

## NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACT

[[ACT OF MARCH 3, 1901, Chapter 872 of the 56th Congress]]

[As Amended Through P.L. 117–286, Enacted December 27, 2022]

【Currency: This publication is a compilation of the text of chapter 872 of the 56th Congress. It was last amended by the public law listed in the As Amended Through note above and below at the bottom of each page of the pdf version and reflects current law through the date of the enactment of the public law listed at <https://www.govinfo.gov/app/collection/comps/>】

【Note: While this publication does not represent an official version of any Federal statute, substantial efforts have been made to ensure the accuracy of its contents. The official version of Federal law is found in the United States Statutes at Large and in the United States Code. The legal effect to be given to the Statutes at Large and the United States Code is established by statute (1 U.S.C. 112, 204).】

**CHAP. 872.**—AN ACT To establish the National Bureau of Standards.

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

### FINDINGS AND PURPOSES

SECTION 1. 【15 U.S.C. 271】 (a) The Congress finds and declares the following:

(1) The future well-being of the United States economy depends on a strong manufacturing base and requires continual improvements in manufacturing technology, quality control, and techniques for ensuring product reliability and cost-effectiveness.

(2) Precise measurements, calibrations, and standards help United States industry and manufacturing concerns compete strongly in world markets.

(3) Improvements in manufacturing and product technology depend on fundamental scientific and engineering research to develop (A) the precise and accurate measurement methods and measurement standards needed to improve quality and reliability, and (B) new technological processes by which such improved methods may be used in practice to improve manufacturing and to assist industry to transfer important laboratory discoveries into commercial products.

(4) Scientific progress, public safety, and product compatibility and standardization also depend on the development of precise measurement methods, standards, and related basic technologies.

(5) The National Bureau of Standards since its establishment has served as the Federal focal point in developing basic measurement standards and related technologies, has taken a

lead role in stimulating cooperative work among private industrial organizations in efforts to surmount technological hurdles, and otherwise has been responsible for assisting in the improvement of industrial technology.

(6) The Federal Government should maintain a national science, engineering, and technology laboratory which provides measurement methods, standards, and associated technologies and which aids United States companies in using new technologies to improve products and manufacturing processes.

(7) Such national laboratory also should serve industry, trade associations, State technology programs, labor organizations, professional societies, and educational institutions by disseminating information on new basic technologies including automated manufacturing processes.

(b) It is the purpose of this Act—

(1) to rename the National Bureau of Standards as the National Institute of Standards and Technology and to modernize and restructure that agency to augment its unique ability to enhance the competitiveness of American industry while maintaining its traditional function as lead national laboratory for providing the measurements, calibrations, and quality assurance techniques which underpin United States commerce, technological progress, improved product reliability and manufacturing processes, and public safety;

(2) to assist private sector initiatives to capitalize on advanced technology;

(3) to advance, through cooperative efforts among industries, universities, and government laboratories, promising research and development projects, which can be optimized by the private sector for commercial and industrial applications; and

(4) to promote shared risks, accelerated development, and pooling of skills which will be necessary to strengthen America's manufacturing industries.

#### ESTABLISHMENT, FUNCTIONS, AND ACTIVITIES

SEC. 2. [15 U.S.C. 272] (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 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 determine 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 improve privacy protections 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;

(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;

(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;

(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;

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

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

(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;

(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;

(28) collect, create, analyze, and maintain specimens of scientific value;

(29) operate national user facilities;

(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;

(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

(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 critical 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));

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

(x) 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. 3. [15 U.S.C. 273]** The Institute is authorized to exercise its functions for the Government of the United States and for international organizations of which the United States is a member; for governments of friendly countries; for any State or municipal government within the United States; or for any scientific society, educational institution, firm, corporation, or individual within the United States or friendly countries engaged in manufacturing or other pursuits requiring the use of standards or standard measuring instruments: *Provided*, That the exercise of these functions for international organizations, governments of friendly countries and scientific societies, educational institutions, firms, corporations, or individuals therein shall be in coordination with other agencies of the United States Government, in particular the Department of State in respect to foreign entities. All requests for the services of

the Institute shall be made in accordance with the rules and regulations herein established.

**SEC. 4. [15 U.S.C. 273a] UNDER SECRETARY OF COMMERCE FOR STANDARDS AND TECHNOLOGY.**

(a) **ESTABLISHMENT.**—There shall be in the Department of Commerce an Under Secretary of Commerce for Standards and Technology (in this section referred to as the “Under Secretary”).

(b) **APPOINTMENT.**—The Under Secretary shall be appointed by the President by and with the advice and consent of the Senate.

(c) **COMPENSATION.**—The Under Secretary shall be compensated at the rate in effect for level III of the Executive Schedule under section 5314 of title 5, United States Code.

(d) **DUTIES.**—The Under Secretary shall serve as the Director of the Institute and shall perform such duties as required of the Director by the Secretary under this Act or by law.

(e) **APPLICABILITY.**—The individual serving as the Director of the Institute on the date of enactment of the National Institute of Standards and Technology Authorization Act of 2010 shall also serve as the Under Secretary until such time as a successor is appointed under subsection (b).

**SEC. 5. [15 U.S.C. 274]** The Director shall report directly to the Secretary and shall have the general supervision of the Institute, its equipment, and the exercise of its functions. The Director shall make an annual report to the Secretary of Commerce. The Director may issue, when necessary, bulletins for public distribution, containing such information as may be of value to the public or facilitate the exercise of the functions of the Institute.

**SEC. 6. [15 U.S.C. 275] HIRING CRITICAL TECHNICAL EXPERTS.**

(a) **IN GENERAL.**—The officers and employees of the Institute, except the director, shall be appointed by the Secretary 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 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, United States Code. 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 the enactment of this section.

**SEC. 7. [15 U.S.C. 275a]** The Secretary shall charge for services performed under the authority of section 3 of this Act, except in cases where he determines that the interest of the Government would be best served by waiving the charge. Such charges may be based upon fixed prices or cost. The appropriation or fund bearing the cost of the services may be reimbursed, or the Secretary may require advance payment subject to such adjustment on completion of the work as may be agreed upon.



SEC. 8. [15 U.S.C. 276] In the absence of specific agreement to the contrary, additional facilities, including equipment, purchased pursuant to the performance of services authorized by section 3 of this Act shall become the property of the Department of Commerce.

SEC. 9. [15 U.S.C. 277] That the Secretary of the Treasury shall, from time to time, make regulations regarding the payment of fees, the limits of tolerance to be attained in standards submitted for verification, the sealing of standards, the disbursement and receipt of moneys, and such other matters as he may deem necessary for carrying this Act into effect.

#### VISITING COMMITTEE ON ADVANCED TECHNOLOGY

SEC. 10. [15 U.S.C. 278] (a) There is established within the Institute a Visiting Committee on Advanced Technology (hereafter in this Act referred to as the "Committee"). The Committee shall consist of not fewer than 9 members appointed by the Director, a majority of whom shall be from United States industry. The Director shall appoint as original members of the Committee any final members of the National Institute of Standards and Technology Visiting Committee who wish to serve in such capacity. In addition to any powers and functions otherwise granted to it by this Act, the Committee shall review and make recommendations regarding general policy for the Institute, its organization, its budget, and its programs within the framework of applicable national policies as set forth by the President and the Congress.

(b) The persons appointed as members of the Committee—

(1) shall be eminent in fields such as business, research, new product development, engineering, labor, education, management consulting, environment, and international relations;

(2) shall be selected solely on the basis of established records of distinguished service;

(3) shall not be employees of the Federal Government; and

(4) shall be so selected as to provide representation of a cross-section of the traditional and emerging United States industries.

The Director is requested, in making appointments of persons as members of the Committee, to give due consideration to any recommendations which may be submitted to the Director by the National Academies, professional societies, business associations, labor associations, and other appropriate organizations.

(c)(1) The term of office of each member of the Committee, other than the original members, shall be 3 years; except that 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. Any person who has completed two consecutive full terms of service on the Committee shall thereafter be ineligible for appointment during the one-year period following the expiration of the second such term.

(2) The original members of the Committee shall be elected to three classes of three members each; one class shall have a term of one year, one a term of two years, and the other a term of three years.

(d) The Committee shall meet at least twice each year at the call of the Chairman or whenever one-third of the members so request in writing. A majority of the members of the Committee not having a conflict of interest in the matter being considered by the Committee shall constitute a quorum. Each member shall be given appropriate notice, whenever possible, not less than 15 days prior to any meeting, of the call of such meeting.

(e) The Committee shall have an executive committee, and may delegate to it or to the Secretary such of the powers and functions granted to the Committee by this Act as it deems appropriate. The Committee is authorized to appoint from among its members such other committees as it deems necessary, and to assign to committees so appointed such survey and advisory functions as the Committee deems appropriate to assist it in exercising its powers and functions under this Act.

(f) The election of the Chairman and Vice Chairman of the Committee shall take place at each annual meeting occurring in an even-numbered year. The Vice Chairman shall perform the duties of the Chairman in his absence. In case a vacancy occurs in the chairmanship or vice chairmanship, the Committee shall elect a member to fill such vacancy.

