CHAPTER 301—RESEARCH AND ENGINEERING GENERALLY

SUBCHAPTER I—GENERAL

SUBCHAPTER II—AGREEMENTS

Editorial Notes

PRIOR PROVISIONS

A prior chapter 301 ''MAJOR DEFENSE ACQUISITION PROGRAMS'', consisting of reserved section 4001, was repealed by Pub. L. 116–283, div. A, title XVIII, §1841(a)(1)(A), Jan. 1, 2021, 134 Stat. 4242.

A prior chapter 301 was renumbered chapter 701 of this title.

AMENDMENTS

2021—Pub. L. 117–81, div. A, title II, §214(b), title XVII, §1701(e)(4)(B), Dec. 27, 2021, 135 Stat. 1591, 2139, added items 4010 and 4027.

Pub. L. 117–81, div. A, title XVII, §1701(u)(2)(A), Dec. 27, 2021, 135 Stat. 2150, amended Pub. L. 116–283, div. A, title XVIII, §1841(a)(1)(B), Jan. 1, 2021, 134 Stat. 4242, which added this analysis, by adding item for subchapter I, by substituting ''[Reserved]'' for ''Research projects: transactions other than contracts and grants'' in item 4002 and for ''Authority of the Department of Defense to carry out certain prototype projects'' in item 4003, by substituting ''Contract authority for development and demonstration of initial or additional prototype units'' for ''Procurement for experimental purposes'' in item 4004, by substituting ''[Reserved]'' for ''Merit-based award of grants for research and development'' in item 4008 and for ''Technology protection features activities'' in item 4009, by striking out item 4015 ''Award of grants and contracts to colleges and universities: requirement of competition'', and by adding item for subchapter II and items 4021 to 4026.

SUBCHAPTER I—GENERAL

Editorial Notes

AMENDMENTS

2021—Pub. L. 116–283, div. A, title XVIII, §1841(c)(1), as added by Pub. L. 117–81, div. A, title XVII, §1701(u)(2)(D), Dec. 27, 2021, 135 Stat. 2151, added subchapter heading. Heading was editorially conformed to the style used in this title.

§ 4001. Research and development projects

(a) AUTHORITY.—The Secretary of Defense or the Secretary of a military department may engage in basic research, applied research, advanced research, and development projects that—

(1) are necessary to the responsibilities of such Secretary's department in the field of research and development; and

(2) either—

(A) relate to weapon systems and other military needs; or

(B) are of potential interest to the Department of Defense.

(b) AUTHORIZED MEANS.—The Secretary of Defense or the Secretary of a military department may perform research and development projects—

(1) by contract, cooperative agreement, or grant, in accordance with chapter 63 of title 31;

(2) through one or more military departments;

(3) by using employees and consultants of the Department of Defense;

(4) by mutual agreement with the head of any other department or agency of the Federal Government;

(5) by transactions (other than contracts, cooperative agreements, and grants) entered into pursuant to section 4021 or 4022 of this title; or

(6) by purchases through procurement for experimental purposes pursuant to section 4023 of this title.

(c) REQUIREMENT OF POTENTIAL DEPARTMENT OF DEFENSE INTEREST.—Funds appropriated to the Department of Defense or to a military department may not be used to finance any research project or study unless the project or study is, in the opinion of the Secretary of Defense or the Secretary of that military department, respectively, of potential interest to the Department of Defense or to such military department, respectively.

(d) ADDITIONAL PROVISIONS APPLICABLE TO COOPERATIVE AGREEMENTS.—Additional authorities, conditions, and requirements relating to certain cooperative agreements authorized by this section are provided in sections 4021 and 4026 of this title.

(Added Pub. L. 87–651, title II, §208(a), Sept. 7, 1962, 76 Stat. 523, §2358; amended Pub. L. 97–86, title IX, §910, Dec. 1, 1981, 95 Stat. 1120; Pub. L. 100–370, §1(g)(3), July 19, 1988, 102 Stat. 846; Pub. L. 103–160, div. A, title VIII, §827(a), Nov. 30, 1993, 107 Stat. 1712; Pub. L. 103–355, title I, §1301(a), Oct. 13, 1994, 108 Stat. 3284; Pub. L. 104–201, div. A, title II, §267(c)(2), Sept. 23, 1996, 110 Stat. 2468;

Pub. L. 115–91, div. A, title VIII, § 862, Dec. 12, 2017, 131 Stat. 1494; renumbered § 4001 and amended Pub. L. 116–283, div. A, title XVIII, § 1841(b)(1), (2)(A), Jan. 1, 2021, 134 Stat. 4243; Pub. L. 117–81, div. A, title XVII, § 1701(u)(2)(B), (C), (F)(i)(I), (II), Dec. 27, 2021, 135 Stat. 2151.)

HISTORICAL AND REVISION NOTES
1962 ACT

Revised section	*Source (U.S. Code)*	*Source (Statutes at Large)*
2358	5:171c(b)(2), (3).	July 26, 1947, ch. 343, § 203(b)(2), (3); added Aug. 6, 1958, Pub. L. 85–599, § 9(a) (3d and 4th pars.), 72 Stat. 520.

5 U.S.C. 171c(b)(3) is omitted as unnecessary since the authorization for appropriations is implied in 5 U.S.C. 171c(b)(2).

1988 ACT

In the existing text of 10 U.S.C. 2358, the bill would in two instances strike the phrase ''or his designee'' appearing after ''Secretary of Defense'' (section 1(g)(3)). The change is made for consistency in the Code, and no substantive change is intended. The committee notes that the Secretary of Defense has general authority to delegate functions under 10 U.S.C. 113(d).

Subsection (b) is based on Pub. L. 91–441, title II, § 204, Oct. 7, 1970, 84 Stat. 908.

Editorial Notes

AMENDMENTS

2021—Pub. L. 116–283, § 1841(b)(1), as amended by Pub. L. 117–81, § 1701(u)(2)(B), renumbered section 2358 of this title as this section.

Subsec. (b)(5). Pub. L. 116–283, § 1841(b)(2)(A)(i), as amended by Pub. L. 117–81, § 1701(u)(2)(C), substituted ''section 4021 or 4022'' for ''section 2371 or 2371b''.

Subsec. (b)(6). Pub. L. 116–283, § 1841(b)(2)(A)(ii), as amended by Pub. L. 117–81, § 1701(u)(2)(F)(i)(I), substituted ''section 4023'' for ''section 2373''.

Subsec. (d). Pub. L. 116–283, § 1841(b)(2)(A)(iii), as amended by Pub. L. 117–81, § 1701(u)(2)(F)(i)(II), substituted ''sections 4021 and 4026'' for ''sections 2371 and 2371a''.

2017—Subsec. (b)(5), (6). Pub. L. 115–91 added pars. (5) and (6).

1996—Subsec. (d). Pub. L. 104–201 substituted ''sections 2371 and 2371a'' for ''section 2371''.

1994—Pub. L. 103–355 amended section generally, inserting reference to development projects in section catchline, and in text specifying that relevant Secretary may perform research and development projects in accordance with chapter 63 of title 31, and adding subsec. (d) relating to additional provisions applicable to cooperative agreements.

1993—Pub. L. 103–160 amended section generally. Prior to amendment, section read as follows:

''(a) IN GENERAL.—Subject to approval by the President, the Secretary of Defense may engage in basic and applied research projects that are necessary to the responsibilities of the Department of Defense in the field of basic and applied research and development and that relate to weapons systems and other military needs. Subject to approval by the President, the Secretary may perform assigned research and development projects—

''(1) by contract with, or by grant to, educational or research institutions, private businesses, or other agencies of the United States;

''(2) through one or more of the military departments; or

''(3) by using employees and consultants of the Department of Defense.

''(b) REQUIREMENT OF POTENTIAL MILITARY RELATIONSHIP.—Funds appropriated to the Department of Defense may not be used to finance any research project or study unless the project or study has, in the opinion of the Secretary of Defense, a potential relationship to a military function or operation.''

1988—Pub. L. 100–370 designated existing provisions as subsec. (a), inserted heading, struck out ''or his designee'' after ''Secretary of Defense'' and ''President, the Secretary'', and added subsec. (b).

1981—Par. (1). Pub. L. 97–86 substituted ''by contract with, or by grant to,'' for ''by contract with''.

Statutory Notes and Related Subsidiaries

CHANGE OF NAME

Pub. L. 115–91, div. A, title II, § 214(a), Dec. 12, 2017, 131 Stat. 1325, provided that: ''The joint technology office on hypersonics in the Office of the Secretary of Defense is redesignated as the 'Joint Hypersonics Transition Office'. Any reference in a law (other than this section), map, regulation, document, paper, or other record of the United States to the joint technology office on hypersonics shall be deemed to be a reference to the Joint Hypersonics Transition Office.''

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 117–81 applicable as if included in the enactment of title XVIII of Pub. L. 116–283 as enacted, see section 1701(a)(2) of Pub. L. 117–81, set out in a note preceding section 3001 of this title and note below.

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE OF 1994 AMENDMENT

For effective date and applicability of amendment by Pub. L. 103–355, see section 10001 of Pub. L. 103–355, set out as a note under section 8752 of this title.

NATIONAL DEFENSE ECONOMIC COMPETITION RESEARCH COUNCIL

Pub. L. 118–159, div. A, title II, § 228, Dec. 23, 2024, 138 Stat. 1832, provided that:

''(a) ESTABLISHMENT OF COUNCIL.—

''(1) IN GENERAL.—Not later than 90 days after the date of the enactment of this Act [Dec. 23, 2024], the Secretary of Defense shall establish a council to identify, evaluate, and coordinate existing research efforts, or propose new research topics, relating to economic competition activities, such as economic coercion, manipulation, or other uses of economic power to undermine the national defense strategy of the United States and the partners and allies of the United States.

''(2) DESIGNATION.—The council established pursuant to paragraph (1) shall be known as the 'National Defense Economic Competition Research Council' (referred to in this section as the 'Council').

''(b) CHARTER AND MISSION.—Not later than 120 days after the date of the enactment of this Act, the Secretary of Defense shall issue a charter for the Council with a mission that includes the following:

''(1) Conducting analysis of ongoing or proposed government and academic research relating to economic competition.

''(2) Making proposals for new areas of research to increase understanding of adversarial uses of economic tools in support of military objectives to improve understanding of threats, vulnerabilities, and defensive options to mitigate such threats and vulnerabilities.

''(3) Informing the tools available to the Department of Defense to defend against such economic competition, coercion and manipulation activities, including the use of adversarial capital to acquire technology, real estate, or other infrastructure, or to preemptively deny access by the United States.

''(4) Assessing current data needs or shortfalls impairing understanding of threats and vulnerabilities relating to economic competition.

''(5) Convening groups, which may include academic institutions, nonprofit organizations, commercial entities, other departments and agencies of the Federal Government, and international partners, to better understand regional requirements or inform the understanding of regional partners on the threats and vulnerabilities relating to military objectives as a result of increasing economic competition.

''(6) Carrying out such other activities relating to economic competition as the Secretary deems appropriate.

''(c) PARTICIPANTS.—

''(1) CO-CHAIRS.—The co-chairs of the Council shall be the Under Secretary of Defense for Policy, the Under Secretary of Defense for Research and Engineering, and the Under Secretary of Defense for Acquisition and Sustainment.

''(2) IN GENERAL.—The co-chairs of the Council shall ensure that the Council includes participation from each of the following:

''(A) The Office of Commercial and Economic Assessment of the Air Force.

''(B) The Office of Expanded Competition.

''(C) The Office of Strategic Capital.

''(D) The Defense Innovation Unit.

''(E) The Strategic Capabilities Office.

''(F) The Joint Warfighting Analysis Center (JWAC).

''(G) The Office of Global Economic and Investment Security [probably should be ''Office of Global Investment and Economic Security''] under the Assistant Secretary of Defense for Industrial Base Policy.

''(H) The Office of Naval Research, including ONR-Global.

''(I) The Army Research Office.

''(J) The Air Force Office of Scientific Research.

''(K) The Defense Advanced Research Projects Agency.

''(L) The Office of Strategic Intelligence and Analysis under the Under Secretary of Defense for Research and Engineering.

''(M) The program office of the Minerva Research Initiative.

''(N) Other relevant organizations as determined by the Secretary of Defense.

''(d) INPUT FROM THE JOINT STAFF AND COMBATANT COMMANDS.—The Council shall regularly solicit input from the Joint Staff and combatant commands on needs, problem statements, or other topics relating to economic competition activities described in subsection (a)(1) affecting their areas of responsibility.

''(e) TERMINATION.—The Council shall terminate on December 31, 2035.''

QUANTUM BENCHMARKING INITIATIVE

Pub. L. 118–159, div. A, title II, §231(a), (b), Dec. 23, 2024, 138 Stat. 1837, provided that:

''(a) INITIATIVE REQUIRED.—

''(1) IN GENERAL.—The Director of the Defense Advanced Research Projects Agency shall establish and carry out an initiative to rapidly expand and support efforts to evaluate concepts, development plans, and prototypes, components, and subsystems needed to develop a utility-scale quantum computing capability available to the Department of Defense.

''(2) DESIGNATION.—The initiative established pursuant to paragraph (1) shall be known as the 'Quantum Benchmarking Initiative' (referred to in this section as the 'Initiative').

''(b) ELEMENTS.—The Initiative shall include the following:

''(1) Activities to broaden existing efforts of the Department of Defense to verify and validate commercial efforts to design and build utility-scale quantum computers, including through collaboration with key partners in the Air Force Research Laboratory, the Office of Strategic Capital, the Defense Innovation Unit, and such other partners and organizations of the Department of Defense as the Director of the Defense Advanced Research Projects Agency deems appropriate.

''(2) Working with the Office of Strategic Capital to establish regular interactions with the venture capital and finance community to help accelerate commercial efforts to develop concepts, plans, prototypes, components, and subsystems needed to develop viable utility-scale quantum computers.

''(3) Working with the Office of the Assistant Secretary of Defense for Industrial Base Policy to connect key performers in fault-tolerant utility-scale quantum computing with support for industrial bases analysis, manufacturing support, and other analysis support to help foster and grow the broader industrial base supporting fault-tolerant utility-scale quantum computing.

''(4) Working with the military departments and other components of the Department of Defense to refine use cases for militarily relevant applications of utility-scale quantum computers.''

PILOT PROGRAM ON DEVELOPMENT OF NEAR-TERM USE CASES AND DEMONSTRATION OF ARTIFICIAL INTELLIGENCE TOWARD BIOTECHNOLOGY APPLICATIONS FOR NATIONAL SECURITY

Pub. L. 118–159, div. A, title II, §236, Dec. 23, 2024, 138 Stat. 1840, provided that:

''(a) PILOT PROGRAM REQUIRED.—The Secretary of Defense shall carry out a pilot program to develop near-term use cases and demonstrations of artificial intelligence for national security-related biotechnology applications.

''(b) PUBLIC-PRIVATE PARTNERSHIPS.—The Secretary of Defense shall carry out the pilot program required by subsection (a) through one or more public-private partnerships entered into for purposes of the pilot program.

''(c) LABORATORY SUPPORT AND INFRASTRUCTURE.—In support of a public-private partnership entered into under subsection (b), the Secretary of Defense may, on a reimbursable basis, make available—

''(1) the facilities and services of a Department of Defense laboratory to perform experimentation for biotechnology applications to aid in the validation of artificial intelligence models; and

''(2) computing and data storage infrastructure and capabilities of the Department of Defense.

''(d) DURATION.—The pilot program required by subsection (a) shall—

''(1) commence not later than one year after the date of the enactment of this Act [Dec. 23, 2024]; and

''(2) terminate five years after the date of the on which the program commences under paragraph (1).

''(e) ANNUAL REPORT.—

''(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act, and not later than December 1 of every other year thereafter until the termination date specified in subsection (d)(2), the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on the pilot program.

''(2) CONTENTS.—Each report submitted under paragraph (1) shall include, for the period covered by the report, the following:

''(A) An assessment of existing Department of Defense biotechnology-related data resources and how they may be used in the pilot program.

''(B) An assessment of required cybersecurity measures for users under the pilot program.

''(C) A description of any mechanisms developed for collaboration among different parties associated with projects under the pilot program, including intellectual property agreements, funding agreements, and material transfer agreements.

''(D) An assessment of the role that artificial intelligence is playing in developing biotechnology

applications for national security purposes, including identification of commercial or academic applications used in the pilot program.

''(E) A description of near-term use cases developed under the pilot program for artificial intelligence-enabled biotechnology applications for national security.

''(F) A description of planned, ongoing, and completed demonstrations or other pilot programs funded under the pilot program required by subsection (a) or otherwise funded by the Department of Defense.

''(G) An assessment of the viability of transitioning technology developed under the pilot program into operational use within the Department, including assessment of—

''(i) the resources needed for further development and scaling of such technology; and

''(ii) the potential benefits of such technology.

''(3) FORM.—Each report under paragraph (1) shall be submitted in unclassified form, but may include a classified annex.

''(f) TRANSITION PLAN.—Not later than one year before the date on which the pilot program terminates under subsection (d)(2), the Secretary of Defense shall submit to the congressional defense committees a plan that outlines what steps the Department could take to turn the pilot program into an operational program if authorized and funded by Congress to do so. The plan shall include the following:

''(1) A transition timeline.

''(2) Associated projected annual cost of operating the program.

''(3) Additional infrastructure that might be needed, including associated costs.

''(4) A descriptive analysis of the relevant technical, engineering and commercial biotechnology ecosystem, including entities within the Department and external stakeholders.

''(5) Examples of projects from the pilot phase of the program and their outcomes.

''(6) The potential impact to Department capabilities of transitioning the program.

''(7) Any other details deemed necessary to include by the Secretary.''

BIOTECHNOLOGY ROADMAP

Pub. L. 118–159, div. A, title II, § 242, Dec. 23, 2024, 138 Stat. 1845, provided that:

''(a) ROADMAP REQUIRED.—Not later than one year after the date of the enactment of this Act [Dec. 23, 2024], the Secretary of Defense, in coordination with the Under Secretary of Defense for Research and Engineering, the Under Secretary of Defense for Acquisition and Sustainment, and the Secretaries of the military departments, shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a biotechnology roadmap.

