Cantwell_Substitute

AMENDMENT NO._____ Calendar No._____

Purpose: In the nature of a substitute.

IN THE SENATE OF THE UNITED STATES—118th Cong., 2d Sess.

S. 4178

To establish artificial intelligence standards, metrics, and evaluation tools, to support artificial intelligence research, development, and capacity building activities, to promote innovation in the artificial intelligence industry by ensuring companies of all sizes can succeed and thrive, and for other purposes.

Referred to the Committee on _____ and ordered to be printed

Ordered to lie on the table and to be printed

AMENDMENT IN THE NATURE OF A SUBSTITUTE intended to be proposed by Ms. CANTWELL (for herself and Mr. YOUNG)

Viz:

Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''Future of Artificial Intelligence Innovation Act of 2024''.

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

SEC. 2. SENSE OF CONGRESS.

It is the sense of Congress that policies affecting artificial intelligence should maximize the potential, development, and use of artificial intelligence to benefit all private and public stakeholders.

TITLE I—VOLUNTARY ARTIFICIAL INTELLIGENCE STANDARDS, METRICS, EVALUATION TOOLS, TESTBEDS, AND INTERNATIONAL COOPERATION

SEC. 100. DEFINITIONS.

In this title:

(1) ARTIFICIAL INTELLIGENCE.—The term ''artificial intelligence'' has the meaning given such term in section 5002 of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9401).

(2) ARTIFICIAL INTELLIGENCE MODEL.—The term ''artificial intelligence model'' means a component of an artificial intelligence system that is—

(A) derived using mathematical, computational, statistical, or machine-learning techniques; and

(B) used as part of an artificial intelligence system to produce outputs from a given set of inputs.

(3) ARTIFICIAL INTELLIGENCE SYSTEM.—The term ''artificial intelligence system'' means an engineered or machine-based system that—

(A) can, for a given set of objectives, generate outputs such as predictions, recommendations, or decisions influencing real or virtual environments; and

(B) is designed to operate with varying levels of autonomy.

(4) CRITICAL INFRASTRUCTURE.—The term ''critical infrastructure'' has the meaning given such term in section 1016(e) of the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001 (42 U.S.C. 5195c(e)).

(5) FEDERAL LABORATORY.—The term ''Federal laboratory'' has the meaning given such term in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703).

(6) FOUNDATION MODEL.—The term ''foundation model'' means an artificial intelligence model trained on broad data at scale and is adaptable to a wide range of downstream tasks.

(7) NATIONAL LABORATORY.—The term ''National Laboratory'' has the meaning given such term in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801).

(8) TESTBED.—The term ''testbed'' means a facility or mechanism equipped for conducting rigorous, transparent, and replicable testing of tools and technologies, including artificial intelligence systems, to help evaluate the functionality, trustworthiness, usability, and performance of those tools or technologies.

Subtitle A—Artificial Intelligence Safety Institute and Testbeds

SEC. 101. ARTIFICIAL INTELLIGENCE SAFETY INSTITUTE.

The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by inserting after section 22A (15 U.S.C. 278h–1) the following:

''SEC. 22B. ARTIFICIAL INTELLIGENCE SAFETY INSTITUTE.

''(a) DEFINITIONS.—In this section:

''(1) AGENCY.—The term 'agency' has the meaning given the term 'Executive agency' in section 105 of title 5, United States Code.

''(2) ARTIFICIAL INTELLIGENCE.—The term 'artificial intelligence' has the meaning given such term in section 5002 of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9401).

''(3) ARTIFICIAL INTELLIGENCE BLUE-TEAMING.—The term 'artificial intelligence blue-teaming' means an effort to conduct operational vul-

nerability evaluations and provide mitigation techniques to entities who have a need for an independent technical review of the security posture of an artificial intelligence system.

''(4) ARTIFICIAL INTELLIGENCE REDTEAMING.—The term 'artificial intelligence redteaming' means structured adversarial testing efforts of an artificial intelligence system.

''(5) FEDERAL LABORATORY.—The term 'Federal laboratory' has the meaning given such term in section 4 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703).

''(6) FOUNDATION MODEL.—The term 'foundation model' means an artificial intelligence model trained on broad data at scale and is adaptable to a wide range of downstream tasks.

''(7) SYNTHETIC CONTENT.—The term 'synthetic content' means information, such as images, videos, audio clips, and text, that has been significantly modified or generated by algorithms, including by an artificial intelligence system.

''(8) TESTBED.—The term 'testbed' means a facility or mechanism equipped for conducting rigorous, transparent, and replicable testing of tools and technologies, including artificial intelligence sys-

tems, to help evaluate the functionality, trustworthiness, usability, and performance of those tools or technologies.

''(9) WATERMARKING.—The term 'watermarking' means the act of embedding information that is intended to be difficult to remove, into outputs generated by artificial intelligence systems or in original content, including outputs such as text, images, audio, videos, software code, or any other digital content or data, for the purposes of verifying the authenticity of the output or the identity or characteristics of its provenance, modifications, or conveyance.

''(b) ESTABLISHMENT OF ARTIFICIAL INTELLIGENCE SAFETY INSTITUTE.—

''(1) IN GENERAL.—Not later than 90 days after the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024, the Director shall establish an institute on artificial intelligence within the Institute.

