fiscal years 2022 through 2026 shall be provided for the Fund established in subsection (a).

"(5) CONTINUING AVAILABILITY OF FUNDS.—Amounts in the Fund are available without regard to fiscal year limitation.

"(6) NOTIFICATION TO COMMITTEES.—Upon making any obligation or expenditure of any amount in the Fund, the Secretary, through the Director, shall notify the Committee on Science, Space, and Technology of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Appropriations of the House of Representatives and the Committee on Appropriations of the Senate of the amount and purpose of the obligation or expenditure.

"(7) NIST FACILITIES MODERNIZATION AND MAINTENANCE PLAN.—

"(A) IN GENERAL.—To carry out the program authorized in subsection (d), the Secretary, acting through the Director, shall develop and submit to Congress a 5-year modernization and maintenance plan for the Institute's campuses.

"(B) TIMING.—The modernization and maintenance plan required in subparagraph (A) shall be submitted to Congress not later than 30 days after the date of enactment of the National Institute of Standards and Technology for the Future Act of 2021, and an update shall be submitted to Congress annually thereafter.

"(C) COMPONENTS.—The plan required in subparagraph (A) shall include, with respect to the 5-year period beginning on the date of the submission or update, the following:

"(i) A list of Capital Construction Projects expected to be undertaken during such period, the core capabilities these facilities will provide, climate-resilience planning efforts, anticipated schedule of construction, and anticipated funding requirements.

"(ii) A list of planned utility infrastructure projects expected to be undertaken during such periods, anticipated schedule of construction, and anticipated funding requirements.

"(iii) A list of planned IT infrastructure projects expected to be undertaken during such period, anticipated schedule of construction, and anticipated funding requirements.

"(iv) A list of the deferred maintenance projects expected to be undertaken during such period, anticipated schedule of construction, anticipated funding requirements, and an evaluation of progress made in reducing the deferred maintenance backlog.".

SEC. 302. EDUCATIONAL OUTREACH AND SUPPORT FOR UNDERREPRESENTED COMMUNITIES.

Section 18 of the National Institute of Standards and Technology Act (15 U.S.C. 278g-1) is amended—

(1) in subsection (a), in the second sentence—

(A) by striking "may" and inserting "shall"; and

(B) by striking "academia" and inserting "diverse types of institutions of higher education"; and

(2) in subsection (e)—

(A) in paragraph (4), by striking "and" at the end;

(B) in paragraph (5), by striking the period at the end and inserting "; and"; and

(C) by inserting after paragraph (5) the following:

"(6) conduct outreach to and develop research collaborations with historically black colleges and universities and minority-serving institutions, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3); and

"(7) carry out other activities to increase the participation of persons historically underrepresented in STEM in the Institute's programs.".

SEC. 303. OTHER TRANSACTIONS AUTHORITY.

Section 2(b)(4) of the National Institute of Standards and Technology Act (15 U.S.C. 272(b)(4)) is amended to read as follows:

"(4) to enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of its work and on such terms as it may deem appropriate, in furtherance of the purposes of this Act;".

SEC. 304. COLLABORATIONS WITH GOVERNMENT AGENCIES.

Section 8 of the National Bureau of Standards Authorization of Act for Fiscal Year 1983 (15 U.S.C. 275b) is amended—

(1) in the heading, by adding "AND WITH" after "PERFORMED FOR";

(2) by striking "The Secretary of Commerce" and inserting "(a) IN GENERAL.—The Secretary of Commerce";

(3) by inserting after "(15 U.S.C. 278b(e))." the following: "The Secretary may accept, apply for, use, and spend Federal, State, and non-governmental funds to further the mission of the Institute without regard to the source or the period of availability of these funds as well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement."; and

(4) by adding at the end the following:

"(b) REPORT.—For each fiscal year beginning with fiscal year 2022, not later than 90 days after submission of the President's annual budget request for such fiscal year, the Director shall submit to the Committee on Science, Space, and Technology and the Committee on Appropriations of the House of Representatives and the

Committee on Commerce, Science, and Transportation and the Committee of Appropriations of the Senate a description of any appropriated funds, under this authority, carried over from the year in which such funds were appropriated.".

SEC. 305. HIRING CRITICAL TECHNICAL EXPERTS.

Section 6 of the National Institute of Standards and Technology Act is amended to read as follows:

"SEC. 6. HIRING CRITICAL TECHNICAL EXPERTS.

"(a) IN GENERAL.—The officers and employees of the Institute, except the director, shall be appointed by the Secretary of Commerce at such time as their respective services may become necessary.

"(b) HIRING CRITICAL TECHNICAL EXPERTS.—Notwithstanding section 3104 of title 5 or the provisions of any other law relating to the appointment, number, classification, or compensation of employees, the Secretary of Commerce shall have the authority to make appointments of scientific, engineering, and professional personnel, and to fix the basic pay of such personnel at a rate to be determined by the Secretary at rates not in excess of the highest total annual compensation payable at the rate determined under section 104 of title 3. The Director shall appoint not more than 15 personnel under this section.

"(c) SUNSET.—The authority under section (b) shall expire on the date that is 5 years after the date of enactment of this section.".

SEC. 306. INTERNATIONAL STANDARDS DEVELOPMENT.

(a) INTERNATIONAL STANDARDS ENGAGEMENT.—

(1) IN GENERAL.—The Director shall lead information exchange and coordination among Federal agencies and communication from Federal agencies to the private sector of the United States to ensure effective Federal engagement in the development and use of international technical standards.

(2) REQUIREMENTS.—To support private sector-led engagement and ensure effective Federal engagement in the development and use of international technical standards, the Director shall consider—

(A) the role and needs of the Federal Government with respect to international technical standards;

(B) organizations developing international technical standards of interest to the United States, United States representation and influence in these organizations, and key contributors for technical and leadership expertise in these organizations;

(C) support for persons with domain subject matter expertise, especially from small businesses located in the United States, to influence and engage in technical standards leadership positions, working groups and meetings;

(D) opportunities for partnerships for supporting international technical standards from across the Federal Government, federally funded research and development centers, university-affiliated research centers, institutions of higher education, industry, industry associations, nonprofit organizations, and other key contributors;

(E) support for activities to encourage the adoption of technical standards developed in the United States to be adopted by international standards organizations; and

(F) other activities determined by the Director to be necessary to support United States participation in international standards development, economic competitiveness, and national security in the development and use of international technical standards.

(b) CAPACITY BUILDING GUIDANCE.—The Director shall support education and workforce development efforts

to promote United States participation in international standards organizations. The Director shall—

(1) identify and create, as appropriate, technical standards education and training resources for interested businesses, industry associations, academia, nonprofits, Federal agencies, and other relevant standards contributors, including activities targeted at integrating standards content into undergraduate and graduate curricula in science, engineering, business, public policy, and law;

(2) conduct outreach, including to private sector leaders, to support engagement by more United States stakeholders in international technical standards development; and

(3) other activities deemed necessary by the Director to support increased engagement, influence, and leadership of United States organizations in the development of international technical standards.

(c) CAPACITY BUILDING PILOT PROGRAM.—

(1) IN GENERAL.—The Director, in coordination with the Director of the National Science Foundation, the Administrator of the Small Business Administration and the heads of other relevant Federal agencies, as appropriate, shall establish a 5-year pilot program to award grants, on a merit-reviewed,

competitive basis, to private sector entities or nonprofit institutions based in the United States to support increased participation by small business and academic interests in international standards organizations.

(2) ACTIVITIES.—In carrying out the pilot programs established in subsection (c), the Director shall award competitive, merit-reviewed grants to covered entities to cover the reasonable costs, up to a specified ceiling set by the Director, of activities supporting increased engagement and leadership of employees of small businesses and faculty of institutions of higher education or other nonprofit research institutions with subject matter and technical expertise necessary to be conributers in international standards organizations.

(3) AWARD CRITERIA.—The Director may only provide a grant under this section to an eligible recipient that—

(A) demonstrates deep technical standards expertise;

(B) demonstrates knowledge with the processes of the standards development organization in which the recipient intends to engage using grant funds;

(C) proposes a feasible set of standard deliverables to be completed over the period of the grant;

(D) explains how the recipient will fund the standards work supported by the grant if the grant funds are insufficient to cover all costs of the work; and

(E) commits personnel with appropriate expertise to engage in relevant international organizations responsible for developing technical standards over the period of the grant.

(4) ELIGIBILITY.—A small business concern (as defined in section 3 of the Small Business Act (15 U.S.C. 632) based in the United States, an institution of higher education (as defined by section 102 of the Higher Education Act of 1965 (20 U.S. C. 1002)), or a nonprofit institution as defined in section 4(5) of the Stevenson-Wydler Act (15 U.S.C. 3703) shall be eligible to receive grants under this program.

(5) PRIORITIZATION.—The Director may prioritize grants awarded under this section to eligible recipients proposals for standards development that address clearly defined current or anticipated

market needs or gaps that would not be met without the grant.

(6) APPLICATION.—An eligible recipient seeking funding under subsection (c) shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

(7) MERIT REVIEW PROCESS.—Not later than 90 days after the enactment of this Act, the Director shall establish a merit review process, including the creation of merit review panels made of experts from government and the private sector, to evaluate the application under paragraph (6) to ensure applications submitted are reviewed in a fair, competitive, transparent, and in-depth manner.

(8) CONSULTATION.—In carrying out the pilot program established under subsection (c), the Director shall consult with other Federal agencies, private sector organizations, institutions of higher education, and nonprofit organizations to help inform the pilot program, including selection criteria, applicant disclosure requirements, grant amount and duration, and the merit review process.

(9) REPORT TO CONGRESS.—The Director shall brief Congress after the second year of the pilot pro-

gram and each year following that includes the following:

(A) An assessment of the effectiveness of the pilot program for improving the participation of United States small businesses, United States institutions of higher education, or other nonprofit research institutions in international standards organizations, including—

(i) the type of activities supported, including leadership roles;

(ii) the international standards organizations participated in; and

(iii) the technical areas covered by the activities.

(B) If deemed effective, a plan for permanent implementation of the pilot program.

SEC. 307. STANDARD TECHNICAL UPDATE.