(g) The Committee may, with the concurrence of a majority of its members, permit the appointment of a staff consisting of not more than four professional staff members and such clerical staff members as may be necessary. Such staff shall be appointed by the Director, after consultation with the Chairman of the Committee, and assigned at the direction of the Committee. The professional members of such staff may be appointed without regard to the provisions of title 5, United States Code, governing appointments in the competitive service and the provisions of chapter 51 of title 5 of such Code relating to classification, and compensated at a rate not exceeding the appropriate rate provided for individuals in grade GS-18 of the General Schedule under section 5332 of title 5 of such Code, as may be necessary to provide for the performance of such duties as may be prescribed by the Committee in connection with the exercise of its powers and functions under this Act.

(h)(1) The Committee shall render an annual report to the Secretary for submission to the Congress not later than 30 days after the submittal to Congress of the President's annual budget request in each year. Such report shall deal essentially, though not necessarily exclusively, with policy issues or matters which affect the Institute or with which the Committee in its official role as the private sector policy advisor of the Institute is concerned. Each such report shall identify areas of research and research techniques of the Institute of potential importance to the long-term competitiveness of United States industry, in which the Institute possesses special competence, which could be used to assist United States enterprises and United States industrial joint research and development ventures.

(2) The Committee shall render to the Secretary and the Congress such additional reports on specific policy matters as it deems appropriate.

**[Section 11 (15 U.S.C. 278a) was repealed.]**

SEC. 12. [15 U.S.C. 278b] (a) The Institute is authorized to utilize in the performance of its functions the Working Capital Fund established by the Act of June 29, 1950 (64 Stat. 275).

(b) The working capital of the fund shall be available for obligation and payment for any activities authorized by this Act, as amended, and for any activities for which provision is made in the appropriations which reimburse the fund.

(c) In the performance of authorized activities, the Working Capital Fund shall be available and may be reimbursed for expenses of hire of automobile, hire of consultants, and travel to meetings, to the extent that such expenses are authorized for the appropriations of the Department of Commerce.

(d) The fund may be credited with advances and reimbursements, including receipts from non-Federal sources, for services performed under the authority of section 3 of this Act.

(e) As used in this Act the term "cost" shall be construed to include directly related expenses and appropriate charges for indirect and administrative expenses.

(f) The amount of any earned net income resulting from the operation of the fund at the close of each fiscal year shall be paid into the general fund of the Treasury: *Provided*, That such earned net income may be applied to restore any prior impairment of the fund, and to ensure the availability of working capital necessary to replace equipment and inventories.

SEC. 13. [15 U.S.C. 278c] To the extent that funds are specifically appropriated therefor, the Secretary of Commerce is authorized to acquire land for such field sites as are necessary for the proper and efficient conduct of the activities authorized herein.

SEC. 14. [15 U.S.C. 278d] (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.

SEC. 15. [15 U.S.C. 278e] 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.<sup>1</sup> (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

<sup>1</sup> So in law.

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.

SEC. 16. [15 U.S.C. 278f] (a) There is hereby established within the Department of Commerce a Fire Research Center which shall have the mission of performing and supporting research on all aspects of fire with aim of providing scientific and technical knowledge applicable to the prevention and control of fires. The content and priorities of the research program shall be determined in consultation with the Administrator of the United States Fire Administration. In implementing this section, the Secretary is authorized to conduct, directly or through contracts or grants, a fire research program, including—

(1) basic and applied fire research for the purpose of arriving at an understanding of the fundamental processes underlying all aspects of fire. Such research shall include scientific investigations of—

(A) the physics and chemistry of combustion processes;

(B) the dynamics of flame ignition, flame spread, and flame extinguishment;

(C) the composition of combustion products developed by various sources and under various environmental conditions;

(D) the early stages of fires in buildings and other structures, structural subsystems and structural components in all other types of fires, including, but not limited to, forest fires, brush fires, fires underground, oil blowout fires, and waterborne fires, with the aim of improving early detection capability;

(E) the behavior of fires involving all types of buildings and other structures and their contents (including mobile homes and highrise buildings, construction materials, floor and wall coverings, coatings, furnishings, and other combustible materials), and all other types of fires, including forest fires, brush fires, fires underground, oil blowout fires, and waterborne fires;

(F) the unique fire hazards arising from the transportation and use, in industrial and professional practices, of combustible gases, fluids, and materials;

(G) design concepts for providing increased fire safety consistent with habitability, comfort, and human impact in buildings and other structures;

(H) such other aspects of the fire process as may be deemed useful in pursuing the objectives of the fire research program; and

- (I) methods, procedures, and equipment for arson prevention, detection, and investigation;
  - (2) research into the biological, physiological, and psychological factors affecting human victims of fire, and the performance of individual members of fire services, including—
    - (A) the biological and physiological effects of toxic substances encountered in fires;
    - (B) the trauma, cardiac conditions, and other hazards resulting from exposure to fire;
    - (C) the development of simple and reliable tests for determining the cause of death from fires;
    - (D) improved methods of providing first aid to victims of fires;
    - (E) psychological and motivational characteristics of persons who engage in arson, and the prediction and cure of such behavior;
    - (F) the conditions of stress encountered by firefighters, the effects of such stress, and the alleviation and reduction of such conditions; and
    - (G) such other biological, psychological, and physiological effects of fire as have significance for purposes of control or prevention of fires; and
  - (3) operation tests, demonstration projects, and fire investigations in support of the activities set forth in this section.
- The Secretary shall insure that the results and advances arising from the work of the research program are disseminated broadly. He shall encourage the incorporation, to the extent applicable and practicable, of such results and advances in building codes, fire codes, and other relevant codes, test methods, fire service operations and training, and standards. The Secretary is authorized to encourage and assist in the development and adoption of uniform codes, test methods, and standards aimed at reducing fire losses and costs of fire protection.
- (b) AUTHORIZATION OF APPROPRIATIONS.—For purposes of this section, there are authorized to be appropriated an amount not to exceed \$5,650,000 for the fiscal year ending September 30, 1980, which amount includes—
- (1) \$525,000 for programs which are recommended in the report submitted to the Congress by the Administrator of the United States Fire Administration pursuant to section 24(b)(1) of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2220(b)(1); and
  - (2) \$119,000 for adjustments required by law in salaries, pay, retirement, and employee benefits.

SEC. 17. [15 U.S.C. 278g] (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 determine 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 me-

trology 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. [15 U.S.C. 278g-1] 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 shall carry out activities under this subsection, including education and outreach activities to the general public, industry and

diverse types of institutions of higher education, including historically Black colleges and universities, Tribal Colleges and Universities, and 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 temporary 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;

(5) facilitate laboratory tours and provide presentations for educational, industry, and community groups; and<sup>2</sup>

(6) conduct outreach to and develop research collaborations with historically Black colleges and universities, Tribal Colleges or 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 nonprofit associations and professional associations or professional societies, to engage persons historically underrepresented in STEM through programs developed under this subsection.

#### SEC. 19. [15 U.S.C. 278g–2] POST-DOCTORAL FELLOWSHIP PROGRAM.

(a) IN GENERAL.—The Institute and the National Academy of Sciences, jointly, shall establish and conduct a post-doctoral fellowship program, subject to the availability of appropriations.

(b) ORGANIZATION.—The post-doctoral fellowship program shall include not less than 20 new fellows per fiscal year.

(c) EVALUATIONS.—In evaluating applications for post-doctoral fellowships under this section, the Director of the Institute and the President of the National Academy of Sciences shall give consideration to the goal of promoting the participation of individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunities Act (42 U.S.C. 1885a, 1885b) in research areas supported by the Institute.

SEC. 19A. [15 U.S.C. 278g–2a] (a) The Director shall establish within the Institute a teacher science and technology enhancement program to provide for professional development of mathematics and science teachers of elementary, middle, and secondary schools (as those terms are defined by the Director), including providing for

<sup>2</sup>The word “and” at the end of paragraph (5) should not appear. See amendment made by section 10241(2)(B) of division B of Public Law 117–167.



the improvement of those teachers with respect to the understanding of science and the impacts of science on commerce.

(b) In carrying out the program under this section, the Director shall focus on the areas of—

- (1) scientific measurements;
- (2) tests and standards development;
- (3) industrial competitiveness and quality;
- (4) manufacturing;
- (5) technology transfer; and
- (6) any other area of expertise of the Institute that the Director determines to be appropriate.

(c) The Director shall develop and issue procedures and selection criteria for participants in the program. The Director shall give special consideration to an application from a teacher from a high-need school, as defined in section 200 of the Higher Education Act of 1965 (20 U.S.C. 1021).

(d) The program under this section shall be conducted on an annual basis during the summer months, during the period of time when a majority of elementary, middle, and secondary schools have not commenced a school year.

(e) The program shall provide for teachers' participation in activities at the laboratory facilities of the Institute, or shall utilize other means of accomplishing the goals of the program as determined by the Director, which may include the Internet, video conferencing and recording, and workshops and conferences.