''(2) DESIGNATION.—The institute established pursuant to paragraph (1) shall be known as the 'Artificial Intelligence Safety Institute'.

''(3) MISSION.—The mission of the Artificial Intelligence Safety Institute is to assist the private

sector and agencies in developing voluntary best practices for the robust assessment of artificial intelligence systems, which may be contributed to or inform the work on such practices in standards development organizations.

''(c) FUNCTIONS.—

''(1) IN GENERAL.—The functions of the Artificial Intelligence Safety Institute, which the Artificial Intelligence Safety Institute shall carry out in coordination with the laboratories of the Institute, include the following:

''(A) Using publicly available or voluntarily provided information, assessing artificial intelligence systems and developing best practices for reliable and secure development, deployment, and use of artificial intelligence technology.

''(B) Supporting artificial intelligence red-teaming, sharing best practices, and coordinating on building testbeds and test environments with allies and international partners of the United States.

''(C) Developing and publishing physical and cybersecurity tools, methodologies, best practices, voluntary guidelines, and other sup-

porting information to assist persons who maintain systems used to create or train artificial intelligence models with discovering and mitigating vulnerabilities and attacks, including manipulation through data poisoning, including those that may be exploited by foreign adversaries.

''(D) Establishing artificial intelligence blue-teaming capabilities to support mitigation approaches and partnering with industry to address the reliability of artificial intelligence systems.

''(E) Developing tools, methodologies, best practices, and voluntary guidelines for detecting synthetic content, authenticating content and tracking of the provenance of content, labeling original and synthetic content, such as by watermarking, and evaluating software and systems relating to detection and labeling of synthetic content.

''(F) Coordinating or developing metrics and methodologies for testing artificial intelligence systems, including the following:

''(i) Cataloging existing artificial intelligence metrics and evaluation methodologies used in industry and academia.

''(ii) Testing the efficacy of existing metrics and evaluations.

''(G) Coordinating with counterpart international institutions, partners, and allies, to support global interoperability in the development of research and testing of standards relating to artificial intelligence.

''(d) ARTIFICIAL INTELLIGENCE SAFETY INSTITUTE CONSORTIUM.—

''(1) ESTABLISHMENT.—

''(A) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act, the Director shall establish a consortium of stakeholders from academic or research communities, Federal laboratories, private industry, including companies of all sizes with different roles in the use of artificial intelligence systems, including developers, deployers, evaluators, users, and civil society with expertise in matters relating to artificial intelligence to support the Artificial Intelligence Safety Institute in car-

rying out the functions set forth under subsection (c).

"(B) DESIGNATION.—The consortium established pursuant to subparagraph (A) shall be known as the 'Artificial Intelligence Safety Institute Consortium'.

"(2) CONSULTATION.—The Director shall consult with the consortium established under this subsection not less frequently than quarterly.

"(3) ANNUAL REPORTS TO CONGRESS.—Not later than 1 year after the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024 and not less frequently than once each year thereafter, the Director shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report summarizing the contributions of the members of the consortium established under this subsection in support the efforts of the Artificial Intelligence Safety Institute.

"(e) VOLUNTARY ARTIFICIAL INTELLIGENCE TESTING STANDARDS.—In carrying out the functions under subsection (c), the Director shall support and contribute to the development of voluntary, consensus-based technical

standards for testing artificial intelligence system components, including by addressing, as the Director considers appropriate, the following:

''(1) Physical infrastructure for training or developing artificial intelligence models and systems, including cloud infrastructure.

''(2) Physical infrastructure for operating artificial intelligence systems, including cloud infrastructure.

''(3) Data for training artificial intelligence models.

''(4) Data for evaluating the functionality and trustworthiness of trained artificial intelligence models and systems.

''(5) Trained or partially trained artificial intelligence models and any resulting software systems or products.

''(6) Human-in-the-loop testing of artificial intelligence models and systems.

''(f) MATTERS RELATING TO DISCLOSURE AND ACCESS.—

''(1) FOIA EXEMPTION.—Any confidential content, as deemed confidential by the contributing private sector person, shall be exempt from public dis-

closure under section 552(b)(3) of title 5, United States Code.

''(2) LIMITATION ON ACCESS TO CONTENT.—Access to a contributing private sector person's voluntarily provided confidential content, as deemed confidential by the contributing private sector person shall be limited to the private sector person and the Artificial Intelligence Safety Institute.

''(3) AGGREGATED INFORMATION.—The Director may make aggregated, deidentified information available to contributing companies, the public, and other agencies, as the Director considers appropriate, in support of the purposes of this section.

''(g) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to provide the Director any enforcement authority that was not in effect on the day before the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024.''.

SEC. 102. INTERAGENCY COORDINATION AND PROGRAM TO FACILITATE ARTIFICIAL INTELLIGENCE TESTBEDS.

(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 and the Committee on Energy and Natural Resources of the Senate; and

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

(2) DIRECTOR.—The term ''Director'' means the Director of the National Science Foundation.

(3) INSTITUTE.—The term ''Institute'' means the National Institute of Standards and Technology.

(4) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

(5) UNDER SECRETARY.—The term ''Under Secretary'' means the Under Secretary of Commerce for Standards and Technology.