''(b) ELEMENTS.—In the roadmap required by subsection (a), the Secretary of Defense shall—

''(1) identify the strategic objectives of the Department of Defense relating to biotechnology;

''(2) for each strategic objective, establish specific goals and milestones for the achievement of such objective, including timelines for meeting such goals and milestones;

''(3) in the case of each updated version of the roadmap following submittal of the initial roadmap under subsection (a), include—

''(A) a review of the goals and milestones established under paragraph (2) to ensure such goals and milestones continue to align with strategic objectives under paragraph (1); and

''(B) a description of any goals and milestones that changed as a result of such review;

''(4) identify the biotechnology development needs and priorities for national security applications based on the strategic objectives identified in paragraph (1);

''(5) assess the technology maturity of each priority identified pursuant to paragraph (4);

''(6) describe funding sources for each priority identified pursuant to paragraph (4), including both current sources and sources covered by the future-years defense program submitted to Congress under section 221 of title 10, United States Code;

''(7) provide a plan, timeline, and metrics for research, development, testing, and evaluation activities for the priorities identified pursuant to paragraph (4);

''(8) assess opportunities for rapid acquisition and fielding of biotechnology in support of the priorities identified pursuant to paragraph (4);

''(9) identify and describe the role of each organization of the Department with responsibilities relating to biotechnology under the strategy, including investment priorities for the Office of Strategic Capital and the Defense Advanced Research Projects Agency;

''(10) assess the overall risk to the security of the United States of the biotechnology efforts covered by the strategy;

''(11) analyze any requirements of the Federal Government that hinder the ability of the Department to advance and use biotechnology;

''(12) provide for the development and support of the biotechnology workforce of the Department, including personnel with responsibilities relating directly to biotechnology and personnel who indirectly support the biotechnology efforts of the Department such as personnel involved program management, acquisition, investment, and legal matters;

''(13) with respect to the biotechnology workforce described in paragraph (12)—

''(A) identify the total number of biotechnology positions required to support the objectives of the roadmap—

''(i) as of the date of the roadmap; and

''(ii) over the periods of five and 10 years following such date;

''(B) indicate the number of such positions that have been filled as of the date of the roadmap;

''(C) describe the positions included in the biotechnology workforce, including a description of—

''(i) the role of each position in supporting the objectives under paragraph (1); and

''(ii) the qualifications required for each position, including any qualifications relating to seniority level, education, training, and security clearances;

''(D) identify any challenges affecting the ability of the Department to develop the biotechnology workforce and propose solutions to those challenges;

''(E) assess whether the codes used to define positions and roles within the workforce of the Department adequately cover the range of positions and personnel that comprise the biotechnology workforce, such as personnel in research, engineering, and testing;

''(F) identify mechanisms to enable the Department to access outside expertise relating to biotechnology, including mechanisms to assemble a pool of outside experts who have been prequalified (including by obtaining any necessary security clearances) to provide advice and assistance to the Department on matters relating to biotechnology on an as-needed basis; and

''(G) assess whether personnel occupying existing positions in the Department could be used to meet biotechnology workforce needs with additional training and, if so, the nature and scope of the training required; and

''(14) address collaboration between the Department and international partners to advance research on biotechnology, which shall include—

''(A) a description of any international partnerships under which the United States is collaborating with partners to conduct biotechnology research and development for defense purposes, in-

cluding a description of any investment priorities for the Office of Strategic Capital and the Defense Advanced Research Projects Agency relating to such partnerships;

''(B) a description of any new international partnerships that may be entered into, or existing partnerships that may be modified, to provide for such collaboration; and

''(C) identification of any challenges affecting the ability of the Department engage in such collaboration with international partners, including—

''(i) any limitations on co-investments within international partnerships;

''(ii) any United States export controls or other technology protections that hinder information sharing within such partnerships; and

''(iii) any other challenges that may prevent the full utilization of such partnerships for such collaboration.

''(c) BIENNIAL UPDATES.—Not less frequently than once every two years following the submittal of the initial roadmap under subsection (a) until the termination date specified in subsection (h), the Secretary shall—

''(1) review and update the roadmap; and

''(2) submit an updated version of the roadmap to the congressional defense committees.

''(d) FORM.—Each version of the roadmap required to be submitted under this section may be submitted in classified form, but if so submitted, shall include an unclassified executive summary.

''(e) PUBLIC AVAILABILITY.—On annual basis, the Secretary shall make an unclassified version of the most recent roadmap submitted under this section available on a publicly accessible website of the Department of Defense.

''(f) GAO EVALUATION AND REPORT.—Not later than 180 days after the date on which the Secretary of Defense submits the initial roadmap pursuant to subsection (a), the Comptroller General of the United States shall—

''(1) complete an evaluation of the roadmap; and

''(2) submit to the congressional defense committees a report on the findings of the Comptroller General with respect to such evaluation.

''(g) BIOTECHNOLOGY DEFINED.—In this section, the term 'biotechnology' means the application of science and technology to living organisms and to parts, products, and models of such organisms to alter living or non-living materials for the production of knowledge, goods, or services.

''(h) SUNSET.—This section shall terminate on the date that is 10 years after the date of the enactment of this Act [Dec. 23, 2024].''

ARTIFICIAL INTELLIGENCE HUMAN FACTORS INTEGRATION INITIATIVE

Pub. L. 118–159, div. A, title XV, §1531, Dec. 23, 2024, 138 Stat. 2142, provided that:

''(a) INITIATIVE REQUIRED.—

''(1) IN GENERAL.—The Under Secretary of Defense for Research and Engineering, in coordination with the Under Secretary of Defense for Acquisition and Sustainment and the Chief Digital and Artificial Intelligence Officer of the Department of Defense, shall establish an initiative—

''(A) to improve the human usability of artificial intelligence systems and information derived from such systems through the application of cognitive ergonomics techniques; and

''(B) to improve the human usability and cognitive effectiveness of artificial intelligence systems adopted by the Department of Defense by ensuring that design tools and metrics are available for artificial intelligence and machine learning programs that ensure human factors considerations are included for such systems.

''(2) DESIGNATION.—The initiative established pursuant to paragraph (1) shall be known as the 'Artificial Intelligence Human Factors Integration Initiative' (in this section the 'Initiative').

''(b) BRIEFING.—Not later than one year after the date of the enactment of this Act [Dec. 23, 2024], the Under Secretary of Defense for Research and Engineering, the Under Secretary of Defense for Acquisition and Sustainment, and the Chief Digital and Artificial Intelligence Officer of the Department of Defense shall jointly brief the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives on the following:

''(1) Existing research and development work within the Department of Defense laboratories relating to human-machine teaming, human-centered design, cognitive load, cognitive ergonomics, and similar topics that are currently being used or could be used to inform or enhance Department personnel usability of artificial intelligence systems and artificial intelligence-derived information.

''(2) Identification of gaps in research with respect to interactions of personnel of the Department with artificial intelligence systems in warfighting and nonwarfighting environments that may necessitate additional research within the Federal Government, industry, or academia.

''(3) Identification of relevant tools, methodologies, testing processes or systems, and evaluation metrics that may be of use to the Department in improving the cognitive ergonomic and human usability features of artificial intelligence systems for personnel of the Department.

''(c) PLAN.—Not later than 90 days after the date on which the briefing required by subsection (b) is provided, the Under Secretary of Defense for Research and Engineering, the Under Secretary of Defense for Acquisition and Sustainment, and the Chief Digital and Artificial Intelligence Officer of the Department of Defense shall jointly develop and implement a plan to—

''(1) work with the military departments (as defined in section 101(a) of title 10, United States Code) and other components of the Department to ensure human factors and human systems integration elements are considered early in the development or evaluation process with respect to the procurement, adoption, or use of artificial intelligence systems or artificial intelligence-derived information;

''(2) convene research meetings or other forums to coordinate cognitive ergonomics research or related research challenges with a broad community of academic, commercial, and international partners;

''(3) work with the Chief Digital and Artificial Intelligence Officer of the Department of Defense to review commercial toolsets to assess the level of human factors integration investment of such commercial toolsets; and

''(4) develop guidance based on the research and development work identified pursuant to subsection (b)(1) regarding how to create a framework or taxonomy for characterizing the exercise of appropriate levels of human judgment within Department of Defense Directive 3000.09 (relating to Autonomy in Weapons Systems), or successor directive, for artificial intelligence programs in the Department.

''(d) RULE OF CONSTRUCTION.—Nothing in this section shall be construed to prohibit or otherwise limit the authority of the Secretary of Defense to research, develop, improve, or acquire any weapon system or other capability that is enabled, empowered, enhanced, or improved by artificial intelligence, machine learning, or a large language model.''

ADVANCED COMPUTING INFRASTRUCTURE TO ENABLE ADVANCED ARTIFICIAL INTELLIGENCE CAPABILITIES

Pub. L. 118–159, div. A, title XV, §1532, Dec. 23, 2024, 138 Stat. 2144, provided that:

''(a) IN GENERAL.—The Secretary of Defense shall establish a program, or designate an existing program, to meet the testing and processing requirements for next generation advanced artificial intelligence capabilities.

''(b) DEVELOPMENT AND EXPANSION OF HIGH-PERFORMANCE COMPUTING INFRASTRUCTURE.—

''(1) IN GENERAL.—Under the program established or designated under subsection (a), the Secretary of De-

fense shall expand the infrastructure of the Department of Defense for development and deployment of military applications of high-performance computing and artificial intelligence capabilities that are located at installations of the Department or accessible through commercial cloud or hybrid-cloud environments.

''(2) ARTIFICIAL INTELLIGENCE APPLICATIONS.—(A) The Secretary of Defense shall ensure that a portion of the infrastructure added pursuant to paragraph (1) is—

''(i) dedicated to providing access to modern artificial intelligence accelerators for training, fine-tuning, modifying, and deploying large artificial intelligence systems; and

''(ii) configured in accordance with industry best practices.

''(B) In carrying out subparagraph (A), the Secretary of Defense shall ensure, to the extent practical, that the Department of Defense does not use the portion of the infrastructure described in such subparagraph for the development of new artificial intelligence systems to the extent that such infrastructure is duplicative of readily available commercial or open source products or services that meet or are reasonably capable of meeting the physical and data security standards of the Department.

''(c) HIGH-PERFORMANCE COMPUTING ROADMAP.—

''(1) IN GENERAL.—Under the program established or designated under subsection (a), the Secretary of Defense shall develop a roadmap that describes the high-performance computing infrastructure needed for the Department of Defense to research, test, develop, and evaluate advanced artificial intelligence applications projected over the period covered by the future-years defense program.

''(2) ASSESSMENT.—The roadmap required by paragraph (1) shall include assessments of the following:

''(A) The anticipated processing for advanced artificial intelligence applications of the Department of Defense during the period covered by the roadmap, including the computing needs associated with the development of such advanced artificial intelligence applications.

''(B) The physical and data security standards required for the infrastructure for the research, development, testing, and evaluation of advanced artificial intelligence applications, including data handling requirements.

''(C) The evaluation, milestones, and resourcing needs to maintain and expand the computing infrastructure necessary for the computing needs described in subparagraph (A).

''(d) ARTIFICIAL INTELLIGENCE SYSTEM DEVELOPMENT.—

''(1) IN GENERAL.—Using the infrastructure added under the program established or designated under subsection (a), the Secretary of Defense shall develop advanced artificial intelligence systems that have general-purpose military applications for multiple data formats, including text, audio, and graphical.

''(2) TRAINING OF SYSTEMS.—The Secretary of Defense shall ensure that advanced artificial intelligence systems developed pursuant to paragraph (1) are trained using datasets curated by the Department of Defense using general, openly or commercially available sources of such data, or data owned by the Department, depending on the appropriate use case. Such systems may use openly or commercially available artificial intelligence systems, including those available through infrastructure located at installations of the Department or cloud or hybrid-cloud environments, for development or fine-tuning.

''(e) COORDINATION AND DUPLICATION.—In establishing or designating the program under subsection (a), the Secretary of Defense shall consult with the Secretary of Energy to ensure that none of the activities carried out under this section are duplicative of any activity of a research entity of the Department of Energy, including the following:

''(1) The National Laboratories.

''(2) The Advanced Scientific Computing Research program.

''(3) The Advanced Simulation and Computing program.''

PILOT PROGRAM ON NEAR-TERM QUANTUM COMPUTING APPLICATIONS

Pub. L. 118–31, div. A, title II, § 231, Dec. 22, 2023, 137 Stat. 203, provided that:

''(a) PILOT PROGRAM.—The Secretary of Defense may carry out a pilot program under which the Secretary, in partnership with the entities specified in subsection (b), establishes and operates a program that enables organizations of the Department of Defense, including the Armed Forces, to test and evaluate how quantum and quantum-hybrid applications may be used—

''(1) to solve technical problems and research challenges identified under section 234(e) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. 4001 note) and such other near-term technical problems and challenges facing the Department and the Armed Forces as the Secretary may identify; and

''(2) to provide capabilities needed by the Department and the Armed Forces in the near-term.

''(b) ENTITIES SPECIFIED.—The Secretary of Defense shall seek to carry out the pilot program under subsection (a) in partnership with—

''(1) a federally funded research and development center, university affiliated research center, center of excellence, or similar entity; and

''(2) one or more private-sector entities with expertise in quantum computing and quantum information science.

''(c) ACTIVITIES.—Under the pilot program, the Secretary of Defense, in partnership with the entities specified in subsection (b), may—

''(1) convene a group of experts and organizations to identify and articulate challenges faced by the Department of Defense, including the Armed Forces, that have the potential to be addressed by quantum and quantum-hybrid applications;

''(2) develop and mature demonstrations, proofs of concept, pilot programs, and other measures to address the challenges identified under paragraph (1) using quantum and quantum-hybrid applications;

''(3) develop pathways through which successful demonstrations, proofs of concept, pilot programs, and other measures developed and matured under paragraph (2) may be transitioned to more advanced stages of research and development or into operational use within the Department;

''(4) ensure that any quantum-based or quantum-hybrid application-based solutions identified under the program are capable of development and deployment within the period covered by the most recent future-years defense program submitted to Congress under section 221 of title 10, United States Code (as of the time of the pilot program);

''(4) [sic] assess the utility of commercial quantum and quantum-hybrid applications for meeting the near-term needs of warfighters; and

''(5) seek to build and strengthen relationships between the Department of Defense, academic institutions, small businesses, and nontraditional defense contractors (as defined in section 3014 of title 10, United States Code) in the technology industry that may have unused or underused solutions to specific operational challenges of the Department relating to quantum and quantum-hybrid applications.

''(d) BRIEFING AND REPORTS.—

''(1) INTERIM BRIEFING.—Not later than 30 days before commencing the pilot program under subsection (a), the Secretary of Defense shall provide to the Committees on Armed Services of the Senate and the House of Representatives a briefing that—

''(A) identifies the entities the Secretary intends to partner with for the purposes of carrying out the pilot program, including—

''(i) any entities specified in subsection (b);

''(ii) any of the Armed Forces; and

''(iii) any other departments and agencies of the Federal Government with pre-existing quantum technology research efforts; and

''(B) describes the plan of the Secretary for developing and operating the program.

''(2) ANNUAL REPORT.—By December 1 of each year in which the pilot program under subsection (a) is carried out, the Secretary of Defense shall submit to the Committees on Armed Services of the Senate and the House of Representatives a report that includes—

''(A) a description of the problem sets and capabilities that were evaluated by organizations of the Department of Defense under the program;

''(B) an explanation of whether and to what extent the program resulted in the identification of potential solutions based on quantum and quantum-hybrid applications;

''(C) any potential barriers to the use of quantum and quantum-hybrid applications to solve near-term problems for the Department of Defense, including the Armed Forces; and

''(D) recommendations regarding how the Department of Defense can better leverage and deploy quantum and quantum-hybrid applications to address near-term military applications and operational needs.

''(e) TERMINATION.—The authority to carry out the pilot program under subsection (a) shall terminate on September 30, 2026.

''(f) DEFINITION.—In this section, the term 'quantum and quantum-hybrid applications' means algorithms and applications which use quantum mechanics through quantum processing units, including—

''(1) quantum-classical hybrid applications which are applications that use both quantum computing and classical computing hardware systems;

''(2) annealing and gate systems; and

''(3) all qubit modalities (including superconducting, trapped-ion, neutral atom, and photonics).''

PILOT PROGRAM ON OPTIMIZATION OF AERIAL REFUELING AND FUEL MANAGEMENT IN CONTESTED LOGISTICS ENVIRONMENTS THROUGH USE OF ARTIFICIAL INTELLIGENCE

Pub. L. 118–31, div. A, title III, §346, Dec. 22, 2023, 137 Stat. 226, provided that:

''(a) DESIGN OF PILOT PROGRAM.—

''(1) DESIGN.—Not later than 90 days after the date of the enactment of this Act [Dec. 22, 2023], the Chief Digital and Artificial Intelligence Officer of the Department of Defense, in collaboration with the Under Secretary of Defense for Acquisition and Sustainment and the Chief of Staff of the Air Force, shall design a pilot program to optimize the logistics of aerial refueling and fuel management in the context of contested logistics environments through the use of advanced digital technologies and artificial intelligence (in this section referred to as the 'pilot program').

''(2) COORDINATION AND CONSULTATION.—In designing the pilot program, the Chief Digital and Artificial Intelligence Officer shall—

''(A) coordinate with the Commander of the United States Transportation Command and the Commander of the United States Indo-Pacific Command regarding the activities to be carried out under the pilot program, to ensure the pilot program will align with existing operational requirements; and

''(B) seek to consult with relevant experts in the fields of artificial intelligence, logistics, aviation, and fuel management.

''(b) OBJECTIVES.—The objectives of the pilot program shall include the following:

''(1) Assessing the feasibility and effectiveness of artificial intelligence-driven approaches in enhancing aerial refueling operations and fuel management processes compared to existing mission planning processes executed by members of the Air Force with relevant training.

''(2) Identifying opportunities to reduce fuel consumption, decrease operational costs, and minimize the environmental impact of fuel management while maintaining military readiness.

''(3) Evaluating the interoperability and compatibility of artificial intelligence-enabled systems with the existing logistics infrastructure of the Department of Defense.

''(4) Enhancing situational awareness and decision-making capabilities through real-time data analysis and predictive modeling.

''(5) Addressing potential challenges and risks associated with the integration of artificial intelligence and other advanced digital technologies, including challenges and risks involving cybersecurity concerns.

''(c) COMMENCEMENT.—Not later than one year after the date of the enactment of this Act, the Chief Digital and Artificial Intelligence Officer, in collaboration with the Under Secretary of Defense for Acquisition and Sustainment and the Chief of Staff of the Air Force, shall commence the pilot program.

''(d) REPORT.—Not later than one year after the date of the enactment of this Act, the Chief Digital and Artificial Intelligence Officer shall submit to the Committees on Armed Services of the House of Representatives and the Senate a report on—

''(1) the design of the pilot program under subsection (a);

''(2) the status of any efforts underway to commence the pilot program under subsection (c); and

''(3) any planned future activities to be carried out under the pilot program to test expected outcomes regarding improved efficiencies or other benefits that may be derived from artificial intelligence-driven approaches to aerial refueling operations and fuel management.

''(e) TERMINATION.—The authority to conduct the pilot program under this section shall terminate on January 1, 2027.''

CONTROL AND MANAGEMENT OF DEPARTMENT OF DEFENSE DATA

Pub. L. 118–31, div. A, title XV, §1521(a), Dec. 22, 2023, 137 Stat. 551, provided that: ''The Chief Digital and Artificial Intelligence Officer of the Department of Defense may access and control, on behalf of the Secretary of Defense, any data collected, acquired, accessed, or used by a component (as such term is defined in section 1513 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 (Public Law 117–263; 10 U.S.C. 4001 note)), consistent with such section.''

ARTIFICIAL INTELLIGENCE BUG BOUNTY PROGRAMS

Pub. L. 118–31, div. A, title XV, §1542, Dec. 22, 2023, 137 Stat. 573, provided that:

''(a) PROGRAM FOR FOUNDATIONAL ARTIFICIAL INTELLIGENCE PRODUCTS BEING INTEGRATED WITHIN DEPARTMENT OF DEFENSE.—

''(1) DEVELOPMENT REQUIRED.—Not later than 180 days after the date of the enactment of this Act [Dec. 22, 2023] and subject to the availability of appropriations, the Chief Digital and Artificial Intelligence Officer of the Department of Defense shall develop a bug bounty program for foundational artificial intelligence models being integrated into the missions and operations of the Department of Defense.

''(2) COLLABORATION.—In developing the program under paragraph (1), the Chief Digital and Artificial Intelligence Officer may collaborate with the heads of other Federal departments and agencies with expertise in cybersecurity and artificial intelligence.

''(3) IMPLEMENTATION AUTHORIZED.—The Chief Digital and Artificial Intelligence Officer may carry out the program developed under subsection (a).

''(4) CONTRACTS.—The Secretary of Defense shall ensure, as may be appropriate, that whenever the Secretary enters into any contract, such contract allows for participation in the bug bounty program developed under paragraph (1).

''(5) RULE OF CONSTRUCTION.—Nothing in this subsection shall be construed to require—

''(A) the use of any foundational artificial intelligence model; or

''(B) the implementation of the program developed under paragraph (1) for the purpose of the integration of a foundational artificial intelligence model into the missions or operations of the Department of Defense.

''(b) BRIEFING.—Not later than one year after the date of the enactment of this Act, the Chief Digital and Artificial Intelligence Officer shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on—

''(1) the development and implementation of bug bounty programs the Chief Digital and Artificial Intelligence Officer considers relevant to the matters covered by this section; and

''(2) long-term plans of the Chief Digital and Artificial Intelligence Officer with respect to such bug bounty programs.

