| LOG ID | REV | MEMBER | MARKUP LOC | DESCRIPTION | MARKUP ACT |
|---|---|---|---|---|---|
| **10** | 1 | Slotkin, Elissa | ETC | Realigns the National Security Innovation Capital program within the Defense Innovation Unit, establishes an advisory board to provide recommendations on defense innovation priority investments once funding is available, and extends the Defense Manufacturing pilot program. | EB 1 |
| **19** | 0 | Gallagher, Mike | ETC | Amends Sec. 1286 of the FY 2019 NDAA by adding to the requirements a publication deadline and public release of a list of Chinese and Russian academic institutions with a history of improper technology transfer and other malign behavior. | EB 1 |
| **57** | 0 | Stefanik, Elise | ETC | Directs the Secretary of Defense to provide a briefing to the House Committee on Armed Services, not later than 1 December 2020, on the information environment segmentation methodology framework. | EB 1 |
| **93** | 0 | Gallagher, Mike | ETC | Directs the Secretary of the Army to provide a briefing on supercavitating ammunition technologies and the Department's efforts to evaluate and field this capability. | EB 1 |
| **137** | 0 | Lamborn, Doug | ETC | Adds an additional responsibility to the Directed Energy Working Group. | EB 1 |
| **160** | 1 | Langevin, James | ETC | Expand level of detail on SOCOM budget reporting | EB 1 |
| **177** | 1 | Brown, Anthony G. | ETC | Directs the Secretary of Defense to provide a briefing on the development of botulinum and plague vaccines. | EB 1 |
| **187** | 0 | Bacon, Don | ETC | Would require the Secretary of Defense to provide a briefing on a plan to develop software-driven solutions that assist servicemembers and military families in implementing the total force fitness framework. | EB 1 |
| **203** | 1 | Waltz, Michael | ETC | Prohibits procurement of aircraft for U.S. Special Operation Command's (SOCOM) Armed Overwatch Program until the Secretary of Defense and the Commander of SOCOM make certain reviews and certifications. | EB 1 |
| **204** | 0 | Wittman, Robert | ETC | Addition of a sentence within existing "High energy laser endless magazine definition" report language within Division A, Title II, RDT&E, Defense-wide under “Items of Special Interest” of the IETC Mark addressing magazine depth within size and weight constraints. | EB 1 |
| **300** | 1 | Brindisi, Anthony | ETC | Requires SecAF to submit reports on the amount of funding allocated to each Air Force Research Laboratory (AFRL) Directorate from the Research Development Test and Evaluation (RDT&E) Budget Activity (BA03) for FY 2021 and FY 2022. | EB 1 |
| **313** | 1 | Wittman, Robert | ETC | Requesting a briefing on the digitization program for the Department’s paper and analog records and cost-effective methods to ensure proper records management compliance within the Department's digital modernization strategy. | EB 1 |
| **328** | 2 | Langevin, James | ETC | NSCAI Recommendations for NDAA. | EB 1 |

| LOG ID | REV | MEMBER | MARKUP LOC | DESCRIPTION | MARKUP ACT |
|---|---|---|---|---|---|
| **335** | 0 | Langevin, James | ETC | Changes to existing 127e provisions. | EB 1 |
| **338** | 0 | Larsen, Rick | ETC | To amend the designee of the "Feasibility assessment of establishing large and open defense based data sets" report. | EB 1 |
| **351** | 2 | Waltz, Michael | ETC | Briefing on use of Artificial Intelligence to analyze beneficial ownership of defense contractors | EB 1 |
| **371** | 0 | Waltz, Michael | ETC | Expands eligibility for Special Operations Forces's Preservation of the Force and Family program | EB 1 |
| **392** | 2 | Houlahan, Chrissy | ETC | Requires training needs analysis to identify opportunities in DOD trainings to integrate attention to women's varied roles in violent extremism. | EB 1 |
| **393** | 1 | Langevin, James | ETC | Department of Defense chemical and biological emerging threats response efforts | EB 1 |
| **394** | 1 | Horn, Kendra S. | ETC | Establishes a National Artificial Intelligence Initiative. | EB 1 |
| **402** | 1 | Torres Small, Xochitl | ETC | Direct report language to support development and testing of High-Powered Microwave (HPM) systems both for offensive use and defense against these systems. | EB 1 |
| **427** | 1 | Speier, Jackie | ETC | Measuring and Incentivizing Programming Proficiency for Servicemembers and DoD Civilians | EB 1 |
| **440** | 0 | Kim, Andy | ETC | GAO STUDY AND REPORT ON ELECTRONIC CONTINUITY OF OPERATIONS ON THE DEPARTMENT OF DEFENSE | EB 1 |
| **447** | 1 | Carbajal, Salud O. | ETC | Directs the SAF/AQ to submit a report regarding the potential cost savings, environmental benefits, and pilot readiness improvements through the use of airborne augmented reality systems. | EB 1 |
| **458** | 2 | Waltz, Michael | ETC | Requires the Secretary of Defense to develop and maintain a list of foreign talent recruitment programs that pose a threat to national security interests. | EB 1 |
| **465** | 1 | Brindisi, Anthony | ETC | Requires a report from the Chief of the National Guard Bureau on the programs and systems it uses, or plans to use, to allow authorized National Guard members to access classified information, as necessary, remotely on the SIPRNet. | EB 1 |