(a) NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT UPDATES.—The National Institute of Standards and Technology Act (15 U.S.C. 271) is amended—

(1) in section 15—

(A) in subsection (b), by striking the period at the end and inserting a semicolon;

(B) in subsection (g), by striking "and" after the semicolon; and

(C) by striking the period at the end and inserting "; and (i) the protection of Institute buildings and other plant facilities, equipment, and property, and of employees, associates, or visitors, located therein or associated therewith, notwithstanding any other provision of law, the direction of such of the officers and employees of the Institute as the Secretary deems necessary in the public interest hereafter to carry firearms while in the conduct of their official duties, and the authorization of employees of contractors and subcontractors of the Institute who are engaged in the protection of property owned by the United States, and located at facilities owned by, leased, used or under the control of the United States, to carry firearms while in the conduct of their official duties, and, under regulations prescribed by the Secretary and approved by the Attorney General, the authorization of officers and employees of the Institute and of its contractors and subcontractors authorized to carry firearms hereafter to arrest without warrant for any offense against

the United States committed in their presence, or for any felony cognizable under the laws of the United States if they have reasonable grounds to believe that the person to be arrested has committed or is committing such felony, provided that such authority to make arrests may be exercised only while guarding and protecting buildings and other plant facilities, equipment, and property owned or leased by, used or under the control of, the United States under the administration and control of the Secretary."; and

(2) by amending section 17(a) to read as follows:

"(a) The Secretary is authorized, notwithstanding any other provision of law, to expend such sums, within the limit of appropriated funds, as the Secretary may deem desirable through direct support for activities of international organizations and foreign national metrology institutes with which the Institute cooperates to advance measurement methods, technical standards, and related basic technologies, for official representation, to host official receptions, dinners, and similar events, and to otherwise extend official courtesies, including transportation of foreign dignitaries and representatives of foreign national

metrology institutes to and from the Institute, for the purpose of maintaining the standing and prestige of the Department of Commerce and the Institute, through the grant of fellowships or other appropriate form of financial or logistical assistance or support to foreign nationals not in service to the Government of the United States while they are performing scientific or engineering work at the Institute or participating in the exchange of scientific or technical information at the Institute.".

(b) STEVENSON-WYDLER UPDATES.—The Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3701) is amended—

(1) in section 17(c)(1)—

(A) by moving each of subparagraphs (D) and (E) two ems to the left; and

(B) by adding at the end the following:

"(G) Community."; and

(2) in section 23(a)—

(A) by redesignating paragraphs (1) and (2) as paragraphs (2) and (3), respectively; and

(B) by inserting before paragraph (2), as so redesignated, the following:

"(1) accept, apply for, use, and spend Federal, State, and nongovernmental acquisition and assistance funds to further the purposes of this Act as

well as share personnel, associates, facilities, and property with these partner organizations, with or without reimbursement, upon mutual agreement: *Provided*, That the approving official may waive statutory and regulatory administrative provisions so that a single agency may administer a joint program, upon mutual agreement;".

(c) AMERICAN INNOVATION AND COMPETITIVENESS ACT UPDATE.—Section 113 of the American Innovation and Competitiveness Act (15 U.S.C. 278e note) is repealed.

(d) FEDERAL ENERGY MANAGEMENT IMPROVEMENT ACT UPDATE.—Section 4 of the Federal Energy Management Improvement Act of 1988 (15 U.S.C. 5001) is amended by striking "Secretary of Commerce" and "Secretary" each place either such term appears and inserting "Consumer Product Safety Commission".

TITLE IV—HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP

SECTION 401. ESTABLISHMENT OF EXPANSION AWARDS PILOT PROGRAM AS A PART OF THE HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by inserting after section 25A (15 U.S.C. 278k–1) the following:

"SEC. 25B. EXPANSION AWARDS PILOT PROGRAM.

"(a) DEFINITIONS.—The terms used in this section have the meanings given the terms in section 25.

"(b) ESTABLISHMENT.—The Director shall establish as a part of the Hollings Manufacturing Extension Partnership a pilot program of expansion awards among participants described in subsection (c) of this section for the purposes described in subsection (e) of this section.

"(c) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers.

"(d) AWARD AMOUNTS.—Subject to the availability of appropriations, an award for a recipient under this section shall be in an amount equal to the sum of the following:

"(1) Such amount as the Director considers appropriate as a minimum base funding level for each award under this section.

"(2) Such additional amount as the Director considers in proportion to the manufacturing density of the region of the recipient.

"(3) Such supplemental amounts as the Director considers appropriate.

"(e) PURPOSE OF AWARDS.—An award under this section shall be made for one or more of the following purposes:

"(1) To provide coordinating services on employee engagement, including employee ownership and workforce training, including connecting manufacturers with career and technical education entities, institutions of higher education (including community colleges), workforce development boards, labor organizations, and nonprofit job training providers to develop and support training and job placement services, including apprenticeship and online learning platforms, for new and incumbent workers, programming to prevent job losses when adopting new technologies and processes, and development of employee ownership practices.

"(2) To provide services to improve the resiliency of domestic supply chains and to mitigate vulnerabilities to cyberattacks, including helping to offset the cost of cybersecurity projects for small manufacturers.

"(3) To expand advanced technology services to small- and medium-sized manufacturers, which may include—

"(A) developing advanced technology demonstration laboratories for training and demonstration in areas of supply chain and critical technology needs;

"(B) services for the adoption of advanced technologies, including smart manufacturing technologies and practices; and

"(C) establishing partnerships, for the development, demonstration, and deployment of advanced technologies, with—

"(i) national laboratories (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

"(ii) Federal laboratories;

"(iii) Manufacturing USA institutes (as described in section 34(d)); and

"(iv) institutions of higher education.

"(4) To build capabilities across the Hollings Manufacturing Extension Partnership for domestic supply chain resiliency and optimization, including—

"(A) assessment of domestic manufacturing capabilities, expanded capacity for researching and deploying information on supply chain risk, hidden costs of reliance on offshore suppliers, redesigning products and processes to encourage reshoring, and other relevant topics; and

"(B) expanded services to provide industry-wide support that assists United States manufacturers with reshoring manufacturing to strengthen the resiliency of domestic supply chains, including in critical technology areas and foundational manufacturing capabilities that are key to domestic manufacturing competitiveness and resiliency, including forming, casting, machining, joining, surface treatment, and tooling.

"(f) REIMBURSEMENT.—The Director may reimburse Centers for costs incurred by the Centers under this section.

"(g) APPLICATIONS.—Applications for awards under this section shall be submitted in such manner, at such

time, and containing such information as the Director shall require in consultation with the Manufacturing Extension Partnership Advisory Board.

"(h) SELECTION.—

"(1) REVIEWED AND MERIT-BASED.—The Director shall ensure that awards under this section are reviewed and merit-based.

"(2) GEOGRAPHIC DIVERSITY.—The Director shall endeavor to have broad geographic diversity among selected proposals.

"(3) CRITERIA.—The Director shall select applications consistent with the purposes identified pursuant to subsection (e) to receive awards that the Director determines will achieve one or more of the following:

"(A) Improvement of the competitiveness of industries in the region in which the Center or Centers are located.

"(B) Creation of jobs or training of newly hired employees.

"(C) Promotion of the transfer and commercialization of research and technology from institutions of higher education, national laboratories, or other federally funded research programs, and nonprofit research institutes.

"(D) Recruitment of a diverse manufacturing workforce, including through outreach to underrepresented populations, including individuals identified in section 33 or section 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b).

"(E) Any other result the Director determines will advance the objective set forth in sections 25(c) or 26.

"(i) PROGRAM CONTRIBUTION.—Recipients of awards under this section shall not be required to provide a matching contribution.

"(j) GLOBAL MARKETPLACE PROJECTS.—In making an award under this section, the Director, in consultation with the Manufacturing Extension Partnership Advisory Board and the Secretary, may take into consideration whether an application has significant potential for enhancing the competitiveness of small and medium-sized United States manufacturers in the global marketplace.

"(k) DURATION.—The Director shall ensure that the duration of an award under this section is aligned and consistent with a Center's cooperative agreement established in section 25(e).

"(l) REPORT.—After the completion of the pilot program under subsection (b) and not later than October 1,

2024, the Director shall submit to Congress a report that includes—

"(1) a summary description of what activities were funded and the measurable outcomes of such activities;

"(2) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the program under section 25;

"(3) a description of which types of activities under paragraph (1) could be integrated into, and supported under, the competitive awards program under section 25A; and

"(4) a recommendation, supported by a clear explanation, as to whether the pilot program should be continued.".

SEC. 402. UPDATE TO MANUFACTURING EXTENSION PARTNERSHIP.

(a) ACCEPTANCE OF FUNDS.—Section 25(l) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(l)) is amended to read as follows:

"(l) ACCEPTANCE OF FUNDS.—

"(1) IN GENERAL.—In addition to such sums as may be appropriated to the Secretary and Director to operate the Program, the Secretary and Director may also accept funds from other Federal de-

partments and agencies, as well as funds provided by the private sector pursuant to section 2(c)(7) of this Act (15 U.S.C. 272(c)(7)), to be available to the extent provided by appropriations Acts, for the purpose of strengthening United States manufacturing.

"(2) COMPETITIVE AWARDS.—Funds accepted from other Federal departments and agencies and from the private sector under paragraph (1) shall be awarded competitively by the Secretary and by the Director to Manufacturing Extension Partnership Centers, provided that the Secretary and Director may make non-competitive awards, pursuant to this section or section 25A, or as a non-competitive contract, as appropriate, if the Secretary and the Director determine that—

"(A) the manufacturing market or sector targeted is limited geographically or in scope;

"(B) the number of States (or territory, in the case of Puerto Rico) with Manufacturing Extension Partnership Centers serving manufacturers of such market or sector is five or fewer; and

"(C) such Manufacturing Extension Partnership Center or Centers has received a posi-

tive evaluation in the most recent evaluation conducted pursuant to subsection (g).".

(b) INCLUSION OF CERTAIN SCHOOLS.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended—

(1) in subsection (c)—

(A) in paragraph (6), by striking "community colleges and area career and technical education schools" and inserting "secondary schools (as defined in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801)), community colleges, and area career and technical education schools, including those in underserved and rural communities,"; and

(B) in paragraph (7)—

(i) by striking "and local colleges" and inserting "local high schools and local colleges, including those in underserved and rural communities,"; and

(ii) by inserting "or other applied learning opportunities" after "apprenticeships"; and

(2) in subsection (d)(3), by striking ", community colleges, and area career and technical edu-

cation schools," and inserting "and local high schools, community colleges, and area career and technical education schools, including those in underserved and rural communities,".

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading, and without objection, so ordered. I recognize Ms. Stevens for 5 minutes to explain her amendment.