SEC. 20. [15 U.S.C. 278g-3] (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)(6) 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;

(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 such standards and guidelines to the Secretary of Commerce for promulgation under section 11331 of title 40<sup>3</sup>;

(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

<sup>3</sup>The phrase “, United States Code” probably should appear before the semicolon at the end of paragraph (3).

should be made compulsory and binding, to the Secretary of Commerce 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 Director of the Office of Management and Budget with such standards submitted to the Director<sup>4</sup>; 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.

<sup>4</sup> Section 10246(a)(2)(B)(ii) of division B of Public Law 117–167 provides for an amendment to strike “Director of Management and Budget with such standards submitted to the Director” and insert “Secretary of Commerce with such standards submitted to the Secretary”. Such amendment was not carried out because it should have been made to strike “Director of [the] Management and Budget with such standards submitted to the Director”.

(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)<sup>5</sup> 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)<sup>6</sup> 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)<sup>5</sup> 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)<sup>6</sup> of such title.

SEC. 21. [15 U.S.C. 278g–4] (a) There is hereby established a Information Security and Privacy Advisory Board within the Department of Commerce. The Secretary of Commerce shall appoint the chairman of the Board. The Board shall be composed of twelve additional members appointed by the Secretary of Commerce as follows:

(1) four members from outside the Federal Government who are eminent in the information technology industry, at least one of whom is representative of small or medium sized companies in such industries;

(2) four members from outside the Federal Government who are eminent in the fields of information technology, or related disciplines, but who are not employed by or representative of a producer of information technology; and

<sup>5</sup> Section 2(e)(4)(B)(i) of Public Law 113–283 provides that section 20 is amended by striking “section 3532(1)” and inserting “section 3552(b)(2)”. This amendment could not be executed due to a previous amendment made by section 204 of Public Law 113–274 which inserted a new subsection (e) and redesignated the previous subsection (e) as subsection (f).

<sup>6</sup> Section 2(e)(4)(B)(ii) of Public Law 113–283 provides that section 20 is amended by striking “section 3532(b)(2)” and inserting “section 3552(b)(5)”. This amendment could not be executed due to a previous amendment made by section 204 of Public Law 113–274 which inserted a new subsection (e) and redesignated the previous subsection (e) as subsection (f).

(3) four members from the Federal Government who have information system management experience, including experience in information security and privacy, at least one of whom shall be from the National Security Agency.

(b) The duties of the Board shall be—

(1) to identify emerging managerial, technical, administrative, and physical safeguard issues relative to information security and privacy;

(2) to advise the Institute, the Secretary of Homeland Security, and the Director of the Office of Management and Budget on information security and privacy issues pertaining to Federal Government information systems, including through review of proposed standards and guidelines developed under section 20; and

(3) to report annually its findings to the Secretary of Commerce, the Secretary of Homeland Security, the Director of the Office of Management and Budget, the Director of the National Security Agency, and the appropriate committees of the Congress.

(c) The term of office of each member of the Board shall be four years, except that—

(1) of the initial members, three shall be appointed for terms of one year, three shall be appointed for terms of two years, three shall be appointed for terms of three years, and three shall be appointed for terms of four years; and

(2) any member appointed to fill a vacancy in the Board shall serve for the remainder of the term for which his predecessor was appointed.

(d) The Board shall not act in the absence of a quorum, which shall consist of seven members.

(e) Members of the Board, other than full-time employees of the Federal Government, while attending meetings of such committees or while otherwise performing duties at the request of the Board Chairman while away from their homes or a regular place of business, may be allowed travel expenses in accordance with subchapter I of chapter 57 of title 5, United States Code.

(f) The Board shall hold meetings at such locations and at such time and place as determined by a majority of the Board.

(g) To provide the staff services necessary to assist the Board in carrying out its functions, the Board may utilize personnel from the Institute or any other agency of the Federal Government with the consent of the head of the agency.

(h) As used in this section, the terms “information system” and “information technology” have the meanings given in section 20.

#### SEC. 22 RESEARCH PROGRAM ON SECURITY OF COMPUTER SYSTEMS<sup>7</sup>

(a) ESTABLISHMENT.—The Director shall establish a program of assistance to institutions of higher education that enter into partnerships with for-profit entities to support research to improve the security of computer systems. The partnerships may also include

<sup>7</sup> Style of heading so in law. The code citation for section 22 is section 278h of title 15, United States Code.

government laboratories and nonprofit research institutions. The program shall—

- (1) include multidisciplinary, long-term research;
- (2) include research directed toward addressing needs identified through the activities of the Computer System Security and Privacy Advisory Board under section 20(f); and
- (3) promote the development of a robust research community working at the leading edge of knowledge in subject areas relevant to the security of computer systems by providing support for graduate students, post-doctoral researchers, and senior researchers.

(b) FELLOWSHIPS.—

(1) POST-DOCTORAL RESEARCH FELLOWSHIPS.—The Director is authorized to establish a program to award post-doctoral research fellowships to individuals who are citizens, nationals, or lawfully admitted permanent resident aliens of the United States and are seeking research positions at institutions, including the Institute, engaged in research activities related to the security of computer systems, including the research areas described in section 4(a)(1) of the Cyber Security Research and Development Act.

(2) SENIOR RESEARCH FELLOWSHIPS.—The Director is authorized to establish a program to award senior research fellowships to individuals seeking research positions at institutions, including the Institute, engaged in research activities related to the security of computer systems, including the research areas described in section 4(a)(1) of the Cyber Security Research and Development Act. Senior research fellowships shall be made available for established researchers at institutions of higher education who seek to change research fields and pursue studies related to the security of computer systems.

(3) ELIGIBILITY.—

(A) IN GENERAL.—To be eligible for an award under this subsection, an individual shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require.

(B) STIPENDS.—Under this subsection, the Director is authorized to provide stipends for post-doctoral research fellowships at the level of the Institute's Post Doctoral Research Fellowship Program and senior research fellowships at levels consistent with support for a faculty member in a sabbatical position.

(c) AWARDS; APPLICATIONS.—

(1) IN GENERAL.—The Director is authorized to award grants or cooperative agreements to institutions of higher education to carry out the program established under subsection (a). No funds made available under this section shall be made available directly to any for-profit partners.

(2) ELIGIBILITY.—To be eligible for an award under this section, an institution of higher education shall submit an application to the Director at such time, in such manner, and containing such information as the Director may require. The application shall include, at a minimum, a description of—

(A) the number of graduate students anticipated to participate in the research project and the level of support to be provided to each;

(B) the number of post-doctoral research positions included under the research project and the level of support to be provided to each;

(C) the number of individuals, if any, intending to change research fields and pursue studies related to the security of computer systems to be included under the research project and the level of support to be provided to each; and

(D) how the for-profit entities, nonprofit research institutions, and any other partners will participate in developing and carrying out the research and education agenda of the partnership.

(d) PROGRAM OPERATION.—

(1) MANAGEMENT.—The program established under subsection (a) shall be managed by individuals who shall have both expertise in research related to the security of computer systems and knowledge of the vulnerabilities of existing computer systems. The Director shall designate such individuals as program managers.

(2) MANAGERS MAY BE EMPLOYEES.—Program managers designated under paragraph (1) may be new or existing employees of the Institute or individuals on assignment at the Institute under the Intergovernmental Personnel Act of 1970, except that individuals on assignment at the Institute under the Intergovernmental Personnel Act of 1970 shall not directly manage such employees.

(3) MANAGER RESPONSIBILITY.—Program managers designated under paragraph (1) shall be responsible for—

(A) establishing and publicizing the broad research goals for the program;

(B) soliciting applications for specific research projects to address the goals developed under subparagraph (A);

(C) selecting research projects for support under the program from among applications submitted to the Institute, following consideration of—

(i) the novelty and scientific and technical merit of the proposed projects;

(ii) the demonstrated capabilities of the individual or individuals submitting the applications to successfully carry out the proposed research;

(iii) the impact the proposed projects will have on increasing the number of computer security researchers;

(iv) the nature of the participation by for-profit entities and the extent to which the proposed projects address the concerns of industry; and

(v) other criteria determined by the Director, based on information specified for inclusion in applications under subsection (c); and

(D) monitoring the progress of research projects supported under the program.

(4) REPORTS.—The Director shall report to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Science annually on the use and responsibility of individuals on assignment at the Institute under the Intergovernmental Personnel Act of 1970 who are performing duties under subsection (d).

(e) REVIEW OF PROGRAM.—

(1) PERIODIC REVIEW.—The Director shall periodically review the portfolio of research awards monitored by each program manager designated in accordance with subsection (d). In conducting those reviews, the Director shall seek the advice of the Computer System Security and Privacy Advisory Board, established under section 21, on the appropriateness of the research goals and on the quality and utility of research projects managed by program managers in accordance with subsection (d).