''(c) FOUNDATIONAL ARTIFICIAL INTELLIGENCE MODEL DEFINED.—In this section, the term 'foundational artificial intelligence model' means an adaptive generative model that is trained on a broad set of unlabeled data sets that may be used for different tasks with minimal fine-tuning.''

PLANS, STRATEGIES, AND OTHER MATTERS RELATING TO ARTIFICIAL INTELLIGENCE

Pub. L. 118–31, div. A, title XV, § 1544, Dec. 22, 2023, 137 Stat. 574, provided that:

''(a) IN GENERAL.—The Secretary of Defense, in consultation with the Deputy Secretary of Defense, shall—

''(1) establish and document procedures, including timelines, for the periodic review of the 2018 Department of Defense Artificial Intelligence Strategy, or any successor strategy, and associated annexes of the military departments to assess the implementation of such strategy and whether any revision is necessary;

''(2) issue Department of Defense-wide guidance that defines outcomes of near-term and long-term strategies and plans relating to—

''(A) the adoption of artificial intelligence;

''(B) the adoption and enforcement of policies on the ethical use of artificial intelligence systems; and

''(C) the identification and mitigation of bias in artificial intelligence algorithms;

''(3) issue Department-wide guidance regarding methods to monitor accountability for artificial intelligence-related activity, including artificial intelligence performance indicators and metrics;

''(4) develop a strategic plan for the development, use, and cybersecurity of generative artificial intelligence, including a policy governing the use of, and the defense against adversarial use of, generative artificial intelligence;

''(5) assess technical workforce needs across the future years defense plan to support the continued development of artificial intelligence capabilities, including recruitment and retention policies and programs;

''(6) assess the availability and adequacy of the basic artificial intelligence training and education curricula, including efforts developed or authorized pursuant to section 256 of the National Defense Authorization Act for Fiscal Year 2020 (133 Stat. 1290; Public Law 116–92), available to the broader civilian workforce of the Department and military personnel to promote artificial intelligence literacy to the non-technical workforce and senior leadership with responsibilities adjacent to artificial intelligence technical development;

''(7) develop and issue a timeline and guidance for the Chief Digital and Artificial Intelligence Officer of the Department and the Secretaries of the military departments to establish a common lexicon for artificial intelligence-related activities;

''(8) develop and implement a plan to protect and secure the integrity, availability, and privacy of artificial intelligence systems and models, including large language models, data libraries, data repositories, and algorithms, in training, development, and production environments;

''(9) ensure the fulfilment of the statutory requirement to establish data repositories under section 232 of the National Defense Authorization Act for Fiscal Year 2022 (Public Law 117–81; 10 U.S.C. 4001 note), as amended by section 212 of the National Defense Authorization Act for Fiscal Year 2023 (Public Law 117–263; 136 Stat. 2466);

''(10) develop and implement a plan—

''(A) to identify commercially available and relevant large language models; and

''(B) to make such models available, as appropriate, on classified networks;

''(11) develop a plan to defend the personnel, organizations, and systems of the Department against adversarial artificial intelligence, including an identification of organizations within the Department capable of providing to cyber red teams of the Department capabilities for operational and developmental needs;

''(12) develop and implement a policy for use by contracting officials to protect the intellectual property of commercial entities that provide artificial intelligence algorithms to a data repository specified in paragraph (9), including a policy for how to address data rights in situations in which governmental and commercial intellectual property may be mixed when such artificial intelligence algorithms are deployed in an operational environment;

''(13) issue guidance and directives governing how the Chief Digital and Artificial Intelligence Officer of the Department shall exercise authority to access, control, and maintain, on behalf of the Secretary, data collected, acquired, accessed, or used by components of the Department consistent with section 1513 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 (Public Law 117–263; 10 U.S.C. 4001 note); and

''(14) clarify guidance on the instances for, and the role of human intervention and oversight in, the exercise of artificial intelligence algorithms for use in the generation of offensive or lethal courses of action for tactical operations.

''(b) ETHICAL AND RESPONSIBLE ARTIFICIAL INTELLIGENCE.—

''(1) PROCESS.—The Secretary of Defense, acting through the Chief Digital and Artificial Intelligence Officer, shall develop and implement a process—

''(A) to assess whether a given artificial intelligence technology used by the Department of Defense is in compliance with a test, evaluation, verification, and validation framework that—

''(i) operationalizes responsible artificial intelligence principles; and

''(ii) is validated and selected by the Chief Digital and Artificial Intelligence Officer for purposes of this subsection;

''(B) to report and remediate any artificial intelligence technology that is determined not to be in compliance with the framework selected pursuant to subparagraph (A); and

''(C) in a case in which efforts to remediate such technology have been unsuccessful, to discontinue the use of the technology until effective remediation is achievable.

''(2) ADDITIONAL REQUIREMENTS.—In developing and implementing the process under paragraph (1), the Secretary of Defense shall—

''(A) develop clear criteria against which the compliance of an artificial intelligence technology

with the framework selected pursuant to subparagraph (A) of such paragraph may be assessed under such subparagraph, taking into consideration—

''(i) similar criteria previously developed by the Secretary; and

''(ii) the identification of potential vulnerabilities in systems and infrastructure of the Armed Forces that could be exploited by adversarial artificial intelligence applications used by the People's Republic of China, the Russian Federation, or other foreign adversaries;

''(B) take steps to integrate such process across the elements of the Department of Defense, including the combatant commands; and

''(C) provide information on such process to members of the Armed Forces and civilian personnel of the Department that are—

''(i) responsible for developing and deploying artificial intelligence technologies;

''(ii) end users of such technologies, including members of the Army, Navy, Air Force, Marine Corps, or Space Force who use such technologies in military operations; or

''(iii) otherwise determined relevant by the Secretary.

''(c) DEADLINE; BRIEFING.—

''(1) DEADLINE.—The Secretary shall complete the requirements under this section by not later than 120 days after the date of enactment of this Act [Dec. 22, 2023].

''(2) BRIEFING.—Not later than 150 days after the date of the enactment of this Act, the Secretary shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on the implementation of this section.''

PILOT PROGRAM TO FACILITATE THE DEVELOPMENT OF BATTERY TECHNOLOGIES FOR WARFIGHTERS

Pub. L. 117–263, div. A, title II, §225, Dec. 23, 2022, 136 Stat. 2484, provided that:

''(a) ESTABLISHMENT.—

''(1) IN GENERAL.—The Secretary of Defense may establish and carry out a pilot program to assess the feasibility and advisability of providing support to battery producers—

''(A) to facilitate the research and development of safe and secure battery technologies for existing and new or novel battery chemistry configurations, including through the research and development of new or updated manufacturing processes and technologies;

''(B) to assess commercial battery offerings within the marketplace for viability and utility for warfighter applications; and

''(C) to transition battery technologies, including technologies developed under other pilot programs, prototype projects, or other research and development programs, from the prototyping phase to manufacturing production.

''(2) DESIGNATION.—The pilot program established under paragraph (1) shall be known as the 'Warfighter Electric Battery Transition Project' (referred to in this section as the 'Project').

''(3) ADMINISTRATION.—The Under Secretary of Defense for Research and Engineering shall administer the Project.

''(b) GRANTS, CONTRACTS, AND OTHER AGREEMENTS.—The Secretary of Defense may carry out the Project through the award of support, as described in subsection (a)(1), in the form of grants to, or contracts or other agreements with, battery producers.

''(c) COORDINATION.—The Secretary of Defense shall ensure that activities under the Project are coordinated with the Strategic Environmental Research and Development Program under section 2901 of title 10, United States Code.

''(d) USE OF GRANT AND CONTRACT AMOUNTS.—A battery producer who receives a grant, contract, or other agreement under the Project may use the amount of the grant, contract, or other agreement to carry out one or more of the following activities:

''(1) Conducting research and development to validate new or novel battery chemistry configurations, including through—

''(A) experimentation;

''(B) prototyping;

''(C) testing;

''(D) adapting battery technology to integrate with other technologies and systems; or

''(E) addressing manufacturing or other production challenges.

''(2) Providing commercially available battery technologies to each Secretary of a military department and the commanders of the combatant commands to support utility assessments or other testing by warfighters.

''(3) Expanding, validating, or assessing battery recycling capabilities that may provide operational utility to the Department of Defense.

''(4) Building and strengthening relationships of the Department of Defense with nontraditional defense contractors in the technology industry that may have unused or underused solutions to specific operational challenges of the Department relating to battery technology.

''(e) PRIORITY OF AWARDS.—In awarding grants, contracts, or other agreements under the Project, the Secretary shall give preference to battery producers that meet one or more of the following criteria:

''(1) The producer manufactures, designs, or develops battery cells, packs, modules, or other related capabilities in the United States.

''(2) The producer manufactures, designs, or develops battery cells, packs, modules, or other related capabilities in the national technology and industrial base (as defined in section 4801 of title 10, United States Code).

''(3) The technology made available by the producer provides modularity to support diverse applications.

''(4) The technology made available by the producer facilitates safety in tactical and combat applications by using battery chemistries and configurations that reduce thermal runaway and minimize oxygen liberation.

''(5) The producer demonstrates new or novel battery chemistry configurations, safety characteristics, or form-factor configurations.

''(6) The producer facilitates the domestic supply chain for raw materials needed for battery production.

''(7) The producer offers battery-related commercial products or commercial services.

''(f) PLANNING, REPORTING AND DATA COLLECTION.—

''(1) PLAN REQUIRED BEFORE IMPLEMENTATION.—

''(A) IN GENERAL.—The Secretary of Defense may not commence the Project until the Secretary has completed a plan for the implementation of the Project.

''(B) ELEMENTS.—The plan under subparagraph (A) shall provide for—

''(i) collecting, analyzing, and retaining Project data;

''(ii) developing and sharing best practices for achieving the objectives of the Project;

''(iii) identification of any policy or regulatory impediments inhibiting the execution of the Project; and

''(iv) sharing results from the Project across the Department of Defense and with other departments and agencies of the Federal Government and Congress.

''(C) SUBMITTAL TO CONGRESS.—Not later than 180 days after the date of the enactment of this Act [Dec. 23, 2022], the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] the implementation plan developed under subparagraph (A).

''(2) FINAL REPORT.—Not later than one year after the date on which the Project terminates under subsection (g), the Secretary of Defense shall submit to the congressional defense committees a final report on the results of the Project. Such report shall include—

''(A) a summary of the objectives achieved by the Project; and

''(B) recommendations regarding the steps that may be taken to promote battery technologies that are not dependent on foreign competitors to meet the needs of the Armed Forces.

''(g) TERMINATION.—The authority to carry out the Project shall terminate on December 31, 2028.''

PLAN FOR INVESTMENTS TO SUPPORT THE DEVELOPMENT OF NOVEL PROCESSING APPROACHES FOR DEFENSE APPLICATIONS

Pub. L. 117–263, div. A, title II, § 233, Dec. 23, 2022, 136 Stat. 2486, provided that:

''(a) INVESTMENT PLANS REQUIRED.—Not later than November 1, 2023, and not less frequently than once every three years thereafter until December 31, 2035, the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a plan for making investments to support the development of novel processing approaches for defense applications.

''(b) ELEMENTS.—Each investment plan required by subsection (a) shall—

''(1) identify any investments the Secretary has made, and any future investments the Secretary intends to make, in research and technology development to support the use and fielding of novel processing approaches for defense applications;

''(2) identify any investments the Secretary has made, and any future investments the Secretary intends to make, to accelerate the development of novel processing approaches for defense applications, including investments in—

''(A) personnel and workforce capabilities;

''(B) facilities and infrastructure to host systems utilizing novel processing approaches;

''(C) algorithm developments necessary to expand the functionality of each novel processing approach;

''(D) other Federal agencies and federally funded laboratories; and

''(E) appropriate international and commercial sector organizations and activities;

''(3) describe mechanisms to coordinate and leverage investments in novel processing approaches within the Department and with non-Federal partners;

''(4) describe the technical goals to be achieved and capabilities to be developed under the plan; and

''(5) include recommendations for such legislative or administration actions as may support the effective execution of the investment plan.

''(c) FORM.—Each plan submitted under subsection (a) shall be submitted in such form as the Secretary considers appropriate, which may include classified, unclassified, and publicly releasable formats.

''(d) NOVEL PROCESSING APPROACHES DEFINED.—In this section, the term 'novel processing approaches' means—

''(1) emerging techniques in computation, such as biocomputing, exascale computing, utility scale quantum computing; and

''(2) associated algorithm and hardware development needed to implement such techniques.''

STRATEGY AND PLAN FOR FOSTERING AND STRENGTHENING THE DEFENSE INNOVATION ECOSYSTEM

Pub. L. 117–263, div. A, title II, § 236, Dec. 23, 2022, 136 Stat. 2490, as amended by Pub. L. 118–159, div. B, title XXVIII, § 2871(c)(3), Dec. 23, 2024, 138 Stat. 2281, provided that:

''(a) STRATEGY AND IMPLEMENTATION PLAN REQUIRED.—Not later than 180 days after the date of the enactment of this Act [Dec. 23, 2022], the Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering, shall develop—

''(1) a strategy fostering and strengthening the defense innovation ecosystem; and

''(2) a plan for implementing such strategy.

''(b) PURPOSES.—

''(1) STRATEGY.—The purpose of the strategy required by subsection (a)(1) is to provide a framework for identifying, assessing, and tracking innovation ecosystems that are beneficial to advancing the defense, national security, and warfighting missions of the Department of Defense.

''(2) IMPLEMENTATION PLAN.—The purpose of the implementation plan required by subsection (a)(2) is to provide—

''(A) concrete steps and measures of effectiveness to gauge the effect of the innovation ecosystems described in paragraph (1) on the Department; and

''(B) a means for assessing the effectiveness of the strategy developed under subsection (a)(1), including the approaches taken by the Department to grow, foster, and sustain such innovation ecosystems.

''(c) ELEMENTS.—The strategy and the implementation plan required by subsection (a) shall include the following elements:

''(1) A process for defining, assessing, and selecting innovation ecosystems with potential to provide benefit to the Department of Defense.

''(2) Metrics for measuring the performance and health of innovation ecosystems being supported by the Department, including identification of criteria to determine when to support or cease supporting identified ecosystems.

''(3) Identification of the authorities and Department of Defense research, development, test, and evaluation assets that can be used to identify, establish, sustain, and expand innovation ecosystems.

''(4) For each innovation ecosystem supported by the Department—

''(A) a description of the core competencies or focus areas of the ecosystem;

''(B) identification of any organizations or elements of the Department that engage with the ecosystem;

''(C) identification of the private sector assets that are being used to support, sustain, and expand the identified innovation ecosystem; and

''(D) a description of any challenges and successes associated with such ecosystem.

''(5) Such other elements as the Secretary considers appropriate.

''(d) INTERIM BRIEFING.—Not later than 90 days after the date of the enactment of this Act, the Secretary of Defense shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on the strategy and implementation plan developed under subsection (a).

''(e) SUBMITTAL OF STRATEGY AND PLAN.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall submit to the congressional defense committees the strategy and implementation plan developed under subsection (a).

''(f) QUADRENNIAL UPDATES.—Not later than March 1, 2027, and not less frequently than once ever four years thereafter until December 31, 2039, the Secretary shall—

''(1) update the strategy and plan developed under subsection (a); and

''(2) submit the updated strategy and plan to the congressional defense committees.

''(g) DEFINITIONS.—In this section:

''(1) The term 'Department of Defense research, development, test, and evaluation assets' includes the following:

''(A) The Department of Defense science and technology reinvention laboratories designated under section 4121 of title 10, United States Code.

''(B) The Major Range and Test Facility Base (as defined in section 4173 of such title).

''(C) Department of Defense sponsored manufacturing innovation institutes.

''(D) The organic industrial base.

''(E) Defense Agencies and Department of Defense Field Activities (as defined in section 101(a) of title 10, United States Code) that carry out activities using funds appropriated for research, development, test, and evaluation.

''(F) Any other organization or element of the Department of Defense that carries out activities using funds appropriated for research, development, test, and evaluation.

''(2) The term 'innovation ecosystem' refers to a regionally based network of private sector, academic, and government institutions in a network of formal and informal institutional relationships that contribute to technological and economic development in a defined technology sector or sectors.''

ESTABLISHING PROJECTS FOR DATA MANAGEMENT, ARTIFICIAL INTELLIGENCE, AND DIGITAL SOLUTIONS

Pub. L. 117–263, div. A, title XV, §1513, Dec. 23, 2022, 136 Stat. 2894, provided that:

''(a) ESTABLISHMENT OF PRIORITY PROJECTS.—The Deputy Secretary of Defense shall—

''(1) establish priority enterprise projects for data management, artificial intelligence, and digital solutions for both business efficiency and warfighting capabilities intended to accelerate decision advantage; and

''(2) assign responsibilities for execution and funding of the projects established under paragraph (1).

''(b) ACTIONS REQUIRED.—To ensure implementation of the priority projects of the Deputy Secretary of Defense under subsection (a), and to instill data science and technology as a core discipline in the Department of Defense, the Deputy Secretary shall—

''(1) hold the heads of components accountable for—

''(A) making their component's data available for use pursuant to the memorandum of the Deputy Secretary of Defense dated May 5, 2021, and titled 'Creating Data Advantage', in accordance with plans developed and approved by the head of the component and the Deputy Secretary;

''(B) developing, implementing, and reporting measurable actions to acquire, preserve, and grow the population of government and contractor personnel with expertise in data management, artificial intelligence, and digital solutions;

''(C) making their components use data management practices, analytics processes, enterprise cloud computing environments, and operational test environments that are made available and specifically approved by the head of the component and the Deputy Secretary;

''(D) identifying and reporting on an annual basis for Deputy Secretary approval those ongoing programs and activities and new initiatives within their components to which the component head determines should be applied advanced analytics, digital technology, and artificial intelligence; and

''(E) developing and implementing cybersecurity and artificial intelligence security solutions, including preventative and mitigative technical solutions, red team assessments, to protect artificial intelligence systems, data, development processes, and applications from adversary actions;

''(2) require the Chief Digital and Artificial Intelligence Officer, in coordination with the heads of components, to develop and report on an actionable plan for the Deputy Secretary to reform the technologies, policies, and processes used to support accreditation and authority to operate decisions to enable rapid deployment into operational environments of newly developed government, contractor, and commercial data management, artificial intelligence, and digital solutions software;

''(3) require the Under Secretary of Defense for Personnel and Readiness, in coordination with the Chief Digital and Artificial Intelligence Officer and heads of components to define and establish career paths, work roles, and occupational specialties for civilian and military personnel in the fields of data management, artificial intelligence, and digital solutions for the Deputy Secretary's approval; and

''(4) establish a Departmental management reform goal for adoption and integration artificial intelligence or machine learning into business and warfighting processes, including the tracking of metrics, milestones, and initiatives to measure the progress of the Department in meeting that goal.

''(c) BRIEFINGS REQUIRED.—Not later than 180 days after the date of the enactment of this Act [Dec. 23, 2022], and annually thereafter until December 31, 2025, the Deputy Secretary shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on directives issued by the Deputy Secretary to implement the requirements of this section and the status of implementation actions.

''(d) COMPONENT DEFINED.—In this section, the term 'component' means a military department, a combatant command, or a Defense Agency of the Department of Defense.''

REVIEW OF ARTIFICIAL INTELLIGENCE APPLICATIONS AND ESTABLISHMENT OF PERFORMANCE METRICS

Pub. L. 117–81, div. A, title II, §226, Dec. 27, 2021, 135 Stat. 1607, as amended by Pub. L. 117–263, div. A, title II, §212(b), Dec. 23, 2022, 136 Stat. 2467, provided that:

''(a) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act [Dec. 27, 2021], the Secretary of Defense shall—

''(1) review the potential applications of artificial intelligence and digital technology to the platforms, processes, and operations of the Department of Defense; and

''(2) establish performance objectives and accompanying metrics for the incorporation of artificial intelligence and digital readiness into such platforms, processes, and operations.