Ms. STEVENS. Thank you, Madam Chair. I am, yet again, pleased to offer this bipartisan amendment in the nature of a substitute for the *National Institute of Standards and Technology for the Future Act*. This amendment makes a few important adjustments to the underlying bill to increase the construction account within NIST to ensure that we are investing in our research and development infrastructure. Based on Department of Commerce standards, roughly 60 percent of NIST's facilities are in poor to critical condition, and the agency has over $800 million in deferred maintenance projects. Addressing this maintenance backlog is long overdue, and will ensure that NIST is well-equipped to meet our innovation challenges of today and tomorrow.

The amendment also includes a bipartisan provision led by myself and Congressman Meijer to create a pilot program of expansion awards for MEP Centers to provide services for workforce development, resiliency of supply chains, and more. Within this provision, the bill authorizes a historic increase in funding for the MEP Program to 275 million, as requested by President Biden in his budget earlier this year. We know that the MEP Program produces incredible return on the Federal investments we are making here today. For instance, the Michigan Manufacturing Technology Center, the pride and joy of Michigan's 11th District, located in Plymouth, has helped its small and medium manufacturing clients create and retain over 42,000 jobs in the past 10 years. So I thank my colleagues for their bipartisan partnership on this amendment. I urge them to support it, and at this time, Madam Chair, I will yield back.

Chairwoman JOHNSON. Thank you very much. Any further discussion on the amendment? Ms. Bonamici.

Ms. BONAMICI. I move to strike the last word, and speak in favor of the amendment in the nature of a substitute.

Chairwoman JOHNSON. You're recognized. 5 minutes.

Ms. BONAMICI. Thank you, Chairwoman Johnson, and thank you to Subcommittee Chairwoman Stevens for this bipartisan bill and amendment in the nature of a substitute. The National Institute of Standards and Technology, NIST, serves as an essential—serves an essential role in strengthening our Nation's competitiveness in innovation, science, and technology, and I'm pleased to be a co-sponsor of the *NIST for the Future Act* to scale up the authorities and resources NIST needs to carry out its mission.

The events through the COVID–19 pandemic demonstrate why the agency's work developing standards and strengthening manufacturing is so important, and in need of more robust investments. As our communities struggled to find access to personal protective equipment to stay safe, it was the responsibility of our Nation's manufacturing supply chain to remain resilient, and rapidly transition to in-demand products, and also address workforce development shortages, and that's a place where NIST is so important.

For example, in my home State, the Oregon Manufacturing Extension Partnership, or OMEP, has been informing the local partnerships needed to make these nimble decisions. For example, they worked with Speedrack West, a warehouse shelving manufacturer

in North Plains, Oregon, after the pandemic resulted in a significant loss in the business's revenue. OMEP helped Speedrack West brainstorm and connect with consultants on manufacturing and other materials to help provide workers, and their business, with economic certainty during a challenging time. With OMEP's help, Speedrack stayed open through the pandemic, and also broadened the scope of their business.

Manufacturing jobs are changing with the future of work, and significant changes in our economy, particularly as we transition to clean energy resources. Strengthening investments in the Manufacturing USA Network and the Hollings Manufacturing Extension Partnership is an important step to make sure that businesses and workers will be prepared. I look forward to working with my colleagues to advance this important NIST reauthorization. Again, would like to thank Chair Stevens, Chairwoman Johnson, and Ranking Member Lucas for their leadership. I urge my colleagues to support the amendment in the nature of a substitute in the underlying bill, and I yield back the balance of my time.

Chairwoman JOHNSON. Thank you. Anyone else? Mr. McNerney.

Mr. MCNERNEY. Madam Chair, I move to strike the last word on the ANS to H.R. 4609.

Chairwoman JOHNSON. You're recognized for 5 minutes.

Mr. MCNERNEY. Well, I'm pleased that we're considering comprehensive legislation today to reauthorize NIST, and I believe this amendment will strengthen the bill. NIST's work is critical to ensuring our Nation's competitiveness across a wide range of different areas of science and technology. As someone who worked with standard-setting bodies before being elected to Congress, I highly value the work that NIST does, and I believe that it's important that we have a robust agency that is equipped with the necessary resources. That's why I'm generally very supportive of the ANS. But I do have some concerns about Section 210, the Advanced Communication Research Section, that I would like to raise, specifically with respect to the National Advanced Spectrum and Communications Test Network provisions. I want to make sure that we address any potential overlapping roles that could result with NIST and NTIA (National Telecommunications and Information Administration), that we are allocating resources efficiently, and that we don't undermine the NTIA's—agency's mission. Chairwoman Johnson, would you work with me, with NIST, and NTIA to address potential concerns before the bill goes to the floor?

Chairwoman JOHNSON. Yes.

Mr. MCNERNEY. Chairwoman Johnson, I thank you for that, and I appreciate your willingness to work with me, and I yield back.

Chairwoman JOHNSON. Thank you very much. Anyone else wishing to—yes.

Mr. OBERNOLTE. I move to strike the last word.

Chairwoman JOHNSON. You're recognized for 5 minutes.

Mr. OBERNOLTE. I'd like to echo the comments of my colleague about the concerns with Section 210 of this bill. The problem is that we're creating essentially duplicative responsibilities between NIST and the TIA with respect to this kind of research, and I believe that we have an obligation in government to be as efficient and as clear as possible when we're authorizing this kind of re-

search. The problem is that the ITS right now, in their authorizing legislation in Federal code, it specifically says that they're supposed to be the central Federal Government laboratories for research on transmission of radio waves, and Section 210 of this bill as it's currently written—seems to create a duplicative responsibility within NIST.

So I'm very supportive of this legislation. I want to thank you Ms.—Madam Chair and our Ranking Member for the bipartisan way that you've conducted this, but I hope that we will conduct—we will keep these concerns in mind as this bill moves forward in the House. I yield back.

Chairwoman JOHNSON. Thank you very much. Let me say that the Committee sought input from a lot of stakeholders in the development of the legislation, including from NIST itself. Committee staff also shared text with Energy and Commerce Committee staff, and made such changes in response to their feedback. Unfortunately, on the executive side, the lines have become somewhat blurred between NIST and NTIA. The responsibilities in the area of advanced communication technologies and testing, the administration's own budget request did not provide the clarity that we hoped for.

We've been in touch with the Department of Commerce, seeking greater clarity. They informed us just yesterday that they hope to have that to us in the next few weeks, but I'm unable to turn around specific TA in the time for the markup today, but I do commit to working with my colleagues who serve on the Energy and Commerce Committee, and with the administration, to refine the language in our NIST bill as needed going forward. Let me thank you for calling that to our attention. Any further comments?

Well, we're going to delay the vote on the substitute until later, and we'll now go to Representative Crist's amendment, the next amendment on the roster.

Mr. CRIST. Madam Chair, I have an amendment at the desk.

Chairwoman JOHNSON. Clerk will read the amendment.

The CLERK. Amendment No. 2, amendment in the amendment—of the nature of the substitute to H.R. 4609, offered by Mr. Crist of Florida and Mr. Waltz, Posey, Gimenez, and Webster of Florida.

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentleman now for 5 minutes. Mr. Crist.

[The amendment of Mr. Crist, Mr. Waltz, Mr. Posey, Mr. Gimenez, and Mr. Webster follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609

OFFERED BY MR. CRIST OF FLORIDA

And Mr. Waltz, Posey, Gimenez, and Webster of Florida

Page 4, line 3, strike "$1,387,070,000" and insert "$1,409,070,000".

Page 4, line 14, strike "and" after the semicolon.

Page 4, line 24, strike the period and insert "; and".

Page 4, after line 24, insert the following:

(D) $22,000,000 shall be for the Director for the purpose of investigating the building collapse that occurred in Surfside, Florida on June 24, 2021, to understand the source of failure, to provide recommendations for how to rectify any shortcomings in existing building standards in order to prevent future similar disasters, and to inform future building codes for similar structures, in coordination with state and local offices and other federal agencies as appropriate, consistent with the Institute's responsibilities under the National Construction

Safety Team Act of 2002 (Public Law 107–231).

☒

Mr. CRIST. Thank you, Madam Chair. During the early morning hours of June 24, Champlain Towers South in Surfside, Florida unexpectedly and tragically collapsed, claiming the lives of far too many. I immediately called for a full investigation into that collapse to get to the bottom of why this happened, and figure out how to prevent it from happening again. My amendment seeks to do just that.

This amendment authorizes $22 million for the National Institute of Standards and Technology to investigate the condo collapse in Surfside, find the source of failure, issue recommendations on how to prevent future collapses, and inform building codes for similar structures. The National Institute of Standards and Technology has the experience and knowledge to conduct investigations of major building collapses. The agency has examined failures ranging from the World Trade Center collapse to post-disaster investigations following hurricanes and wildfires. In fact, the National Institute of Standards and Technology is already on the site at Surfside. However, the agency has indicated that it needs an additional resources of $22 million in order to complete a full investigation.

I want to thank my Florida colleagues and bipartisan co-sponsors of this amendment, Mr. Waltz, Mr. Posey, Mr. Gimenez, and Mr. Webster, for their support. I'd also like to extend my gratitude to my friend and colleague Congresswoman Debbie Wasserman Schultz for her work and leadership in the wake of this disaster. Through our role on the House Appropriations Committee, Congresswoman Wasserman Schultz and I were able to secure funding and report language for Fiscal Year 2022 to support the investigation at Surfside. I can't stress enough how instrumental the Congresswoman's experience and leadership was in that effort.

Taken together, that report and this amendment will give the National Institute of Standards and Technology the resources and direction it needs to get to the bottom of this horrific tragedy, and identify ways to prevent another similar disaster from occurring. Because no family should ever have to endure a tragedy of this magnitude, I urge my colleagues to support this amendment. Thank you, and I yield back.

Chairwoman JOHNSON. Thank you. There anyone else seeking time?

Mr. WALTZ. Madam Chair?

Chairwoman JOHNSON. You're recognized.

Mr. WALTZ. Madam Chair, I just, again, would like to thank my colleague, Representative Crist, and the other co-sponsors for their leadership, and I just can't emphasize my—that no American should have to worry about their loved ones' or themselves safety sleeping in their homes. I was able to visit the pile, as it's called, in Surfside. I just want to publicly, and on the record, thank the first responders, many of which were out there for—day after day, hour after hour, on their hands and knees in full protective gear in 95- to÷0-degree Florida heat, on their hands and knees, combing through each piece of rubble looking for their fellow Americans. I especially want to thank our State CFO (Chief Financial Officer) and Chief Fire Marshal, Jimmy Patronis, and his team, and the first responders from many of our States, from all over the country, that descended on that site.