(2) COMPREHENSIVE 5-YEAR REVIEW.—The Director shall also contract with the National Research Council for a comprehensive review of the program established under subsection (a) during the 5th year of the program. Such review shall include an assessment of the scientific quality of the research conducted, the relevance of the research results obtained to the goals of the program established under subsection (d)(3)(A), and the progress of the program in promoting the development of a substantial academic research community working at the leading edge of knowledge in the field. The Director shall submit to Congress a report on the results of the review under this paragraph no later than 6 years after the initiation of the program.

(f) DEFINITIONS.—In this section:

(1) COMPUTER SYSTEM.—The term “computer system” has the meaning given that term in section 20(d)(1).

(2) INSTITUTION OF HIGHER EDUCATION.—The term “institution of higher education” has the meaning given that term in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

**SEC. 22A. [15 U.S.C. 278h-1] STANDARDS FOR ARTIFICIAL INTELLIGENCE.**

(a) MISSION.—The Institute shall—

(1) advance collaborative frameworks, standards, guidelines, and associated methods and techniques for artificial intelligence;

(2) support the development of a risk-mitigation framework for deploying artificial intelligence systems;

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

(4) support the development of technical standards and guidelines by which to test for bias in artificial intelligence training data and applications.

(b) SUPPORTING ACTIVITIES.—The Director of the National Institute of Standards and Technology may—



(1) support measurement research and development of best practices and voluntary standards for trustworthy artificial intelligence systems, which may include—

(A) privacy and security, including for datasets used to train or test artificial intelligence systems and software and hardware used in artificial intelligence systems;

(B) advanced computer chips and hardware designed for artificial intelligence systems;

(C) data management and techniques to increase the usability of data, including strategies to systematically clean, label, and standardize data into forms useful for training artificial intelligence systems and the use of common, open licenses;

(D) safety and robustness of artificial intelligence systems, including assurance, verification, validation, security, control, and the ability for artificial intelligence systems to withstand unexpected inputs and adversarial attacks;

(E) auditing mechanisms and benchmarks for accuracy, transparency, verifiability, and safety assurance for artificial intelligence systems;

(F) applications of machine learning and artificial intelligence systems to improve other scientific fields and engineering;

(G) model documentation, including performance metrics and constraints, measures of fairness, training and testing processes, and results;

(H) system documentation, including connections and dependences within and between systems, and complications that may arise from such connections; and

(I) all other areas deemed by the Director to be critical to the development and deployment of trustworthy artificial intelligence;

(2) produce curated, standardized, representative, high-value, secure, aggregate, and privacy protected data sets for artificial intelligence research, development, and use;

(3) support one or more institutes as described in section 5201(b) of the National Artificial Intelligence Initiative Act of 2020 for the purpose of advancing measurement science, voluntary consensus standards, and guidelines for trustworthy artificial intelligence systems;

(4) support and strategically engage in the development of voluntary consensus standards, including international standards, through open, transparent, and consensus-based processes; and

(5) 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 division.

(c) **RISK MANAGEMENT FRAMEWORK.**—Not later than 2 years after the date of the enactment of this Act, the Director shall work

to develop, and periodically update, in collaboration with other public and private sector organizations, including the National Science Foundation and the Department of Energy, a voluntary risk management framework for trustworthy artificial intelligence systems. The framework shall—

(1) identify and provide standards, guidelines, best practices, methodologies, procedures and processes for—

(A) developing trustworthy artificial intelligence systems;

(B) assessing the trustworthiness of artificial intelligence systems; and

(C) mitigating risks from artificial intelligence systems;

(2) establish common definitions and characterizations for aspects of trustworthiness, including explainability, transparency, safety, privacy, security, robustness, fairness, bias, ethics, validation, verification, interpretability, and other properties related to artificial intelligence systems that are common across all sectors;

(3) provide case studies of framework implementation;

(4) align with international standards, as appropriate;

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

(6) not prescribe or otherwise require the use of specific information or communications technology products or services.

(d) PARTICIPATION IN STANDARD SETTING ORGANIZATIONS.—

(1) REQUIREMENT.—The Institute shall participate in the development of standards and specifications for artificial intelligence.

(2) PURPOSE.—The purpose of this participation shall be to ensure—

(A) that standards promote artificial intelligence systems that are trustworthy; and

(B) that standards relating to artificial intelligence reflect the state of technology and are fit-for-purpose and developed in transparent and consensus-based processes that are open to all stakeholders.

(e) DATA SHARING BEST PRACTICES.—Not later than 1 year after the date of enactment of this Act, the Director shall, in collaboration with other public and private sector organizations, develop guidance to facilitate the creation of voluntary data sharing arrangements between industry, federally funded research centers, and Federal agencies for the purpose of advancing artificial intelligence research and technologies, including options for partnership models between government entities, industry, universities, and nonprofits that incentivize each party to share the data they collected.

(f) BEST PRACTICES FOR DOCUMENTATION OF DATA SETS.—Not later than 1 year after the date of enactment of this Act, the Director shall, in collaboration with other public and private sector organizations, develop best practices for datasets used to train artificial intelligence systems, including—

(1) standards for metadata that describe the properties of datasets, including—

- (A) the origins of the data;
  - (B) the intent behind the creation of the data;
  - (C) authorized uses of the data;
  - (D) descriptive characteristics of the data, including what populations are included and excluded from the datasets; and
  - (E) any other properties as determined by the Director; and
  - (2) standards for privacy and security of datasets with human characteristics.
- (g) TESTBEDS.—In coordination with other Federal agencies as appropriate, the private sector, and institutions of higher education (as such term is defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)), the Director may establish testbeds, including in virtual environments, to support the development of robust and trustworthy artificial intelligence and machine learning systems, including testbeds that examine the vulnerabilities and conditions that may lead to failure in, malfunction of, or attacks on such systems.
- (h) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the National Institute of Standards and Technology to carry out this section—
- (1) \$64,000,000 for fiscal year 2021;
  - (2) \$70,400,000 for fiscal year 2022;
  - (3) \$77,440,000 for fiscal year 2023;
  - (4) \$85,180,000 for fiscal year 2024; and
  - (5) \$93,700,000 for fiscal year 2025.

## REPORTS TO CONGRESS

SEC. 23. [15 U.S.C. 278i] (a) The Director shall keep the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives<sup>8</sup> fully and currently informed with regard to all of the activities of the Institute.

(b) The Director shall justify in writing all changes in policies regarding fees for standard reference materials and calibration services occurring after June 30, 1987, including a description of the anticipated impact of any proposed changes on demand for and anticipated revenues from the materials and services. Changes in policy and fees shall not be effective unless and until the Director has submitted the proposed schedule and justification to the Congress and 30 days on which both Houses of Congress are in session have elapsed since such submission, except that the requirement of this sentence shall not apply with respect to adjustments which are based solely on changes in the costs of raw materials or of producing and delivering standard reference materials or calibration services.

<sup>8</sup>In accordance with section 1(a)(10) of Public Law 104–14 (109 Stat. 187), “the Committee on Science, Space, and Technology of the House of Representatives shall be treated as referring to the Committee on Science of the House of Representatives”.

## STUDIES BY THE NATIONAL RESEARCH COUNCIL

SEC. 24. [15 U.S.C. 278j] The Director may periodically contract with the National Research Council for advice and studies to assist the Institute to serve United States industry and science. The subjects of such advice and studies may include—

- (1) the competitive position of the United States in key areas of manufacturing and emerging technologies and research activities which would enhance that competitiveness;
- (2) potential activities of the Institute, in cooperation with industry and the States, to assist in the transfer and dissemination of new technologies for manufacturing and quality assurance; and
- (3) identification and assessment of likely barriers to widespread use of advanced manufacturing technology by the United States workforce, including training and other initiatives which could lead to a higher percentage of manufacturing jobs of United States companies being located within the borders of our country.

## SEC. 25. [15 U.S.C. 278k] 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, an institution of higher education, or a State, United States territory, local, or tribal government or a consortium thereof.

(6) HISTORICALLY BLACK COLLEGE AND UNIVERSITY.—The term “historically Black college and university” has the meaning given the term “part B institution” in section 322 of the Higher Education Act of 1965 (20 U.S.C. 1061).

(7)<sup>9</sup> 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).

(7)<sup>9</sup> HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP OR PROGRAM.—The term “Hollings Manufacturing Extension Partnership” or “Program” means the program established under subsection (b).

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

(9) MINORITY-SERVING INSTITUTION.—The term “minority-serving institution” means a Hispanic-serving institution as defined in section 502(a) of the Higher Education Act of 1965 (20 U.S.C. 1101a(a)); an Alaska Native-serving institution or Native Hawaiian-serving institution as defined in section 317(b) of such Act (20 U.S.C. 1059d(b)); or a Predominantly Black institution, Asian American and Native American Pacific Islander-serving institution, or Native American-serving non-tribal institution as defined in section 371(c) of such Act (20 U.S.C. 1067q(c)).

(10) SECONDARY SCHOOL.—The term “secondary school” has the meaning given such term in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801).

(11) TRIBAL COLLEGE OR UNIVERSITY.—The term “Tribal College or University” has the meaning given the term “Tribal College or University” in section 316 of the Higher Education Act of 1965 (20 U.S.C. 1059c).