| LOG ID | REV | MEMBER | MARKUP LOC | DESCRIPTION | MARKUP ACT |
|---|---|---|---|---|---|
| **473** | 3 | Sherrill, Mikie | ETC | Briefing on how JBADS Lite could aid in the pandemic preparedness of civilian transportation systems | EB 1 |
| **479** | 0 | Stefanik, Elise | ETC | Package of recommendations on artificial intelligence (AI) and emerging technologies from the National Security Commission on Artificial Intelligence (NSCAI). | EB 1 |
| **488** | 2 | Torres Small, Xochitl | ETC | Direct report language to encourage the Office of Naval Research, to review research opportunities in cloud-aerosol effects and atmospheric sunlight reflection, and to report back to the Committee | EB 1 |
| **504** | 0 | Khanna, Ro | ETC | Facilitate the fulfillment of the requirements in section 936 of the John S. McCain National Defense Authorization Act of FY2019 by authorizing resources to implement a Department policy on civilian casualties in connection with U.S. military operations. | EB 1 |
| **506** | 0 | Khanna, Ro | ETC | Sense of Congress, mirroring S. 4049 report language, commends the Department for the measures it has implemented and is currently implementing to prevent, mitigate, track, investigate, learn from, respond to, and report civilian casualties resulting from U.S. military operations | EB 1 |
| **530** | 1 | Escobar, Veronica | ETC | University Consortium to Support the Space Force | EB 1 |
| **564** | 3 | Horn, Kendra S. | ETC | Requests a report from SOCOM detailing the the role of all reserve units including the Air National Guard in developing the Armed Overwatch Platform. | EB 1 |
| **598** | 1 | Trahan, Lori | ETC | Directs a briefing from the JAIC on the Center's established and prospective relationships with universities, academic consortia, and private sector institutions. | EB 1 |
| **608** | 0 | Conaway, K. Michael | ETC | Amending report language on "Ties between Russia and China" to include assessment on defense cooperation and coordination between Russia and China | EB 1 |
| **621** | 0 | Khanna, Ro | ETC | AFRICOM has adopted important civilian casualty initiatives to prevent, mitigate, track and investigate civilian casualties. Direct DoD to conduct feasibility study on the adoption of AFRICOM civilian casualty initiatives by each combatant command. | EB 1 |
| **45** | 0 | Brown, Anthony G. | ETC | Creates a program to enhance contractor participation in science, technology, engineering, and mathematics activities. Supported by Rep. Hartzler and Rep. Escobar. | EB 1 |
| **68** | 1 | Horn, Kendra S. | ETC | Requires a report on the applicability of using automated technologies related to computer aided manufacturing software and similar manufacturing technologies to address repair part obsolesce issues and part obsolesce issues and parts shortages across the organic industrial base. | EB 1 |
| **50** | 0 | Brown, Anthony G. | ETC | Requires a report on the status of the Fourth Estate Network Optimization activities. | EB 1 |

| LOG ID | REV | MEMBER | MARKUP LOC | DESCRIPTION | MARKUP ACT |
|---|---|---|---|---|---|
| **55** | 1 | Brown, Anthony G. | ETC | Requires a briefing on the threat to the digital personas of senior military leaders and the use of technology to mitigate associated risks. | EB 1 |
| **91** | 0 | Turner, Michael | ETC | Limitation on Awarding Contracts to Entities Operating Commercial Terrestrial Communication Networks that Cause Interference with the Global Positioning System | EB 1 |
| **199** | 0 | Larsen, Rick | ETC | To require a plan on spectrum information technology modernization and a program to identify and mitigate vulnerabilities in the military's telecommunications infrastructure | EB 1 |
| **540** | 1 | Moulton, Seth | ETC | The DOD lacks a similar comprehensive understanding of the Internet-connected assets and attack surface across the DOD enterprise. Amends existing DRL to require a briefing on the current and planned capabilities and concept of operations for Internet operations management. | EB 1 |
| **158** | 0 | Langevin, James | ETC | Require evaluation of PPE and testing equipment | EB 1 |
| **225** | 0 | Crow, Jason | ETC | Requires the Office of Management and Budget to include a crosscut of all federal agencies budget requirements for biodefense preparedness/planning in the President's annual budget submission. | EB 1 |
| **487** | 1 | Torres Small, Xochitl | ETC | Direct report language requesting a report on current COVID-19 testing capabilities, detection gaps, and analysis of alternatives. | EB 1 |
| **596** | 1 | Speier, Jackie | ETC | Research recovery DRL | EB 1 |
| **198** | 2 | Abraham, Ralph Lee | ETC | To amend section 1625 on the FY21 IETC mark to direct the secretary to report to the committee on existing K-12 federal cyber education programs | EB 1 |
| **374** | 2 | Wilson, Joe | ETC | To provide a briefing to HASC on improving the cybersecurity of disadvantaged small businesses in the defense industrial base. | EB 1 |
| **418** | 0 | Houlahan, Chrissy | ETC | Directs the GAO to conduct a study of DOD Cyber Incident Management Efforts. | EB 1 |
| **421** | 0 | Houlahan, Chrissy | ETC | Requires a GAO study of DOD's Cyber vulnerability assessment efforts. | EB 1 |
| **433** | 1 | Houlahan, Chrissy | ETC | Requires DOD to submit a report to Congress on DOD components cyber hygiene practices and directs the GAO to review that report and brief the Committees on its findings. | EB 1 |

| LOG ID | REV | MEMBER | MARKUP LOC | DESCRIPTION | MARKUP ACT |
|---|---|---|---|---|---|
| **548** | 0 | Hartzler, Vicky | ETC | Requires DOD to implement regulations to phase in a requirement that printed circuit boards provided to DOD be acquired from covered countries to end U.S. reliance on Chinese printed circuit boards. | EB 1 |

# AMENDMENT TO H.R. 6395

## OFFERED BY MS. SLOTKIN OF MICHIGAN

At the appropriate place in title II, insert the following new section:

**SEC. 2___. MODIFICATION OF NATIONAL SECURITY INNOVATION ACTIVITIES AND MANUFACTURING PILOT PROGRAM.**

(a) NATIONAL SECURITY INNOVATION ACTIVITIES.—Section 230 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note) is amended—

(1) in subsection (a), by striking ''The Under Secretary of Defense for Research and Engineering shall establish'' and inserting ''The Under Secretary of Defense for Research and Engineering, acting through the Director of the Defense Innovation Unit, shall establish'';

(2) by redesignating subsections (e) through (h) as subsections (f) through (i), respectively;

(3) by inserting after subsection (d) the following new subsection:

''(e) ESTABLISHMENT OF ADVISORY BOARD.—

''(1) IN GENERAL.—Not earlier than the date specified in paragraph (5), but no later than 180 days after such date, the Under Secretary shall establish an advisory board within the Defense Innovation Unit to advise the Under Secretary and the Director of the Unit with respect to the establishment and prioritization of activities under such subsection (a).

''(2) DUTIES.—The advisory board established under paragraph (1) shall—

''(A) identify activities that should be prioritized for establishment under subsection (a);

''(B) not less frequently that semiannually, reevaluate and update such priorities; and

''(C) ensure continuing alignment of the activities established under subsection (a), including all elements of such activities described in subsection (b), with the overall technology strategy of the Department of Defense.

''(3) MEMBERSHIP.—The advisory board established under paragraph (1) shall be composed of one or more representatives from each of the following:

''(A) Each science and technology reinvention laboratory of the Department of Defense.

''(B) The primary procurement organization of each Armed Force.

''(C) The Defense Innovation Board.

''(D) Such other organizations and elements of the Department of Defense as the Under Secretary, in consultation with the Director of the Defense Innovation Unit, determines appropriate.

''(4) PLAN.—Not later than 90 days before the date on which the advisory board is established under paragraph (1), the Under Secretary shall submit to the congressional defense committees a plan for establishing the advisory board, including a description of the expected roles, responsibilities, and membership of the advisory board.