I look forward to seeing this investigation through, and I have to tell you, it is—it was incredibly eye-opening and disturbing to see so many others in all of the surrounding buildings petrified to go back to their homes, to sleep at night. Every crack, every chip of concrete that they saw, thought—you know, in their minds thought that—indicated to them that their building could collapse too. So I look forward to getting to the bottom of it, and again, Representative Crist, I thank you for your leadership on this.

Chairwoman JOHNSON. Thank you. Any further comment—time?

Mr. GIMENEZ. Madam Chair? Madam Chair?

Chairwoman JOHNSON. Mr. Gimenez.

Mr. GIMENEZ. Thank you, Madam Chairwoman. I also want to thank Mr. Crist, and all the other co-sponsors of this amendment. Although this is not in my district specifically, I did serve as the mayor of Miami-Dade County, and Surfside is in Miami-Dade County. I also want to thank all of the first responders that were there, and—through this very difficult time, the tremendous work that they did. From the fire departments to FEMA (Federal Emergency Management Agency) urban search and rescue teams, their work was extraordinary. All the local officials, the Governor's office, CFO Patronis, they all did an extraordinary job.

As my colleague Mr. Waltz has said, there are many people that live in Miami-Dade County that are not resting easily today that live in these high-rise condominiums all up and down the coast, and they want to make sure that their building is safe, and I think that this investigation is vitally important to find out the root cause of what happened here, why this building collapsed, and then make the necessary changes and recommendations to codes to make sure that this never happens again, and also give a peace of mind to those that live in high rises. Not just in South Florida, not just in Dade County, but throughout the Nation that their building is indeed safe. And those that are not safe then need to be rectified before a tragedy like this happens.

Yesterday they found the remains of the last unaccounted for individual, so that brings the death total up to—fatality total up to about—to 98, and it's a huge tragedy in my hometown. And, again, I want to thank Mr. Crist, and all the other co-sponsors of this amendment. It's something very much needed in Miami-Dade County, but also around the Nation. Thank you, and I yield my time back.

Chairwoman JOHNSON. Thank you very much. Any further discussion on this amendment? All in—if there's no further discussion a vote occurs on the amendment. All in favor say aye. Those opposed, no. The ayes have it, and the amendment is agreed to.

The next amendment is Mr. Casten's amendment. Clerk will read the amendment.

The CLERK. Amendment No. 3, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Casten.

[The amendment of Mr. Casten follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. CASTEN

Page 12, line 6, strike "greenhouse gas measurement systems" and insert "greenhouse gas emissions measurement systems".

Page 12, line 12, insert "at a range of scales that covers direct measurement at the component or process level through atmospheric observations" before the semicolon.

Page 12 line 15, strike "gases" and insert "gas emissions".

Page 12, line 19, insert before the semicolon at the end the following: ", taking into account any existing United States and international standards and guidance".

Page 13 line 1, insert after "gas" the following "emissions".

Page 13, line 9, insert before the period at the end the following: ", taking into account any existing United States or international standards".

Page 13, line 16, strike "measurement research and standards development for greenhouse gas emissions", and insert the following: "research and standards development for greenhouse gas emissions measurements".

Page 14, line 18, insert "at a range of scales that covers direct measurement at the component or process level through atmospheric observations" after "modeling".

Page 14, line 20, insert before the semicolon at the end the following: "to specific underlying activities and processes".

Page 14, line 21, strike "test and evaluate the performance of existing capabilities for the measurement and validation of greenhouse gas emissions" and insert "test and evaluate the performance of existing capabilities, and inform and improve best practices, benchmarks, methodologies, procedures, and technical standards, for the measurement and validation of greenhouse gas emissions at scales noted in clause (i)".

Page 15, line 4, after "gas" insert "emissions".

Chairwoman JOHNSON. The Clerk will report the amendment. I'm sorry, I ask unanimous consent to dispense with the reading, and, without objection, so ordered. I recognize the gentleman for 5 minutes to explain his amendment.

Mr. CASTEN. Thank you, Madam Chair. My amendment is—includes technical corrections to the ANS, and has language that incorporates feedback from the Environmental Protection Agency (EPA) to strengthen the greenhouse gas measurement research activities authorized in Section 202 of the *NIST for the Future Act.*

As a Member of the Select Committee on the Climate Crisis, and as someone who, prior to coming to Congress, spent 16 years running clean energy companies with a mission to profitably reduce greenhouse gas emissions, it is safe to say I have dedicated my life to fighting the climate crisis. Whether you're in the business world or in this line of work, we can only do that if we accurately and consistently measure our greenhouse gas emissions. This amendment will ensure that greenhouse gas emissions measurement research activities authorized in this bill are done in cooperation with agencies like the EPA and NOAA (National Oceanic and Atmospheric Administration) so that NIST can best leverage the expertise of the scientists across our Federal research enterprise.

The EPA has a unique role in greenhouse gas emissions monitoring, given the inventory of U.S. Greenhouse Gas Emissions, Sources, and Sinks—all capitalized, that's a title—that it operates, so it's important to include their expertise in the development of standards for measuring greenhouse gas emissions. This amendment would also help facilitate the EPA's ongoing work in greenhouse gas emissions reporting, and ensure that studying the attribution of greenhouse gas emissions to the underlying activities and processes causing them is a key priority of the Center of Excellence that is established in this bill.

Finally, the amendment would also clarify that NIST's development of measurement standards takes into consideration any standards and guidance that currently exists at the national or international level. I thank my colleagues for their patience, and respectfully ask for their support of this common-sense amendment that would enhance and improve the already impressive greenhouse gas emission measurement research component of this bill. Thank you, and I yield back.

Chairwoman JOHNSON. Thank you. Any further discussion on this amendment? If there is no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed say no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentlelady from North Carolina. She is recognized to offer her amendment. Ms. Ross.

Ms. ROSS. Thank you very much, Madam Chair. I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment No. 4, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Ms. Ross of North Carolina and Ms. Kim.

[The amendment of Ms. Ross and Ms. Kim follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MS. ROSS OF NORTH CAROLINA

Page 20, after line 6, insert the following:

(e) SOFTWARE SUPPLY CHAIN SECURITY PRACTICES.—

(1) IN GENERAL.—The Director shall, in coordination with industry, academia, and other Federal agencies, as appropriate, develop a set of security outcomes and practices, including security controls, control enhancements, supplemental guidance, or other supporting information to enable software developers and operators to identify, assess, and manage cyber risks over the full lifecycle of software products.

(2) OUTREACH.—The Director shall conduct outreach and coordination activities to share technical expertise with Federal agencies, relevant industry stakeholders, and standards development organizations, as appropriate, to encourage the voluntary adoption of the software lifecycle security practices by Federal agencies and industry stakeholders.

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading, and, without objection, so ordered. I recognize the gentlelady for 5 minutes to explain her amendment.

Ms. ROSS. Thank you, Madam Chair. I introduced a bipartisan software supply chain security amendment to H.R. 4609, the *National Institute of Standards and Technology for the Future Act of 2021*, with Congresswoman Kim. This amendment would require the Director of NIST to coordinate with academia, industry, and Federal agencies to develop security practices and outcomes to enable software developers to manage cyber risks over the full life cycle of software products.

Over the past decade there have been at least 138 software supply chain attacks or vulnerability disclosures. One glaring example was the Russian State sponsored SolarWind cyberattack in 2020, which compromised government, industry, and non-profit information. These attacks are very expensive to manage, as they often involve paying ransom, restoring backups, and rebuilding systems. This amendment will direct NIST to take an active role in conducting outreach and coordination with our agency and industry partners to prevent or mitigate the impact of future cyberattacks. I urge my colleagues to support this amendment, and the underlying bill, and I yield back.

Chairwoman JOHNSON. Thank you. Any further discussion on this amendment? If there is no further discussion, the vote occurs on the amendment. All in favor say aye. Those opposed, no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentleman from California, Mr. McNerney, and he is recognized to offer that amendment.

Mr. MCNERNEY. Madam Chair, I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment No. 5, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. McNerney of California.

[The amendment of Mr. McNerney follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. MCNERNEY OF CALIFORNIA

Page 36, line 14, insert "(a) IN GENERAL.—" before "The Director".

Page 37, after line 8, insert the following:

(b) TESTBEDS.—In coordination with other Federal agencies as appropriate, the private sector, and institutions of higher education, the Director may establish testbeds to examine artificial intelligence and machine learning systems in virtual environments for vulnerabilities that may lead to failure, malfunction, or attacks under a wide range of conditions.

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading. Without objection, so ordered, and I recognize the gentleman for 5 minutes to explain his amendment.

Mr. MCNERNEY. Well, I thank the Chair. This amendment would enable NIST to establish test beds for examining security, safety, and reliability of artificial intelligence and machine learning systems. NIST would work in coordination with other Federal agencies, the private sector, the higher education institutes, to establish Test Beds Program.

As Co-Chair of the AI Caucus, a key priority for me is identifying policies that we can adopt to promote deployment of more secure and reliable AI systems. AI systems pose unique security risks, and these systems don't always work as intended. This could cause real harm to the public. That's why it's critical we have virtual testing environments, where entities that are building and using AI systems can test their systems to identify potential vulnerabilities that may result in malfunction, failure, or cyberattacks.

These test beds will also complement the Committee's important work on AI from the last Congress, specifically the *National AI Initiative Act*, which was enacted as a part of last year's NDAA. And I urge all of my colleagues to support this amendment, and I yield back.

Chairwoman JOHNSON. Thank you. Any further discussion on the amendment? If there is no further discussion, the vote occurs on the amendment. All those in favor say aye. Opposed say no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by myself, and the Clerk will report the amendment.

The CLERK. Amendment No. 6, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Ms. Johnson of Texas and Mr. Feenstra of Iowa.

[The amendment of Chairwoman Johnson and Mr. Feenstra follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MS. JOHNSON OF TEXAS AND MR. FEENSTRA OF IOWA

Page 37, insert after line 8 the following:

SEC. 214. FACILITATING DEVELOPMENT AND DISTRIBUTION OF FORENSIC SCIENCE STANDARDS.

(a) ORGANIZATION OF SCIENTIFIC AREA COMMITTEES FOR FORENSIC SCIENCE.—

(1) ESTABLISHMENT.—The Director shall establish in the Institute an organization to facilitate the development of forensic science standards.

(2) DESIGNATION.—The organization established under paragraph (1) shall be known as the "Organization of Scientific Area Committees for Forensic Science".

(3) COMPOSITION.—The Organization shall be composed of the following:

(A) The Forensic Science and Standards Board established under subsection (b).