(b) PROGRAM REQUIRED.—Not later than 1 year after the date of the enactment of this Act, the Under Secretary and the Secretary, in coordination with the Director, shall jointly establish a testbed program to encourage collaboration and support partnerships between the National Laboratories, Federal laboratories, the National Institute of Standards and Technology, the National Artificial Intelligence Research Resource pilot program established by the Director, or any successor program, and public and private sector entities, including companies of all sizes, to conduct tests, evaluations, and security or vulner-

ability risk assessments, and to support research and development, of artificial intelligence systems, including measurement methodologies developed by the Institute, in order to develop standards and encourage development of a third-party ecosystem.

(c) ACTIVITIES.—In carrying out the program required by subsection (b), the Under Secretary and the Secretary—

(1) may use the advanced computing resources, testbeds, and expertise of the National Laboratories, Federal laboratories, the Institute, the National Science Foundation, and private sector entities to run tests and evaluations on the capabilities and limitations of artificial intelligence systems;

(2) shall use existing solutions to the maximum extent practicable;

(3) shall develop automated and reproducible tests and evaluations for artificial intelligence systems to the extent that is practicable;

(4) shall assess the computational resources necessary to run tests and evaluations of artificial intelligence systems;

(5) shall research methods to effectively minimize the computational resources needed to run

tests, evaluations, and security assessments of artificial intelligence systems;

(6) shall where practicable, develop tests and evaluations for artificial intelligence systems that are designed for high-, medium-, and low-computational intensity; and

(7) shall prioritize assessments by identifying security vulnerabilities of artificial intelligence systems, including the establishment of and utilization of existing classified testbeds, at the National Laboratories if necessary, including with respect to—

(A) autonomous offensive cyber capabilities;

(B) cybersecurity vulnerabilities in the artificial intelligence software ecosystem and beyond;

(C) chemical, biological, radiological, nuclear, critical infrastructure, and energy-security threats or hazards; and

(D) such other capabilities as the Under Secretary or the Secretary determines necessary.

(d) CONSIDERATION GIVEN.—In carrying out the activities required by subsection (c), the Under Secretary and the Secretary shall take under consideration the appli-

cability of any tests, evaluations, and risk assessments to artificial intelligence systems trained using primarily biological sequence data that could be used to enhance an artificial intelligence system's ability to contribute to the creation of a pandemic or biological weapon, including those systems used for gene synthesis.

(e) METRICS.—The Under Secretary and the Secretary shall jointly develop metrics to assess—

(1) the effectiveness of the program in encouraging collaboration and supporting partnerships as described in subsection (b); and

(2) the impact of the program on public and private sector integration and use of artificial intelligence systems.

(f) USE OF EXISTING PROGRAM.—In carrying out the program required by subsection (b), the Under Secretary, the Secretary, and the Director may use a program that was in effect on the day before the date of the enactment of this Act.

(g) EVALUATION AND FINDINGS.—Not later than 3 years after the start of the program required by subsection (b), the Under Secretary and the Secretary shall jointly—

(1) evaluate the success of the program in encouraging collaboration and supporting partnerships

as described in subsection (b), using the metrics developed pursuant to subsection (e);

(2) evaluate the success of the program in encouraging public and private sector integration and use of artificial intelligence systems by using the metrics developed pursuant to subsection (e); and

(3) submit to the appropriate committees of Congress the evaluation supported pursuant to paragraph (1) and the findings of the Under Secretary, the Secretary, and the Director with respect to the testbed program.

(h) CONSULTATION.—In carrying out subsection (b), the Under Secretary and the Secretary shall consult, as the Under Secretary and the Secretary consider appropriate, with the following:

(1) Industry, including private artificial intelligence laboratories, companies of all sizes, and representatives from the United States financial sector.

(2) Academia and institutions of higher education.

(3) Civil society.

(i) ESTABLISHMENT OF VOLUNTARY FOUNDATION MODELS TEST PROGRAM.—In carrying out the program under subsection (b), the Under Secretary and the Secretary shall, jointly carry out a test program to provide

vendors of foundation models, as well as vendors of artificial intelligence virtual agents and robots that incorporate foundation models, the opportunity to voluntarily test foundation models across a range of modalities, such as models that ingest and output text, images, audio, video, software code, and mixed modalities.

(j) MATTERS RELATING TO DISCLOSURE AND ACCESS.—

(1) LIMITATION ON ACCESS TO CONTENT.—Access to a contributing private sector person's voluntarily provided confidential content, as deemed confidential by the contributing private sector person, shall be limited to the contributing private sector person and the Institute.

(2) AGGREGATED INFORMATION.—The Under Secretary and the Secretary may make aggregated, deidentified information available to contributing companies, the public, and other agencies, as the Under Secretary considers appropriate, in support of the purposes of this section.

(3) FOIA EXEMPTION.—Any confidential content, as deemed confidential by the contributing private sector person, shall be exempt from public disclosure under section 552(b)(3) of title 5, United States Code.

(k) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to require a person to disclose any information, including information—

(1) relating to a trade secret or other protected intellectual property right;

(2) that is confidential business information; or

(3) that is privileged.

(l) SUNSET.—The programs required by subsections (b) and (i) and the requirements of this section shall terminate on the date that is 7 years after the date of the enactment of this Act.