''(5) DATE SPECIFIED.—The date specified in this paragraph is the date on which funds are first appropriated or otherwise made available to carry out subsection (a).''; and

(4) in subsection (h), as so redesignated, by striking ''subsection (h)'' and inserting ''subsection (i)''.

(b) PILOT PROGRAM ON DEFENSE MANUFACTURING.—Section 1711 of the National Defense Author-

ization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2505 note) is amended—

(1) in subsection (d), by striking ''the date that is four years after the date of the enactment of this Act'' and inserting ''December 31, 2026''; and

(2) in subsection (e), by striking ''January 31, 2022'' and inserting ''January 31, 2027''.

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# AMENDMENT TO H.R. 6395

## OFFERED BY MR. GALLAGHER OF WISCONSIN

At the appropriate place in title XII, insert the following:

**SEC. 12___. MODIFICATION OF INITIATIVE TO SUPPORT PROTECTION OF NATIONAL SECURITY ACADEMIC RESEARCHERS FROM UNDUE INFLUENCE AND OTHER SECURITY THREATS.**

Subsection (e) of section 1286 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 2358 note) is amended by adding at the end the following new paragraph:

''(4) PUBLICATION OF UPDATED LIST.—

''(A) IN GENERAL.—Not later than January 1, 2021, and annually thereafter, the Secretary shall submit to the congressional defense committees the most recently updated list described in subsection (c)(8) in unclassified form (but with a classified annex as applicable) and make the unclassified portion of each such list publicly available on an internet website in a searchable format.

"(B) INTERVENING PUBLICATION.—The Secretary may submit and publish an updated list described in subparagraph (A) more frequently than required by such subparagraph if the Secretary determines necessary.".

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Elise Stefanik (NY-21)

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Information Environment Best Practices and Audience Segmentation Methodologies

The committee is encouraged by recent efforts by the Department of Defense to better understand and operate in the information environment, as required by section 1631 of the National Defense Authorization Act for Fiscal Year 2020. The committee understands that one of the mechanisms that the Department of Defense is adopting to more effectively understand the information environment are segmentation methodologies. Specifically, this information operations framework encourages an audience-focused approach that allows for better understanding of the demographics, behavior and effectiveness of messaging themes. The committee is interested in understanding how this methodology is resulting in more informed messaging campaigns, more intelligent risk management process, and more effective content distribution in coordination with interagency partners. Therefore, the committee directs the Secretary of Defense to provide a briefing to the House Committee on Armed Services, not later than 1 December 2020, on the information environment segmentation methodology framework. The briefing should include (1) an explanation of audience segmentation frameworks; (2) measures of effectiveness; (3) contextual lessons learned and best practices from employment in Afghanistan; (4) a plan on how this methodology could be employed in other areas of operations; and (5) how this framework nests with other Department of Defense and interagency capabilities

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Gallagher of Wisconsin

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Supercavitating Ammunition

In the committee reports (H. Rept 115-200 and H.Rept 115-70) to accompany the National Defense Authorizations Acts for FY 2018 and 2019 the committee has shared its interest in supercavitating ammunition technologies and shared support for the Departments efforts to evaluate and field this capability. The committee understands that a solution has been identified and is ready for procurement pending final evaluations.

Therefore, the committee directs the Secretary of the Army to provide to the Committees on Armed Services of the Senate and the House of Representatives, no later than September 30, 2020, an update to the briefing provided pursuant to the committee report accompanying the National Defense Authorization Act for Fiscal Years FY 2018 and FY 2019. This briefing shall include an overview of the current status of the project and an estimated plan for procurement.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. LAMBORN OF COLORADO

In subsection (b) of section 219 (log _____)—

(1) strike ''and'' at the end of paragraph (2);

(2) strike the period at the end of paragraph (3) and insert ''; and''; and

(3) add at the end the following new paragraph:

(4) develop a compendium on the effectiveness of directed energy weapon systems and integrate the compendium into an overall Joint Effectiveness Manual under the guidance from the Joint Technical Coordination Group for Munitions Effectiveness.

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# AMENDMENT TO H.R. 3695

## OFFERED BY MR. LANGEVIN

At the appropriate place in title X, insert the following:

**SEC. 10___ BUDGET MATERIALS FOR SPECIAL OPERATIONS FORCES.**

Section 226 of title 10, United States Code, is amended—

(1) in subsection (a)—

(A) by inserting ''of Defense and the Secretary of each of the military departments'' after ''Secretary'';

(B) by striking ''2021'' and inserting ''2022'';

(C) by striking ''a consolidated budget justification display'' and inserting ''a budget justification display for each applicable appropriation'';

(D) in the second sentence, by striking ''display'' and all that follows and inserting ''displays shall include each of the following:'' and

(E) by adding at the end the following new paragraphs:

''(1) Details at the appropriation and line item level, including any amount for service-common support, acquisition support, training, operations, pay and allowances, base operations sustainment, and any other common services and support.

''(2) An identification of any change in the level or type of service-common support and enabling capabilities provided by each of the military services or Defense Agencies to special operations forces for the fiscal year covered by the budget justification display when compared to the preceding fiscal year, including the rationale for any such change and any mitigating actions.

''(3) An assessment of the specific effects that the budget justification display for the fiscal year covered by the display and any anticipated future manpower and force structure changes are likely to have on the ability of each of the military services to provide service-common support and enabling capabilities to special operations forces.

''(4) Any other matters the Secretary of Defense or the Secretary of a military department determines are relevant.'';

(2) by redesignating subsection (b) as subsection (c); and

(3) by inserting after subsection (a) the following new subsection (b):

''(b) CONSOLIDATED BUDGET JUSTIFICATION DISPLAY.—The Secretary of Defense shall include, in the budget materials submitted to Congress under section 1105 of title 31, for fiscal year 2022 and any subsequent fiscal year, a consolidated budget justification display containing the same information as is required in the budget justification displays required under subsection (a). Such consolidated budget justification display may be provided as a summary by appropriation for each military department and a summary by appropriation for all Defense Agencies.''.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Brown of Maryland

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Joint Vaccine Acquisition Program

The committee recognizes that botulism or plague have been identified as potential biological weapons against service members or the general public. The committee further recognizes that there are currently no available vaccines to protect against these threats. The committee notes that the Department of Defense has invested $300M in developing a plague vaccine and $375M in developing a botulism vaccine. The committee further notes the impact the current viral pandemic has had on national security, to include economic and military readiness, and that reductions to research and development of vaccines reduces the Department's ability to respond to pandemic outbreaks. The committee believes that the continuation of these existing projects under the Joint Vaccine Acquisition Program is necessary to ensure that a deployable vaccine for these agents is available to protect our warfighters and to provide continuity for capabilities under a scenario in which these agents are utilized in a combat environment. Therefore, the committee encourages the Secretary of Defense to continue the development of botulinum and plague vaccines and directs the Secretary of Defense to provide a briefing to the House Committee on Armed Services no later than November 1, 2020 on the acquisition strategy for the botulinum and plague vaccines, to include the status of the development, the cost to complete the development, and the risks if development is discontinued.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by Mr. Bacon of Nebraska

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

**Supporting Innovation for Servicemember and Family Readiness and Resiliency**

The committee is concerned that the Department lacks a modern, software driven approach to support Servicemember and military family wellness, readiness and resiliency. The Department's reliance on duplicative and independent programs designed around static public health information has not kept pace with the demands of military life. The committee believes the Department must implement an aggressive digital transformation to improve the health, readiness and quality of life for servicemembers and their families that focuses on wellness and prevention.