(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

<sup>9</sup>There are two paragraph (7)s in law. See amendments made by paragraphs (1) and (4) of section 10255 of division B of Public Law 117–167.

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 secondary schools, 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, local secondary schools and local colleges, including historically Black colleges and universities, Tribal Colleges or Universities, minority-serving institutions, community colleges, and secondary schools and colleges 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 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)<sup>10</sup> 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.—

<sup>10</sup>So in law. There are no subsequent paragraphs in subsection (j).

(1) IN GENERAL.—To the extent provided in advance in appropriations Acts, other Federal departments and agencies may transfer amounts to the Institute, and the Secretary and Director may accept and make available cash donations from the private sector pursuant to section 2(c)(7), to be used for strengthening United States manufacturing under this section.

(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 Director to Centers, provided that the Secretary and Director may make noncompetitive awards, pursuant to this section or section 25A, or as a non-competitive contract, as appropriate, if the Secretary and 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 Centers serving manufacturers of such market or sector is five or fewer; and

(C) such Center has or Centers have 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) APPLICABILITY OF CHAPTER 10 OF TITLE 5, UNITED STATES CODE.—

(A) IN GENERAL.—In discharging its duties under this subsection, the MEP Advisory Board shall function solely in an advisory capacity, in accordance with chapter 10 of title 5, United States Code.

(B) EXCEPTION.—Section 1013 of title 5, United States Code, 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. [15 U.S.C. 278k-1] 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. [15 U.S.C. 278k-2] 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, subject to the availability of appropriations, as a part of the Hollings Manufacturing Extension Partnership under sections 25 and 25A, a pilot program of expansion awards among participants described in subsection (c) for the purposes described in subsection (e).

(c) PARTICIPANTS.—Participants receiving awards under this section shall be Centers, or a consortium of Centers (as such term is defined in section 25).

(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 worker education, training, development, and entrepreneurship training and to connect individuals or business with such services offered in their community, which may include 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.

(3) To mitigate vulnerabilities to cyberattacks, including helping to offset the cost of cybersecurity projects for small manufacturers.

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

(A) developing technology demonstration laboratories;

(B) 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;

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

(D) 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.

(5) 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 off-shore suppliers, redesigning products and processes to encourage reshoring, and other relevant topics; and

(B) expanded services to provide industrywide 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, tooling, and metal or chemical refining.

(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 section 25(c) or 25A.

(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.—Not later than October 1, 2025, 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 remain as part of a permanent expansion awards program;

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

(4) 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

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

#### ASSISTANCE TO STATE TECHNOLOGY PROGRAMS

SEC. 26. [15 U.S.C. 278l] (a) In addition to the Hollings Manufacturing Extension Partnership under section 25, the Secretary, through the Director and, if appropriate, through other officials, shall provide technical assistance to State technology programs throughout the United States, in order to help those programs help businesses, particularly small- and medium-sized businesses, to enhance their competitiveness through the application of science and technology.

(b) Such assistance from the Institute to State technology programs shall include, but not be limited to—

(1) technical information and advice from Institute personnel;

(2) workshops and seminars for State officials interested in transferring Federal technology to businesses; and

(3) entering into cooperative agreements when authorized to do so under this or any other Act.

[Section 27 repealed by Public Law 110–69. Section 28 repealed by Public Law 114–329.]



## SAVINGS PROVISION

SEC. 29. [15 U.S.C. 271 note] All rules and regulations, determinations, standards, contracts, certifications, authorizations, delegations, results and findings of investigations, or other actions duly issued, made, or taken by or pursuant to this Act, or under the authority of any other statutes which resulted in the assignment of functions or activities to the Secretary, the Department, the Director, or the Institute, as are in effect immediately before the date of enactment of this section, and not suspended by the Secretary, the Director, the Institute or the courts, shall continue in full force and effect after the date of enactment of this section until modified or rescinded.

## USER FEES

SEC. 30. [15 U.S.C. 278o] The Institute shall not implement a policy of charging fees with respect to the use of Institute research facilities by research associates in the absence of express statutory authority to charge such fees.

## NOTICE

SEC. 31. [15 U.S.C. 278p] (a) NOTICE OF REPROGRAMMING.—If any funds authorized for carrying out this Act are subject to a reprogramming action that requires notice to be provided to the Appropriations Committees of the House of Representatives and the Senate, notice of such action shall concurrently be provided to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

(b) NOTICE OF REORGANIZATION.—

(1) REQUIREMENT.—The Secretary shall provide notice to the Committees on Science and Appropriations of the House of Representatives, and the Committees on Commerce, Science, and Transportation and Appropriations of the Senate, not later than 15 days before any major reorganization of any program, project, or activity of the Institute.

(2) DEFINITION.—For purposes of this subsection, the term “major reorganization” means any reorganization of the Institute that involves the reassignment of more than 25 percent of the employees of the Institute.

SEC. 32. [15 U.S.C. 278q] Appropriations to carry out the provisions of this Act may remain available for obligation and expenditure for such period or periods as may be specified in the Acts making such appropriations.

SEC. 33. [15 U.S.C. 278r] COLLABORATIVE MANUFACTURING RESEARCH PILOT GRANTS.

(a) AUTHORITY.—

(1) ESTABLISHMENT.—The Director shall establish a pilot program of awards to partnerships among participants described in paragraph (2) for the purposes described in paragraph (3). Awards shall be made on a peer-reviewed, competitive basis.

(2) PARTICIPANTS.—Such partnerships shall include at least—

(A) 1 manufacturing industry partner; and

(B) 1 nonindustry partner.

(3) PURPOSE.—The purpose of the program under this section is to foster cost-shared collaborations among firms, educational institutions, research institutions, State agencies, and nonprofit organizations to encourage the development of innovative, multidisciplinary manufacturing technologies. Partnerships receiving awards under this section shall conduct applied research to develop new manufacturing processes, techniques, or materials that would contribute to improved performance, productivity, and competitiveness of United States manufacturing, and build lasting alliances among collaborators.

(b) PROGRAM CONTRIBUTION.—Awards under this section shall provide for not more than one-third of the costs of a partnership. Not more than an additional one-third of such costs may be obtained directly or indirectly from other Federal sources.

(c) 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. Such applications shall describe at a minimum—

(1) how each partner will participate in developing and carrying out the research agenda of the partnership;

(2) the research that the grant would fund; and

(3) how the research to be funded with the award would contribute to improved performance, productivity, and competitiveness of the United States manufacturing industry.

(d) SELECTION CRITERIA.—In selecting applications for awards under this section, the Director shall consider at a minimum—

(1) the degree to which projects will have a broad impact on manufacturing;

(2) the novelty and scientific and technical merit of the proposed projects; and

(3) the demonstrated capabilities of the applicants to successfully carry out the proposed research.

(e) DISTRIBUTION.—In selecting applications under this section the Director shall ensure, to the extent practicable, a distribution of overall awards among a variety of manufacturing industry sectors and a range of firm sizes.

(f) DURATION.—In carrying out this section, the Director shall run a single pilot competition to solicit and make awards. Each award shall be for a 3-year period.

[15 U.S.C. 278s]

#### SEC. 34. MANUFACTURING USA.

(a) DEFINITIONS.—In this section:

(1) AGENCY HEAD.—The term “agency head” means the head of any Executive agency (as defined in section 105 of title 5, United States Code), other than the Department of Defense.

(2) REGIONAL INNOVATION INITIATIVE.—The term “regional innovation initiative” has the meaning given such term in section 27(f)(1) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3722(f)(1)).

## (b) ESTABLISHMENT OF MANUFACTURING USA PROGRAM.—

(1) IN GENERAL.—The Secretary shall establish within the Institute a program to be known as the “Manufacturing United States of America Program” or the “Manufacturing USA Program” (referred to in this section as the “Program”).

(2) PURPOSES OF PROGRAM.—The purposes of the Program are—

(A) to improve the competitiveness of United States manufacturing and to increase the production of goods manufactured predominantly within the United States;

(B) to stimulate United States leadership in advanced manufacturing research, innovation, and technology;

(C) to facilitate the transition of innovative technologies into scalable, cost-effective, and high-performing manufacturing capabilities;

(D) to facilitate access by manufacturing enterprises to capital-intensive infrastructure, including high-performance electronics and computing, and the supply chains that enable these technologies;

(E) to accelerate the development of an advanced manufacturing workforce;

(F) to facilitate peer exchange of and the documentation of best practices in addressing advanced manufacturing challenges;

(G) to leverage non-Federal sources of support to promote a stable and sustainable business model without the need for long-term Federal funding;

(H) to create and preserve jobs; and

(I) to contribute to the development of regional innovation initiatives across the United States.

(3) SUPPORT.—The Secretary, acting through the Director, shall carry out the purposes set forth in paragraph (2) by supporting—

(A) the Manufacturing USA Network established under subsection (b); and

(B) the establishment of Manufacturing USA institutes.

(4) DIRECTOR.—The Secretary shall carry out the Program through the Director.