SEC. 103. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY AND DEPARTMENT OF ENERGY TESTBED TO IDENTIFY, TEST, AND SYNTHESIZE NEW MATERIALS.

(a) IN GENERAL.—The Secretary of Commerce, acting through the Under Secretary of Commerce for Standards and Technology, and the Secretary of Energy may use the program established under section 102(b) to advance materials science and to support advanced manufacturing for the benefit of the United States economy through the use of artificial intelligence, autonomous laboratories, and artificial intelligence integrated with emerging technologies, such as quantum hybrid computing and robotics.

(b) SUPPORT FOR ACCELERATED TECHNOLOGIES.—The Secretary of Commerce and the Secretary of Energy shall ensure that technologies accelerated under subsection (a) are supported by advanced algorithms and models, uncertainty quantification, and software and workforce development tools to produce benchmark data, model comparison tools, and best practices guides.

(c) PUBLIC-PRIVATE PARTNERSHIPS.—In carrying out subsection (a), the Secretary of Commerce and the Secretary of Energy shall, in consultation with industry, civil society, and academia, enter into such public-private partnerships as the Secretaries jointly determine appropriate.

(d) RESOURCES.—In carrying out this section, the Secretaries may—

(1) use science and technology resources from the Manufacturing USA Program, the Hollings Manufacturing Extension Partnership, the National Laboratories, Federal laboratories, and the private sector; and

(2) the program established under section 102(b).

SEC. 104. COORDINATION, REIMBURSEMENT, AND SAVINGS PROVISIONS.

(a) COORDINATION AND DUPLICATION.—The Secretary of Commerce shall take such actions as may be necessary to ensure no duplication of activities carried out under this subtitle with the activities of—

(1) research entities of the Department of Energy, including—

(A) the National Laboratories; and

(B) the Advanced Scientific Computing Research program; and

(2) relevant industries.

(b) NATIONAL LABORATORY RESOURCES.—Any advanced computing resources, testbeds, expertise, or other resources of the Department of Energy or the National Laboratories that are provided to the National Science Foundation, the National Institute of Standards and Technology, or any other applicable entities under this subtitle shall be provided—

(1) on a reimbursable basis; and

(2) pursuant to a reimbursable agreement.

(c) WAIVER.—The Secretary may waive the requirements set forth in subsection (b) if the Secretary determines the waiver is necessary or appropriate to carry out the missions of the Department of Commerce.

(d) SAVINGS PROVISION.—Nothing in this subtitle shall be construed—

(1) to modify any requirement or authority provided under section 5501 of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9461); or

(2) to allow the Secretary of Commerce (including the Under Secretary of Commerce for Standards and Technology or the Director of the Artificial Intelligence Safety Institute) or the Director of the National Science Foundation to use monetary resources of the Department of Energy or any National Laboratory.

SEC. 105. PROGRESS REPORT.

(a) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, the Under Secretary of Commerce for Standards and Technology shall, in coordination with the Secretary of Commerce and the Secretary of Energy, submit to Congress a report on the implementation of sections 102 and 103.

(b) CONTENTS.—The report submitted pursuant to subsection (a) shall include the following:

(1) A description of the reimbursable agreements, statements of work, and associated project schedules and deliverables for the testbed program

established pursuant to section 102(b) and section 103(a).

(2) Details on the total amount of reimbursable agreements entered into pursuant to section 104(b).

(3) Such additional information as the Under Secretary determines appropriate.

Subtitle B—International Cooperation

SEC. 111. INTERNATIONAL COALITIONS ON INNOVATION, DEVELOPMENT, AND ALIGNMENT OF STANDARDS WITH RESPECT TO ARTIFICIAL INTELLIGENCE.

(a) IN GENERAL.—The Under Secretary of Commerce for Standards and Technology (in this section referred to as the ''Under Secretary'') and the Secretary of Energy (in this section referred to as the ''Secretary'') shall jointly lead information exchange and coordination among Federal agencies and communication from Federal agencies to the private sector of the United States and like-minded governments of foreign countries to ensure effective Federal engagement in the development and use of international technical standards for artificial intelligence.

(b) REQUIREMENTS.—To support private sector-led engagement and ensure effective Federal engagement in

the development and use of international technical standards for artificial intelligence, the Under Secretary shall seek to form alliances or coalitions with like-minded governments of foreign countries—

(1) to support the private sector-led development and adoption of standards or alignment with respect to artificial intelligence;

(2) to encourage the adoption of technical standards developed in the United States to be adopted by international standards organizations;

(3) to facilitate international collaboration on innovation, science, and advancement in artificial intelligence research and development, including data sharing, expertise, and resources; and

(4) to develop the government-to-government infrastructure to support the activities described in paragraphs (1) through (3), using existing bilateral and multilateral agreements to the extent practicable.

(c) CRITERIA FOR PARTICIPATION.—In forming an alliance or coalition of like-minded governments of foreign countries under subsection (b), the Secretary of Commerce, the Secretary of Energy, the Secretary of State, and the Director, in consultation with the heads of rel-

evant agencies, shall jointly establish technology trust criteria—

(1) to ensure all partner countries have a high level of scientific and technological advancement; and

(2) to support the principles for international standards development as detailed in the Committee Decision on World Trade Organization Agreement on Technical Barriers to Trade (Annex 2 of Part 1 of G/TBT/1), on international standards, such as transparency, openness, and consensus-based decision-making.