Therefore, the committee directs the Secretary of Defense to provide a briefing to the congressional defense committees by December 1, 2020, on a plan to develop innovation partnerships for software-driven solutions that assist servicemembers and military families in implementing the total force fitness framework across their daily lives. The briefing shall include the following elements: (1) A strategy and timeline describing how the Department will implement a software-driven, systemic approach to total force fitness; (2) An overview of the Department's proposal to accelerate partnerships for total force fitness innovation; and (3) A description of how the Department intends to use existing authorities, including other transaction authorities, in combination with public-private partnerships to prototype agile and scalable digital solutions to improve total force wellness, readiness, and resiliency.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. WALTZ OF FLORIDA

At the appropriate place in title I, insert the following new section:

**SEC. 1___. LIMITATION ON USE OF FUNDS FOR THE ARMED OVERWATCH PROGRAM.**

None of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2021 for procurement for the Armed Overwatch Program of the United States Special Operations Command may be obligated or expended until the date on which—

(1) the Secretary of Defense certifies to the congressional defense committees that—

(A) the Secretary has completed a requirements review of the Armed Overwatch Program; and

(B) the Secretary has conducted a review of the roles and responsibilities of the United States Air Force and the United States Special Operations Command with respect to close air support and armed intelligence, surveillance, and reconnaissance and, as a result of such review, the Secretary has identified the Armed

Overwatch Program as a special operations forces-peculiar requirement; and

(2) the Commander of United States Special Operations Command submits to the congressional defense committees—

(A) certification that the Commander or Deputy Commander has approved the documentation of the Special Operations Command Requirements Evaluation Board; and

(B) a requirements plan for the Armed Overwatch program that includes—

(i) an analysis of alternatives;

(ii) a procurement plan over the period covered by the most recent future-years defense program submitted under section 221 of title 10, United States Code;

(iii) a sustainment plan with projected costs;

(iv) a phase out plan of existing armed intelligence, surveillance, and reconnaissance platforms;

(v) a manpower and training analysis, and;

(vi) doctrinal considerations for employment; and

(C) a roadmap analyzing whether the near-term to mid-term multi-mission responsibilities of the Armed Overwatch Program are consistent with the intelligence, surveillance, and reconnaissance requirements of the various special operations forces units and missions, and the geographic combatant commands.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Wittman of Virginia

In the portion of the report to accompany H.R. 6395 titled "High energy laser endless magazine definition" insert after the second sentence, the following new text: "Additionally, the committee understands that magazine depth is but one of the system variables that need to be considered in delivering required mission effectiveness within the size and weight constraints of the platform within which the system is integrated or with which it is otherwise deployed."

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Brindisi of New York

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Air Force Advanced Technology Development Report

The committee recognizes that our service members and military leaders face evolving challenges that will require integration of the Air Force's science and technology development efforts in order to reassert the United States' competitive advantage across every warfighting domain. The committee is aware of the consolidation of thirteen Advanced Technology Development (ATD) Program Elements (PE) into five new PE lines within the Air Force's Research Development Test and Evaluation (RDT&E) funding in section 4201. The committee is concerned about losing insight and transparency during the Air Force's transition and implementation phase. Therefore, the committee directs the Secretary of the Air Force to submit an initial report to the congressional defense committees no later than October 30, 2021 on the amount of funding allocated to each Air Force Research Laboratory (AFRL) Directorate from the ATD RDT&E BA03 lines in Fiscal Year (FY) 2021. For transparency and consistency, the committee directs the Secretary of the Air Force to submit a final report to the congressional defense committees no later than October 30, 2022 on the amount of funding allocated to each AFRL Directorate from the ATD RDT&E BA03 lines in FY 2022.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Wittman of Virginia

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

*Consolidated Defense Data Program*

The committee commends the Department of Defense's Chief Information Officer (CIO) for undertaking efforts to ensure the Department's data resources are well maintained and ready for use by a wide range of DOD users, and especially to leverage multiple artificial intelligence initiatives. As the Department continues to evaluate software and other electronic data solutions, the committee directs the Chief Information Officer and the Chief Management Officer of the Department of Defense to provide a briefing by March 30, 2021.

(1) the digitization program for the Department's paper and analog records;
(2) cost-effective methods to ensure proper records management compliance within the Department's digital modernization strategy

**AMENDMENT TO H.R. 6395**

**OFFERED BY MR. LANGEVIN OF RHODE ISLAND**

At the end of title II, add the following new subtitle:

# Subtitle D—Emerging Technology and Artificial Intelligence Matters

**SEC. 241. STEERING COMMITTEE ON EMERGING TECHNOLOGY.**

(a) ESTABLISHMENT.—There is established in the executive branch 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 Under Secretary of Defense for Intelligence and Security.

(4) Such other officials of the Department of Defense as are jointly appointed to Steering Committee by the officials specified in paragraphs (1) through (3).

(c) CO-CHAIRS.—The officials specified in paragraphs (1) through (3) of subsection (b) shall serve as co-chairs of the Steering Committee.

(d) STAFF AND SUPPORT SERVICES.—Upon request of the co-chairs, the Department of Defense shall provide to the Steering Committee, on a reimbursable basis, such staff and administrative support services as are necessary for the Committee to carry out its responsibilities under this section.

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

(1) developing a strategic vision for the organizational change, concept and capability development, and technology investments in emerging technologies that are needed to maintain the technological edge of the military and intelligence community of the United States;

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

(3) making recommendations to the Secretary of Defense on—

(A) the implementation of the strategy developed under to paragraph (1); and

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

(4) coordinating with the Joint Committee on Research Environments of the National Science and Technology Council; and

(5) carrying out such other activities as are assigned to the Steering Committee by the Secretary of Defense.