## (c) ESTABLISHMENT OF MANUFACTURING USA NETWORK.—

(1) IN GENERAL.—As part of the Program, the Secretary shall establish a network of Manufacturing USA institutes.

(2) DESIGNATION.—The network established under paragraph (1) shall be known as the “Manufacturing United States of America Network” or the “Manufacturing USA Network” (referred to in this section as the “Network”).

## (d) MANUFACTURING USA INSTITUTES.—

(1) IN GENERAL.—For purposes of this section, a Manufacturing USA institute is an institute that—

(A) has been established by a person or group of persons to address challenges in advanced manufacturing and to assist manufacturers in retaining or expanding industrial production and jobs in the United States;

(B) has a predominant focus on a manufacturing process, novel material, enabling technology, supply chain integration methodology, or another relevant aspect of advanced manufacturing, such as nanotechnology applications, advanced ceramics, photonics and optics, composites, biobased and advanced materials, flexible hybrid technologies, tool development for microelectronics, food manufacturing, superconductors, advanced battery technologies, robotics, advanced sensors, quantum information science, supply chain water optimization, aeronautics and advanced materials, and graphene and graphene commercialization;

(C) has the potential—

(i) to improve the competitiveness of United States manufacturing, including key advanced manufacturing technologies such as nanotechnology, advanced ceramics, photonics and optics, composites, biobased and advanced materials, flexible hybrid technologies, tool development for microelectronics, food manufacturing, superconductors, advanced battery technologies, robotics, advanced sensors, quantum information science, supply chain water optimization, aeronautics and advanced materials, and graphene and graphene commercialization;

(ii) to accelerate non-Federal investment in advanced manufacturing production capacity in the United States; or

(iii) to enable the commercial application of new technologies or industry-wide manufacturing processes; and

(D) includes active participation among representatives from multiple industrial entities, research universities, community colleges, and other entities as appropriate, which may include industry-led consortia, career and technical education schools, Federal laboratories, State, local, and Tribal governments, businesses, educational institutions, and nonprofit organizations.

(2) ACTIVITIES.—

(A) REQUIRED ACTIVITIES.—For purposes of this section, a Manufacturing USA institute is also an institute that carries out the following:

(i) Research, development, and demonstration projects, including proof-of-concept development and prototyping, to reduce the cost, time, or risk of commercializing new technologies and improvements in existing technologies, processes, products, and research and development of materials to solve precompetitive industrial problems with economic or national security implications.

(ii) Development and implementation of education, training, and workforce recruitment courses, materials, and programs addressing workforce needs through training and education programs at all appro-

priate education levels, including programs on applied engineering.

(iii) Development of innovative methodologies and practices for supply chain integration and introduction of new technologies into supply chains, as appropriate.

(iv) Outreach and engagement with small and medium-sized manufacturing enterprises, including women, minority, and veteran owned manufacturing enterprises, in addition to large manufacturing enterprises.

(v) Development of roadmaps or leveraging of existing roadmaps with respect to technology areas being pursued by that Manufacturing USA institute that take into account the research and development undertaken at other Manufacturing USA institutes and Federal agencies with respect to such areas.

(B) PERMISSIBLE ACTIVITIES.—In addition to the activities set forth under subparagraph (A), a Manufacturing USA institute may carry out such other activities as may be consistent with the purposes set forth under subsection (b)(2).

(3) ADDITIONAL MANUFACTURING USA INSTITUTES.—

(A) IN GENERAL.—Except as provided in subparagraph (C), the National Additive Manufacturing Innovation Institute and other manufacturing institutes formally recognized as Manufacturing USA institutes pursuant to Federal law or executive actions, or under pending interagency review for such recognition as of December 16, 2014, shall be considered Manufacturing USA institutes for purposes of this section.

(B) NETWORK PARTICIPATION.—Except as provided in subparagraph (C), an institute that is substantially similar to an institute described by paragraphs (1) and (2) but does not meet every element of such description and does not receive financial assistance under subsection (e) may, upon request of the institute, be recognized as a Manufacturing USA institute by the Secretary for purposes of participation in the Network.

(C) APPLICABILITY.—Effective beginning on the date of the enactment of the National Defense Authorization Act for Fiscal Year 2020, an institute shall be treated as a Manufacturing USA institute under this section and subject to subsections (b)(2), (d), and (e) in the same manner and to the same extent as such provisions apply to a Manufacturing USA institute described by paragraphs (1) and (2) if such institute—

(i) (I) is, as of such date of enactment, considered a Manufacturing USA institute under subparagraph (A) or recognized as a Manufacturing USA institute under subparagraph (B); and

(II) as of such date of enactment, receives Federal financial assistance under subsection (e) or otherwise consistent with the purposes of this section;

(ii) is under pending agency review for such recognition as of such date of enactment; or

(iii) is currently funded by the Department of Energy.

(e) FINANCIAL ASSISTANCE TO ESTABLISH AND SUPPORT MANUFACTURING USA INSTITUTES.—

(1) FINANCIAL ASSISTANCE AUTHORIZED.—Under the Program, the Secretary and the Secretary of Energy shall, and every other agency head may, award financial assistance to a person or group of persons to assist the person or group of persons in planning, establishing, or supporting a Manufacturing USA institute.

(2) PERIOD AND RENEWAL OF AWARDS.—

(A) INITIAL PERIODS.—An award of financial assistance under paragraph (1) shall be awarded for an initial period of not less than 5 years and not more than 7 years.

(B) RENEWAL OF AWARDS.—

(i) RENEWAL AUTHORIZED.—An award of financial assistance under paragraph (1) may be renewed for additional periods, with each period not to exceed the duration of the initial period of the award, subject to a rigorous merit review.

(ii) CONSIDERATION OF PERFORMANCE STANDARDS.—In carrying out a rigorous merit review under clause (i) for renewal of an award under such clause for a Manufacturing USA institute, an agency head shall consider the extent to which the institute has made progress in meeting the standards of performance established pursuant to paragraph (5)(C).

(iii) INITIAL FAILURE TO MEET PERFORMANCE STANDARDS.—If, pursuant to a rigorous merit review under clause (i) for renewal of an award under such clause for a Manufacturing USA institute, an agency head finds that the institute does not meet the standards for performance established pursuant to paragraph (5)(C), the agency head shall—

(I) notify the institute of any deficiencies in the performance of the institute; and

(II) provide the institute one year to remedy such deficiencies.

(iv) FURTHER FAILURE TO MEET PERFORMANCE STANDARDS.—If a Manufacturing USA institute fails to remedy a deficiency identified or to show significant improvement in performance during the 1-year period set forth under clause (iii)(II)—

(I) the institute shall not be eligible for renewed award under clause (i); and

(II) the agency head that conducted the review for renewal shall notify the institute of such ineligibility.

(v) CONTINUATION OF EXISTING MANUFACTURING USA INSTITUTES.—Notwithstanding clauses (i) through (iv), a Manufacturing USA institute already in exist-

ence or undergoing a renewal process prior to December 1, 2019—

(I) may continue to receive support for the duration of the original funding award beginning on the date of establishment of that institute; and

(II) shall be eligible for renewal of that funding pursuant to clause (i).

(3) APPLICATION FOR FINANCIAL ASSISTANCE.—

(A) IN GENERAL.—A person or group of persons seeking financial assistance under paragraph (1) shall submit to an agency head an application therefor at such time, in such manner, and containing such information as the agency head may require.

(B) REQUIREMENTS.—An application submitted under subparagraph (A) for an institute shall, at a minimum include the following:

(i) A description of the specific sources and amounts of non-Federal financial support for the institute on the date financial assistance is sought.

(ii) A description of the anticipated sources and amounts of non-Federal financial support during the period for which the institute could be eligible for continued Federal financial assistance under this section.

(4) SELECTION.—

(A) COMPETITIVE, MERIT REVIEW.—In awarding financial assistance under paragraph (1), an agency head shall—

(i) use a competitive, merit review process that includes review by a diverse group of individuals with relevant expertise from both the private and public sectors; and

(ii) ensure that the technology focus of a Manufacturing USA institute does not substantially duplicate the technology focus of any other Manufacturing USA institute.

(B) PARTICIPATION IN PROCESS.—

(i) PROHIBITION ON PARTICIPATION BY POLITICAL APPOINTEES.—The review required by subparagraph (A)(i) may not include a review by a group of individuals that includes a political appointee.

(ii) CONFLICT OF INTEREST POLICIES.—Each agency head shall implement a conflict of interest policy that—

(I) ensures public transparency and accountability in the process used under subparagraph (A)(i); and

(II) requires full disclosure of any real or potential conflicts of interest on the parts of individuals that participate in the process used under subparagraph (A)(i).

(iii) DEFINITION OF POLITICAL APPOINTEE.—For purposes of this subparagraph, the term “political appointee” has the meaning given such term in section 714(h) of title 38, United States Code.