''(b) PERFORMANCE OBJECTIVES AND ACCOMPANYING METRICS.—

''(1) SKILL GAPS.—In carrying out subsection (a), the Secretary of Defense shall require each Secretary of a military department and the heads of such other organizations and elements of the Department of Defense as the Secretary of Defense determines appropriate to—

''(A) conduct a comprehensive review and assessment of—

''(i) skill gaps in the fields of software development, software engineering, data science, and artificial intelligence;

''(ii) the qualifications of civilian personnel needed for both management and specialist tracks in such fields; and

''(iii) the qualifications of military personnel (officer and enlisted) needed for both management and specialist tracks in such fields; and

''(B) establish recruiting, training, and talent management performance objectives and accompanying metrics for achieving and maintaining staffing levels needed to fill identified gaps and meet the needs of the Department for skilled personnel.

''(2) AI MODERNIZATION ACTIVITIES.—In carrying out subsection (a), the Secretary of Defense shall—

''(A) assess investment by the Department of Defense in artificial intelligence innovation, science and technology, and research and development;

''(B) assess investment by the Department in test and evaluation of artificial intelligence capabilities; and

''(C) establish performance objectives and accompanying metrics for artificial intelligence modernization activities of the Department.

''(3) EXERCISES, WARGAMES, AND EXPERIMENTATION.—In conjunction with the activities of the Secretary of

Defense under subsection (a), the Chairman of the Joint Chiefs of Staff, in coordination with the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061), shall—

''(A) assess the integration of artificial intelligence into war-games, exercises, and experimentation; and

''(B) develop performance objectives and accompanying metrics for such integration.

''(4) LOGISTICS AND SUSTAINMENT.—In carrying out subsection (a), the Secretary of Defense shall require the Under Secretary of Defense for Acquisition and Sustainment, with support from the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061), to—

''(A) assess the application of artificial intelligence in logistics and sustainment systems; and

''(B) establish performance objectives and accompanying metrics for integration of artificial intelligence in the Department of Defense logistics and sustainment enterprise.

''(5) BUSINESS APPLICATIONS.—In carrying out subsection (a), the Secretary of Defense shall require the Under Secretary of Defense (Comptroller), in coordination with the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061), to—

''(A) assess the integration of artificial intelligence for administrative functions that can be performed with robotic process automation and artificial intelligence-enabled analysis; and

''(B) establish performance objectives and accompanying metrics for the integration of artificial intelligence in priority business process areas of the Department of Defensee, including the following:

''(i) Human resources.

''(ii) Budget and finance, including audit.

''(iii) Retail.

''(iv) Real estate.

''(v) Health care.

''(vi) Logistics.

''(vii) Such other business processes as the Secretary considers appropriate.

''(c) REPORT TO CONGRESS.—Not later than 120 days after the completion of the review required by subsection (a)(1), the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on—

''(1) the findings of the Secretary with respect to the review and any action taken or proposed to be taken by the Secretary to address such findings; and

''(2) the performance objectives and accompanying metrics established under subsections (a)(2) and (b).''

MODIFICATION OF THE JOINT COMMON FOUNDATION PROGRAM

Pub. L. 117–81, div. A, title II, § 227, Dec. 27, 2021, 135 Stat. 1609, as amended by Pub. L. 117–263, div. A, title II, § 212(c), Dec. 23, 2022, 136 Stat. 2467, provided that:

''(a) MODIFICATION OF JOINT COMMON FOUNDATION.—The Secretary of Defense shall modify the Joint Common Foundation program conducted by the the [sic] office of the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061) to ensure that Department of Defense components can more easily contract with leading commercial artificial intelligence companies to support the rapid and efficient development and deployment of applications and capabilities.

''(b) QUALIFYING COMMERCIAL COMPANIES.—The Secretary of Defense shall take such actions as may be necessary to increase the number of commercial artificial intelligence companies eligible to provide support to Department of Defense components, including with respect to requirements for cybersecurity protections and processes, to achieve automatic authority to operate and provide continuous delivery, security clearances, data portability, and interoperability.

''(c) USE OF FAR PART 12.—The Secretary of Defense shall ensure that, to the maximum extent practicable, commercial artificial intelligence companies are able to offer platforms, services, applications, and tools to Department of Defense components through processes and procedures under part 12 of the Federal Acquisition Regulation.

''(d) OBJECTIVES OF THE JOINT COMMON FOUNDATION PROGRAM.—The objectives of the Joint Common Foundation program shall include the following:

''(1) Relieving Department of Defense components of the need to design or develop or independently contract for the computing and data hosting platforms and associated services on and through which the component at issue would apply its domain expertise to develop specific artificial intelligence applications.

''(2) Providing expert guidance to components in selecting commercial platforms, tools, and services to support the development of component artificial intelligence applications.

''(3) Ensuring that leading commercial artificial intelligence technologies and capabilities are easily and rapidly accessible to components through streamlined contracting processes.

''(4) Assisting components in designing, developing, accessing, or acquiring commercial or non-commercial capabilities that may be needed to support the operational use of artificial intelligence applications.

''(5) Enabling companies to develop software for artificial intelligence applications within secure software development environments that are controlled, sponsored, required, or specified by the Department of Defense, including PlatformOne of the Department of the Air Force[.]

''(e) BRIEFING.—Not later than 120 days after the date of the enactment of this Act [Dec. 27, 2021], the Secretary of Defense shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on actions taken to carry out this section.''

ACTIVITIES TO ACCELERATE DEVELOPMENT AND DEPLOYMENT OF DUAL-USE QUANTUM TECHNOLOGIES

Pub. L. 117–81, div. A, title II, § 229, Dec. 27, 2021, 135 Stat. 1610, as amended by Pub. L. 118–159, div. A, title II, § 231(c), Dec. 23, 2024, 138 Stat. 1837, provided that:

''(a) ACTIVITIES REQUIRED.—The Secretary of Defense shall establish a set of activities—

''(1) to accelerate the development and deployment of dual-use quantum capabilities;

''(2) to ensure the approach of the United States to investments of the Department of Defense in quantum information science research and development reflects an appropriate balance between scientific progress and the potential economic and security implications of such progress;

''(3) to ensure that the Department of Defense is fully aware and has a technical understanding of the maturity and operational utility of new and emerging quantum technologies; and

''(4) to ensure the Department of Defense consistently has access to the most advanced quantum capabilities available in the commercial sector to support research and modernization activities.

''(b) ASSISTANCE PROGRAM.—

''(1) PROGRAM REQUIRED.—In carrying out subsection (a) and subject to the availability of appropriations for such purpose, the Secretary of Defense shall, acting through the Director of the Defense Advanced Research Projects Agency and in consultation with appropriate public and private sector organizations, establish a program under which the Secretary may award assistance to one or more organizations—

''(A) to identify defense applications for which dual-use quantum technologies provide a clear advantage over competing technologies;

''(B) to accelerate development of such quantum technologies; and

''(C) to accelerate the deployment of dual-use quantum capabilities.

''(2) FORM OF ASSISTANCE.—Assistance awarded under the program required by paragraph (1) may consist of a grant, a contract, a cooperative agreement, other transaction, or such other form of assistance as the Secretary of Defense considers appropriate.

''(3) AUTHORITIES AND ACQUISITION APPROACHES.—The Secretary of Defense may use the following authorities and approaches for the program required by paragraph (1):

''(A) Section 2374a of title 10, United States Code [now 10 U.S.C. 4025], relating to prizes for advanced technology achievements.

''(B) Section 2373 of such title [now 10 U.S.C. 4023], relating to procurement for experimental purposes.

''(C) Sections 2371 [now 10 U.S.C. 4021] and 2371b [now 10 U.S.C. 4022] of such title, relating to transactions other than contracts and grants and authority of the Department of Defense to carry out certain prototype projects, respectively.

''(D) Section 2358 of such title [now 10 U.S.C. 4001], relating to research and development projects.

''(E) Section 879 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328; [former] 10 U.S.C. 2302 note), relating to defense pilot program for authority to acquire innovative commercial products, technologies, and services using general solicitation competitive procedures.

''(F) Requirement for milestone payments based on technical achievements.

''(G) Requirement for cost share from private sector participants in the program.

''(H) Commercial procurement authority under part 12 of the Federal Acquisition Regulation.

''(I) Such other authorities or approaches as the Secretary considers appropriate.

''(4) POLICIES AND PROCEDURES.—The Secretary of Defense shall, in consultation with such experts from government and industry as the Secretary considers appropriate, establish policies and procedures to carry out the program required by paragraph (1).''

DATA REPOSITORIES TO FACILITATE THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE CAPABILITIES FOR THE DEPARTMENT OF DEFENSE

Pub. L. 117–81, div. A, title II, §232, Dec. 27, 2021, 135 Stat. 1613, as amended by Pub. L. 117–263, div. A, title II, §212(d), Dec. 23, 2022, 136 Stat. 2467, provided that:

''(a) ESTABLISHMENT OF DATA REPOSITORIES.—The Secretary of Defense, acting through the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061) (and such other officials as the Secretary determines appropriate), shall—

''(1) establish data repositories containing Department of Defense data sets relevant to the development of artificial intelligence software and technology; and

''(2) allow appropriate public and private sector organizations to access such data repositories for the purpose of developing improved artificial intelligence and machine learning software capabilities that may, as determined appropriate by the Secretary, be procured by the Department to satisfy Department requirements and technology development goals.

''(b) ELEMENTS.—The data repositories established under subsection (a)—

''(1) may include unclassified training quality data sets and associated labels representative of diverse types of information, representing Department of Defense missions, business processes, and activities; and

''(2) shall—

''(A) be categorized and annotated to support development of a common evaluation framework for artificial intelligence models and other technical software solutions;

''(B) be made available to appropriate public and private sector organizations to support rapid development of software and artificial intelligence capabilities;

''(C) include capabilities and tool sets to detect, evaluate, and correct errors in data annotation, identify gaps in training data used in model development that would require additional data labeling, and evaluate model performance across the life cycle of the data repositories; and

''(D) be developed to support other missions and activities as determined by the Secretary.

''(c) BRIEFING.—Not later than July 1, 2023, the Secretary of Defense shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on—

''(1) the types of information the Secretary determines are feasible and advisable to include in the data repositories established under subsection (a); and

''(2) the progress of the Secretary in establishing such data repositories.''

AUTHORITY FOR ACTIVITIES TO IMPROVE NEXT GENERATION RADAR SYSTEMS CAPABILITIES

Pub. L. 117–81, div. A, title III, §380, Dec. 27, 2021, 135 Stat. 1670, provided that:

''(a) AUTHORITY.—The Secretary of Defense may undertake activities to enhance future radar systems capabilities, including the following:

''(1) Designating specific industry, academic, government, or public-private partnership entities to provide expertise in the repair, sustainment, and support of radar systems to meet current and future defense requirements, as appropriate.

''(2) Facilitating collaboration among academia, the Federal Government, the defense industry, and the commercial sector, including with respect to radar system repair and sustainment activities.

''(3) Establishing advanced research and workforce training and educational programs to enhance future radar systems capabilities.

''(4) Establishing goals for research in areas of study relevant to advancing technology and facilitating better understanding of radar systems in defense systems and operational activities, including continuing education and training goals.

''(5) Increasing communications and personnel exchanges with radar systems experts in industry to support adoption of state-of-the-art technologies and operational practices, especially to support meeting future defense needs related to radar systems in autonomous systems.

''(6) Establishing agreements with one or more institutions of higher education or other organizations in academia or industry to provide for activities authorized under this section.

''(7) Partnering with nonprofit institutions and private industry with expertise in radar systems to support activities authorized under this section.

''(8) Establishing research centers and facilities, including centers of excellence, as appropriate to support activities authorized under this section, especially to promote partnerships between government, industry, and academia.

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

PILOT PROGRAM ON SYSTEMS ENGINEERING DETERMINATIONS

Pub. L. 117–81, div. A, title VIII, §823, Dec. 27, 2021, 135 Stat. 1826, provided that:

''(a) REQUIREMENT.—As soon as practicable but not later than September 30, 2023, the Secretary of Defense shall ensure that each covered entity enters into at least two covered transactions under an authority described in subsection (b), where each such covered transaction includes the system engineering determinations described under subsection (c).

''(b) COVERED AUTHORITIES.—The authorities described under this subsection are as follows:

''(1) Section 2371 of title 10, United States Code [now 10 U.S.C. 4021], with respect to applied and advanced research project transactions relating to weapons systems.

''(2) Section 2371b of such title [now 10 U.S.C. 4022], with respect to transactions relating to weapons systems.

''(3) Section 2373 of such title [now 10 U.S.C. 4023].

''(4) Section 2358 of such title [now 10 U.S.C. 4001], with respect to transactions relating to weapons systems.

''(c) SYSTEMS ENGINEERING DETERMINATIONS.—

''(1) FIRST DETERMINATION.—

''(A) SUCCESS CRITERIA.—The head of a covered entity that enters into a covered transaction under this section shall identify, in writing, not later than 30 days after entering into such covered transaction, measurable success criteria related to potential military applications of such covered transaction, to be demonstrated not later than the last day of the period of performance for such covered transaction.

''(B) TYPES OF DETERMINATIONS.—Not later than 30 days after the end of such period of performance, the head of the covered entity shall make one of the following determinations:

''(i) A 'Discontinue' determination, under which such head discontinues support of the covered transaction and provides a rationale for such determination.

''(ii) A 'Retain and Extend' determination, under which such head ensures continued performance of such covered transaction and extends the period of performance for a specified period of time in order to achieve the success criteria described under subparagraph (A).

''(iii) An 'Endorse and Refer' determination, under which such head endorses the covered transaction and refers it to the most appropriate Service Systems Engineering Command, based on the technical attributes of the covered transaction and the associated potential military applications, based on meeting or exceeding the success criteria.

''(C) WRITTEN NOTICE.—A determination made pursuant to subparagraph (B) shall be documented in writing and provided to the person performing the covered transaction to which the determination relates.

''(D) FURTHER DETERMINATION.—If the head of a covered entity issued a 'Retain and Extend' determination described in subparagraph (B)(ii), such head shall, at the end of the extension period—

''(i) issue an 'Endorse and Refer' determination described in subparagraph (B)(iii) if the success criteria are met; or

''(ii) issue a 'Discontinue' determination described in subparagraph (B)(i) if the success criteria are not met.

''(2) SECOND DETERMINATION.—

''(A) SYSTEMS ENGINEERING PLAN.—The head of the Service Systems Engineering Command that receives a referral from an 'Endorse and Refer' determination described in paragraph (1)(B)(iii) shall, not later than 30 days after receipt of such referral, formulate a systems engineering plan with the person performing the referred covered transaction, technical experts of the Department of Defense, and any prospective program executive officers.

''(B) ELEMENTS.—The systems engineering plan required under subparagraph (A) shall include the following:

''(i) Measurable baseline technical capability, based on meeting the success criteria described in paragraph (1)(A).

''(ii) Measurable transition technical capability, based on the technical needs of the prospective program executive officers to support a current or future program of record.

''(iii) Discrete technical development activities necessary to progress from the baseline technical capability to the transition technical capability, including an approximate cost and schedule, including activities that provide resolution to issues relating to—

''(I) interfaces;

''(II) data rights;

''(III) Federal Government technical requirements;

''(IV) specific platform technical integration;

''(V) software development;

''(VI) component, subsystem, or system prototyping;

''(VII) scale models;

''(VIII) technical manuals;

''(IX) lifecycle sustainment needs; and

''(X) other needs identified by the relevant program executive officer.

''(iv) Identification and commitment of funding sources to complete the activities under clause (iii).

''(C) TYPES OF DETERMINATIONS.—Not later than 30 days after the end of the schedule required by subparagraph (B)(iii), the head of the Service Systems Engineering Command shall make one of the following determinations:

''(i) A 'Discontinue' determination, under which such head discontinues support of the covered transaction and provides a rationale for such determination.

''(ii) A 'Retain and Extend' determination, under which such head ensures continued performance of such covered transaction within the Service Systems Engineering Command and extends the period of performance for a specified period of time in order to—

''(I) successfully complete the systems engineering plan required under subparagraph (A); and

''(II) issue specific remedial or additional activities to the person performing the covered transaction.

''(iii) An 'Endorse and Refer' determination, under which such head endorses the covered transaction and refers it to a program executive officer, based on successful completion of the systems engineering plan required under subparagraph (A).

''(D) WRITTEN NOTICE.—A determination made pursuant to subparagraph (C) shall be documented in writing and provided to the person performing the covered transaction to which the determination relates and any prospective program executive officers for such covered transaction.

''(E) FURTHER DETERMINATION.—If the head of the Service Systems Engineering Command issued a 'Retain and Extend' determination described in subparagraph (C)(ii), such head shall, at the end of the extension period—

''(i) issue an 'Endorse and Refer' determination described in subparagraph (C)(iii) if the transition technical capability criteria are met; or

''(ii) issue a 'Discontinue' determination described in subparagraph (B)(i) if the success criteria are not met.

''(d) PRIORITY FOR COVERED TRANSACTION SELECTION.—In selecting a covered transaction under this section, the Secretary shall prioritize those covered transactions that—

''(1) are being initially demonstrated at a covered entity;

''(2) demonstrate a high potential to be further developed by a Service Systems Engineering Command; and

''(3) demonstrate a high potential to be used in a program of the Department of Defense.

''(e) NOTIFICATIONS.—

''(1) IN GENERAL.—Not later than 30 days after a covered transaction is entered into pursuant to subsection (a), the Secretary of Defense shall notify the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] of such covered transaction.

''(2) UPDATES.—Not later than 120 days after such a covered transaction is entered into, and every 120 days thereafter until the action specified in subsection (c)(1)(B)(i), (c)(2)(C)(i), or (c)(2)(C)(iii) occurs, the Secretary of Defense shall provide written updates to the congressional defense committees on the actions being taken by the Department to comply with the requirements of this section.

''(f) BRIEFING REQUIRED.—Not later than 60 days after the date of the enactment of this Act [Dec. 27, 2021], the Secretary of Defense shall provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives with a detailed plan to implement the requirements of this section.

''(g) DEFINITIONS.—In this section:

''(1) The term 'covered entity' means—

''(A) the Defense Innovation Unit;

''(B) the Strategic Capabilities Office; or

''(C) the Defense Advanced Research Projects Agency.

''(2) The term 'covered transaction' means a transaction, procurement, or project conducted pursuant to an authority listed in subsection (b).

''(3) The term 'Service Systems Engineering Command' means the specific Department of Defense command that reports through a chain of command to the head of a military department that specializes in the systems engineering of a system, subsystem, component, or capability area.''

PILOT PROGRAM ON ACQUISITION PRACTICES FOR EMERGING TECHNOLOGIES

Pub. L. 117–81, div. A, title VIII, § 833, Dec. 27, 2021, 135 Stat. 1833, provided that:

''(a) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act [Dec. 27, 2021], the Secretary of Defense, acting through the Under Secretary of Defense for Acquisition and Sustainment or the Under Secretary's designee, shall establish a pilot program (in this section referred to as the 'Pilot Program') to develop and implement unique acquisition mechanisms for emerging technologies in order to increase the speed of transition of emerging technologies into acquisition programs or into operational use.

''(b) ELEMENTS.—In carrying out the Pilot Program, the Under Secretary of Defense for Acquisition and Sustainment shall—

''(1) identify, and award agreements to, not less than four new projects supporting high-priority defense modernization activities, consistent with the National Defense Strategy, with consideration given to—

''(A) offensive missile capabilities;

''(B) space-based assets;

''(C) personnel and quality of life improvement;

''(D) energy generation and storage; and

''(E) any other area activities the Under Secretary determines appropriate;

''(2) develop a unique acquisition plan for each project identified pursuant to paragraph (1) that is significantly novel from standard Department of Defense acquisition practices, including the use of—

''(A) alternative price evaluation models;

''(B) alternative independent cost estimation methodologies;

''(C) alternative market research methods;

''(D) continuous assessment of performance metrics to measure project value for use in program management and oversight;

''(E) alternative intellectual property strategies, including activities to support modular open system approaches (as defined in section 2446a(b) of title 10, United States Code [now 10 U.S.C. 4401(b)]) and reduce life-cycle and sustainment costs; and

''(F) other alternative practices identified by the Under Secretary;

''(3) execute the acquisition plans described in paragraph (2) and award agreements in an expedited manner; and

''(4) determine if existing authorities are sufficient to carry out the activities described in this subsection and, if not, submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] recommendations for statutory reforms that will provide sufficient authority.