(B) Each scientific area committee established under subsection (c).

(4) DUTIES OF THE ORGANIZATION.—The duties of the Organization are as follows:

(A) Facilitating the development and distribution of scientifically sound, consensus-based documentary standards and guidelines for forensic science, including through formal collaboration with nongovernmental standards development organizations.

(B) Establishing a registry of scientifically sound forensic science standards and guidelines approved and endorsed by the Organization.

(C) Establish a process for regularly re-evaluating existing standards and guidelines published for placement on the registry established under subparagraph (B).

(D) Promoting the adoption by the forensic science community of the standards and guidelines described in subparagraph (A) and as included in the registry established under subparagraph (B).

(b) FORENSIC SCIENCE STANDARDS BOARD.—

(1) ESTABLISHMENT.—The Director shall establish in the Organization a board to oversee the operations of the Organization and its committees.

(2) DESIGNATION.—The board established under paragraph (1) shall be known as the "Forensic Science Standards Board".

(3) COMPOSITION.—The Board shall be composed of the following:

(A) Members selected by the Director to serve on the Board from among each of—

(i) members of the forensic science community;

(ii) scientists and engineers with relevant expertise at institutions of higher education and other nonprofit research organizations;

(iii) statisticians;

(iv) a representative of each of the task groups established under subsection (d), as the Director considers appropriate; and

(v) such other communities or sectors as the Director considers appropriate.

(B) The chairpersons of the scientific area committees established under subsection (c).

(4) DUTIES.—The duties of the Board are as follows:

(A) Overseeing all operations of the Organization, including the committees of the Organization.

(B) Establishing governance rules and policies for the Organization.

(C) Facilitating communication within the Organization and between the Organization, the criminal justice community, and the forensic science community.

(D) Overseeing the reviewing and approving process of standards to be added to the registry established under subsection (a)(4)(B).

(5) AUTHORITY TO APPROVE STANDARDS FOR LISTING IN REGISTRY OF FORENSIC SCIENCE STANDARDS AND GUIDELINES.—The Board may approve standards for listing on the registry established under subsection (a)(4)(B).

(c) SCIENTIFIC AREA COMMITTEES.—

(1) ESTABLISHMENT.—The Director shall establish one or more scientific area committees to carry out the work of the Organization.

(2) MEMBERSHIP.—

(A) COMPOSITION.—Each scientific area committee established under paragraph (1) shall be composed of the following:

(i) The chairperson of the scientific area committee.

(ii) The vice chairperson of the scientific area committee.

(iii) The chairperson of each subcommittee established under paragraph (3) for each scientific area committee under paragraph (1).

(B) CHAIRPERSON AND VICE CHAIRPERSON.—

(i) IN GENERAL.—For each scientific area committee established under paragraph (1), the Director shall appoint a chairperson and a vice chairperson for the scientific area committee from among individuals with expertise in the subject area of the scientific area committee.

(ii) SERVICE.—Each chairperson and vice chairperson appointed under clause (i) shall serve as a chairperson or vice chairperson at the pleasure of the Director.

(3) SUBCOMMITTEES.—

(A) ESTABLISHMENT.—The Director may establish such subcommittees in a scientific area committee established under paragraph (1) as the Director considers appropriate to assist in the work of the scientific area committee.

(B) MEMBERSHIP.—Each subcommittee established under subparagraph (A) shall be composed of such members selected by the Director from among the following:

(i) Forensic science practitioners.

(ii) Scientists and engineers at institutions of higher education and other non-profit research organizations.

(iii) Statisticians.

(iv) Representatives of the legal community.

(v) Such others as the Director considers appropriate for purposes of this section.

(4) DUTIES.—The duties of a scientific area committee established under paragraph (1) shall be as follows:

(A) Coordinating the operation and activities of specific forensic science discipline subcommittees in order to encourage communication across all subject and discipline specific subcommittees.

(B) Providing opportunity to the public to engage the forensic science community in mat-

ters relating to priorities, standards, and guidelines.

(C) Address topics of high importance to the forensic community, such as matters relating to the following:

(i) Biology.

(ii) Chemistry, including—

(I) matters relating to seized drugs and toxicology; and

(II) matters relating to trace evidence.

(iii) Scene examination.

(iv) Medicine.

(v) Digital and multimedia.

(vi) Physics and pattern interpretation.

(vii) Computational forensic algorithms.

(D) Furthering the development of standards under subsection (e)(1) and other guidelines.

(d) RESOURCE TASK GROUPS.—

(1) ESTABLISHMENT.—The Director, acting through the Board, shall establish legal, human factors, quality, and statistics task groups to support

and assist the Organization with matters relating to questions of law, human factors, ethical and social implications of technology, workflow processes, quality assurance, and statistics.

(2) MEMBERSHIP.—The Director, acting through the Board, shall ensure that each task group established under paragraph (1) is composed of voting members of the subcommittees established under subsection (e)(3) who have relevant expertise.

(3) CHAIRPERSONS.—The Director, acting through the Board, shall appoint a chairperson of each task group established under paragraph (1).

(e) FORENSIC SCIENCE STANDARDS DEVELOPMENT PROCESS.—

(1) STANDARDS DEVELOPMENT PROCESS.—The Director, acting through the Organization, shall implement a process to facilitate the development of scientifically sound, consensus- based forensic standards and guidelines, consistent with the duties described for each entity established under this section.

(2) TECHNICAL REVIEW.—

(A) PROCESS REQUIRED.—The Director shall establish a process for technical peer review to provide feedback on a draft of a standard or guideline to a relevant subcommittee of

a scientific area committee before such standard or guideline is submitted to a nongovernmental standards development organization or submitted for inclusion in a registry of forensic standards or guidelines.

(B) PARTICIPANTS.—The process established under subparagraph (A)—

(i) may include members of the Organization; and

(ii) shall include additional volunteer experts from the forensic science community and the academic research community.

(3) PUBLIC COMMENT.—

(A) IN GENERAL.—The Director shall provide for public comment on draft standards prior to inclusion in the registry of forensic science standards and guidelines established under subsection (a)(4)(B).

(B) COMMENTS FROM RESEARCH TASK GROUPS.—The Director shall ensure that—

(i) each resource task group established under subsection (d) may submit, as a group, comments on draft standards described in subparagraph (A); and

(ii) any comments submitted under clause (i), and any adjudication of such comments by the Organization, are made available to the public.

(4) SUBMISSION TO STANDARDS DEVELOPING ORGANIZATION.—The Director shall ensure that standards proposed by the Organization and approved for the registry of forensic science standards and guidelines established under subsection (a)(4)(B) are submitted to a nongovernmental standards development organization for review and formal adoption as standard.

(5) GRANTS.—The Director shall award grants through a competitive process—

(A) to support activities under paragraph (3); and

(B) to ensure that the standards approved for inclusion in the registry of forensic science standards and guidelines required by subsection (a)(4)(B) are submitted to a nongovernmental standards development organization.

(f) FORENSIC STANDARDS FOR AUTHENTICATING DIGITAL EVIDENCE.—

(1) FURTHERING DEVELOPMENT OF STANDARDS.—

(A) IN GENERAL.—The subcommittee addressing digital and multimedia, or any successor thereto, shall develop standards for validating or assessing the authenticity of digital content, including content created by technologies that synthesize or manipulate digital content such as deepfakes.

(B) COLLABORATION.—In carrying out subparagraph (A), the subcommittee described in such subparagraph shall collaborate with the forensic science community and experts who study advanced techniques for digital content manipulation, including those in academia and government entities such as the Defense Advanced Research Projects Agency (DARPA).

(2) RESOURCE DEVELOPMENT.—The Organization shall develop and compile resources and materials for use by the forensic science community in developing standards to authenticate digital materials.

(3) CONGRESSIONAL BRIEFING.—Not later than 1 year after the date of the enactment of this Act, the Director shall provide the appropriate committees of Congress a briefing on the status of efforts undertaken pursuant to this subsection.

234

157

12

Page 1, in the table of contents, insert after the matter relating to section 213 the following:

Sec. 214. Facilitating development and distribution of forensic science standards.

Chairwoman JOHNSON. I ask unanimous consent to dispense of the reading. Without objection, so ordered. I recognize myself for 5 minutes to explain the amendment.

The Organization of Scientific Area Committees, or OSAC, was stood up by NIST in 2014 to address the lack of discipline-specific forensic science standards. OSAC has contributed to progress in many forensic disciplines, but there is much work yet to be done. Just last week they announced that they were going to draft new standards for collecting physical evidence from victims of sexual assault.

Normally NIST partners with non-governmental standards development organization, such as the SDOs, in the development of new voluntary consensus standards. They don't typically manage the consensus process themselves. However, in the case of forensic science standards, there is simply no business model for an SDO to take this on. It is a public policy imperative, not a commercial one. It's time to formalize NIST's role to remove any uncertainty without the future of this effort.

My amendment would codify the OSAC, specifying requirements for the overall structure and processes of the OSAC. The amendment emphasizes broad stakeholder participation and input, scientific integrity, and transparency. This amendment text has long been part of my *Forensic Science and Standards Act*. We have continued to update it with diverse stakeholder input. I have been disappointed by inability to move the legislation forward, even after we reported out of Committee on a bipartisan basis last Congress. The *NIST for the Future Act* is another opportunity for us to try to move forward on at least a part of this important issue.

However, even as I seek to include my amendment today, I recognize that we have more work to do with the stakeholder community to build consensus around the specific details of the text. It is essential that those on all sides of this issue, the scientists, the practitioners, the legal community, the advocates for wrongfully convicted, all have a voice. And it is essential that OSAC's process be transparent from the beginning to end. We're only going to be successful in strengthening the science in our Nation's courtrooms if we have widespread trust in the process that yields these standards.

I want to thank Representative Feenstra for joining me and cosponsoring this amendment. Iowa State University is doing very important work in forensic science and standards through its management of the NIST Center of Excellence for Forensics. I will continue to advocate for those and other forensics research efforts across the Federal science agencies. I urge my colleagues to support this amendment, and I yield back.

Is there further discussion? Mr. Feenstra.

Mr. FEENSTRA. Thank you, Chairman Johnson, for allowing me to co-sponsor this amendment with you, and thank you, Ranking Member Lucas, for your supportive words. I support this amendment because of the importance of forensic science, and how it can aid law enforcement. The Organization of Scientific Area Committees for Forensic Science strengthens the Nation's use for forensic science by facilitating development and promotion of the use of high-quality technical standards. This helps ensure that forensic

analysis is reliable, and has the support of medical examiners and law enforcement forensic labs.