(d) CONSULTATION ON INNOVATION AND ADVANCEMENTS IN ARTIFICIAL INTELLIGENCE.—In forming an alliance or coalition under subsection (b), the Director, the Secretary of Commerce, and the Secretary of State shall consult with the Secretary of Energy and the Director of the National Science Foundation on approaches to innovation and advancements in artificial intelligence.

(e) SECURITY AND PROTECTION OF INTELLECTUAL PROPERTY.—The Director, the Secretary of Commerce, the Secretary of Energy, and the Secretary of State shall jointly ensure that an alliance or coalition formed under subsection (b) is only undertaken with countries that—

(1) have in place sufficient intellectual property protections, safety standards, and risk management approaches relevant to innovation and artificial intelligence; and

(2) develop and coordinate research security measures, export controls, and intellectual property protections relevant to innovation, development, and standard-setting relating to artificial intelligence.

(f) RULE OF CONSTRUCTION.—Nothing in this section shall be construed—

(1) to prohibit a person (as defined in section 551 of title 5, United States Code) from participating in an international standards body; or

(2) to constrain separate engagement with emerging economies on artificial intelligence.

Subtitle C—Identifying Regulatory Barriers to Innovation

SEC. 121. COMPTROLLER GENERAL OF THE UNITED STATES IDENTIFICATION OF RISKS AND OBSTACLES RELATING TO ARTIFICIAL INTELLIGENCE AND FEDERAL AGENCIES.

(a) REPORT REQUIRED.—Not later than 1 year after the date of the enactment of this Act, the Comptroller General of the United States shall submit to Congress a

report on regulatory impediments to innovation in artificial intelligence systems.

(b) CONTENTS.—The report submitted pursuant to subsection (a) shall include the following:

(1) Significant examples of Federal statutes and regulations that directly affect the innovation of artificial intelligence systems, including the ability of companies of all sizes to compete in artificial intelligence, which should also account for the effect of voluntary standards and best practices developed with contributions from the Federal Government.

(2) An evaluation of the progress in government adoption of artificial intelligence and use of artificial intelligence to improve the quality of government services.

(3) Based on the findings of the Comptroller General with respect to paragraphs (1) and (2), such recommendations as the Comptroller General may have for legislative or administrative action to increase the rate of innovation in artificial intelligence systems.

TITLE II—ARTIFICIAL INTELLIGENCE RESEARCH, DEVELOPMENT, CAPACITY BUILDING ACTIVITIES

SEC. 201. PUBLIC DATA FOR ARTIFICIAL INTELLIGENCE SYSTEMS.

(a) IN GENERAL.—Title LI of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9411 et seq.) is amended by adding at the end the following new section:

"SEC. 5103A. PUBLIC DATA FOR ARTIFICIAL INTELLIGENCE SYSTEMS.

''(a) LIST OF PRIORITIES.—

''(1) IN GENERAL.—To expedite the development of artificial intelligence systems in the United States, the Director of the Office of Science and Technology Policy (in this section referred to as the 'Director') shall, acting through the National Science and Technology Council and the Interagency Committee and in consultation with the Advisory Committee on Data for Evidence Building established under section 315 of title 5, United States Code, develop a list of priorities for Federal investment in creating or improving curated, publicly available Federal Government data for training and

evaluating artificial intelligence systems and identify an appropriate location to host curated datasets.

''(2) REQUIREMENTS.—

''(A) IN GENERAL.—The list developed pursuant to paragraph (1) shall—

''(i) prioritize data that will advance novel artificial intelligence systems in the public interest; and

''(ii) prioritize datasets unlikely to independently receive sufficient private sector support to enable their creation, absent Federal funding.

''(B) DATASETS IDENTIFIED.—In carrying out subparagraph (A)(ii), the Director shall identify 20 datasets to be prioritized.

''(3) CONSIDERATIONS.—In developing the list under paragraph (1), the Director shall consider the following:

''(A) Applicability to the initial list of societal, national, and geostrategic challenges set forth by subsection (b) of section 10387 of the Research and Development, Competition, and Innovation Act (42 U.S.C. 19107), or any successor list.

"(B) Applicability to the initial list of key technology focus areas set forth by subsection (c) of such section, or any successor list.

"(C) Applicability to other major United States economic sectors, such as agriculture, health care, transportation, manufacturing, communications, weather services, and positive utility to small- and medium-sized United States businesses.

"(D) Opportunities to improve datasets in effect before the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024.

"(E) Inclusion of data representative of the entire population of the United States.

"(F) Potential national security threats to releasing datasets, consistent with the United States Government approach to data flows.

"(G) Requirements of laws in effect.

"(H) Applicability to the priorities listed in the National Artificial Intelligence Research and Development Strategic Plan of the National Science and Technology Council, dated October 2016.

''(I) Ability to use data already made available to the National Artificial Intelligence Research Resource Pilot program or any successor program.

''(4) PUBLIC INPUT.—Before finalizing the list required by paragraph (1), the Director shall implement public comment procedures for receiving input and comment from private industry, academia, civil society, and other relevant stakeholders.