''(c) REGULATION WAIVER.—The Under Secretary of Defense for Acquisition and Sustainment shall establish mechanisms for the Under Secretary to waive, upon request, regulations, directives, or policies of the Department of Defense, a military service, or a Defense Agency with respect to a project awarded an agreement under the Pilot Program if the Under Secretary determines that such a waiver furthers the purposes of the Pilot Program, unless such waiver would be prohibited by a provision of a Federal statute or common law.

''(d) AGREEMENT TERMINATION.—

''(1) IN GENERAL.—The Secretary of Defense may establish procedures to terminate agreements awarded under the Pilot Program.

''(2) NOTIFICATION REQUIRED.—Any procedure established under paragraph (1) shall require that, not later than 30 days prior to the termination of any agreement under such procedure, notice of such termination shall be provided to the congressional defense committees.

''(e) PILOT PROGRAM ADVISORY GROUP.—

''(1) IN GENERAL.—The Under Secretary of Defense for Acquisition and Sustainment shall establish a Pilot Program advisory group to advise the Under Secretary on—

''(A) the selection, management and elements of projects under the Pilot Program;

''(B) the collection of data regarding the use of the Pilot Program; and

''(C) the termination of agreements under the Pilot Program.

''(2) MEMBERSHIP.—

''(A) IN GENERAL.—The members of the advisory group established under paragraph (1) shall be appointed as follows:

''(i) One member from each military department (as defined under section 101(a) of title 10, United States Code), appointed by the Secretary of the military department concerned.

''(ii) One member appointed by the Under Secretary of Defense for Research and Engineering.

''(iii) One member appointed by the Under Secretary of Defense for Acquisition and Sustainment.

''(iv) One member appointed by the Director of the Strategic Capabilities Office of the Department of Defense.

''(v) One member appointed by the Director of the Defense Advanced Research Projects Agency.

''(vi) One member appointed by the Director of Cost Assessment and Program Evaluation.

''(vii) One member appointed by the Director of Operational Test and Evaluation.

''(B) DEADLINE FOR APPOINTMENT.—Members of the advisory group shall be appointed not later than 30 days after the date of the establishment of the pilot program under subsection (a).

''(3) FACA NON-APPLICABILITY.—The Federal Advisory Committee Act ([former] 5 U.S.C. App.) [see 5 U.S.C. 1001 et seq.] shall not apply to the advisory group established under paragraph (1).

''(f) INFORMATION TO CONGRESS.—

''(1) BRIEFING REQUIREMENT.—Not later than 180 days after the date of the enactment of this Act, and not less than annually thereafter, the Secretary of

Defense shall provide to the congressional defense committees a briefing on activities performed under this section.

''(2) BUDGET JUSTIFICATION MATERIALS.—The Secretary shall establish procedures to clearly identify all projects under the Pilot Program in budget justification materials submitted to Congress.

''(g) DATA REQUIREMENTS.—

''(1) COLLECTION AND ANALYSIS OF DATA.—The Secretary shall establish mechanisms to collect and analyze data on the execution of the Pilot Program for the purpose of—

''(A) developing and sharing best practices for achieving goals established for the Pilot Program;

''(B) providing information to the Secretary and the congressional defense committees on the execution of the Pilot Program; and

''(C) providing information to the Secretary and the congressional defense committees on related policy issues.

''(2) DATA STRATEGY REQUIRED.—The Secretary may not establish the Pilot Program prior to completion of a plan for—

''(A) meeting the requirements of this subsection;

''(B) collecting the data required to carry out an evaluation of the lessons learned from the Pilot Program; and

''(C) conducting such evaluation.

''(h) TERMINATION.—The Pilot Program shall terminate on the earlier of—

''(1) the date on which each project identified under subsection (b)(1) has either been completed or has had all agreements awarded to such project under the Pilot Program terminated; or

''(2) the date that is five years after the date of the enactment of this Act.''

DESIGNATION OF SENIOR OFFICIALS FOR CRITICAL TECHNOLOGY AREAS SUPPORTIVE OF THE NATIONAL DEFENSE STRATEGY

Pub. L. 116–283, div. A, title II, §217(a)–(d), Jan. 1, 2021, 134 Stat. 3460, 3461, provided that:

''(a) DESIGNATION OF SENIOR OFFICIALS.—The Under Secretary of Defense for Research and Engineering shall—

''(1) identify technology areas that the Under Secretary considers critical for the support of the National Defense Strategy; and

''(2) for each such technology area, designate a senior official of the Department of Defense to coordinate research and engineering activities in that area.

''(b) DUTIES.—The duties of each senior official designated under subsection (a) shall include, with respect to the technology area overseen by such official—

''(1) developing and continuously updating research and technology development roadmaps, funding strategies, and technology transition strategies to ensure—

''(A) the effective and efficient development of new capabilities in the area; and

''(B) the operational use of appropriate technologies;

''(2) conducting annual assessments of workforce, infrastructure, and industrial base capabilities and capacity to support—

''(A) the roadmaps developed under paragraph (1); and

''(B) the goals of the National Defense Strategy;

''(3) reviewing the relevant research and engineering budgets of appropriate organizations within the Department of Defense, including the Armed Forces, and advising the Under Secretary on—

''(A) the consistency of the budgets with the roadmaps developed under paragraph (1);

''(B) any technical and programmatic risks to the achievement of the research and technology development goals of the National Defense Strategy;

''(C) programs, projects, and activities that demonstrate—

''(i) unwanted or inefficient duplication, including duplication with activities of other government agencies and the commercial sector;

''(ii) lack of appropriate coordination with other organizations; or

''(iii) inappropriate alignment with organizational missions and capabilities;

''(4) coordinating the research and engineering activities of the Department with appropriate international, interagency, and private sector organizations; and

''(5) tasking appropriate intelligence agencies of the Department to develop a direct comparison between the capabilities of the United States in the technology area concerned and the capabilities of adversaries of the United States in that area.

''(c) ANNUAL REPORTS.—

''(1) IN GENERAL.—Not later than December 1, 2021, and not later than December 1 of each year thereafter through December 1, 2025, the Under Secretary shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on research and engineering activities and on the status of the technology areas identified under subsection (a)(1), including a description of any programs, projects, or activities in such areas, that have, in the year preceding the date of the report—

''(A) achieved significant technical progress;

''(B) transitioned from the research and development phase to formal acquisition programs;

''(C) transitioned from the research and development phase into operational use; or

''(D) been transferred from the Department of Defense to private sector organizations for further commercial development or commercial sales.

''(2) FORM.—Each report under paragraph (1) shall [sic] submitted in unclassified form that can be made available to the public, but may include a classified annex.

''(d) COORDINATION OF RESEARCH AND ENGINEERING ACTIVITIES.—The Service Acquisition Executive for each military department and the Director of the Defense Advanced Research Projects Agency shall each identify senior officials to ensure coordination of appropriate research and engineering activities with each of the senior officials designated under subsection (a).''

SOCIAL SCIENCE, MANAGEMENT SCIENCE, AND INFORMATION SCIENCE RESEARCH ACTIVITIES

Pub. L. 116–283, div. A, title II, §220, Jan. 1, 2021, 134 Stat. 3464, provided that:

''(a) ESTABLISHMENT.—The Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering, shall carry out a program of research and development in social science, management science, and information science.

''(b) PURPOSES.—The purposes of the program under subsection (a) are as follows:

''(1) To ensure that the Department of Defense has access to innovation and expertise in social science, management science, and information science to enable the Department to improve the effectiveness, efficiency, and agility of the Department's operational and management activities.

''(2) To develop and manage a portfolio of research initiatives in fundamental and applied social science, management science, and information science that is stable, consistent, and balanced across relevant disciplines.

''(3) To enhance cooperation and collaboration on research and development in the fields of social science, management science, and information science between the Department of Defense and appropriate private sector and international entities that are involved in research and development in such fields.

''(4) To accelerate the development of a research community and industry to support Department of Defense missions in the fields of social science, management science, and information science, including the development of facilities, a workforce, infrastructure, and partnerships in support of such missions.

''(5) To coordinate all research and development within the Department of Defense in the fields of social science, management science, and information science.

''(6) To collect, synthesize, and disseminate critical information on research and development in the fields of social science, management science, and information science.

''(7) To assess and appropriately share, with other departments and agencies of the Federal Government and appropriate entities in the private sector—

''(A) challenges within the Department of Defense that may be addressed through the application of advances in social science, management science, and information science; and

''(B) datasets related to such challenges.

''(8) To support the identification of organizational and institutional barriers to the implementation of management and organizational enhancements and best practices.

''(9) To accelerate efforts—

''(A) to transition, and deploy within the Department of Defense, technologies and concepts derived from research and development in the fields of social science, management science, and information science; and

''(B) to establish policies, procedures, and standards for measuring the success of such efforts.

''(10) To integrate knowledge from cross-disciplinary research on—

''(A) how factors relating to social science, management science, and information science affect the global security environment; and

''(B) best practices for management in the public and private sectors.

''(11) To apply principles, tools, and methods from social science, management science, and information science—

''(A) to ensure the Department of Defense is more agile, efficient, and effective in organizational management and in deterring and countering current and emerging threats; and

''(B) to support the National Defense Strategy.

''(c) ADMINISTRATION.—The Under Secretary of Defense for Research and Engineering shall supervise the planning, management, and coordination of the program under subsection (a).

''(d) ACTIVITIES.—The Under Secretary of Defense for Research and Engineering, in consultation with the Under Secretary of Defense for Policy, the Secretaries of the military departments, and the heads of relevant Defense Agencies, shall—

''(1) prescribe a set of long-term challenges and a set of specific technical goals for the program, including—

''(A) optimization of analysis of national security data sets;

''(B) development of innovative defense-related management activities;

''(C) improving the operational use of social science, management science, and information science innovations by military commanders and civilian leaders;

''(D) improving understanding of the fundamental social, cultural, and behavioral forces that shape the strategic interests of the United States; and

''(E) developing a Department of Defense workforce capable of developing and leveraging innovations and best practices in the fields of social science, management science, and information science to support defense missions;

''(2) develop a coordinated and integrated research and investment plan for meeting near-term, mid-term, and long-term national security, defense-related, and Departmental management challenges that—

''(A) includes definitive milestones;

''(B) provides for achieving specific technical goals;

''(C) establishes pathways to address the operational and management missions of the Department through—

''(i) the evaluation of innovations and advances in social science, management science, and information science for potential implementation within the Department; and

''(ii) implementation of such innovations and advances within the Department, as appropriate; and

''(C) [(D)] builds upon the investments of the Department, other departments and agencies of the Federal Government, and the commercial sector in the fields of social science, management science, and information science;

''(3) develop plans for—

''(A) the development of the Department's workforce in social science, management science, and information science; and

''(B) improving awareness of—

''(i) the fields of social science, management science, and information science;

''(ii) advances and innovations in such fields; and

''(iii) and the ability of such advances and innovations to enhance the efficiency and effectiveness of the Department; and

''(4) develop memoranda of agreement, joint funding agreements, and such other cooperative arrangements as the Under Secretary determines necessary—

''(A) to carry out the program under subsection (a); and

''(B) to transition appropriate products, services, and innovations relating social science, management science, and information science into use within the Department.

''(e) GUIDANCE REQUIRED.—

''(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act [Jan. 1, 2021], the Under Secretary of Defense for Research and Engineering shall develop and issue guidance for defense-related social science, management science, and information science activities, including—

''(A) classification and data management plans for such activities;

''(B) policies for control of personnel participating in such activities to protect national security interests; and

''(C) ensuring that research findings and innovations in the fields of social science, management science, and information science are incorporated into the activities and strategic documents of the Department.

''(2) UPDATES.—The Under Secretary of Defense for Research and Engineering shall regularly update the guidance issued under paragraph (1).

''(f) DESIGNATION OF ENTITY.—The Secretary of each military department may establish or designate an entity or activity under the jurisdiction of such Secretary, which may include a Department of Defense Laboratory, an academic institution, or another appropriate organization, to support interdisciplinary research and development activities in the fields of social science, management science, and information science, and engage with appropriate public and private sector organizations, including academic institutions, to enhance and accelerate the research, development, and deployment of social science, management science, and information science within the Department.

''(g) USE OF OTHER AUTHORITY.—The Secretary of Defense shall use the authority provided under section 217 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2358 note [now 10 U.S.C. 4001 note, set out below]) to enhance the ability of the Department of Defense to access technical talent and expertise at academic institutions in support of the purposes of this section.

''(h) REPORT.—

''(1) IN GENERAL.—Not later than December 31, 2022, the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on the program under subsection (a).

''(2) FORM OF REPORT.—The report required under paragraph (1) shall be submitted in unclassified form, but may include a classified annex.''

ACTIVITIES TO IMPROVE FIELDING OF AIR FORCE HYPERSONIC CAPABILITIES

Pub. L. 116–283, div. A, title II, § 222, Jan. 1, 2021, 134 Stat. 3469, provided that:

''(a) IMPROVEMENT OF GROUND-BASED TEST FACILITIES.—The Secretary of Defense shall take such actions as may be necessary to improve ground-based test facilities used for the research, development, test, and evaluation of hypersonic capabilities.

''(b) INCREASING FLIGHT TEST RATE.—The Secretary of Defense shall increase the rate at which hypersonic capabilities are flight tested to expedite the maturation and fielding of such capabilities.

''(c) STRATEGY AND PLAN.—Not later than 60 days after the date of the enactment of this Act [Jan. 1, 2021], the Chief of Staff of the Air Force, in consultation with the Under Secretary of Defense for Research and Engineering, shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a strategy and plan for fielding air-launched and air-breathing hypersonic weapons capabilities within the period of three years following such date of enactment.

''(d) REPORT.—In addition to the strategy and plan required under subsection (c), not later than 60 days after the date of the enactment of this Act, the Under Secretary of Defense for Research and Engineering, in consultation with the Director of Operational Test and Evaluation, shall submit to the congressional defense committees a report on the testing capabilities and infrastructure used for hypersonic weapons development. The report shall include—

''(1) an assessment of the sufficiency of the testing capabilities and infrastructure used for fielding hypersonic weapons; and

''(2) a description of any investments in testing capabilities and infrastructure that may be required to support in-flight and ground-based testing for such weapons.''

RESEARCH, DEVELOPMENT, AND DEPLOYMENT OF TECHNOLOGIES TO SUPPORT WATER SUSTAINMENT

Pub. L. 116–283, div. A, title II, § 226, Jan. 1, 2021, 134 Stat. 3476, provided that:

''(a) IN GENERAL.—The Secretary of Defense shall research, develop, and deploy advanced water harvesting technologies to support and improve water sustainment within the Department of Defense and in geographic regions where the Department operates.

''(b) REQUIRED ACTIVITIES.—In carrying out subsection (a), the Secretary shall—

''(1) develop advanced water harvesting systems that reduce weight and logistics support needs compared to conventional water supply systems, including—

''(A) modular water harvesting systems that are easily transportable; and

''(B) trailer mounted water harvesting systems that reduce resupply needs;

''(2) develop and implement storage requirements for water harvesting systems at forward operating bases; and

''(3) establish cross functional teams to identify geographic regions where the deployment of water harvesting systems could reduce conflict and potentially eliminate the need for the presence of the Armed Forces.

''(c) ADDITIONAL ACTIVITIES.—In addition to the activities required under subsection (b), the Secretary shall—

''(1) seek to leverage existing water harvesting techniques and technologies and apply such techniques and technologies to military operations carried out by the United States;

''(2) consider using commercially available off-the-shelf items (as defined in section 104 of title 41, United States Code) and near-ready deployment technologies to achieve cost savings and improve the self sufficiency of warfighters; and

''(3) seek to enter into information sharing arrangements with foreign militaries and other organizations that have the proven ability to operate in water constrained areas for the purpose of sharing lessons learned and best practices relating to water harvesting.

''(d) IMPLEMENTATION.—The Secretary shall deploy technologies developed under subsection (b)(1) for use by expeditionary forces not later than January 1, 2025.

''(e) WATER HARVESTING DEFINED.—In this section, the term 'water harvesting', when used with respect to a system or technology, means a system or technology that is capable of creating useable water by—

''(1) harvesting water from underutilized environmental sources, such as by capturing water from ambient humidity; or

''(2) recycling or otherwise reclaiming water that has previously been used.''

BOARD OF ADVISORS FOR THE OFFICE OF THE SENIOR OFFICIAL WITH PRINCIPAL RESPONSIBILITY FOR ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Pub. L. 116–283, div. A, title II, § 233, Jan. 1, 2021, 134 Stat. 3483, as amended by Pub. L. 117–263, div. A, title II, § 212(f), Dec. 23, 2022, 136 Stat. 2468, provided that:

''(a) ESTABLISHMENT.—The Secretary of Defense shall establish a board of advisors for the office of the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061) (referred to in this section as the 'Official').

''(b) DUTIES.—The duties of the board of advisors shall include the following:

''(1) Provide independent strategic advice and technical expertise to the Secretary and the Official on matters relating to the development and use of artificial intelligence by the Department of Defense.

''(2) Evaluate and advise the Secretary and the Official on ethical matters relating to the development and use of artificial intelligence by the Department.

''(3) Conduct long-term and long-range studies on matters relating to artificial intelligence, as required.

''(4) Evaluate and provide recommendations to the Secretary and the Official regarding the Department's development of a robust workforce proficient in artificial intelligence.

''(5) Assist the Secretary and the Official in developing strategic level guidance on artificial intelligence-related hardware procurement, supply-chain matters, and other technical matters relating to artificial intelligence.

''(c) MEMBERSHIP.—The board of advisors shall be composed of appropriate experts from academic or private sector organizations outside the Department of Defense, who shall be appointed by the Secretary.

''(d) CHAIRPERSON.—The chairperson of the board of advisors shall be selected by the Secretary.

''(e) MEETINGS.—The board of advisors shall meet not less than once each fiscal quarter and may meet at other times at the call of the chairperson or a majority of its members.

''(f) REPORTS.—Not later than September 30 of each year through September 30, 2026, the board of advisors shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report that summarizes the activities of the board over the preceding year.

''(g) DEFINITIONS.—In this section:

''(1) The term 'artificial intelligence' has the meaning given that term in section 238(g) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. 2358 note [now 10 U.S.C. 4061 note prec.]).

''(2) The term 'Secretary' means the Secretary of Defense.''

STEERING COMMITTEE ON EMERGING TECHNOLOGY

Pub. L. 116–283, div. A, title II, § 236, Jan. 1, 2021, 134 Stat. 3485, as amended by Pub. L. 117–81, div. A, title II, § 216, Dec. 27, 2021, 135 Stat. 1595, provided that:

''(a) ESTABLISHMENT.—The Secretary of Defense and the Director of National Intelligence may jointly establish a steering committee on emerging technology and national security threats (referred to in this section as the 'Steering Committee').

''(b) MEMBERSHIP.—The Steering Committee shall be composed of the following:

''(1) The Deputy Secretary of Defense.

''(2) The Vice Chairman of the Joint Chiefs of Staff.

''(3) The Principal Deputy Director of National Intelligence.

''(4) Such other officials of the Department of Defense and intelligence community as the Secretary of Defense and the Director of National Intelligence jointly determine appropriate.

''(c) LEADERSHIP.—The Steering Committee shall be chaired by the Deputy Secretary of Defense, the Vice Chairman of the Joint Chiefs of Staff, and the Principal Deputy Director of National Intelligence jointly.