(f) COORDINATION WITH JAIC.—The co-chairs shall coordinate the activities of the Steering Committee with the activities of the Board of Directors of the Joint Artificial Intelligence Center established under [section 218 (log 70936)], as appropriate.

(g) EMERGING TECHNOLOGY DEFINED.—In this section, 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.

**SEC. 242. TRAINING FOR HUMAN RESOURCES PERSONNEL IN ARTIFICIAL INTELLIGENCE AND RELATED TOPICS.**

(a) DEPARTMENT OF DEFENSE.—

(1) TRAINING PROGRAM.—Not later than one year after the date of the enactment of this Act, the Secretary of Defense shall develop and implement a program to provide covered human resources personnel with training in the fields of software development, data science, and artificial intelligence, as such fields related to the duties of such personnel.

(2) ELEMENTS.—The training provided under paragraph (1) shall include—

(A) a generalist's introduction to—

(i) software development and business processes;

(ii) data management practices related to machine learning;

(iii) machine learning, deep learning, and artificial intelligence;

(iv) artificial intelligence workforce roles; and

(v) cybersecurity and secure software development; and

(B) training in the authorities and procedures that may be used to recruit software de-

velopers, data scientists, and artificial intelligence professionals, including direct hiring authorities, excepted service authorities, the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4701 et seq.), and authorities for hiring special government employees and highly qualified experts.

(3) CERTIFICATE OF COMPLETION.—The Secretary of Defense shall issue a certificate of completion to each individual who successfully completes the training provided under paragraph (1), as determined by the Secretary.

(4) IMPLEMENTATION.—The Secretary of Defense shall implement the training program under paragraph (1) as follows:

(A) In the first year in which the training program is carried out, the Secretary shall ensure that not less than 20 percent of covered human resource personnel complete the program.

(B) In each year of the training program after the first year, the Secretary shall ensure that not less than an additional 10 percent of covered human resources personnel complete

the program until 80 percent of such personnel have completed the program.

(C) After achieving the 80 percent completion rate specified in subparagraph (B), the Secretary shall ensure, in each year, that not less than 80 percent of covered human resources personnel have completed the training program.

(b) COVERED HUMAN RESOURCES PERSONNEL DEFINED.—In this section, the term ''covered human resources personnel'' means members of the Armed Forces and civilian employees of the Department of Defense, including human resources professionals, hiring managers, and recruiters, who are responsible for hiring software developers, data scientists, or artificial intelligence professionals for the Department.

**SEC. 243. UNCLASSIFIED WORKSPACES FOR PERSONNEL WITH PENDING SECURITY CLEARANCES.**

(a) GUIDANCE REQUIRED.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall issue guidance to ensure, to the extent practicable, that all facilities the Department of Defense at which covered personnel perform work functions have unclassified workspaces.

(b) USE OF WORKSPACES BY OTHER PERSONNEL.—The guidance issued under subsection (a) shall include guidelines under which appropriately screened individuals other than covered personnel, such as interns and visiting experts, may use unclassified workspaces on a space-available basis.

(c) REPORT REQUIRED.—Not later than 90 days after the issuance of the guidance under subsection (a), the Secretary of Defense shall submit to the congressional defense committees a report that includes—

(1) a plan for implementing the guidance;

(2) a description of how existing facilities may be modified to accommodate unclassified workspaces; and

(3) identification of any impediments to making unclassified workspace available as described in subsection (a).

(d) DEFINITIONS.—

(1) In this section, the term ''unclassified workspace'' means a workspace at which unclassified work may be performed.

(2) The term ''covered personnel'' means a member of the Armed Forces or a civilian employee of the Department of Defense who has applied for, but who has not yet received, a security clearance.

**SEC. 244. PILOT PROGRAM ON THE USE OF ELECTRONIC PORTFOLIOS TO EVALUATE APPLICANTS FOR CERTAIN TECHNICAL POSITIONS.**

(a) PILOT PROGRAM.—Beginning not later than one year after the date of the enactment of this Act, the Secretary of Defense shall carry out a pilot program under which applicants for technical positions within the Department of Defense will be evaluated, in part, based on electronic portfolios of the applicant's work, as described in subsection (b).

(b) ACTIVITIES.—Under the pilot program, the human resources manager of an organization of the Department of Defense participating in the program, in consultation with relevant subject matter experts, shall assess each applicant for a technical position in the organization by reviewing an electronic portfolio of the applicant's best work, as selected by the applicant.

(c) SCOPE OF PROGRAM.—The Secretary of Defense shall carry out the pilot program under subsection (a) in at least one major command of each military department.

(d) REPORT.—Not later than two years after the commencement of the pilot program under subsection (a), the Secretary of Defense shall submit to the congressional defense committees a report on the results of the program. At a minimum, the report shall describe—

(1) how the use of electronic portfolios in the hiring process affected the timeliness of the hiring process for technical positions in organizations of the Department of Defense participating in the program;

(2) the level of satisfaction of organization leaders, hiring authorities, and subject matter experts with the quality of applicants that were hired based on evaluations of electronic portfolios.

(e) TECHNICAL POSITION DEFINED.—In this section, the term ''technical position'' means a position in the Department of Defense requiring expertise in artificial intelligence, data science, or software development.

(f) TERMINATION.—The authority to carry out the pilot program under subsection (a) shall terminate five years after the date of the enactment of this Act.

**SEC. 245. SELF-DIRECTED TRAINING IN ARTIFICIAL INTELLIGENCE.**

(a) ONLINE ARTIFICIAL INTELLIGENCE COURSES.—The Secretary of Defense shall make available a list of approved online courses relating to artificial intelligence that may be taken by civilian employees of the Department of Defense and members of the Armed Forces on a voluntary basis while not engaged in the performance of their duties.

(b) DOCUMENTATION OF COMPLETION.—The Secretary of Defense shall develop and implement a system—

(1) to confirm whether a civilian employee of the Department of Defense or member of the Armed Forces has completed an online course approved by the Secretary under paragraph (1); and

(2) to document the completion of such course in the personnel file of such employee or member.

(c) REWARD SYSTEM.—The Secretary of Defense shall develop and implement a system to reward civilian employees of the Department of Defense and members of the Armed Forces who complete an online course approved by the Secretary under paragraph (1), which may include—

(1) for a member of the Armed Forces, a 24-hour pass which may be used on a stand-alone basis or in conjunction with other leave, holiday, or weekend periods; and

(2) for a civilian employees of the Department, up to 8 hours of additional leave.