(C) CONSIDERATIONS.—In selecting a person or group of persons who submitted an application to an agency head under paragraph (3) for an award of financial assistance under paragraph (1) for a Manufacturing USA institute, the agency head shall consider, at a minimum, the following:

(i) The potential of the Manufacturing USA institute to advance domestic manufacturing and the likelihood of economic impact, including the creation or preservation of jobs, in the predominant focus areas of the institute.

(ii) The commitment of continued financial support, advice, participation, and other contributions from non-Federal sources, to provide leverage and resources to promote a stable and sustainable business model.

(iii) Whether the financial support provided to the Manufacturing USA institute from non-Federal sources exceeds the requested Federal financial assistance.

(iv) How the Manufacturing USA institute will increase the non-Federal investment in advanced manufacturing research in the United States.

(v) How the Manufacturing USA institute will engage with small and medium-sized manufacturing enterprises to improve the capacity of such enterprises to commercialize new processes and technologies and to improve the domestic supply chain.

(vi) How the Manufacturing USA institute will carry out educational and workforce activities that meet industrial needs related to the predominant focus areas of the institute.

(vii) How the Manufacturing USA institute will advance economic competitiveness and generate substantial benefits to the Nation that extend beyond the direct return to participants in the Program.

(viii) Whether the predominant focus of the Manufacturing USA institute is a manufacturing process, novel material, enabling technology, supply chain integration methodology, or other relevant aspect of advanced manufacturing that has not already been commercialized, marketed, distributed, or sold by another entity.

(ix) How the Manufacturing USA institute will strengthen and leverage the industrial, research, entrepreneurship, and other assets of a region.

(x) How the Manufacturing USA institute will encourage the education and training of veterans and individuals with disabilities.

(5) PERFORMANCE MEASUREMENT, TRANSPARENCY, AND ACCOUNTABILITY.—For each award of financial assistance under paragraph (1) by an agency head, the agency head shall—

(A) develop metrics to assess the effectiveness of the activities funded in making progress toward the purposes



of the Program set forth under subsection (b)(2), including the effectiveness of Manufacturing USA institutes in advancing technology readiness levels or manufacturing readiness levels;

(B) establish standards for the performance of Manufacturing USA institutes that are based on the metrics developed under subparagraph (A); and

(C) for each Manufacturing USA institute supported by the award, 5 years after the initial award and every 5 years thereafter until Federal financial assistance under this subsection is discontinued, conduct an assessment of the institute to confirm whether the performance of the institute is meeting the standards for performance established under subparagraph (B).

(6) **COLLABORATION.**—In awarding financial assistance under paragraph (1), an agency head, in coordination with the National Program Office, as the agency head considers appropriate, may collaborate with Federal departments and agencies whose missions contribute to or are affected by advanced manufacturing, including, as the agency head considers appropriate, the Department of Agriculture, the Department of Defense, the Department of Education, the Department of Energy, the Department of Labor, the Food and Drug Administration, the National Aeronautics and Space Administration, the National Institutes of Health, and the National Science Foundation.

(7) **MATCHING FUNDS AND PREFERENCES.**—

(A) **IN GENERAL.**—Except as provided in subparagraph (B), an agency head may not, with respect to a Manufacturing USA institute, award financial assistance under paragraph (1) or renew an award of financial assistance under paragraph (2) unless the agency head determines that non-Federal funding comprises 50 percent or more of the total amount of funding made available for the operation and support of the institute.

(B) **WAIVERS.**—An agency head awarding financial assistance under paragraph (1) with respect to a Manufacturing USA institute may waive the requirements of subparagraph (A) in the case of satellite centers, large capital facilities, equipment purchases, workforce development, or general operations.

(8) **DIVERSITY PREFERENCES.**—In awarding financial assistance under paragraph (1) for planning or establishing a Manufacturing USA institute, an agency head shall give special consideration to Manufacturing USA institutes that—

(A) contribute to the geographic diversity of the Manufacturing USA Program;

(B) are located in an area with a low per capita income;

(C) are located in an area with a high proportion of socially disadvantaged residents; or

(D) are located in small and rural communities.

(f) **AUTHORITY TO AWARD FINANCIAL ASSISTANCE FOR CONSTRUCTION OF TEST BEDS AND SPECIALIZED FACILITIES.**—

(1) IN GENERAL.—The Secretary may, acting through the Director, award financial assistance for the construction of test beds and specialized facilities by Manufacturing USA institutes established or supported under subsection (e) as the Secretary considers appropriate to carry out the purposes of the Program.

(2) REQUIREMENTS.—The Secretary shall exercise authority under paragraph (1) in a manner and with requirements consistent with paragraphs (3) through (8) of subsection (e).

(3) PRIORITY.—The Secretary shall establish preferences in selection criteria for proposals for financial assistance under this subsection from Manufacturing USA institutes that integrate as active members one or more covered entities as described in section 10262 of the Research and Development, Competition, and Innovation Act (Public Law 117–167).

(g) GRANT PROGRAM FOR PUBLIC SERVICE ACTIVITIES FOR MANUFACTURING USA INSTITUTES WITHOUT FEDERAL FUNDING.—The Secretary may award a grant on a competitive basis to a Manufacturing USA institute that is not receiving financial assistance under subsection (e) to carry out workforce development, outreach to small- and medium-sized manufacturers, and other activities that—

(1) are determined by the Secretary to be in the national interest; and

(2) are unlikely to receive private sector financial support.

(h) AUTHORIZATION OF APPROPRIATIONS.—

(1) NIST INDUSTRIAL TECHNICAL SERVICES ACCOUNT.—To the extent provided for in advance by appropriations Acts, the Secretary may use amounts appropriated to the Industrial Technical Services account to carry out this section as follows:

(A) For each of the fiscal years 2015 through 2019, an amount not to exceed \$5,000,000.

(B) For each of fiscal years 2020 through 2030, such amounts as may be necessary to carry out this section.

(2) DEPARTMENT OF ENERGY.—There are authorized to be appropriated to the Secretary of Energy for the provision of financial assistance under subsection (e) by the Department of Energy amounts as follows:

(A) \$70,000,000 for each of fiscal years 2020, 2021, and 2022.

(B) \$84,000,000 for each of fiscal years 2023 and 2024.

(i) NATIONAL PROGRAM OFFICE.—

(1) ESTABLISHMENT.—The Secretary shall establish, within the Institute, the National Office of the Manufacturing USA Network (referred to in this section as the “National Program Office”), which shall oversee and carry out the Program.

(2) FUNCTIONS.—The functions of the National Program Office are—

(A) to oversee the planning, management, and coordination of the Program;

(B) to coordinate with and, as appropriate, enter into memorandums of understanding with Federal departments and agencies whose missions contribute to or are affected by advanced manufacturing, including the Department of Agriculture, the Department of Defense, the Department

of Education, the Department of Energy, the Department of Labor, the Food and Drug Administration, the National Aeronautics and Space Administration, the National Institutes of Health, and the National Science Foundation, to carry out the purposes set forth under subsection (b)(2);

(C) to develop, not later than December 16, 2015, and update not less frequently than once every 3 years thereafter, a strategic plan to guide the Program, including a strategy for retaining domestic public benefits from Manufacturing USA institutes once Federal funding has been discontinued;

(D) to establish such procedures, processes, and criteria as may be necessary and appropriate to maximize cooperation and coordinate the activities of the Program with programs and activities of other Federal departments and agencies whose missions contribute to or are affected by advanced manufacturing;

(E) to establish a clearinghouse of public information related to the activities of the Program;

(F) to act as a convener of the Network;

(G) to work with Federal agencies that are not sponsoring or supporting a Manufacturing USA institute to explore and develop options for sponsoring or supporting a Manufacturing USA institute;

(H) to work with Federal agencies that are sponsoring or supporting a Manufacturing USA institute to develop and implement network-wide performance goals with measurable targets and timelines;

(I) to help develop pilot programs that may be implemented by the Manufacturing USA institutes to address specific purposes of the Program, including to accelerate technology transfer to the private sector and to develop entrepreneurship programs;

(J) to provide support services to promote workforce development activities, including the development of industry credentials;

(K) to identify and disseminate best practices for workforce education and training across the Network and further enhance collaboration among Manufacturing USA institutes in developing and implementing such practices;

(L) to collaborate with the Department of Labor, the Department of Education, industry, career and technical education schools, local community colleges, universities, and labor organizations to provide input, as appropriate, for the development of national certifications for advanced manufacturing workforce skills in the technology areas of the Manufacturing USA institutes; and

(M) to coordinate with Manufacturing USA institutes to develop best practices for the membership agreements and coordination of similar project solicitations.

(3) RECOMMENDATIONS.—In developing and updating the strategic plan under paragraph (2)(C), the Secretary shall solicit recommendations and advice from a wide range of stakeholders, including industry, small and medium-sized manufac-

turing enterprises, research universities, community colleges, State, Tribal, and local governments, and other relevant organizations and institutions on an ongoing basis.

(4) **REPORT TO CONGRESS.**—Upon completion, the Secretary shall transmit the strategic plan required under paragraph (2)(C) to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives.