The brave men and women in law enforcement are often asked to do seemingly impossible tasks, like bringing criminals to justice using what evidence they have to gather. Improving the technical standards of forensic science helps our police officers, medical examiners, and other investigators bringing guilty criminals to justice. I support our law enforcement officers, and the sacrifices they make to keep us safe, but many officers across my district take pride in finding the truth, and we are extremely proud of their work. I want to ensure that they have the best tools and techniques available to them to help with this difficult, important work they've dedicated themselves to.

Relating back to the forensic science in my district, we are proud to have Iowa State as the headquarters for the Center for Applications for Forensic Evidence. CSAFE is a research center committed to applying statistical and scientific methods to improve the accuracy of forensic evidence. I have—had the pleasure of speaking with their faculty, and there are amazing things that CSAFE is working on. They collaborate with statisticians, scientists, forensic practitioners, and their partner universities that include Iowa State, Carnegie Mellon, UC (University of California) Irvine, West Virginia, University of Virginia, and Duke. This amendment will help them with their incredible work by improving standards, and including a grant section that is intended to cover CSAFE and NIST funding for forensic studies.

For these reasons, I ask others—Members of the Committee to please support this amendment. Thank you, and I yield back.

Chairwoman JOHNSON. Thank you. Is there any further discussion?

Mr. LUCAS. Madam Chair?

Chairwoman JOHNSON. Mr. Lucas.

Mr. LUCAS. Thank you, Chairwoman Johnson and Representative Feenstra, for offering this amendment, and continuing our bipartisan work from last Congress on the *Forensic Science Research and Standards Act*. Forensic Science is playing an increasingly large role in our criminal justice system. It's critical that we have scientific, consistent, and robust standards and guidelines for the use and analysis of forensics. This amendment authorizes the incredible work already being done in this area by the National Institute of Standard and Technology.

I want to thank the stakeholders for working with us on this language, in particular the Consortium of Forensic Science Organizations, which supports the amendment. The Consortium represents the crime labs, medical examiners, and toxicologists, the practitioners in the field we rely on, who rely on these standards and guidelines to do their work at the highest level of accuracy and integrity.

Madam Chair, I ask unanimous consent to submit a letter from the Consortium for the record, please.

Chairwoman JOHNSON. Without objection.

[The information referred to follows:]

********** COMMITTEE INSERT **********

Mr. LUCAS. Thank you, Madam Chair. As the Chair noted, we recognize that we have more work to do to address other stakeholders' feedback. I support this amendment, and I look forward to working with the Chair and our stakeholders through to process to finalize this language. And with that, Madam Chair, I yield back.

Chairwoman JOHNSON. Thank you very much. Any further discussion? The vote, then, will occur on the amendment. All those in favor say aye. Opposed say no. The ayes have it, the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentlelady from Texas, Mrs. Fletcher. You're recognized to offer the amendment.

Mrs. FLETCHER. Thank you, Madam Chair. I do have an amendment at the desk, and it's because what we know today——

Chairwoman JOHNSON. The Clerk will——

Mrs. FLETCHER [continuing]. That chemicals——

Chairwoman JOHNSON [continuing]. Report the amendment.

Mrs. FLETCHER [continuing]. Are used in everything, from the fabric in our clothing, to the preservatives that keep our food fresh, they play an integral role——

Chairwoman JOHNSON. The Clerk—let the Clerk to—report the amendment, and you'll be recognized.

Mrs. FLETCHER. OK. Thank you, Madam Chair.

The CLERK. Amendment No. 7, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mrs. Fletcher.

[The amendment of Mrs. Fletcher follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609

OFFERED BY Ms. Fletcher

Page 37, insert after line 8 the following:

SEC. ___. SUSTAINABLE CHEMISTRY RESEARCH AND EDUCATION.

In accordance with section 263 of the National Defense Authorization Act for Fiscal Year 2021, the Director shall carry out activities in support of green and sustainable chemistry, including coordinating and partnering with academia, industry, non-profits, and other entities in activities to support clean, safe, and economic alternatives, technologies, and methodologies to traditional chemical products and processes.

Page 1, in the table of contents, insert after the matter relating to section ____ the following:

Sec. ____. Sustainable Chemistry Research and Education.

☒

Chairwoman JOHNSON. Without objection, so—the—we offer unanimous consent to dispense with the reading. Without objection, so ordered, and I recognize the gentlelady for 5 minutes to explain her amendment.

Mrs. FLETCHER. Thank you, Madam Chair. Used in everything from the fabric in our clothing, to the preservatives that keep our food fresh, chemicals play an integral role in our everyday lives. In our fight against the COVID–19 pandemic, we relied heavily on preventative measures like frequent hand washing with soap, and sanitizers, and products to keep our surfaces clean and disinfected.

It's hard to imagine life without these chemical innovations, but if not used responsibly, they can have a harmful effect on the environment and on human health. So sustainable chemistry is an approach to chemical innovation that allows society to meet environmental, human health, economic, and societal needs without compromising the health and safety of a future generation. Rather than focusing on cleanup and control of waste and hazardous material, sustainable chemistry emphasizes redesigning industrial products and processes to reduce or eliminate hazards at their source by reducing toxicity, quantities of waste, and energy consumption. Sustainable chemistry is creating jobs, supporting economic development, and keeping U.S. companies competitive around the globe.

Despite strong interest in sustainable chemistry from the private sector, there are still barriers to the design, development, and commercialization of sustainable chemical products and processes. This is partly a lack of investment into research and technology development, and a lack of support for integration into existing industrial processes. Another challenge is the absence of widely recognized definitions for sustainable chemistry, or methods for measuring the sustainability of a chemical product or process.

So, to address this, my amendment directs NIST to carry out activities in coordination with industry, with academic institutions, and with non-profit institutions in support of sustainable chemistry, and to advance new technologies and methodologies to facilitate sustainable chemistry innovation, and its widespread adoption in the private sector. So I urge my colleagues to support this amendment, and I yield back.

Chairwoman JOHNSON. Thank you. Any further discussion on this amendment? If there's no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed, no. Ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentleman from Colorado, the space man. He is recognized to offer his amendment, Mr. Perlmutter.

Mr. PERLMUTTER. Thank you, Madam Chair. I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment No. 8, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Perlmutter of Colorado.

[The amendment of Mr. Perlmutter follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. PERLMUTTER OF COLORADO

Page 38, beginning on line 11, strike "campuses" insert "campuses, and as needed on the Institute's joint institute campuses,".

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentleman for 5 minutes to explain his amendment.

Mr. PERLMUTTER. Thank you, Madam Chair, and to the Chairs and the Ranking Members, thank you for bringing this bill forward. It's very important. My amendment is simple. It allows NIST to use the Facilities Modernization Fund created in the bill for construction and maintenance needs at its Joint Institute Campuses. We have one of these Joint Institutes at my alma mater, the University of Colorado at Boulder, and that is called JILA, the Joint Institute for Laboratory Astrophysics.

JILA is one of the Nation's leading research institutes in physical science. Its scientists explore some of the most challenging questions about quantum technologies, X-rays, interaction of light and matter. In fact, JILA and the University of Colorado have produced at least three Nobel Prize winners, Carl Wieman and Eric Cornell, for their work on the Bose-Einstein Condensation, and I was going to have Dr. Foster and Dr. Baird tell us what the Bose-Einstein Condensation experiment was, and Dave Wineland, who is an expert in quantum systems.

But just in case my friends from Texas, Dr. Babin and Mr. Weber, think that Colorado, and the University of Colorado, is all science and no play, I want you to know that Flora Duffy, a CU Boulder grad, won the triathlon last night in Tokyo, so, you know, we do a little bit of everything on Colorado. Now, back to my prepared remarks so that NIST is benefited by my comments here.

In addition to its groundbreaking research, JILA offers training programs for our future researchers and innovators, and has helped create over 250 Colorado quantum jobs. Unfortunately, the labs at NIST Joint Institutes, like JILA, are over 50 years old, and are insufficient to support today's research needs. Current labs lack sufficient electric power, suffer from excessive vibration due to aging mechanical systems, and are unable to maintain stable temperatures and humidity control. Functional and modern facilities are essential to the work being done at our Joint Institutes, and to the U.S.'s research and innovation enterprise. My amendment will help NIST support the institutes like JILA, continue their important work in physics, astrophysics, biophysics, physical chemistry, optics, electronics, and quantum mechanics.

The infrastructure investments in this bill are critical toward our future innovation and competitiveness, and I hope all my colleagues, including Dr. Babin and Mr. Weber, will support my amendment to help ensure these investments can occur both at NIST campuses and at NIST Joint Institutes across the country. I urge my colleagues to support my amendment, and with that, I yield back to the Chair.

Chairwoman JOHNSON. Thank you very much. Anyone dare to add a discussion? Ms. Bonamici?

Ms. BONAMICI. I just want to thank Mr. Perlmutter for taking up space on this Committee, and I yield back.

Chairwoman JOHNSON. Anyone else? If there's no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed, no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentleman from Pennsylvania, Mr. Lamb. He's recognized to offer his amendment.

Mr. LAMB. Madam Chair, I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk will read the amendment.

The CLERK. Amendment No. 9, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Lamb of Pennsylvania and Ms. Moore.

[The amendment of Mr. Lamb and Ms. Moore follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. LAMB OF PENNSYLVANIA

Page 41, line 22, insert ", including minority-serving institutions and community colleges" after "education".

Page 42, line 10, by striking "and" at the end.

Page 42, line 11, by redesignating paragraph (7) as paragraph (8).

Page 42, by inserting after line 10 the following:

(7) conduct outreach to and develop research collaborations with community colleges, including through the recruitment of students and faculty at such institutions to participate in programs developed under paragraph (3); and

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense of the reading. Without objection, so ordered. I recognize the gentleman for 5 minutes to explain his amendment.

Mr. LAMB. Thank you, Madam Chair. Many of us have talked a lot of times about the need to broaden who has access to the pipeline of scientific research and educational funding in this country, and so my amendment would simply add minority-serving institutions and community colleges to the education and resource—research provisions of this bill. But it would also do something that's a little more simple and practical, but I think very profound, which is put resource dollars in some of the places where people are really discovering the most important facts about technological advancement. And I know that's a little broad, so I want to say what I mean specifically.