''(d) RESPONSIBILITIES.—The Steering Committee shall be responsible for—

''(1) developing strategies for the organizational change, concept and capability development, and technology investments in emerging technologies that are needed to maintain the technological superiority of the United States military and intelligence community as outlined in the National Defense Strategy and National Intelligence Strategy, and consistent with the National Security Strategy;

''(2) providing assessments of emerging threats and identifying investments and advances in emerging technology areas undertaken by adversaries of the United States;

''(3) making recommendations to the Secretary of Defense and the Director of National Intelligence on—

''(A) the implementation of the strategies developed under paragraph (1);

''(B) steps that may be taken to address the threats identified under paragraph (2);

''(C) any changes to a program of record that may be required to achieve the strategy under paragraph (1);

''(D) any changes to the Defense Planning Guidance required by section 113(g)(2)(A) of title 10, United States Code, that may be required to achieve the strategy under paragraph (1);

''(E) any changes to the guidance for developing the National Intelligence Program budget required by section 102A(c)(1)(A) of the National Security Act of 1947 (50 U.S.C. 3024(c)(1)(A)), that may be required to implement the strategies under paragraph (1); and

''(F) whether sufficient resources are available for the research activities, workforce, and infrastructure of the Department of Defense and the intelligence community to support the development of capabilities to defeat emerging threats to the United States; and

''(4) carrying out such other activities as are assigned to the Steering Committee by the Secretary of Defense and Director of National Intelligence, jointly.

''(e) DEFINITIONS.—In this section:

''(1) The term 'emerging technology' means technology jointly determined to be in an emerging phase of development by the Secretary of Defense and the Director of National Intelligence, including quantum information science and technology, data analytics, artificial intelligence, autonomous technology, advanced materials, software, high performance computing, robotics, directed energy, hypersonics, biotechnology, medical technologies, and such other technology as may be jointly identified by the Secretary and the Director.

''(2) The term 'intelligence community' has the meaning given such term in section 3 of the National Security Act of 1947 (50 U.S.C. 3003).

''(f) SUNSET.—This section shall terminate on October 1, 2025.''

PART-TIME AND TERM EMPLOYMENT OF UNIVERSITY FACULTY AND STUDENTS IN THE DEFENSE SCIENCE AND TECHNOLOGY ENTERPRISE

Pub. L. 116–283, div. A, title II, § 249, Jan. 1, 2021, 134 Stat. 3493, as amended by Pub. L. 117–81, div. A, title II, §§ 212(c)(3), 215(d)(11), Dec. 27, 2021, 135 Stat. 1588, 1594, provided that:

''(a) PROGRAM REQUIRED.—Not later than 180 days after the date of the enactment of this Act [Jan. 1, 2021], the Secretary of Defense shall establish a program under which opportunities for part-time and term employment are made available in the Defense science and technology enterprise for faculty and students of institutions of higher education for the purpose of enabling such faculty and students to carry out research projects in accordance with subsection (b).

''(b) RESEARCH PROJECTS.—

''(1) FACULTY.—A faculty member who is employed in position made available under subsection (a) shall, in the course of such employment, carry out a research project that—

''(A) relates to a topic in the field of science, technology, engineering, or mathematics; and

''(B) contributes to the objectives of the Department of Defense, as determined by the Secretary of Defense.

''(2) STUDENTS.—A student employed in position made available under subsection (a) shall assist a faculty member with a research project described in paragraph (1).

''(c) SELECTION OF PARTICIPANTS.—The Secretary of Defense, acting through the heads of participating organizations in the Defense science and technology enterprise, shall select individuals for participation in the program under subsection (a) as follows:

''(1) Faculty members shall be selected for participation on the basis of—

''(A) the academic credentials and research experience of the faculty member; and

''(B) the extent to which the research proposed to be carried out by the faculty member will contribute to the objectives of the Department of Defense.

''(2) Students shall be selected to assist with a research project under the program on the basis of—

''(A) the academic credentials and other qualifications of the student; and

''(B) the student's ability to fulfill the responsibilities assigned to the student as part of the project.

''(d) MINIMUM NUMBER OF POSITIONS.—

''(1) IN GENERAL.—During the first year of the program under subsection (a), the Secretary of Defense shall establish not fewer than 10 part-time or term positions for faculty.

''(2) ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING.—Of the positions established under paragraph (1), not fewer than five such positions shall be reserved for faculty who will conduct research in the area of artificial intelligence and machine learning.

''(e) AUTHORITIES.—In carrying out the program under subsection (a), the Secretary of Defense, or the head of an organization in the Defense science and technology enterprise, as applicable, may—

''(1) use any hiring authority available to the Secretary or the head of such organization, including—

''(A) any hiring authority available under a laboratory demonstration program, including the hiring authority provided under section 4121(b) of title 10, United States Code;

''(B) direct hiring authority under section 1599h of title 10, United States Code [now 10 U.S.C. 4092]; and

''(C) expert hiring authority under section 3109 of title 5, United States Code;

''(2) enter into cooperative research and development agreements under section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a) to enable the sharing of research and expertise with institutions of higher education and the private sector; and

''(3) pay referral bonuses to faculty or students participating in the program who identify—

''(A) students to assist in a research project under the program; or

''(B) students or recent graduates to participate in other programs in the Defense science and technology enterprise, including internships at Department of Defense laboratories and in the Pathways Program of the Department.

''(f) ANNUAL REPORTS.—

''(1) INITIAL REPORT.—Not later than 30 days after the conclusion of the first year of the program under subsection (a), the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on the status of the program. The report shall include—

''(A) identification of the number of faculty and students employed under the program;

''(B) identification of the organizations in the Defense science and technology enterprise that employed such individuals; and

''(C) a description of the types of research conducted by such individuals.

''(2) SUBSEQUENT REPORTS.—Not later than 30 days after the conclusion of the second and third years of the program under subsection (a), the Secretary of Defense shall submit to the congressional defense committees a report on the progress of the program. Each report shall include—

''(A) the information described in subparagraphs (A) through (C) of paragraph (1);

''(B) the results of any research projects conducted under the program; and

''(C) the number of students and recent graduates who, pursuant to a reference from a faculty member or student participating in the program as described in subsection (e)(3), were hired by the Department of Defense or selected for participation in another program in the Defense science and technology enterprise.

''(g) DEFINITIONS.—In this section:

''(1) The term 'Defense science and technology enterprise' means—

''(A) the research organizations of the military departments;

''(B) the science and technology reinvention laboratories (as designated under section 4121(b) of title 10, United States Code);

''(C) the facilities of the Major Range and Test Facility Base (as defined in section 2358a(g) of title 10, United States Code [now 10 U.S.C. 4091(f)]); and

''(D) the Defense Advanced Research Projects Agency.

''(2) The term 'faculty' means an individual who serves as a professor, researcher, or instructor at an institution of higher education.

''(3) The term 'institution of higher education' has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001).''

ACQUISITION AUTHORITY OF THE SENIOR OFFICIAL WITH PRINCIPAL RESPONSIBILITY FOR ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Pub. L. 116–283, div. A, title VIII, §808, Jan. 1, 2021, 134 Stat. 3745, as amended by Pub. L. 117–263, div. A, title II, §212(i), Dec. 23, 2022, 136 Stat. 2469; Pub. L. 118–31, div. A, title XV, §1541, Dec. 22, 2023, 137 Stat. 572, provided that:

''(a) AUTHORITY.—The Secretary of Defense shall delegate to the official designated under subsection (b) of section 238 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. note prec. 4061) (referred to in this section as the 'Official') the acquisition authority to exercise the functions of a head of an agency (as defined in section 2302 of title 10, United States Code [see 10 U.S.C. 3004]) with respect to appropriate acquisition activities of the office of such official (referred to in this section as the 'Office').

''(b) ACQUISITION EXECUTIVE.—

''(1) IN GENERAL.—The staff of the Official shall include an acquisition executive who shall be responsible for the supervision of appropriate acquisition activities under subsection (a). Subject to the authority, direction, and control of such Official, the acquisition executive shall have the authority—

''(A) to negotiate memoranda of agreement with any element of the Department of Defense to carry out the acquisition of technologies, services, and capabilities developed or identified by the Office;

''(B) to supervise the acquisition of technologies, services, and capabilities to support the mission of the Office;

''(C) to represent the Office in discussions with the Secretaries concerned regarding acquisition programs relating to such appropriate acquisition activities for which the Office is involved; and

''(D) to work with the Secretaries concerned to ensure that the Office is appropriately represented in any joint working group or integrated product team regarding acquisition programs relating to such appropriate activities for which the Office is involved.

''(2) DELIVERY OF ACQUISITION SOLUTIONS.—The acquisition executive of the Office shall be—

''(A) responsible to the Official for rapidly delivering capabilities to meet validated requirements;

''(B) subordinate to the Under Secretary of Defense for Acquisition and Sustainment in matters of acquisition; and

''(C) included on the distribution list for acquisition directives and instructions of the Department of Defense.

''(c) ACQUISITION PERSONNEL.—

''(1) IN GENERAL.—The Secretary of Defense shall ensure that, at any given time for the duration of the period specified in subsection (d), the Office has at least 10 full-time employees provided by the Secretary to support the Official in carrying out the requirements of this section, including personnel with experience in—

''(A) acquisition practices and processes;

''(B) the Joint Capabilities Integration and Development System process;

''(C) program management;

''(D) software development and systems engineering; and

''(E) cost analysis.

''(2) EXISTING PERSONNEL.—The personnel provided under this subsection shall be provided from among the existing personnel of the Department of Defense.

''(d) FUNDING.—In exercising the acquisition authority granted in subsection (a), the Official may not obligate or expend more than $75,000,000 out of the funds made available in each of fiscal years 2024 through 2029 to enter into new contracts to support appropriate acquisition activities carried out under this section.

''(e) IMPLEMENTATION PLAN AND DEMONSTRATION REQUIRED.—

''(1) IN GENERAL.—

''(A) PLAN REQUIRED.—Not later than 30 days after the date of the enactment of the National Defense Authorization Act for Fiscal Year 2024 [Dec. 22, 2023], the Secretary of Defense, acting through the Under Secretary of Defense for Acquisition and Sustainment, shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a plan for the delegation and exercise of the acquisition authority described in subsection (a).

''(B) DEMONSTRATION REQUIRED.—Not later than 90 days after the date of the enactment of the National Defense Authorization Act for Fiscal Year 2024, the Secretary of Defense, acting through the Chief Digital and Artificial Intelligence Officer of the Department of Defense, shall provide a demonstration of operational capability delivered under such authority. In addition to the matters specified in paragraph (4), such demonstration shall include a description of—

''(i) how the Chief Digital and Artificial Intelligence Officer may use the acquisition authorities available to the Chief Digital and Artificial Intelligence Officer to further the data and artificial intelligence objectives of the Department of Defense, including an inventory of requirements and funding associated with the exercise of such acquisition authorities;

''(ii) how the Chief Digital and Artificial Intelligence Officer may use the acquisition authorities of other Federal entities to further such objectives, including an inventory of requirements and funding associated with the exercise of such acquisition authorities; and

''(iii) the challenges and benefits of using the acquisition authorities described in clauses (i) and (ii), respectively, to further such objectives.

''(2) IMPLEMENTATION PLAN.—The plan shall include the following:

''(A) Description of the types of activities to be undertaken using the acquisition authority provided under subsection (a).

''(B) Plan for the negotiation and approval of any such memorandum of agreement with an element of the Department of Defense to support the missions of the Office and transition of artificial intelligence capabilities into appropriate acquisition programs or into operational use.

''(C) Plan for oversight of the position of acquisition executive established in subsection (b).

''(D) Assessment of the acquisition workforce, tools, and infrastructure needs of the Office to support the authority under subsection (a) until September 30, 2025.

''(E) Other matters as appropriate.

''(3) DEMONSTRATION.—The capability demonstration shall include a description of how the acquisition authority enabled the capability, how requirements were established and agreed upon, how testing was conducted, and how the capability was transitioned to the user, as well as any other matters deemed appropriate by the Office.

''(4) RELATIONSHIP TO OTHER AUTHORITIES.—The requirement to submit a plan under this subsection is in addition to the requirements under section 260 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92; 133 Stat. 1293).

''(f) SUNSET.—Effective October 1, 2029, the Official may not exercise the authority under subsection (a) and may not enter into any new contracts under this section. The performance on any contract entered into before such date may continue according to the terms of such contract.

''(g) DEFINITIONS.—In this section:

''(1) ELEMENT.—The term 'element' means an element described under section 111(b) of title 10, United States Code.

''(2) SECRETARY CONCERNED.—The term 'Secretary concerned' has the meaning given in section 101[(a)](9) of title 10, United States Code.''

DIRECT AIR CAPTURE AND BLUE CARBON REMOVAL TECHNOLOGY PROGRAM

Pub. L. 116–92, div. A, title II, § 223, Dec. 20, 2019, 133 Stat. 1264, as amended by Pub. L. 117–81, div. A, title II, §§ 212(c)(2), 215(d)(8), Dec. 27, 2021, 135 Stat. 1588, 1594, provided that:

''(a) PROGRAM REQUIRED.—

''(1) IN GENERAL.—The Secretary of Defense, in coordination with the Secretary of Homeland Security, the Secretary of Energy, and the heads of such other Federal agencies as the Secretary of Defense considers appropriate, shall carry out a program on research, development, testing, evaluation, study, and demonstration of technologies related to blue carbon capture and direct air capture.

''(2) PROGRAM GOALS.—The goals of the program established under paragraph (1) are as follows:

''(A) To develop technologies that capture carbon dioxide from seawater and the air to turn such carbon dioxide into clean fuels to enhance fuel and energy security.

''(B) To develop and demonstrate technologies that capture carbon dioxide from seawater and the air to reuse such carbon dioxide to create products for military uses.

''(C) To develop direct air capture technologies for use—

''(i) at military installations or facilities of the Department of Defense; or

''(ii) in modes of transportation by the Navy or the Coast Guard.

''(3) PHASES.—The program established under paragraph (1) shall be carried out in two phases as follows:

''(A) The first phase shall consist of research and development and shall be carried out as described in subsection (b).

''(B) The second phase shall consist of testing and evaluation and shall be carried out as described in subsection (c), if the Secretary determines that the results of the research and development phase justify implementing the testing and evaluation phase.

''(4) DESIGNATION.—The program established under paragraph (1) shall be known as the 'Direct Air Capture and Blue Carbon Removal Technology Program' (in this section referred to as the 'Program').

''(b) RESEARCH AND DEVELOPMENT PHASE.—

''(1) IN GENERAL.—During the research and development phase of the Program, the Secretary of Defense shall conduct research and development in pursuit of the goals set forth in subsection (a)(2).

''(2) DIRECT AIR CAPTURE.—The research and development phase of the Program may include, with respect to direct air capture, a front end engineering and design study that includes an evaluation of direct air capture designs to produce fuel for use—

''(A) at military installations or facilities of the Department of Defense; or

''(B) in modes of transportation by the Navy or the Coast Guard.

''(3) COMMENCEMENT.—The Secretary shall commence carrying out the research and development phase of the Program not later than 90 days after the date of the enactment of this Act [Dec. 20, 2019].

''(4) GRANTS AUTHORIZED.—The Secretary may carry out the research and development phase of the Program through the award of grants to private persons and eligible laboratories.

''(5) REPORT REQUIRED.—Not later than 180 days after the date of the completion of the research and development phase of the Program, the Secretary shall submit to Congress a report on the research and development carried out under the Program.

''(c) TESTING AND EVALUATION PHASE.—

''(1) IN GENERAL.—During the testing and evaluation phase of the Program, the Secretary shall, in pursuit of the goals set forth in subsection (a)(2), conduct tests and evaluations of the technologies researched and developed during the research and development phase of the Program.

''(2) DIRECT AIR CAPTURE.—The testing and evaluation phase of the Program may include demonstration projects for direct air capture to produce fuels for use—

''(A) at military installations or facilities of the Department of Defense; or

''(B) in modes of transportation by the Navy or the Coast Guard.

''(3) COMMENCEMENT.—Subject to subsection (a)(3)(B), the Secretary shall commence carrying out

the testing and evaluation phase of the Program on the date of the completion of the research and development phase described in subsection (b), except that the testing and evaluation phase of the Program with respect to direct air capture may commence at such time after a front end engineering and design study demonstrates to the Secretary that commencement of such phase is appropriate.

''(4) GRANTS AUTHORIZED.—The Secretary may carry out the testing and evaluation phase of the Program through the award of grants to private persons and eligible laboratories.

''(5) LOCATIONS.—The Secretary shall carry out the testing and evaluation phase of the Program at military installations or facilities of the Department of Defense.

''(6) REPORT REQUIRED.—Not later than September 30, 2026, the Secretary shall submit to Congress a report on the findings of the Secretary with respect to the effectiveness of the technologies tested and evaluated under the Program.

''(d) DEFINITIONS.—In this section:

''(1) The term 'blue carbon capture' means the removal of dissolved carbon dioxide from seawater through engineered or inorganic processes, including filters, membranes, or phase change systems.

''(2)(A) The term 'direct air capture', with respect to a facility, technology, or system, means that the facility, technology, or system uses carbon capture equipment to capture carbon dioxide directly from the air.

''(B) The term 'direct air capture' does not include any facility, technology, or system that captures carbon dioxide—

''(i) that is deliberately released from a naturally occurring subsurface spring; or

''(ii) using natural photosynthesis.

''(3) The term 'eligible laboratory' means—

''(A) a National Laboratory (as defined in section 2 of the Energy Policy Act of 2005 (42 U.S.C. 15801));

''(B) a science and technology reinvention laboratory designated under section 4121(b) of title 10, United States Code;

''(C) the Major Range and Test Facility Base (as defined in section 2358a(g) of title 10, United States Code [now 10 U.S.C. 4091(f)]); or

''(D) any other facility that supports the research, development, test, and evaluation activities of the Department of Defense or the Department of Energy.''

RESEARCH PROGRAM ON FOREIGN MALIGN INFLUENCE OPERATIONS

Pub. L. 116–92, div. A, title II, § 228, Dec. 20, 2019, 133 Stat. 1271, provided that:

''(a) PROGRAM AUTHORIZED.—The Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering, may carry out a research program on foreign malign influence operations as part of the university research programs of the Department of Defense.

''(b) PROGRAM OBJECTIVES.—The objectives of a research program carried out under subsection (a) should include the following:

''(1) Enhance the understanding of foreign malign influence operations, including activities conducted on social media platforms.

''(2) Facilitate the analysis of publicly available or voluntarily provided indicators of foreign malign influence operations.

''(3) Promote collaborative research and information exchange with relevant entities within the Department of Defense and with other agencies or nongovernmental organizations relating to foreign malign influence operations, as appropriate.

''(c) NOTICE TO CONGRESS.—Not later than 30 days before initiating a research program under subsection (a), the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] notice of the intent of the Secretary to initiate such a program, which shall include—

''(1) a detailed description of the program and any related research activities;

''(2) the estimated cost and duration of the program; and

''(3) any other matters the Secretary determines to be relevant.''

DIVERSIFICATION OF THE RESEARCH AND ENGINEERING WORKFORCE OF THE DEPARTMENT OF DEFENSE

Pub. L. 116–92, div. A, title II, § 229, Dec. 20, 2019, 133 Stat. 1271, provided that:

''(a) ASSESSMENT REQUIRED.—

''(1) IN GENERAL.—The Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering and in consultation with the Under Secretary of Defense for Personnel and Readiness, shall conduct an assessment of critical skillsets required across, and the diversity of, the research and engineering workforce of the Department of Defense, including the science and technology reinvention laboratories, to support emerging and future warfighter technologies.

''(2) ELEMENTS.—The assessment required by paragraph (1) shall include analysis of the following:

''(A) The percentage of women and minorities employed in the research and engineering workforce of the Department of Defense as of the date of the assessment.

''(B) Of the individuals hired into the research and engineering workforce of the Department in the five years preceding the date of the assessment, the percentage of such individuals who are women and minorities.

''(C) The effectiveness of existing hiring, recruitment, and retention incentives for women and minorities in the research and engineering workforce of the Department.

''(D) The effectiveness of the Department in recruiting women and minorities into the laboratory workforce after such individuals complete work on Department-funded research, projects, grant projects, fellowships, and STEM programs.