(d) DEADLINE.—The Secretary of Defense shall carry out the activities described in subparagraphs (a) through (c) not later than 180 days after the date of the enactment of this Act.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. LANGEVIN

At the appropriate place in title X, insert the following:

**SEC. 10___. SUPPORT OF SPECIAL OPERATIONS TO COMBAT TERRORISM.**

Section 127e of title 10, United States Code, is amended—

(1) by striking subsection (c) and inserting the following new subsection (c):

''(c) PROCEDURES.—

''(1) IN GENERAL.—The authority in this section shall be exercised in accordance with such procedures as the Secretary shall establish for purposes of this section. The Secretary shall notify the congressional defense committees of any material change to such procedures.

''(2) ELEMENTS.—The procedures required under paragraph (1) shall establish, at a minimum, each of the following:

''(A) Policy, strategy, or other guidance for the execution of, and constraints within, activities conducted under this section.

''(B) The processes through which activities conducted under this section are to be developed, validated, and coordinated, as appropriate, with relevant Federal entities.

''(C) The processes through which legal reviews and determinations are made to comply with this section and ensure that the exercise of authority under this section is consistent with the national security of the United States.

''(3) NOTICE TO CONGRESS.—The Secretary shall provide to the congressional defense committees a notice of the procedures established pursuant to this section before any exercise of the authority in this section, and shall notify such committees of any material change of the procedures.'';

(2) in subsection (d)—

(A) in the subsection heading, by inserting ''OF INITIATION OF SUPPORT OF AN APPROVED MILITARY OPERATION'' after ''NOTIFICATION''; and

(B) in paragraph (1), by striking ''15'' and inserting ''30'';

(3) by redesignating subsections (e) through (h) as subsections (f) through (i), respectively;

(4) by inserting after subsection (d) the following new subsection (e):

''(e) NOTIFICATION OF MODIFICATION OR TERMINATION OF SUPPORT OF AN APPROVED MILITARY OPERATION.—

''(1) IN GENERAL.—Except as provided in paragraph (2), the Secretary shall provide to the congressional defense committees notice in writing by not later that—

''(A) 15 days before exercising the authority under this section to modify the support of an approved military operation;

''(B) 30 days before exercising the authority under this section to terminate the support of an approved military operation; or

''(C) as applicable, 30 days before exercising any other authority under which the Secretary engages or plans to engage with foreign forces, irregular forces, groups, or individuals.

''(2) EXTRAORDINARY CIRCUMSTANCES.—If the Secretary finds the existence of extraordinary circumstances affecting the national security of the United States, the Secretary shall provide the notice required under paragraph (1) not later than 48

hours before exercising authority referred to in subparagraph (A) or (B) of such paragraph.

''(3) ELEMENTS.—Notice provided under paragraph (1) with respect to the modification or termination of support shall includes each of the following elements:

''(A) A description of the reasons for the modification or termination.

''(B) A description of the potential effects of the modification or termination of support on the forces providing the support.

''(C) A plan for the modification or termination of the support, including the consideration of the transition of such support from one fiscal authority to another.

''(D) A list of any relevant entities of the United States Government that are or will be involved in the modification or termination of such support, including any planned transition of such support from one Government entity to another.'';

(5) in subsection (i)(3), as redesignated by paragraph (3)—

(A) by redesignating subparagraphs (G) and (H) as subparagraphs (H) and (I), respectively; and

(B) by inserting after subparagraph (F) the following new subparagraph (G):

''(G) If there is a plan to modify or terminate the support to military operations to combat terrorism in any way, a detailed description of the plan, including—

''(i) a description of the reasons for the modification or termination;

''(ii) the potential effects of the modification or termination of support on the forces providing the support;

''(iii) a detailed plan for the modification or termination of the support; and

''(iv) a list of any relevant Government entities that are or will be involved in the modification or termination of such support, including any planned transition of such support from one Government entity to another.''; and

(6) by adding at the end the following new subsection:

''(j) MODIFICATION DEFINED.—In this section, the term 'modification', with respect to support provided for an approved military operation, means—

''(1) an increase or decrease in funding of more than $750,000 or change greater than 40 percent of the material resources provided;

''(2) an increase or decrease in the amount or type of equipment that significantly alters the use of or risk to foreign forces, irregular forces, groups, or United States special operations forces; or

''(3) a change in the legal or operational authorities.''.

☒

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rick Larsen

In the portion of the report to accompany H.R. 6395 titled "Feasibility assessment of establishing large and open defense based data sets", strike the following text: "Director of the Information Innovation Office at the Defense Advanced Research Projects Agency" and insert the following new text "Under Secretary of Defense for Research and Engineering".

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

# Offered by Mr. Waltz:

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

*Use of Artificial Intelligence to Analyze Beneficial Ownership of Defense Contractors*

The Committee remains concerned with the threat of peer and near-peer competitors acquiring critical technology developed by American companies via shell corporations that hide their true ownership in order to circumvent review by the Committee on Foreign Investment in the United States. The Committee, therefore, directs the Director of the Defense Innovation Unit to provide a briefing to the House Committee on Armed Services by April 30, 2021 on commercial capabilities, current challenges, and required resources necessary to develop artificial intelligence for analyzing beneficial ownership of defense contractors or corporations seeking Department of Defense contracts. The artificial intelligence and related capabilities reviewed should be capable of identifying organizations or individuals that hide ownership or investments in companies that contract with the Department of Defense for critical technology.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. WALTZ OF FLORIDA

At the appropriate place in title V of the bill, insert the following:

**SEC. 5___. SUPPORT SERVICES FOR MEMBERS OF SPECIAL OPERATIONS FORCES AND IMMEDIATE FAMILY MEMBERS.**

(a) IN GENERAL.—Section 1788a of title 10, United States Code, is amended—

(1) in the heading—

(A) by striking ''**Family support**'' and inserting ''**Support**'';

(B) by striking ''**immediate family members of**''; and

(C) by adding ''**; immediate family members**'' at the end;

(2) in subsection (a), by striking ''for the immediate family members of members of the armed forces assigned to special operations forces'';

(3) in subsection (b)(1)—

(A) by striking ''the immediate family members''; and

(B) by inserting ''and the immediate family members of such members'' before the semicolon;

(4) in subsection (d)(2)—

(A) in subparagraph (A)—

(i) by striking ''family members of''; and

(ii) by inserting ''and immediate family members of such members'' before the period;

(B) in subparagraph (B)—

(i) by striking ''and on family members of'' and inserting a comma; and

(ii) by inserting '', and immediate family members of such members'' before the period; and

(5) in subsection (e)(4)—

(A) by inserting ''psychological support, spiritual support, and'' before ''costs'';

(B) by striking ''immediate family members of'';

(C) by inserting ''(including the reserve components)'' after ''members of the armed forces''; and

(D) by inserting ", and immediate family members of such members," before "while".