We have, at our community college in Allegheny County, Western Pennsylvania, for example, a program called Mechatronics. It's one of the programs that really integrates robotics, AI, electrical engineering, energy usage, and manufacturing all in one. And the people who come out of this 2-year program are very highly sought after, very well paid, because every single day they're discovering how to manufacture things with robots, and different sources of energy, and, you know, computer assisted intelligence, and all that kind of thing.

If we invest in those types of places, and those types of programs—which you don't always have at a 4-year university because they're not as flexible, you know? CCAC (Community College of Allegheny County) could create a mechatronics program because the employers just came to them 1 day and said, we need you to design something for what you need. If we put our dollars there, we're going to make a lot of discoveries about how to integrate all these different systems, and how to manufacture things in this country in a much more efficient way, and I think that is the goal of the *NIST for the Future Act* is to be kind of ruthlessly practical in the way that we use our dollars, and get societal returns on them, and outcompete our competitors overseas.

So I thank you, I want to especially thank Representative Moore for co-sponsoring this amendment, and I urge everyone to vote for it. Thank you, Madam Chair. I yield back.

Chairwoman JOHNSON. Thank you. Any further discussion on this amendment? If there is no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed, no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentlelady from California, Mrs. Kim, and she's recognized to offer her amendment.

Mrs. KIM. Thank you, Chairman—woman Johnson.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment number 10, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mrs. Kim of California.

[The amendment of Mrs. Kim follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MRS. KIM OF CALIFORNIA

Page 42, line 10, strike "and".

Page 42, line 13, strike the first period and all that follows through the end of the line and insert "; and".

Page 42, after line 13, insert the following:

"(8) conduct outreach to and develop collaborations with nontraditional educational organizations, including those that offer training through non-profit associations and professional associations or professional societies, to engage persons historically underrepresented in STEM through programs developed under this subsection.".

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading. Without objection, so ordered, and I recognize the gentlelady for 5 minutes to explain her amendment.

Mrs. KIM. Thank you, Chairwoman Johnson. My amendment is also very simple. It would encourage the NIST Director to develop educational collaborations and outreach with non-traditional educational organizations, such as non-profits and professional associations, to engage underrepresented communities in STEM (science, technology, engineering, and mathematics) education. Currently, NIST has the authority to support, promote, and coordinate activities and efforts to enhance public awareness and understanding of measurement sciences, standards, and technology with industry, academia, and other community groups, but NIST lacks the authority to include non-profits and professional associations in their educational outreach efforts.

The recently confirmed National Cyber Director has also noted the overt shortage in meeting workforce demands across both the public and private sector. This amendment broadens the capability of NIST to make meaningful contributions toward the cybersecurity challenges by leveraging the expertise of non-profits and professional organizations. So I urge my colleagues from both sides of the aisle to support my amendment, and provide NIST with another tool to improve their educational outreach and practices with underrepresented communities.

I also want to take the time to thank my colleague, Representative Ross, for working with me to offer another amendment that will strengthen our cybersecurity efforts by enabling software developers to share technical expertise with Federal agencies, industry stakeholders, and standards development organizations. Just between 2019 and 2020 our country saw a 400 percent increase in cyber intrusions, so I'm very troubled by the increase of cyberattacks which seem to be designed not only for monetary purposes, but also to instill distrust in our economic system and our institutions. So I want to thank you, and I yield back the balance of my time.

Chairwoman JOHNSON. Thank you very much. Any further discussion on this amendment? If there's no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed, say no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentleman from Texas, Mr. Babin, and he's recognized to offer his amendment.

Mr. BABIN. Thank you, Madam Chairwoman. I have an amendment at the desk. Might want to read the amendment?

Mr. LUCAS. Just do it however you want. We can——

Mr. BABIN. 13? Excuse me, 26.

Chairwoman JOHNSON. Go ahead.

Mr. BABIN. You're out of order, Madam Chair, and I don't—it doesn't—I mean, I'm easy if you want to go ahead with somebody else.

Mr. LUCAS. Do it however you want to, Mr. Babin.

Mr. BABIN. But I'll be glad to do it.

Chairwoman JOHNSON. Go ahead.

Mr. BABIN. OK. Thank you. I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment to H.R. 4609, offered by Mr. Babin of Texas.

[The amendment of Mr. Babin follows:]

AMENDMENT TO H.R. 4609

OFFERED BY MR. BABIN OF TEXAS

Page 55, after line 17, insert the following:

SEC. 308. GAO STUDY OF NIST RESEARCH SECURITY POLICIES AND PROTOCOLS.

(a) EVALUATION.—Not later than 1 year after the date of enactment of this Act, the Comptroller General of the United States shall conduct a study of the Institute's policies and protocols to protect its research and combat undue foreign influence,

(b) MATTERS TO BE INCLUDED.—The study conducted under subsection (a) shall include, to the extent practicable, the following:

(1) An analysis of steps taken by the Institute to address foreign threats to Institute-funded research over the previous 5 years.

(2) An analysis of the coordination and engagement between the Department of Commerce's Office of Inspector General, the Department of Commerce's Office of Intelligence and the Institute in identifying and addressing concerning findings.

(3) An assessment of the Institute's review process for Foreign National associates.

(4) An assessment of the Institute's policies as it relates to employees and associates participating in foreign talent recruitment programs.

(5) An assessment of the Institute's implementation of conflict-of-interest and disclosure policies and requirements, including the disclosure requirements authorized in Section 223 of the National Defense Authorization Act for Fiscal Year 2021 (public Law 116-283).

(6) An assessment of the Institute's, the Department of Commerce's Office of Security, the Department of Commerce's Office of Intelligence, and the Department of Commerce's Office of Inspector General's ability to monitor and enforce conflict-of-interest and disclosure policies and requirements, including the disclosure requirements authorized in Section 223 of the National Defense Authorization Act for Fiscal Year 2021 (public Law 116-283).

(7) An assessment of the Institute's, the Department of Commerce's, and the Department of Commerce's Office of Inspector General's ability to conduct risk assessments of research and development award applications and disclosures to the Institute.

(8) An assessment of the Institute's research security training programs for both internal and externally-supported researchers and associates, including training focused on international collaboration, and international travel, foreign interference, and rules for proper use of funds, disclosure, conflict of commitment, and conflict of interest.

(9) An analysis and summary of incidents of undue foreign influence at Institute-supported research facilities and programs over the past 10 years.

(10) Recommendations for the Institute to bolster its research security policies and protocols.

(11) Other matters the Comptroller General determines appropriate.

(c) CONGRESSIONAL BRIEFING.—Not later than 180 days after the date of enactment of this Act, the Comptroller General shall brief the Committee on Science, Space, and Technology of the House of Representatives and the Committee of Commerce, Science, and Transportation of the Senate on the findings available from the evaluation conducted under subsection (a).

(d) REPORT.—Not later than 18 months after the date of enactment of this Act, the Comptroller General shall submit to the congressional committees specified in

subsection (c) a report on the findings and recommendations of the evaluation conducted under subsection (a).

Mr. BABIN. Thank you very much. When we authorize new spending on new programs to invest in our science and our technology, we must make sure that it is protected. We know that our foreign adversaries are building their technological success on the basic research developed in the United States and around the world. We've even seen the infiltration of Chinese influence in our university systems, our businesses, our agencies, and in several different occasions at our—even our top institutions. We must work to ensure that foreign nationals do not undermine our open system of research.

That's why I'm very pleased to be offering this amendment, which will require the GAO (Government Accountability Office) to conduct an audit of NIST's research security measures. It is critical that all of our Federal agencies have advanced security protocol to fight undue foreign influence. I hope and encourage all of my colleagues here today to support this amendment so that we can ensure all of the resources necessary are implemented to secure our systems, and to mitigate our threats. And with that, Madam Chair, I yield back.

Chairwoman JOHNSON. Thank you very much. Any further discussion on this amendment? Hearing none, the vote occurs on the amendment. All those in favor say aye. Those opposed, say no. The ayes have it, and the amendment is adopted.

There's an amendment at the desk for Mr. Posey.

Mr. POSEY. Thank you, Madam Chair. I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk——

The CLERK. Amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Posey of Florida.

[The amendment of Mr. Posey follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609

OFFERED BY MR. POSEY OF FLORIDA

Page 51, after line 16, insert the following:

(c) REAFFIRMING THE IMPORTANCE OF VOLUNTARY CONSENSUS-BASED INTERNATIONAL STANDARDS BODIES.—To the extent applicable, the Institute, when preparing standards, participating in voluntary consensus standard bodies, and engaging in a standards development process that is open to participation from Chinese firms and state-owned enterprises of the People's Republic of China, the process should include the following attributes that are easily accessible, clear, and unambiguous:

(1) Transparency.

(2) Openness.

(3) Impartiality and Consensus.

(4) Effectiveness and Relevance.

(5) Coherence.

(6) Development Dimension.

☒

Chairwoman JOHNSON. The Clerk will dispense for the reading, and the—so—as—so ordered. And, Mr. Posey, you're recognized for 5 minutes.

Mr. POSEY. Thank you, Chairwoman Johnson. I have a long explanation and a short explanation. Which one do you think my colleagues would prefer? OK. This reaffirms the importance of including open and transparent attributes when NIST participates in voluntary, consensus-based international standard bodies that will also include participation from the Chinese firms and the State-owned enterprises of the People's Republic of China, and I urge support of the amendment. Thank you.

Chairwoman JOHNSON. Anyone else wishing to have time? OK. I recognize myself to speak on the amendment. It should not be a surprise that I have reservations about this amendment. I join my colleague from Florida in his concerns about China not adhering to international norms and rules, including in standards development. I am very cautious about legislating something with unintended consequences in standards development. It's certainly complicated. That said, I appreciate that Mr. Posey has already incorporated helpful changes recommended by NIST, and, even with those changes, we've heard from several companies and industry groups that remain concerned that this could unintentionally harm the U.S. leadership in some international standard-setting bodies.

Given Mr. Posey's willingness to work with us, and with NIST, I plan to accept this amendment today, however, I want to make sure we continue to work with the stakeholders going forward to refine the text as needed. I thank you, and yield back.

Any further comments? Hearing none, the amendment is adopted. OK. We got a little confused here in these notes, so we're getting back on schedule. If there's no further discussion occurring on this amendment, all those in favor say aye. Those opposed say no. The ayes have it, and the amendment is agreed to.

We're back now to Mr. Babin's second amendment on the roster, and Mr. Babin of Texas is recognized to offer the amendment.

Mr. BABIN. Yes, ma'am. Thank you, Madam Chair. This—I have an amendment at the desk, 13.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment number 13, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Babin of Texas.