''(E) The geographical diversity of the workforce across various geographic regions.

''(b) PLAN REQUIRED.—

''(1) IN GENERAL.—Based on the results of the assessment conducted under subsection (a), the Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering and in consultation with the Secretaries of the military departments, shall develop and implement a plan to diversify and strengthen the research and engineering workforce of the Department of Defense.

''(2) ELEMENTS.—The plan required by paragraph (1) shall—

''(A) align with science and technology strategy priorities of the Department of Defense, including the emerging and future warfighter technology requirements identified by the Department;

''(B) except as provided in subsection (c)(2), set forth steps for the implementation of each recommendation included in the 2013 report of the RAND corporation titled 'First Steps Toward Improving DoD STEM Workforce Diversity';

''(C) harness the full range of the Department's STEM programs and other Department sponsored programs to develop and attract top talent;

''(D) use existing authorities to attract and retain students, academics, and other talent;

''(E) establish and use contracts, agreements, or other arrangements with institutions of higher education (as defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)), including historically black colleges and universities and other minority-serving institutions (as described in section 371(a) of such Act (20 U.S.C. 1067q(a)) to enable easy and efficient access to research and research-

ers for Government sponsored basic and applied research and studies at each institution, including contracts, agreements, and other authorized arrangements such as those authorized under—

''(i) section 217 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2358 note [now 10 U.S.C. 4001 note, set out below]); and

''(ii) such other authorities as the Secretary determines to be appropriate; and

''(F) include recommendations for changes in authorities, regulations, policies, or any other relevant areas that would support the achievement of the goals set forth in the plan.

''(3) SUBMITTAL TO CONGRESS.—Not later than one year after the date of the enactment of this Act [Dec. 20, 2019], the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report that includes—

''(A) the plan developed under paragraph (1); and

''(B) with respect to each recommendation described in paragraph (2)(B) that the Secretary has implemented or expects to implement—

''(i) a summary of actions that have been taken to implement the recommendation; and

''(ii) a schedule, with specific milestones, for completing the implementation of the recommendation.

''(c) DEADLINE FOR IMPLEMENTATION.—

''(1) IN GENERAL.—Except as provided in paragraph (2), not later than 18 months after the date of the enactment of this Act the Secretary of Defense shall carry out activities to implement the plan developed under subsection (b).

''(2) EXCEPTION FOR IMPLEMENTATION OF CERTAIN RECOMMENDATIONS.—

''(A) DELAYED IMPLEMENTATION.—The Secretary of Defense may commence implementation of a recommendation described in subsection (b)(2)(B) after the date specified in paragraph (1) if the Secretary provides the congressional defense committees with a specific justification for the delay in implementation of such recommendation on or before such date.

''(B) NONIMPLEMENTATION.—The Secretary of Defense may opt not to implement a recommendation described in subsection (b)(2)(B) if the Secretary provides to the congressional defense committees, on or before the date specified in paragraph (1)—

''(i) a specific justification for the decision not to implement the recommendation; and

''(ii) a summary of the alternative actions the Secretary plans to take to address the issues underlying the recommendation.

''(d) STEM DEFINED.—In this section, the term 'STEM' means science, technology, engineering, and mathematics.''

PROCESS TO ALIGN POLICY FORMULATION AND EMERGING TECHNOLOGY DEVELOPMENT

Pub. L. 116–92, div. A, title II, § 232, Dec. 20, 2019, 133 Stat. 1277, provided that:

''(a) ALIGNMENT OF POLICY AND TECHNOLOGICAL DEVELOPMENT.—Not later than 180 days after the date of the enactment of this Act [Dec. 20, 2019], the Secretary of Defense shall establish a process to ensure that the policies of the Department of Defense relating to emerging technology are formulated and updated continuously as such technology is developed by the Department.

''(b) ELEMENTS.—As part of the process established under subsection (a), the Secretary shall—

''(1) specify the role of each covered official in ensuring that the formulation of policies relating to emerging technology is carried out concurrently with the development of such technology; and

''(2) incorporate procedures for the continuous legal review of—

''(A) weapons and other defense systems that incorporate or use emerging technology; and

''(B) treaties that may be affected by such technology.

''(c) BRIEFING REQUIRED.—Not later than 30 days after the date on which the Secretary of Defense establishes the process required under subsection (a), the Secretary shall provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on such process.

''(d) DEFINITIONS.—In this section:

''(1) The term 'covered official' means the following:

''(A) The Chairman of the Joint Chiefs of Staff.

''(B) The Under Secretary of Defense for Research and Engineering.

''(C) The Under Secretary of Defense for Acquisition and Sustainment.

''(D) The Under Secretary of Defense for Policy.

''(E) The commanders of combatant commands with responsibilities involving the use of weapons or other defense systems that incorporate or use emerging technology, as determined by the Secretary of Defense.

''(F) The Secretaries of the military departments.

''(2) The term 'emerging technology' means technology determined to be in an emerging phase of development by the Secretary of Defense, including quantum computing, technology for the analysis of large and diverse sets of data (commonly known as 'big data analytics'), artificial intelligence, autonomous technology, robotics, directed energy, hypersonics, biotechnology, and such other technology as may be identified by the Secretary.''

PROCEDURES FOR RAPID REACTION TO EMERGING TECHNOLOGY

Pub. L. 115–232, div. A, title II, § 225, Aug. 13, 2018, 132 Stat. 1684, provided that:

''(a) REQUIREMENT TO ESTABLISH PROCEDURES.—Not later than 180 days after the date of the enactment of this Act [Aug. 13, 2018], the Under Secretary of Defense for Research and Engineering shall prescribe procedures for the designation and development of technologies that are—

''(1) urgently needed—

''(A) to react to a technological development of an adversary of the United States; or

''(B) to respond to a significant and urgent emerging technology; and

''(2) not receiving appropriate research funding or attention from the Department of Defense.

''(b) ELEMENTS.—The procedures prescribed under subsection (a) shall include the following:

''(1) A process for streamlined communications between the Under Secretary, the Joint Chiefs of Staff, the commanders of the combatant commands, the science and technology executives within each military department, and the science and technology community, including—

''(A) a process for the commanders of the combatant commands and the Joint Chiefs of Staff to communicate their needs to the science and technology community; and

''(B) a process for the science and technology community to propose technologies that meet the needs communicated by the combatant commands and the Joint Chiefs of Staff.

''(2) Procedures for the development of technologies proposed pursuant to paragraph (1)(B), including—

''(A) a process for demonstrating performance of the proposed technologies on a short timeline;

''(B) a process for developing a development strategy for a technology, including integration into future budget years; and

''(C) a process for making investment determinations based on information obtained pursuant to subparagraphs (A) and (B).

''(c) BRIEFING.—Not later than 180 days after the date of the enactment of this Act, the Under Secretary shall

provide to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a briefing on the procedures required by subsection (a).''

Human Factors Modeling and Simulation Activities

Pub. L. 115–232, div. A, title II, § 227, Aug. 13, 2018, 132 Stat. 1687, provided that:

''(a) Activities Required.—The Secretary of Defense shall develop and provide for the carrying out of human factors modeling and simulation activities designed to do the following:

''(1) Provide warfighters and civilians with personalized assessment, education, and training tools.

''(2) Identify and implement effective ways to interface and team warfighters with machines.

''(3) Result in the use of intelligent, adaptive augmentation to enhance decision making.

''(4) Result in the development of techniques, technologies, and practices to mitigate critical stressors that impede warfighter and civilian protection, sustainment, and performance.

''(b) Purpose.—The overall purpose of the activities shall be to accelerate research and development that enhances capabilities for human performance, human-systems integration, and training for the warfighter.

''(c) Participants in Activities.—Participants in the activities may include the following:

''(1) Elements of the Department of Defense engaged in science and technology activities.

''(2) Program Executive Offices of the Department.

''(3) Academia.

''(4) The private sector.

''(5) Such other participants as the Secretary considers appropriate.''

Defense Quantum Information Science and Technology Research and Development Program

Pub. L. 115–232, div. A, title II, § 234, Aug. 13, 2018, 132 Stat. 1692, as amended by Pub. L. 116–92, div. A, title II, § 220, Dec. 20, 2019, 133 Stat. 1260; Pub. L. 116–283, div. A, title II, § 214, Jan. 1, 2021, 134 Stat. 3458; Pub. L. 118–31, div. A, title II, § 219, Dec. 22, 2023, 137 Stat. 188, provided that:

''(a) Establishment.—The Secretary of Defense shall carry out a quantum information science and technology research and development program.

''(b) Purposes.—The purposes of the program required by subsection (a) are as follows:

''(1) To ensure global superiority of the United States in quantum information science necessary for meeting national security requirements.

''(2) To coordinate all quantum information science and technology research and development within the Department of Defense and to provide for interagency cooperation and collaboration on quantum information science and technology research and development between the Department of Defense and other departments and agencies of the United States and appropriate private sector and international entities that are involved in quantum information science and technology research and development.

''(3) To develop and manage a portfolio of fundamental and applied quantum information science and technology and engineering research initiatives that is stable, consistent, and balanced across scientific disciplines.

''(4) To accelerate the transition and deployment of technologies and concepts derived from quantum information science and technology research and development into the Armed Forces, and to establish policies, procedures, and standards for measuring the success of such efforts.

''(5) To collect, synthesize, and disseminate critical information on quantum information science and technology research and development.

''(6) To establish and support appropriate research, innovation, and industrial base, including facilities, workforce, and infrastructure, to support the needs of Department of Defense missions and systems related to quantum information science and technology.

''(c) Administration.—In carrying out the program required by subsection (a), the Secretary shall act through the Under Secretary of Defense for Research and Engineering, who shall supervise the planning, management, and coordination of the program. The Under Secretary, in consultation with the Secretaries of the military departments and the heads of participating Defense Agencies and other departments and agencies of the United States, shall—

''(1) prescribe a set of long-term challenges and a set of specific technical goals for the program, including—

''(A) optimization of analysis of national security data sets;

''(B) development of defense related quantum computing algorithms;

''(C) design of new materials and molecular functions;

''(D) secure communications and cryptography, including development of quantum communications protocols;

''(E) quantum sensing and metrology;

''(F) development of mathematics relating to quantum enhancements to sensing, communications, and computing; and

''(G) processing and manufacturing of low-cost, robust, and reliable quantum information science and technology-enabled devices and systems;

''(2) develop a coordinated and integrated research and investment plan for meeting the near-, mid-, and long-term challenges with definitive milestones while achieving the specific technical goals that builds upon the Department's increased investment in quantum information science and technology research and development, commercial sector and global investments, and other United States Government investments in the quantum information sciences, including through consultation with—

''(A) the National Quantum Coordination Office;

''(B) the subcommittee on Quantum Information Science of the National Science and Technology Council;

''(C) other organizations and elements of the Department of Defense;

''(D) other Federal agencies; and

''(E) appropriate private sector organizations;

''(3) in consultation with the entities listed in paragraph (2), develop plans for—

''(A) the development of the quantum information science and technology workforce;

''(B) enhancing awareness of quantum information science and technology;

''(C) reducing the risk of cybersecurity threats posed by quantum information science technology; and

''(D) development of ethical guidelines for the use of quantum information science technology;

''(4) in consultation with the National Institute of Standards and Technology and other appropriate Federal entities, develop a quantum information science taxonomy and standards and requirements for quantum information technology;

''(5) support efforts to increase the technology readiness level of quantum information science technologies under development in the United States;

''(6) not later than 180 days after the date of the enactment of this Act [Aug. 13, 2018], develop and continuously update guidance, including classification and data management plans for defense-related quantum information science and technology activities, and policies for control of personnel participating on such activities to minimize the effects of loss of intellectual property in basic and applied quantum information science and information considered sensitive to the leadership of the United States in the field of quantum information science and technology; and

''(7) develop memoranda of agreement, joint funding agreements, and other cooperative arrangements necessary for carrying out the program under subsection (a).

''(d) QUANTUM INFORMATION SCIENCE RESEARCH CENTERS.—The Secretary of each military department may establish or designate a defense laboratory or establish activities to engage with appropriate public and private sector organizations, including academic organizations, to enhance and accelerate the research, development, and deployment of quantum information sciences and quantum information science-enabled technologies and systems. The Secretary of Defense shall ensure that not less than one such laboratory or center is established or designated.

''(e) USE OF QUANTUM COMPUTING CAPABILITIES.—The Secretary of each military department shall—

''(1) develop and annually update a list of technical problems and research challenges which are likely to be addressable by quantum computers available for use within in the next one to three years, with a priority for technical problems and challenges where quantum computing systems have performance advantages over traditional computing systems, in order to enhance the capabilities of such quantum computers and support the addressing of relevant technical problems and research challenges; and

''(2) establish programs and enter into agreements with appropriate medium and small businesses with functional quantum computing capabilities to provide such private sector capabilities to government, industry, and academic researchers working on relevant technical problems and research activities.

''(f) FELLOWSHIPS.—

''(1) PROGRAM AUTHORIZED.—In carrying out the program under subsection (a) and subject to the availability of appropriations to carry out this subsection, the Secretary may carry out a program of fellowships in quantum information science and technology research and development for individuals who have a graduate or postgraduate degree.

''(2) EQUAL ACCESS.—In carrying out the program under paragraph (1), the Secretary may establish procedures to ensure that minority, geographically diverse, and economically disadvantaged students have equal access to fellowship opportunities under such program.

''(g) MULTIDISCIPLINARY PARTNERSHIPS WITH UNIVERSITIES.—In carrying out the program under subsection (a), the Secretary of Defense may develop partnerships with universities to enable students to engage in multidisciplinary courses of study.

''(h) REPORT.—

''(1) IN GENERAL.—Not later than December 31, 2020, the Secretary shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on the program, in both classified and unclassified format.

''(2) ELEMENTS.—The report required by paragraph (1) shall include the following:

''(A) A description of the knowledge-base of the Department with respect to quantum information sciences, plans to defend against quantum based attacks, and any plans of the Secretary to enhance such knowledge-base.

''(B) A plan that describes how the Secretary intends to use quantum information sciences for military applications and to meet other needs of the Department, including a discussion of likely impacts of quantum information science and technology on military capabilities.

''(C) An assessment of the efforts of foreign powers to use quantum information sciences for military applications and other purposes.

''(D) A description of the activities carried out in accordance with this section, including, for each such activity—

''(i) a roadmap for the activity;

''(ii) a summary of the funding provided for the activity; and

''(iii) an estimated timeline for the development and military deployment of quantum technologies supported through the activity.

''(E) A description of the efforts of the Department of Defense to update classification and cybersecurity practices relating to quantum technology, including—

''(i) security processes and requirements for engagement with allied countries; and

''(ii) a plan for security-cleared government and contractor workforce development.

''(F) Such other matters as the Secretary considers appropriate.''

INITIATIVE TO SUPPORT PROTECTION OF NATIONAL SECURITY ACADEMIC RESEARCHERS FROM UNDUE INFLUENCE AND OTHER SECURITY THREATS

Pub. L. 118–31, div. A, title XII, §1224(b), Dec. 22, 2023, 137 Stat. 455, provided that: ''The Secretary of Defense shall develop the policies required by paragraph (7) of section 1286(c) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 [Pub. L. 115–232] (10 U.S.C. 4001 note), as added by subsection (a)(1)(B), by not later than June 1, 2024.''

Pub. L. 115–232, div. A, title XII, §1286, Aug. 13, 2018, 132 Stat. 2078, as amended by Pub. L. 116–92, div. A, title XII, §1281, Dec. 20, 2019, 133 Stat. 1704; Pub. L. 116–283, div. A, title X, §1081(d)(6), title XII, §1299C, Jan. 1, 2021, 134 Stat. 3874, 3999; Pub. L. 118–31, div. A, title XII, §§1223(a), 1224(a), Dec. 22, 2023, 137 Stat. 453, 454; Pub. L. 118–159, div. A, title II, §226, Dec. 23, 2024, 138 Stat. 1831, provided that:

''(a) INITIATIVE REQUIRED.—The Secretary of Defense shall, in consultation with other appropriate government organizations, establish an initiative to work with institutions of higher education who perform defense research and engineering activities—

''(1) to support protection of intellectual property, controlled information, key personnel, and information about critical technologies relevant to national security;

''(2) to limit undue influence, including through foreign talent programs, by countries to exploit United States technology within the Department of Defense research, science and technology, and innovation enterprise;

''(3) to limit academic institutions identified on the list developed under subsection (c)(8)(A) [now (c)(9)(A)] from benefitting from funding provided by the Department of Defense to United States academic institutions; and

''(4) to support efforts toward development of domestic talent in relevant scientific and engineering fields.

''(b) INSTITUTIONS AND ORGANIZATIONS.—The initiative required by subsection (a) shall be developed and executed to the maximum extent practicable with academic research institutions and other educational and research organizations.

''(c) REQUIREMENTS.—The initiative required by subsection (a) shall include development of the following:

''(1) Information exchange forum and information repositories to enable awareness of security threats and influence operations being executed against the United States research, technology, and innovation enterprise.

''(2) Training developed and delivered in consultation with institutions of higher education and appropriate Government agencies, and other support to institutions of higher education, to promote security and limit undue influence on institutions of higher education and personnel, including Department of Defense financial support to carry out such activities, that—

''(A) emphasizes best practices for protection of sensitive national security information;

''(B) includes the dissemination of unclassified materials and resources for identifying and protecting against emerging threats to institutions of higher education, including specific counterintel-

ligence information and advice developed specifically for faculty and academic researchers based on actual identified threats; and

''(C) includes requirements for appropriate senior officials of institutions of higher education to receive from appropriate Government agencies updated and periodic briefings that describe the espionage risks to academic institutions and associated personnel posed by technical intelligence gathering activities of near-peer strategic competitors.

''(3) The capacity of Government agencies and institutions of higher education to assess whether individuals affiliated with Department of Defense programs have participated in or are currently participating in foreign talent programs or expert recruitment programs.

''(4) Opportunities to collaborate with defense researchers and research organizations in secure facilities to promote protection of critical information and strengthen defense against foreign intelligence services.

''(5) Regulations and procedures—

''(A) for Government agencies and academic organizations and personnel to support the goals of the initiative; and

''(B) that are consistent with policies that protect open and scientific exchange in fundamental research.

''(6) Policies to limit or prohibit funding provided by the Department of Defense for institutions or individual researchers who knowingly violate regulations developed under the initiative, including regulations relating to foreign talent programs.

''(7) Policies to limit or prohibit funding provided by the Department of Defense for institutions or individual researchers who knowingly contract or make other financial arrangements with entities identified in the list described in paragraph (9), which policies shall include—

''(A) use of such list as part of a risk assessment decision matrix during proposal evaluations, including the development of a question for proposers or broad area announcements that require proposers to disclose any contractual or financial connections with such entities;

''(B) a requirement that the Department shall notify a proposer of suspected noncompliance with a policy issued under this paragraph and provide not less than 30 days to take actions to remedy such noncompliance;

''(C) the establishment of an appeals procedure under which a proposer may appeal a negative decision on a proposal if the decision is based on a determination informed by such list;

''(D) a requirement that each awardee of funding provided by the Department shall disclose to the Department any contract or financial arrangement made with such an entity during the period of the award; and

''(E) a requirement that each awardee of funding provided by the Department shall provide to the Department an annual certification of compliance with policies promulgated pursuant to this paragraph; [sic; the semicolon probably should be a period]

''(8) Initiatives to support the transition of the results of institution of higher education research programs into defense capabilities.

''(9)(A) A list of academic institutions of the People's Republic of China, the Russian Federation, and other countries that—

''(i) have a history of improper technology transfer, intellectual property theft, or cyber or human espionage;

''(ii) operate under the direction of the military forces or intelligence agency of the applicable country;

''(iii) are known—

''(I) to recruit foreign individuals for the purpose of transferring knowledge to advance military or intelligence efforts; or

''(II) to provide misleading information or otherwise attempt to conceal the connections of an individual or institution to a defense or an intelligence agency of the applicable country; or

''(iv) pose a serious risk of improper technology transfer of data, technology, or research that is not published or publicly available.