''(b) INTERAGENCY COMMITTEE.—In carrying out this section, the Interagency Committee—

''(1) may establish or leverage existing initiatives, including through public-private partnerships, for the creation or improvement of curated datasets identified in the list developed pursuant to subsection (a)(1), including methods for addressing data scarcity;

''(2) may apply the priorities set forth in the list developed pursuant to subsection (a)(1) to the enactment of Federal public access and open government data policies;

''(3) shall ensure consistency with Federal provisions of law relating to privacy, including the technology and privacy standards applied to the National Secure Data Service under section 10375(f) of the

Research and Development, Competition, and Innovation Act (42 U.S.C. 19085(f)); and

''(4) shall ensure data sharing is limited with any country that the Secretary of Commerce, in consultation with the Secretary of Defense, the Secretary of State, the Secretary of Energy, and the Director of National Intelligence, determines to be engaged in conduct that is detrimental to the national security or foreign policy of the United States.

''(c) AVAILABILITY OF DATASETS.—Datasets that are created or improved pursuant to this section—

''(1) shall, in the case of a dataset created or improved by a Federal agency, be made available to the comprehensive data inventory developed and maintained by the Federal agency pursuant to section 3511(a) of title 44, United States Code, in accordance with all applicable regulations; and

''(2) may be made available to the National Artificial Intelligence Research Resource pilot program established by the Director of the National Science Foundation, and the applicable programs established by the Department of Energy, in accordance with Executive Order 14110 (88 Fed. Reg. 75191; relating to safe, secure, and trustworthy development and

use of artificial intelligence), or any successor program.

''(d) REPORT.—Not later than 1 year after the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024, the Director shall, acting through the National Science and Technology Council and the Interagency Committee, submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives a report that includes—

''(1) best practices in developing publicly curated artificial intelligence datasets;

''(2) lessons learned and challenges encountered in developing the curated artificial intelligence datasets;

''(3) principles used for artificial intelligence-ready data; and

''(4) recommendations related to artificial intelligence-ready data standards and potential processes for development of such standards.

''(e) RULES OF CONSTRUCTION.—

''(1) IN GENERAL.—Nothing in this section shall be construed to require the Federal Government or other contributors to disclose any information—

"(A) relating to a trade secret or other protected intellectual property right;

"(B) that is confidential business information; or

"(C) that is privileged.

"(2) DISCLOSURE TO PUBLIC DATASETS.—Except as specifically provided for in this section, nothing in this section shall be construed to prohibit the head of a Federal agency from withholding information from a public dataset.".

(b) CLERICAL AMENDMENTS.—The table of contents at the beginning of section 2 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 and the table of contents at the beginning of title LI of such Act are both amended by inserting after the items relating to section 5103 the following new item:

"5103A. Public data for artificial intelligence systems.".

SEC. 202. FEDERAL GRAND CHALLENGES IN ARTIFICIAL INTELLIGENCE.

(a) IN GENERAL.—Title LI of the National Artificial Intelligence Initiative Act of 2020 (15 U.S.C. 9411 et seq.), as amended by section 201, is further amended by adding at the end the following new section:

"SEC. 5107. FEDERAL GRAND CHALLENGES IN ARTIFICIAL INTELLIGENCE.

"(a) ESTABLISHMENT OF PROGRAM.—

''(1) IN GENERAL.—Not later than 1 year after the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024, the Director of the Office of Science and Technology Policy (acting through the National Science and Technology Council) and the Interagency Committee may establish a program to award prizes, using the authorities and processes established under section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719), to eligible participants as determined by the co-chairs of the Interagency Committee pursuant to subsection (e).

''(2) PURPOSES.—The purposes of the program required by paragraph (1) are as follows:

''(A) To expedite the development of artificial intelligence systems in the United States.

''(B) To stimulate artificial intelligence research, development, and commercialization that solves or advances specific, well-defined, and measurable challenges in 1 or more of the categories established pursuant to subsection (b).

''(b) FEDERAL GRAND CHALLENGES IN ARTIFICIAL INTELLIGENCE.—

''(1) LIST OF PRIORITIES.—The Director of the Office of Science and Technology Policy (acting through the National Science and Technology Council) and the Interagency Committee and in consultation with industry, civil society, and academia, identify, and annually review and update as the Director considers appropriate, a list of priorities for Federal grand challenges in artificial intelligence pursuant to the purposes set forth under subsection (a)(2).

''(2) INITIAL LIST.—

''(A) CONTENTS.—The list established pursuant to paragraph (1) may include the following priorities:

''(i) To overcome challenges with engineering of and applied research on microelectronics, including through integration of artificial intelligence with emerging technologies, such as neuromorphic and quantum computing, or with respect to the physical limits on transistors, advanced interconnects, and memory elements.

''(ii) To promote transformational or long-term advancements in computing and artificial intelligence technologies through—

''(I) next-generation algorithm design;

''(II) next-generation compute capability;

''(III) generative and adaptive artificial intelligence for design applications;

''(IV) photonics-based microprocessors and optical communication networks, including electrophotonics;

''(V) the chemistry and physics of new materials;

''(VI) energy use or energy efficiency;

''(VII) techniques to establish cryptographically secure content provenance information; or

''(VIII) safety and controls for artificial intelligence applications.