[The amendment of Mr. Babin follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. BABIN OF TEXAS

Page 58, line 7, insert "United States-based" before "small".

Page 58, line 12, insert ", including a focus on the demonstration of technologies developed by companies based in the United States" after "needs".

Page 58, line 18, strike "with" and insert "between United States-based small- and medium-sized manufacturers and".

Page 65, after line 4, insert the following:

(c) SUPPORTING AMERICAN MANUFACTURING.—Section 25 of the National Institute of Standards and Technology Act (15 U.S.C. 278k) is amended—

(1) in subsection (a)(5), by striking "or consortium thereof" and inserting "or a consortium thereof" at the end of the sentence;

(2) in subsection (c)(4), by inserting "United States-based" before "industrial";

(3) in subsection (d)—

(A) in paragraph (1), by inserting "at United States-based industrial facilities, including small and medium manufacturing companies" before "based";

(B) in paragraph (2), by inserting "United States-based" before "companies"; and

(C) in paragraph (3), by inserting "United States-based" before "small";

(4) in subsection (f)(5)(b)(i), by inserting "in the United States" at the end of the clause; and

(5) in subsection (n)(1)(A), by inserting "United States-based" before "small".

(d) AMENDING THE MEP COMPETITIVE AWARDS PROGRAM.—Section 25(c)(2) of the National Institute of Standards and Technology Act (15 U.S.C. 278k-1(c)(1)) is amended by inserting "United States" before "manufacturers".

☒

Mr. BABIN. Thank you. As we emerge from a year that crippled thousands of companies nationwide, it's imperative that we provide all the tools and resources necessary for American businesses and manufacturers to bounce back and fully recover. The *National Institute of Standards and Technology for the Future Act* authorizes a pilot program within the Hollings Manufacturing Extension Partnership Program to support expansion awards focused on technology demonstration, supply chain security, cybersecurity, and workforce training here in the United States.

The MEP Program is a resource available in all 50 States, and Puerto Rico, that provides custom services to small- and medium-sized manufacturers to help them enhance their productivity and technological performance. This program, and more than 1,400 trusted advisors, gives manufacturers an opportunity to better enhance their businesses and maintain a competitive edge, which is so necessary today. Because of the importance of this program, and the desperate need for its services across the country, I'm pleased to be introducing an amendment today that will help ensure all funds designated for MEP, specifically focused on supporting and building up U.S.-based manufacturing companies.

Our Nation needs this now more than ever, and we cannot afford for this money to be spent on manufacturers operating outside of the United States who don't provide American jobs or fuel our economy. I encourage all my colleagues here today to support this amendment, and with that, I yield back.

Chairwoman JOHNSON. Thank you very much. Any further discussion? If there's no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed say no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is the amendment offered by the gentleman from New York, Mr. Tonko.

Mr. TONKO. Madam Chair, I have an amendment at the desk.

Chairwoman JOHNSON. Clerk will read the amendment.

The CLERK. Amendment number 14, amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Tonko of New York.

[The amendment of Mr. Tonko follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. TONKO OF NEW YORK

At the end of title III, add the following:

SEC. 308. PREMISE PLUMBING RESEARCH.

(a) IN GENERAL.—The Secretary, acting through the Director, shall create a program for premise plumbing research, including to—

(1) conduct metrology research on premise plumbing in relation to water safety, security, efficiency, sustainability, and resilience; and

(2) coordinate research activities with academia, the private sector, nonprofits, and other Federal agencies,

(b) DEFINITIONS.—For purposes of this section, the term "premise plumbing" means the water distribution system located within the property lines of a property, including all buildings and permanent structures on such property. Such term includes building supply and distribution pipes, fixtures, fittings, water heaters, water-treating and water-using equipment, and all respective joints, connections, devices, and appurtenances.

☒

Chairwoman JOHNSON. I ask unanimous consent to dispense with the reading. Without objection, so ordered. I recognize the gentleman for 5 minutes to explain his amendment.

Mr. TONKO. Thank you, Chair Johnson. The *NIST for the Future Act* is critical to the advancement of science, technology, economic competitiveness, and the well-being of our Nation. I am grateful for the opportunity to propose a friendly amendment to this important bill. Our Nation's plumbing infrastructure is based in large part on data generated nearly a century ago. It is no wonder that newly built plumbing systems are often inefficient and ill-suited for current plumbing fixtures and appliances. Most often the impact of these inefficiencies can be felt in costly repairs, and wasted taxpayer dollars. But poor plumbing data and widespread overestimation of water demand can also pose serious health hazards.

When more water is supplied than necessary, it remains trapped in the plumbing system, and allows harmful bacteria to grow, and contaminants to enter the water. My amendment will bring U.S. plumbing standards into the 21st century by investing in research that will make our plumbing systems more reliable, more water efficient, and, most importantly, safer for everyone. With that, I urge my colleagues to support this amendment, and, Madam Chair, I yield back the balance of my time.

Chairwoman JOHNSON. Thank you. Any further discussion? If there's no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed say no. The ayes have it, and the amendment is agreed to.

The next amendment on the roster is an amendment offered by the gentleman from Michigan, Mr. Meijer. He's recognized to offer his amendment.

Mr. MEIJER. Madam Chair, I have an amendment at the desk.

Chairwoman JOHNSON. The Clerk will report the amendment.

The CLERK. Amendment number 15. Amendment to the amendment in the nature of a substitute to H.R. 4609, offered by Mr. Meijer of Michigan.

[The amendment of Mr. Meijer follows:]

AMENDMENT TO THE AMENDMENT IN THE NATURE OF A SUBSTITUTE TO H.R. 4609 OFFERED BY MR. MEIJER OF MICHIGAN

At the end of the bill, add the following:

SEC. 403. NATIONAL SUPPLY CHAIN DATABASE.

(a) ESTABLISHMENT OF NATIONAL SUPPLY CHAIN DATABASE.—The Director of the National Institute of Standards and Technology (referred to in this section as "NIST") shall establish and maintain a National Supply Chain Database.

(b) PURPOSE.—The purpose of the National Supply Chain Database shall be to assist the Federal government and industry sectors in minimizing disruptions to the United States supply chain by having an assessment of United States manufacturers' capabilities.

(c) STUDY ON NATIONAL SUPPLY CHAIN DATABASE.—In establishing the National Supply Chain Database, the Director of NIST shall consider the findings and recommendations from the study authorized in section 9413 of the National Defense Authorization Act for Fiscal Year 2021 (Public Law 116–283), including measures to secure and protect the National Supply Chain Database from adversarial attacks and vulnerabilities.

(d) DATABASE AND MANUFACTURING EXTENSION PARTNERSHIP.—

(1) IN GENERAL.—The National Supply Chain Database shall be carried out and managed through the Hollings Manufacturing Extension Partnership program and the Director of NIST shall ensure that the Hollings Manufacturing Extension Partnership Centers are connected to the National Supply Chain Database.

(2) CAPABILITIES.—The National Supply Chain Database shall be capable of providing a national view of the supply chain and enable authorized database users to determine in near real-time the United States manufacturing capabilities for critical products, including defense supplies, food, and medical devices, including personal protective equipment.

(3) INDIVIDUAL STATE DATABASES.—Each State's supply chain database maintained by the NIST-recognized Manufacturing Extension Partnership Center within the State shall be complementary in design to the National Supply Chain Database.

(e) MAINTENANCE OF NATIONAL SUPPLY CHAIN DATABASE.—The Director of NIST, acting through the Hollings Manufacturing Extension Partnership program, shall maintain the National Supply Chain Database as an

integration of the State level databases from each State's Manufacturing Extension Partnership Center and may be populated with information from past, current, or potential Center clients.

(f) EXEMPT FROM PUBLIC DISCLOSURE.—The National Supply Chain Database and any information related to it not publicly released by NIST shall be exempt from public disclosure under section 552 of title 5, United States Code, and access to non-public content shall be limited to the contributing company and Manufacturing Extension Partnership Center staff who sign an appropriate non-disclosure agreement.

(g) AUTHORIZATION OF APPROPRIATIONS.—Of the funds authorized to the Hollings Manufacturing Extension Partnership Program, $10,000,000 for each of the fiscal years 2022 through 2026 are authorized to carry out this Act.

Page 2, in the table of contents, insert at the end the following:

Sec. 403. National Supply Chain Database

☒

Mr. MEIJER. Thank you, Chairwoman Johnson. My amendment today would create a national supply chain data base that is established through the Director of NIST, and managed through the Hollings Manufacturing Extension Partnership Program. Each State supply chain data base is maintained by NIST-recognized MEP Centers, which will complement this national data base.

It's been nearly 18 months since the COVID–19 pandemic shut down our economy, schools, and normal way of life, and within just weeks it was clear that we face significant vulnerabilities in our supply chain. From life-saving medical supplies to raw materials to support our manufacturing and construction industries, we're facing critical shortages that threaten our day to day. We cannot allow these disruptions to exist in the future. My amendment ensures that the Federal Government and industry sectors have an accurate and real-time view of our supply chain, and the United States manufacturing capabilities for critical products.

This tool will help safeguard our economy from future disruptions, and I'm proud to support this amendment, and I urge my colleagues to do so today as well. Thank you, and I reserve the balance of my time.

Chairwoman JOHNSON. Thank you. Any further discussion on this amendment? If there's no further discussion, the vote occurs on the amendment. All those in favor say aye. Those opposed, say no. The ayes have it, and the amendment is agreed to.

Now the vote on amendment in the nature of a substitute. We will now vote on the amendment in the nature of a substitute, as amended. The vote occurs on the amendment. All those in favor say aye. Opposed, say no. The ayes have it, and the amendment is agreed to.

A reporting quorum being present, I move that the Committee on Science, Space, and Technology report H.R. 4609, as amended, to the House, with the recommendation that the bill be approved. Those in favor of the motion will signify by saying aye. Those opposed, nay—no. The ayes have it, and the bill is favorably reported.

Without objection, the motion to reconsider is laid on the table, and I ask unanimous consent that the staff be authorized to make any necessary technical and conforming changes to the bill. Without objection, so ordered, and Members will have 2 subsequent calendar days in which to submit supplementary minority or additional views on the measure. Now we'll have a 5 minute recess before we begin the next bill.

[Recess.]

Chairwoman JOHNSON. Committee will come back to order, and we will now consider H.R. 3858, the *National Science and Technology Strategy Act*. The Clerk will report the bill. Sorry.

The CLERK. H.R. 3858, a bill to establish a National Science and Technology Strategy, a Quadrennial Science and Technology Review, and for other purposes.

[The bill follows:]