''(B) The list described in subparagraph (A) shall be developed and continuously updated in consultation with the Bureau of Industry and Security of the Department of Commerce, the Director of National Intelligence, United States institutions of higher education that conduct significant Department of Defense research or engineering activities, and other appropriate individuals and organizations.

''(10)(A) A list, developed and continuously updated in consultation with the National Academies of Science, Engineering, and Medicine and the appropriate Government agencies, of foreign talent programs that pose a threat to the national security interests of the United States, as determined by the Secretary.

''(B) In developing and updating such list, the Secretary shall consider—

''(i) the extent to which a foreign talent program—

''(I) poses a threat to research funded by the Department of Defense; and

''(II) engages in, or facilitates, cyber attacks, theft, espionage, attempts to gain ownership of or influence over companies, or otherwise interferes in the affairs of the United States; and

''(ii) any other factor the Secretary considers appropriate.

''(11) Development of measures of effectiveness and performance to assess and track progress of the Department of Defense across the initiative, which measures shall include—

''(A) the evaluation of currently available data to support the assessment of such measures, including the identification of areas in which gaps exist that may require collection of completely new data, or modifications to existing data sets;

''(B) current means and methods for the collection of data in an automated manner, including the identification of areas in which gaps exist that may require new means for data collection or visualization of such data; and

''(C) the development of an analysis and assessment methodology framework to make tradeoffs between the measures developed under this paragraph and other metrics related to assessing undue foreign influence on the Department of Defense research enterprise, such as commercial due diligence, beneficial ownership, and foreign ownership, control, and influence.

''(d) PROCEDURES FOR ENHANCED INFORMATION SHARING.—

''(1) COLLECTION OF INFORMATION.—

''(A) DEFENSE RESEARCH AND DEVELOPMENT ACTIVITIES.—Not later than October 1, 2020, for the purpose of maintaining appropriate security controls over research activities, technical information, and intellectual property, the Secretary, in conjunction with appropriate public and private entities, shall establish streamlined procedures to collect appropriate information relating to individuals, including United States citizens and foreign nationals, who participate in defense research and development activities.

''(B) FUNDAMENTAL RESEARCH PROGRAMS.—With respect to fundamental research programs, the academic liaison designated under subsection (h) shall establish policies and procedures to collect, consistent with the best practices of Government agencies that fund academic research, appropriate information relating to individuals who participate in fundamental research programs.

''(2) PROTECTION FROM RELEASE.—The procedures required by paragraph (1) shall include procedures to

protect such information from release, consistent with applicable regulations.

''(3) REPORTING TO GOVERNMENT INFORMATION SYSTEMS AND REPOSITORIES.—The procedures required by paragraph (1) may include procedures developed, in coordination with appropriate public and private entities, to report such information to existing Government information systems and repositories.

''(e) ANNUAL REVIEWS REQUIRED.—Not later than March 30, 2025, and not later than March 30 of each year thereafter—

''(1) each head of a Department of Defense component that awards grants for research shall carry out a review of a representative sample of the research grants awarded by the respective component in the previous fiscal year to ensure that the component is awarding grants in compliance with the applicable policies of the Department of Defense; and

''(2) the Under Secretary of Defense for Research and Engineering shall carry out a separate review of a representative sample of the research grants awarded by such components in the previous fiscal year.

''(f) ANNUAL REPORT.—

''(1) IN GENERAL.—Not later than April 30, 2020, and annually thereafter, the Secretary, acting through appropriate Government officials (including the Under Secretary for Research and Engineering), shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on the activities carried out under the initiative required by subsection (a) and on the periodic reviews conducted pursuant to subsection (e).

''(2) CONTENTS.—The report required by paragraph (1) shall include the following:

''(A) With respect to the activities carried out under the initiative required by subsection (a), the following:

''(i) A description of the activities conducted and the progress made under the initiative.

''(ii) The findings of the Secretary with respect to the initiative.

''(iii) Such recommendations as the Secretary may have for legislative or administrative action relating to the matters described in subsection (a), including actions related to foreign talent programs.

''(iv) Identification and discussion of the gaps in legal authorities that need to be improved to enhance the security of research institutions of higher education performing defense research.

''(v) A description of the actions taken by such institutions to comply with such best practices and guidelines as may be established by under the initiative.

''(vi) Identification of any incident relating to undue influence to security threats to academic research activities funded by the Department of Defense, including theft of property or intellectual property relating to a project funded by the Department at an institution of higher education.

''(vii) A description of the status of the measures of effectiveness and performance described in subsection (c)(11) for the period covered by such report, including an analytical assessment of the impact of such measures on the goals of the initiative.

''(B) With respect to the periodic reviews conducted pursuant to subsection (e), the following:

''(i) The total number of research grants awarded by the Department in the fiscal year covered by the reviews.

''(ii) The number of reviews carried out pursuant to subsection (e)(1).

''(iii) The number of reviews carried out pursuant to subsection (e)(2).

''(iv) A description of the processes by which the heads of the components described in paragraph (1) of subsection (e) and the Under Secretary of Defense for Research and Engineering conducted the reviews under such subsection.

''(v) An assessment of issues identified during the reviews carried out under subsection (e), including a list of grants that were identified as having not been awarded in compliance with applicable policies of the Department of Defense.

''(3) FORM.—The report submitted under paragraph (1) shall be submitted in both unclassified and classified formats, as appropriate.

''(g) PUBLICATION OF UPDATED LISTS.—

''(1) SUBMITTAL TO CONGRESS.—Not later than January 1, 2021, and annually thereafter, the Secretary shall submit to the congressional defense committees the most recently updated lists described in paragraphs (8) and (9) of subsection (c).

''(2) FORM.—Each list submitted under paragraph (1) shall be submitted in unclassified form but may include a classified annex.

''(3) PUBLIC AVAILABILITY.—Each list submitted under paragraph (1) shall be published on a publicly accessible internet website of the Department of Defense in a searchable format.

''(4) INTERVENING SUBMITTAL AND PUBLICATION.—The Secretary may submit and publish an updated list described in paragraph (1) more frequently than required by that paragraph, as the Secretary considers necessary.

''(h) DESIGNATION OF ACADEMIC LIAISON.—

''(1) IN GENERAL.—Not later than 180 days after the date of the enactment of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 [Pub. L. 116–283; approved Jan. 1, 2021], the Secretary, acting through the Under Secretary of Defense for Research and Engineering, shall designate an academic liaison with principal responsibility for working with the academic and research communities to protect Department-sponsored academic research of concern from undue foreign influence and threats.

''(2) QUALIFICATION.—The Secretary shall designate an individual under paragraph (1) who is an official of the Office of the Under Secretary of Defense for Research and Engineering.

''(3) DUTIES.—The duties of the academic liaison designated under paragraph (1) shall be as follows:

''(A) To serve as the liaison of the Department with the academic and research communities.

''(B) To execute initiatives of the Department related to the protection of Department-sponsored academic research of concern from undue foreign influence and threats, including the initiative required by subsection (a).

''(C) To conduct outreach and education activities for the academic and research communities on undue foreign influence and threats to Department-sponsored academic research of concern.

''(D) To coordinate and align academic security policies with Department component agencies, the Office of Science and Technology Policy, the intelligence community, and appropriate Federal agencies.

''(E) To the extent practicable, to coordinate with the intelligence community to share, not less frequently than annually, with the academic and research communities unclassified information, including counterintelligence information, on threats from undue foreign influence.

''(F) Any other related responsibility, as determined by the Secretary in consultation with the Under Secretary of Defense for Research and Engineering.

''(i) INSTITUTION OF HIGHER EDUCATION DEFINED.—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).''

MECHANISMS FOR EXPEDITED ACCESS TO TECHNICAL TALENT AND EXPERTISE AT ACADEMIC INSTITUTIONS TO SUPPORT DEPARTMENT OF DEFENSE MISSIONS

Pub. L. 115–91, div. A, title II, § 217, Dec. 12, 2017, 131 Stat. 1328, as amended by Pub. L. 115–232, div. A, title

II, §§228, 236, Aug. 13, 2018, 132 Stat. 1687, 1694; Pub. L. 116–92, div. A, title II, §218, Dec. 20, 2019, 133 Stat. 1259; Pub. L. 116–283, div. A, title II, §244, Jan. 1, 2021, 134 Stat. 3488; Pub. L. 117–81, div. A, title II, §218, Dec. 27, 2021, 135 Stat. 1597, provided that:

''(a) ARRANGEMENTS AUTHORIZED.—

''(1) IN GENERAL.—Not later than 180 days after the date of the enactment of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 [Pub. L. 116–283; approved Jan. 1, 2021], the Secretary of Defense shall direct the secretaries of the military departments to establish not fewer than four multi-institution task order contracts, consortia, cooperative agreements, or other arrangements to facilitate expedited access to university technical expertise, including faculty, staff, and students, in support of Department of Defense missions in the areas specified in subsection (e).

''(2) COORDINATION.—In carrying out paragraph (1), the Secretary of Defense may act through the Defense Advanced Research Projects Agency or any other organization or element of the Department of Defense the Secretary considers appropriate.

''(3) USE FOR TECHNICAL ANALYSES AND ENGINEERING SUPPORT.—The Secretary may use an arrangement under paragraph (1) to fund technical analyses and other engineering support as required to address acquisition, management, training, and operational challenges, including support for classified programs and activities.

''(b) LIMITATION.—An arrangement established under subsection (a)(1) may not be used to fund research programs that can be executed through other Department of Defense basic research activities.

''(c) CONSULTATION WITH OTHER ORGANIZATIONS.—For the purposes of providing technical expertise and reducing costs and duplicative efforts, the Secretary of Defense and the Secretaries of the military departments shall work to ensure and support the sharing of information on the research and consulting that is being carried out across the Federal Government in Department-wide shared information systems including the Defense Technical Information Center.

''(d) POLICIES AND PROCEDURES.—If the Secretary of Defense or a secretary of a military department establishes one or more arrangements under subsection (a)(1), the Secretary of Defense shall establish and implement policies and procedures to govern—

''(1) selection of participants in the arrangement or arrangements;

''(2) the awarding of task orders under the arrangement or arrangements;

''(3) maximum award size for tasks under the arrangement or arrangements;

''(4) the appropriate use of competitive awards and sole source awards under the arrangement or arrangements; and

''(5) technical areas under the arrangement or arrangements.

''(e) MISSION AREAS.—The areas specified in this subsection are as follows:

''(1) Cybersecurity.
''(2) Air and ground vehicles.
''(3) Shipbuilding.
''(4) Explosives detection and defeat.
''(5) Undersea warfare.
''(6) Trusted electronics.
''(7) Unmanned systems.
''(8) Directed energy.
''(9) Energy, power, and propulsion.
''(10) Management science and operations research.
''(11) Artificial intelligence.
''(12) Data analytics.
''(13) Business systems.
''(14) Technology transfer and transition.
''(15) Biological engineering and genetic enhancement.
''(16) High performance computing.
''(17) Materials science and engineering.
''(18) Quantum information sciences.
''(19) Special operations activities.
''(20) Modeling and simulation.
''(21) Autonomous systems.
''(22) Model based engineering.
''(23) Space.
''(24) Infrastructure resilience.
''(25) Photonics.
''(26) Autonomy.
''(27) Rapid prototyping.
''(28) Additive manufacturing.
''(29) Hypersonics.
''(30) 3D and virtual technology training platforms.
''(31) Nuclear science, security, and nonproliferation.
''(32) Chemical, biological, radiological, and nuclear defense.
''(33) Spectrum activities.
''(34) Research security and integrity.
''(35) Printed circuit boards.
''(36) Such other areas as the Secretary considers appropriate.

''(f) REQUIREMENT TO ESTABLISH CONSORTIA.—

''(1) IN GENERAL.—In carrying out subsection (a)(1)—

''(A) the Secretary of Defense shall seek to establish at least one multi-institution consortium through the Office of the Secretary of Defense;

''(B) the Secretary of the Army shall seek to establish at least one multi-institution consortium through the Army;

''(C) the Secretary of the Navy shall seek to establish at least one multi-institution consortium through the Navy; and

''(D) the Secretary of the Air Force shall seek to establish at least one multi-institution consortium through the Air Force.

''(2) REPORT REQUIRED.—Not later than September 30, 2022, the Secretary of Defense shall submit to the congressional defense committees [Committees on Armed Services and Appropriations of the Senate and the House of Representatives] a report on the status of the efforts to establish consortia under paragraph (1).

''(g) SUNSET.—No new arrangements may be entered into under subsection (a)(1) after September 30, 2028.

''(h) ARRANGEMENTS ESTABLISHED UNDER SUBSECTION (A)(1) DEFINED.—In this section, the term 'arrangement established under subsection (a)(1)' means a multi-institution task order contract, consortia, cooperative agreement, or other arrangement established under subsection (a)(1).''

INFORMATION OPERATIONS AND ENGAGEMENT TECHNOLOGY DEMONSTRATIONS

Pub. L. 114–92, div. A, title X, §1056, Nov. 25, 2015, 129 Stat. 984, which authorized the Secretary of Defense to carry out a series of technology demonstrations to assess innovative new technologies for information operations and information engagement to support the operational and strategic requirements of the commanders of the geographic and functional combatant commands, was repealed by Pub. L. 118–159, div. A, title VIII, §811(a)(1)(D), Dec. 23, 2024, 138 Stat. 1979.

INCLUSION OF WOMEN AND MINORITIES IN CLINICAL RESEARCH PROJECTS

Pub. L. 103–160, div. A, title II, §252, Nov. 30, 1993, 107 Stat. 1607, provided that:

''(a) GENERAL RULE.—In conducting or supporting clinical research, the Secretary of Defense shall ensure that—

''(1) women who are members of the Armed Forces are included as subjects in each project of such research; and

''(2) members of minority groups who are members of the Armed Forces are included as subjects of such research.

''(b) WAIVER AUTHORITY.—The requirement in subsection (a) regarding women and members of minority

groups who are members of the Armed Forces may be waived by the Secretary of Defense with respect to a project of clinical research if the Secretary determines that the inclusion, as subjects in the project, of women and members of minority groups, respectively—

''(1) is inappropriate with respect to the health of the subjects;

''(2) is inappropriate with respect to the purpose of the research; or

''(3) is inappropriate under such other circumstances as the Secretary of Defense may designate.

''(c) REQUIREMENT FOR ANALYSIS OF RESEARCH.—In the case of a project of clinical research in which women or members of minority groups will under subsection (a) be included as subjects of the research, the Secretary of Defense shall ensure that the project is designed and carried out so as to provide for a valid analysis of whether the variables being tested in the research affect women or members of minority groups, as the case may be, differently than other persons who are subjects of the research.''

UNIVERSITY RESEARCH INITIATIVE SUPPORT PROGRAM

Pub. L. 103–160, div. A, title VIII, §802, Nov. 30, 1993, 107 Stat. 1701, as amended by Pub. L. 104–106, div. A, title II, §275, Feb. 10, 1996, 110 Stat. 241; Pub. L. 104–201, div. A, title II, §263, Sept. 23, 1996, 110 Stat. 2465; Pub. L. 112–239, div. A, title X, §1076(c)(2)(E), Jan. 2, 2013, 126 Stat. 1950, provided that:

''(a) ESTABLISHMENT.—The Secretary of Defense, through the Assistant Secretary of Defense for Research and Engineering, may establish a University Research Initiative Support Program.

''(b) PURPOSE.—Under the program, the Assistant Secretary may award grants and contracts to eligible institutions of higher education to support the conduct of research and development relevant to requirements of the Department of Defense.

''(c) ELIGIBILITY.—An institution of higher education is eligible for a grant or contract under the program if the institution has received less than a total of $2,000,000 in grants and contracts from the Department of Defense in the two most recent fiscal years for which complete statistics are available when proposals are requested for such grant or contract.

''(d) COMPETITION REQUIRED.—The Assistant Secretary shall use competitive procedures in awarding grants and contracts under the program.

''(e) SELECTION PROCESS.—In awarding grants and contracts under the program, the Assistant Secretary shall use a merit-based selection process that is consistent with the provisions of section 2361(a) of title 10 [now 10 U.S.C. 4141(a)], United States Code.

''(f) REGULATIONS.—The Assistant Secretary shall prescribe regulations for carrying out the program.

''(g) FUNDING.—Of the amounts authorized to be appropriated under section 201 [107 Stat. 1583], $20,000,000 shall be available for the University Research Initiative Support Program.''

CAMPUSES BARRING MILITARY RECRUITERS; CESSATION OF PAYMENTS; NOTIFICATION OF SECRETARY OF DEFENSE

Pub. L. 92–436, title VI, §606, Sept. 29, 1972, 86 Stat. 740, provided that:

''(a) No part of the funds appropriated pursuant to this or any other Act for the Department of Defense or any of the Armed Forces may be used at any institution of higher learning if the Secretary of Defense or his designee determines that recruiting personnel of any of the Armed Forces of the United States are being barred by the policy of such institution from the premises of the institution: except in a case where the Secretary of the service concerned certifies to the Congress in writing that a specific course of instruction is not available at any other institution of higher learning and furnishes to the Congress the reasons why such course of instruction is of vital importance to the security of the United States.

''(b) The prohibition made by subsection (a) of this section as it applies to research and development funds shall not apply if the Secretary of Defense or his designee determines that the expenditure is a continuation or a renewal of a previous program with such institution which is likely to make a significant contribution to the defense effort.

''(c) The Secretaries of the military departments shall furnish to the Secretary of Defense or his designee within 60 days after the date of enactment of this Act [Sept. 29, 1972] and each January 31 and June 30 thereafter the names of any institution of higher learning which the Secretaries determine on such dates are affected by the prohibitions contained in this section.''

Similar provisions were contained in the following prior authorization acts:

Pub. L. 92–156, title V, §502, Nov. 17, 1971, 85 Stat. 427.

Pub. L. 91–441, title V, §510, Oct. 7, 1970, 84 Stat. 914.

[§§ 4002, 4003. Omitted]

Editorial Notes

CODIFICATION

As enacted, Pub. L. 116–283, div. A, title XVIII, §1841(b)(1), Jan. 1, 2021, 134 Stat. 4243, originally transferred sections 2371 and 2371b of this title to sections 4002 and 4003, respectively, to become effective Jan. 1, 2022. Subsequently, Pub. L. 117–81, div. A, title XVII, §1701(u)(2)(B), Dec. 27, 2021, 135 Stat. 2151, amended section 1841(b)(1) of Pub. L. 116–283, effective as if included therein, so as to eliminate those transfers, thereby omitting these sections before they took effect. As amended by section 1701(u)(2)(B) of Pub. L. 117–81, sections 2371 and 2371b were transferred to sections 4021 and 4022 of this title, respectively.

§4004. Contract authority for development and demonstration of initial or additional prototype units

(a) AUTHORITY.—A contract initially awarded from the competitive selection of a proposal resulting from a general solicitation referred to in section 3012(2) of this title may contain a contract line item or contract option for—

(1) the development and demonstration or initial production of technology developed under the contract; or

(2) the delivery of initial or additional items if the item or a prototype thereof is created as the result of work performed under the contract.

(b) LIMITATIONS.—

(1) MINIMAL AMOUNT.—A contract line item or contract option described in subsection (a)(2) shall require the delivery of the minimal amount of initial or additional items to allow for the timely competitive solicitation and award of a follow-on development or production contract for those items.

(2) TERM.—A contract line item or contract option described in subsection (a) shall be for a term of not more than 2 years.

(3) DOLLAR VALUE OF WORK.—The dollar value of the work to be performed pursuant to a contract line item or contract option described in subsection (a) may not exceed $100,000,000, in fiscal year 2017 constant dollars.

(4) APPLICABILITY.—The authority provided in subsection (a) applies only to the Secretary of Defense, the Secretary of the Army, the Secretary of the Navy, and the Secretary of the Air Force.

(c) PROCEDURES.—The Secretary of Defense shall establish procedures to collect and analyze