''(iii) To develop artificial intelligence solutions, including through integration among emerging technologies such as neuromorphic and quantum computing to overcome barriers relating to innovations

in advanced manufacturing in the United States, including areas such as—

''(I) materials, nanomaterials, and composites;

''(II) rapid, complex design;

''(III) sustainability and environmental impact of manufacturing operations;

''(IV) predictive maintenance of machinery;

''(V) improved part quality;

''(VI) process inspections;

''(VII) worker safety; and

''(VIII) robotics.

''(iv) To develop artificial intelligence solutions in sectors of the economy, such as expanding the use of artificial intelligence in maritime vessels, including in navigation and in the design of propulsion systems and fuels.

''(v) To develop artificial intelligence solutions to improve border security, including solutions relevant to the detection of fentanyl, illicit contraband, and other illegal activities.

"(vi) To develop artificial intelligence for science applications.

"(3) CONSULTATION ON IDENTIFICATION AND SELECTION OF GRAND CHALLENGES.—The Director of the Office of Science and Technology Policy, the Director of the National Institute of Standards and Technology, the Director of the Defense Advanced Research Projects Agency, such agency heads as the Director of the Office of Science and Technology Policy considers relevant, and the National Artificial Intelligence Advisory Committee shall each identify and select artificial intelligence research and development grand challenges in which eligible participants will compete to solve or advance for prize awards under subsection (a).

"(4) PUBLIC INPUT ON IDENTIFICATION.—The Director of the Office of Science and Technology Policy shall also seek public input on the identification of artificial intelligence research and development grand challenges under subsection (a).

"(5) PROBLEM STATEMENTS; SUCCESS METRICS.—For each priority for a Federal grand challenge identified under paragraph (1) and the grand challenges identified and selected under para-

graph (3), the Director of the Office of Science and Technology Policy shall—

"(A) establish a specific and well-defined grand challenge problem statement and ensure that such problem statement is published on a website linking out to relevant prize competition listings on the website Challenge.gov, or successor website, that is managed by the General Services Administration; and

"(B) establish and publish on the website Challenge.gov, or successor website, clear targets, success metrics, and validation protocols for the prize competitions designed to address each grand challenge, in order to provide specific benchmarks that will be used to evaluate submissions to the prize competition.

"(c) FEDERAL INVESTMENT INITIATIVES AUTHORIZED.—Subject to the availability of amounts appropriated for this purpose, the Secretary of Commerce, the Secretary of Transportation, the Director of the National Science Foundation may, consistent with the missions or responsibilities of each Federal agency, establish 1 or more prize competitions under section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719), challenge-based acquisitions, or other research and

development investments that each agency head deems appropriate consistent with the list of priorities established pursuant to subsection (b)(1).

''(d) REQUIREMENTS.—

''(1) IN GENERAL.—The Director of the Office of Science and Technology Policy shall develop requirements for—

''(A) the process for prize competitions under subsections (a) and (c), including eligibility criteria for participants, consistent with the requirements under paragraph (2); and

''(B) testing, judging, and verification procedures for submissions to receive a prize award under subsection (c).

''(2) ELIGIBILITY REQUIREMENT AND JUDGING.—

''(A) ELIGIBILITY.—In accordance with the requirement described in section 24(g)(3) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719(g)(3)), a recipient of a prize award under subsection (c)—

''(i) that is a private entity shall be incorporated in and maintain a primary place of business in the United States; and

"(ii) who is an individual, whether participating singly or in a group, shall be a citizen or permanent resident of the United States.

"(B) JUDGES.—In accordance with section 24(k) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719(k)), a judge of a prize competition under subsection (c) may be an individual from the private sector.

"(3) AGENCY LEADERSHIP.—Each agency head carrying out an investment initiative under subsection (c) shall ensure that—

"(A) for each prize competition or investment initiative carried out by the agency head under such subsection, there is—

"(i) a positive impact on the economic competitiveness of the United States;

"(ii) a benefit to United States industry;

"(iii) to the extent possible, leveraging of the resources and expertise of industry and philanthropic partners in shaping the investments; and

"(iv) in a case involving development and manufacturing, use of advanced manufacturing in the United States; and

"(B) all research conducted for purposes of the investment initiative is conducted in the United States.

"(e) REPORTS.—

"(1) NOTIFICATION OF WINNING SUBMISSION.—Not later than 60 days after the date on which a prize is awarded under subsection (c), the agency head awarding the prize shall submit to the Committee on Commerce, Science, and Transportation of the Senate, the Committee on Science, Space, and Technology of the House of Representatives, and such other committees of Congress as the agency head considers relevant a report that describes the winning submission to the prize competition and its benefits to the United States.

"(2) BIENNIAL REPORT.—

"(A) IN GENERAL.—Not later than 2 years after the date of the enactment of the Future of Artificial Intelligence Innovation Act of 2024, and biennially thereafter, the heads of agencies described in subsection (c) shall submit to the Committee on Commerce, Science,

and Transportation of the Senate, the Committee on Science, Space, and Technology of the House of Representatives, and such other committees of Congress as the agency heads consider relevant a report that includes—

"(i) a description of the activities carried out by the agency heads under this section;

"(ii) a description of the active competitions and the results of completed competitions under subsection (c); and

"(iii) efforts to provide information to the public on active competitions under subsection (c) to encourage participation.