(5) **HOLLINGS MANUFACTURING EXTENSION PARTNERSHIP.**—

(A) **IN GENERAL.**—The Secretary shall ensure that the National Program Office leverages the capabilities of the Hollings Manufacturing Extension Partnership into Program planning to ensure—

(i) significant outreach to, participation of, and engagement of small- and medium-sized manufacturers in Manufacturing USA institutes across the entirety of the manufacturing supply chain; and

(ii) that the results of the Program, including technologies developed by the Program, reach small- and medium-sized manufacturers and that such entities have access to technical assistance, as appropriate, in deploying those technologies.

(B) **LIAISONS.**—The Secretary may provide financial assistance to a manufacturing extension center established as part of the Hollings Manufacturing Extension Partnership to support the purposes of the Program by providing services in one or more of the following areas:

(i) Support services for small- and medium-sized manufacturers, that many include the designation of a liaison.

(ii) Assistance with workforce development.

(iii) Technology transfer for small and medium-sized manufacturers.

(iv) Such other areas as the Secretary determines appropriate to support the purposes of the Program.

(6) **DETAILS.**—Any Federal Government employee may be detailed to the National Program Office without reimbursement. Such detail shall be without interruption or loss of civil service status or privilege.

(7) **COUNCIL FOR COORDINATION OF INSTITUTES.**—

(A) **COUNCIL.**—The National Program Office shall establish or designate a council of heads of any Manufacturing USA institute receiving Federal funding at any time to foster collaboration between Manufacturing USA institutes.

(B) **MEETINGS.**—The council established or designated pursuant to subparagraph (A) shall meet not less frequently than twice each year.

(C) **DUTIES OF THE COUNCIL.**—The council established pursuant to subparagraph (A) shall assist the National Program Office in carrying out the functions of the National Program Office under paragraph (2).

(j) **REPORTING AND AUDITING.**—

(1) **ANNUAL REPORTS TO THE SECRETARY.**—

(A) IN GENERAL.—Not less frequently than once each year, each agency head that is providing financial assistance under subsection (e) shall—

(i) require each recipient of such financial assistance submit to the agency head a report that describes the finances and performance of the Manufacturing USA institute with respect to which the financial assistance is awarded; and

(ii) submit to the Secretary each report received by the agency head under clause (i).

(B) ELEMENTS.—Each report submitted under subparagraph (A) shall include:

(i) an accounting of expenditures of amounts awarded to the recipient under subsection (e); and

(ii) consistent with the standards for performance established under subsection (e)(5)(B), a description of the performance of the Manufacturing USA institute with respect to—

(I) its goals, plans, financial support, and accomplishments; and

(II) how the Manufacturing USA institute has furthered the purposes set forth under subsection (b)(2).

(2) ANNUAL REPORTS TO CONGRESS.—

(A) IN GENERAL.—Not less frequently than once each year until December 31, 2030, the Secretary shall submit a report to Congress that describes the performance of the Program during the most recent 1-year period.

(B) ELEMENTS.—Each report submitted under subparagraph (A) shall include, for the period covered by the report—

(i) a summary and assessment of the reports received by the Secretary under paragraph (1);

(ii) an accounting of the funds expended by the Secretary under the Program, including any waivers made under subsection (e)(7)(B);

(iii) an assessment of the participation in, and contributions to, the Network by any Manufacturing USA institutes not receiving financial assistance under subsection (e); and

(iv) an assessment of the Program with respect to meeting the purposes set forth under subsection (b)(2).

(3) ASSESSMENTS BY COMPTROLLER GENERAL OF THE UNITED STATES.—

(A) ASSESSMENTS.—Not less frequently than once every 3 years, the Comptroller General of the United States shall submit to Congress an assessment of the operation of the Program during the most recent 3-year period, including an assessment of the progress made towards achieving the goals specified in the national strategic plan for advanced manufacturing required under section 102(b)(7) of the America COMPETES Reauthorization Act of 2010 (42 U.S.C. 6622(b)(7)).

(B) ELEMENTS.—Each assessment submitted under subparagraph (A) shall include, for the period covered by the report—

(i) a review of the management, coordination, and industry utility of the Program;

(ii) an assessment of the extent to which the Program has furthered the purposes set forth under subsection (b)(2);

(iii) such recommendations for legislative and administrative action as the Comptroller General considers appropriate to improve the Program; and

(iv) an assessment as to whether any prior recommendations for improvement made by the Comptroller General have been implemented or adopted.

(C) FINAL ASSESSMENT.—No later than December 31, 2030, the Comptroller General shall submit to Congress a final report regarding the overall success of the Program.

(k) ADDITIONAL AUTHORITIES.—

(1) APPOINTMENT OF PERSONNEL AND CONTRACTS.—The Secretary may appoint such personnel and enter into such contracts, financial assistance agreements, and other agreements as the Secretary considers necessary or appropriate to carry out the Program, including support for research and development activities involving a Manufacturing USA institute.

(2) TRANSFER OF FUNDS.—Of amounts available under the authority provided by subsection (g), the Secretary may transfer to other Federal agencies such sums as the Secretary considers necessary or appropriate to carry out the Program. No funds so transferred may be used to reimburse or otherwise pay for the costs of financial assistance incurred or commitments of financial assistance made prior to December 16, 2014.

(3) AUTHORITY OF OTHER AGENCIES.—In the event that the Secretary exercises the authority to transfer funds to another agency under paragraph (2), such agency may accept such funds to award and administer, under the same conditions and constraints applicable to the Secretary, all aspects of financial assistance awards under this section.

(4) USE OF RESOURCES.—In furtherance of the purposes of the Program, the Secretary may use, with the consent of a covered entity and with or without reimbursement, the land, services, equipment, personnel, and facilities of such covered entity.

(5) ACCEPTANCE OF RESOURCES.—In addition to amounts appropriated to carry out the Program, the Secretary may accept funds, services, equipment, personnel, and facilities from any covered entity to carry out the Program, subject to the same conditions and constraints otherwise applicable to the Secretary under this section and such funds may only be obligated to the extent provided for in advance by appropriations Acts.

(6) COVERED ENTITIES.—For purposes of this subsection, a covered entity is any Federal department, Federal agency, instrumentality of the United States, State, local government, Tribal government, territory, or possession of the United

States, or of any political subdivision thereof, or international organization, or any public or private entity or individual.

(7) **COLLABORATIONS WITH OTHER AGENCIES.**—The Secretary shall collaborate with Federal agencies whose missions contribute to, or are affected by, advanced manufacturing to identify and leverage existing resources at such Federal agencies to assist Manufacturing USA institutes in carrying out the purposes of the Program set forth under subsection (b)(2). Such existing resources may include programs—

(A) at the Department of Labor relating to labor and apprenticeships;

(B) at the Economic Development Administration relating to regional innovation, such as the Regional Innovation Strategies program;

(C) at the Department of Education relating to workforce development, education, training, and retraining;

(D) at the Department of Defense relating to procurement and other authorities of the Department of Defense;

(E) at the Food and Drug Administration relating to biopharmaceutical manufacturing;

(F) at the National Science Foundation, including the Advanced Technological Education program;

(G) at the National Aeronautics and Space Administration relating to procurement, workforce development, education, training, and retraining;

(H) at the Department of Energy relating to development of clean energy technologies and other authorities of the Department of Energy;

(I) at the Department of Agriculture relating to outreach to rural communities;

(J) additional programs that the Secretary determines are appropriate to support the activities of existing Manufacturing USA institutes; and

(K) additional programs that the Secretary determines are appropriate to support the activities of existing Manufacturing USA institutes.

(l) **PATENTS.**—Chapter 18 of title 35, United States Code, shall apply to any funding agreement (as defined in section 201 of that title) awarded to new or existing Manufacturing USA institutes with respect to which financial assistance is awarded under subsection (e).

(m) **REFERENCES TO PRIOR NAMES AND TERMINOLOGY.**—Any reference in law, regulation, map, document, paper, or other record of the United States to the “Network for Manufacturing Innovation Program”, the “Network for Manufacturing Innovation”, “National Office of the Network for Manufacturing Innovation Program”, or a “center for manufacturing innovation” shall be considered to be a reference to the Manufacturing USA Program, the Manufacturing USA Network, the National Office of the Manufacturing USA Network, or a Manufacturing USA institute, respectively.

**SEC. 35. [15 U.S.C. 278t] ADVANCED COMMUNICATIONS RESEARCH ACTIVITIES.**

(a) **ADVANCED COMMUNICATIONS RESEARCH.**—

(1) IN GENERAL.—The Director, in consultation with the Assistant Secretary for Communications and Information, the Director of the National Science Foundation, and heads of other Federal agencies, as appropriate, shall carry out a program of measurement research 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 and interference;

(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;

(H) public safety communications;

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

(J) other research areas determined necessary by the Director.

(3) TESTBEDS.—In coordination with the Assistant Secretary for Communications and Information, 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 multistakeholder 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 Communications 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 current and proposed Federal and commercial spectrum activities;

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

(F) other activities as determined necessary by the Director.

SEC. 36. [15 U.S.C. 271 note] This Act may be cited as the National Institute of Standards and Technology Act.