(b) CLERICAL AMENDMENT.—The table of sections at the beginning of chapter 88 of title 10, United States Code, is amended by striking the item relating to section 1788a and inserting the following:

"1788a. Support programs: members of special operations forces; immediate family members".

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Ms. Houlahan of Pennsylvania

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Assessment of Department of Defense Training Programs and Resources Regarding the Role of Women as Participants of Violent Extremism.

The committee directs the Secretary of Defense to conduct an assessment and submit a report to the House Committee on Armed Services by April 30, 2021 on existing programs, tools, and resources of the Department of Defense for training members of the United States Armed Forces and other personnel of the Department of Defense regarding the role of women as participants of violent extremism. The assessment shall consider the totality of the varied roles of women in all aspects of fomenting violent extremism including, but not limited to, as—

(1) recruiters;
(2) sympathizers;
(3) perpetrators; and
(4) combatants.

The committee further directs the Secretary of Defense to conduct a training needs analysis, in accordance with the Women, Peace and Security Act of 2017 (Public Law 115-68; 22 U.S.C. 2151 note), and to submit a report to the House Committee on Armed Services by September 30, 2021 that identifies opportunities in existing training programs for members of the U.S. Armed Forces (including units involved in counterterrorism operations) and other personnel of the Department of Defense to integrate attention to the varied roles of women in fomenting violent extremism and terrorism.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

# Offered by: Mr. Langevin of Rhode Island

In the portion of the report to accompany H.R. 6395 titled "Department of Defense Chemical and biological event responsibilities", strike the entire text and replace it with the following text:

*"Department of Defense chemical and biological emerging threats response efforts*

The U.S. Government Accountability Office's December 2018 report on Emerging Threats highlighted a range of potential threats and opportunities that cover a broad spectrum of science and technology. These included synthetic biology and bioengineering, artificial intelligence, and natural biological threats. The committee notes that the current coronavirus pandemic is precisely the kind of threat identified in that report and that has been of concern to planners throughout the government for years. At a time when the United States is struggling to respond to the spread of a highly infectious new virus, the committee is also concerned about the preparedness of the U.S. Armed Forces to respond to a significant state-level weapons of mass destruction event.

The committee recognizes the valuable work done by key elements of the defense research enterprise, such as the Defense Advanced Research Projects Agency. However, the committee remains concerned about the Department of Defense's (DOD) capacity and planning for research on science and technology and conversion to development to capitalize on opportunities, address emerging threats early, and respond in a flexible manner to those threats that materialize rapidly, such as the coronavirus pandemic. Ensuring that the Department's science and technology and research and development enterprises are coordinated is important in building flexibility for the broad range of associated capabilities to respond to emerging threats. Similarly, ensuring that the Department has the structure in place to plan and exercise for potential responses to these potentially catastrophic emerging threats is critical for military and national preparedness.

The committee therefore directs the Comptroller General to assess the Department's strategy and planning for research and development and for emerging threats, and particularly biological threats, and for incorporating those threats into broader planning and exercise mechanisms. The assessment should include:

(1) The Department's strategy and planning for research and development, including plans for prioritizing efforts to address emerging threats;
(2) The Department's visibility and coordination of capabilities and capacity in all elements of the research and development portfolio, including:
    a. DOD science and technology research laboratories;
    b. the Chemical Biological Defense Program;

c. the Defense Threat Reduction Agency;
d. DOD-sponsored research in academia;
e. Manufacturing Innovation Institutes,
f. small business innovation research and technology transfer; and
g. other efforts;

(3) The Department's coordination with other federal and non-governmental organizations to plan and conduct research and development activities;
(4) The Department's plans, capacity, and authorities, for drawing upon the extensive research and development enterprise to respond to the coronavirus pandemic or similar rapidly occurring threats;
(5) Department-wide tabletop exercises and wargames;
(6) Medical countermeasures and stockpile completeness; and
(7) Any other matters the Comptroller General deems appropriate.

The committee directs the Comptroller General to provide a briefing to the congressional defense committees by March 1, 2021 on preliminary findings and submit a final report to the congressional defense committees at a date agreed to at the time of the briefing."

**AMENDMENT TO H.R. 6395**

**OFFERED BY MS. KENDRA S. HORN OF OKLAHOMA**

Add at the end the following new division:

# DIVISION E—NATIONAL ARTIFICIAL INTELLIGENCE INITIATIVE ACT OF 2020

**SEC. 5001. SHORT TITLE.**

This division may be cited as the ''National Artificial Intelligence Initiative Act of 2020''.

**SEC. 5002. FINDINGS.**

Congress finds the following:

(1) Artificial intelligence is a tool that has the potential to change and possibly transform every sector of the United States economy and society.

(2) The Federal Government should continue to play an important role advancing research, development, standards, and education activities in artificial intelligence through coordination and collaboration between government, academia, and the private sector to leverage the intellectual, physical, and digital resources of each stakeholder.

(3) The Federal Government lacks clear understanding of the capabilities of artificial intelligence and its potential to affect various social and economic sectors, including ethical concerns, national security implications, and workforce impacts.

(4) Researchers from academia, Federal laboratories, and much of the private sector have limited access to many high-quality datasets, computing resources, or real-world testing environments to design and deploy safe and trustworthy artificial intelligence systems.

(5) There is a lack of standards and benchmarking for artificial intelligence systems that academia and the public and private sectors can use to evaluate the performance of these systems before and after deployment.

(6) Artificial intelligence is increasingly becoming a highly interdisciplinary field with expertise required from a diverse range of scientific and other scholarly disciplines that traditionally work independently and continue to face cultural and institutional barriers to large scale collaboration.

(7) Current Federal investments and funding mechanisms are largely insufficient to incentivize and support the large-scale interdisciplinary and

public-private collaborations that will be required to advance trustworthy artificial intelligence systems in the United States.

(8) The United States education pipeline for artificial intelligence fields faces significant challenges. Not only does the artificial intelligence research field lack the gender and racial diversity of the American population as a whole, but it is failing to both retain researchers and adequately support educators to meet the demands of the next generation of students studying artificial intelligence.

(9) In order to help drive forward advances in trustworthy artificial intelligence across all sectors and to the benefit of all Americans, the Federal Government must provide sufficient resources and use its convening power to facilitate the growth of artificial intelligence human capital, research, and innovation capacity in academia and other nonprofit research organizations, companies of all sizes and across all sectors, and within the Federal Government.