"(B) PUBLIC ACCESSIBILITY.—The agency heads described in subsection (c) shall make the biennial report required under subparagraph (A) publicly accessible, including by posting the biennial report on a website in an easily accessible location, such as the GovInfo website of the Government Publishing Office.

"(f) ACCESSIBILITY.—In carrying out any competition under subsection (c), the head of an agency shall post the active prize competitions and available prize awards under subsection (b) to Challenge.gov, or successor

website, after the grand challenges are selected and the prize competitions are designed pursuant to subsections (c) and (e) to ensure the prize competitions are widely accessible to eligible participants.

''(g) SUNSET.—This section shall terminate on the date that is 5 years after the date of the enactment the Future of Artificial Intelligence Innovation Act of 2024.''.

(b) COMPTROLLER GENERAL OF THE UNITED STATES STUDIES AND REPORTS.—

(1) INITIAL STUDY.—

(A) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Comptroller General of the United States shall conduct a study of Federal prize competitions, which shall include an assessment of the efficacy and impact of prize competitions generally.

(B) ELEMENTS.—The study conducted under subparagraph (A) shall include, to the extent practicable, the following:

(i) A survey of all existing, current and ongoing Federal prize competitions carried out under authorities enacted before the date of the enactment of this Act.

(ii) An assessment of those existing, current, and ongoing Federal prize competitions that includes addressing—

(I) whether and what technology or innovation would have been developed in the absence of the prize competitions;

(II) whether the prize competitions shortened the timeframe for the development of the technology or innovation;

(III) whether the prize competition was cost effective;

(IV) what, if any, other benefits were gained from conducting the prize competitions;

(V) whether the use of a more traditional policy tool such as a grant or contract have resulted in the development of a similar technology or innovation;

(VI) whether prize competitions might be designed differently in a way that would result in a more effective

or revolutionary technology being developed;

(VII) what are appropriate metrics that could be used for determining the success of a prize competition, and whether those metrics differ when evaluating near-term and long-term impacts of prize competitions; and

(VIII) suggested best practices of prize competitions.

(C) CONGRESSIONAL BRIEFING.—Not later than 540 days after the date of the enactment of this Act, the Comptroller General shall provide the Committee on Science, Space, and Technology and the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a briefing on the findings of the Comptroller General with respect to the study conducted under subparagraph (A).

(D) REPORT.—Not later than 540 days after the date of the enactment of this Act, the Comptroller General shall submit to the congressional committees specified in subparagraph

(C) a report on the findings and recommendations of Comptroller General from the study conducted under subparagraph (A).

(2) INTERIM STUDY.—

(A) IN GENERAL.—The Comptroller General of the United States shall conduct a study of the Federal prize challenges implemented under section 5108 of the of the National Artificial Intelligence Initiative Act of 2020, as added by subsection (a), which shall include an assessment of the efficacy and effect of such prize competitions.

(B) ELEMENTS.—The study conducted under subparagraph (A) shall include, to the extent practicable, the following:

(i) A survey of all Federal prize competitions implemented under section 5108 of the of the National Artificial Intelligence Initiative Act of 2020, as added by subsection (a).

(ii) An assessment of the Federal prize competitions implemented such section, which shall include addressing the same considerations as set forth under paragraph (1)(B)(ii).

(iii) An assessment of the efficacy, impact, and cost-effectiveness of prize competitions implemented under section 5108 of the of the National Artificial Intelligence Initiative Act of 2020, as added by subsection (a), compared to other Federal prize competitions.

(C) CONGRESSIONAL BRIEFING.—Not later than 1 year after completing the study required by subparagraph (A), the Comptroller General shall provide the Committee on Science, Space, and Technology and the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a briefing on the findings of the Comptroller General with respect to the study conducted under subparagraph (A).

(D) REPORT.—Not later than 180 days after the date of the enactment of this Act, the Comptroller General shall submit to the congressional committees specified in subparagraph (C) a report on the findings and recommendations of the Comptroller General with respect to the study conducted under subparagraph (A).

(c) CLERICAL AMENDMENTS.—The table of contents at the beginning of section 2 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 and the table of contents at the beginning of title LI of such Act, as amended by section 201, are both amended by inserting after the items relating to section 5107 the following new item:

"5107. Federal grand challenges in artificial intelligence.".

TITLE III—RESEARCH SECURITY AND OTHER MATTERS

SEC. 301. RESEARCH SECURITY.

The activities authorized under this Act shall be carried out in accordance with the provision of subtitle D of title VI of the Research and Development, Competition, and Innovation Act (42 U.S.C. 19231 et seq.; enacted as part of division B of Public Law 117–167) and section 223 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (42 U.S.C. 6605).

SEC. 302. EXPANSION OF AUTHORITY TO HIRE CRITICAL TECHNICAL EXPERTS.

(a) IN GENERAL.—Subsection (b) of section 6 of the National Institute of Standards and Technology Act (15 U.S.C. 275) is amended, in the second sentence, by striking "15" and inserting "30

(b) MODIFICATION OF SUNSET.—Subsection (c) of such section is amended by striking ''under section (b) shall expire on the date that is 5 years after the date of the enactment of this section'' and inserting ''under subsection (b) shall expire on December 30, 2035''.