**SEC. 5003. DEFINITIONS.**

In this division:

(1) ADVISORY COMMITTEE.—The term ''Advisory Committee'' means the National Artificial Intel-

ligence Advisory Committee established under section [5104(a)].

(2) AGENCY HEAD.—The term ''agency head'' means the head of any Executive agency (as defined in section 105 of title 5, United States Code).

(3) ARTIFICIAL INTELLIGENCE.—The term ''artificial intelligence'' means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments. Artificial intelligence systems use machine and human-based inputs to—

(A) perceive real and virtual environments;

(B) abstract such perceptions into models through analysis in an automated manner; and

(C) use model inference to formulate options for information or action.

(4) INITIATIVE.—The term ''Initiative'' means the National Artificial Intelligence Initiative established under section [5101(a)].

(5) INITIATIVE OFFICE.—The term ''Initiative Office'' means the National Artificial Intelligence Initiative Office established under section [5102(a)].

(6) INSTITUTE.—The term ''Institute'' means an Artificial Intelligence Research Institute described in section 201(b)(1).

(7) INTERAGENCY COMMITTEE.—The term ''Interagency Committee'' means the interagency committee established under section [5103(a)].

(8) K-12 EDUCATION.—The term ''K-12 education'' means elementary school and secondary education, as such terms are defined in section 8101 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 7801).

(9) MACHINE LEARNING.—The term ''machine learning'' means an application of artificial intelligence that is characterized by providing systems the ability to automatically learn and improve on the basis of data or experience, without being explicitly programmed.

# TITLE I—NATIONAL ARTIFICIAL INTELLIGENCE INITIATIVE

## SEC. 5101. NATIONAL ARTIFICIAL INTELLIGENCE INITIATIVE.

(a) ESTABLISHMENT; PURPOSES.—The President shall establish and implement an initiative to be known as the ''National Artificial Intelligence Initiative''. The purposes of the Initiative shall be to—

(1) ensure continued United States leadership in artificial intelligence research and development;

(2) lead the world in the development and use of trustworthy artificial intelligence systems in the public and private sectors;

(3) maximize the benefits of artificial intelligence systems for all American people; and

(4) prepare the present and future United States workforce for the integration of artificial intelligence systems across all sectors of the economy and society.

(b) INITIATIVE ACTIVITIES.—In carrying out the Initiative, the President, acting through the Initiative Office, the Interagency Committee, and agency heads as the President considers appropriate, shall carry out activities that include the following:

(1) Sustained, consistent, and coordinated support for artificial intelligence research and development through grants, cooperative agreements, testbeds, and access to data and computing resources.

(2) Support for the development of voluntary standards, best practices, and benchmarks for the development and use of trustworthy artificial intelligence systems.

(3) Support for educational programs at all levels, in both formal and informal learning environments, to prepare the American workforce and the general public to be able to use and interact with artificial intelligence systems, as well as adapt to the potentially transformative impact of artificial intelligence on society and the economy.

(4) Support for interdisciplinary research, education, and training programs for students and researchers that promote learning in the methods and systems used in artificial intelligence and foster interdisciplinary perspectives and collaborations among subject matter experts in relevant fields, including computer science, mathematics, statistics, engineering, social sciences, psychology, behavioral science, ethics, security, legal scholarship, and other disciplines that will be necessary to advance artificial intelligence research and development responsibly.

(5) Support for partnerships to leverage knowledge, computing resources, access to open datasets, and other resources from industry, government, nonprofit organizations, Federal laboratories, State programs, and institutions of higher education to advance activities under the Initiative.

(6) Interagency planning and coordination of Federal artificial intelligence research, development, demonstration, standards engagement, and other activities under the Initiative.

(7) Establish the public sector infrastructure and artificial intelligence capabilities necessary to respond to pressing national challenges, including economic and public health emergencies such as pandemics.

(8) Outreach to diverse stakeholders, including citizen groups and industry, to ensure public input is taken into account in the activities of the Initiative.

(9) Leveraging existing Federal investments to advance objectives of the Initiative.

(10) Support for a network of interdisciplinary artificial intelligence research institutes, as described in section [5201(b)(7)(B)].

(11) Support opportunities for international cooperation with strategic allies, as appropriate, on the research and development, assessment, and resources for trustworthy artificial intelligence systems and the development of voluntary consensus standards for those systems.

**SEC. 5102. NATIONAL ARTIFICIAL INTELLIGENCE INITIATIVE OFFICE.**

(a) IN GENERAL.—The Director of the Office of Science and Technology Policy shall establish or designate, and appoint a director of, an office to be known as the ''National Artificial Intelligence Initiative Office'' to carry out the responsibilities described in subsection (b) with respect to the Initiative. The Initiative Office shall have sufficient staff to carry out such responsibilities, including staff detailed from the Federal departments and agencies described in section [5103(c)].

(b) RESPONSIBILITIES.—The Director of the Initiative Office shall—

(1) provide technical and administrative support to the Interagency Committee and the Advisory Committee;

(2) serve as the point of contact on Federal artificial intelligence activities for Federal departments and agencies, industry, academia, nonprofit organizations, professional societies, State governments, and such other persons as the Initiative Office considers appropriate to exchange technical and programmatic information;

(3) conduct regular public outreach to diverse stakeholders, including through the convening of conferences and educational events, the publication

of information about significant Initiative activities on a publicly available website, and the dissemination of findings and recommendations of the Advisory Committee, as appropriate; and

(4) promote access to and early adoption of the technologies, innovations, lessons learned, and expertise derived from Initiative activities to agency missions and systems across the Federal Government, and to industry, including startup companies.

(c) FUNDING ESTIMATE.—The Director of the Office of Science and Technology Policy shall develop an estimate of the funds necessary to carry out the activities of the Initiative Coordination Office, including an estimate of how much each participating Federal department and agency described in section [5103(c)] will contribute to such funds, and submit such estimate to Congress not later than 90 days after the enactment of this Act. The Director shall update this estimate each year based on participating agency investments in artificial intelligence.

**SEC. 5103. COORDINATION BY INTERAGENCY COMMITTEE.**

(a) INTERAGENCY COMMITTEE.—The Director of the Office of Science and Technology Policy, acting through the National Science and Technology Council, shall establish or designate an Interagency Committee to coordinate

Federal programs and activities in support of the Initiative.

(b) CO-CHAIRS.—The Interagency Committee shall be co-chaired by the Director of the Office of Science and Technology Policy and, on an annual rotating basis, a representative from the National Institute of Standards and Technology, the National Science Foundation, or the Department of Energy, as selected by the Director of the Office of Science and Technology Policy.

(c) AGENCY PARTICIPATION.—The Committee shall include representatives from—

(1) the National Institute of Standards and Technology;

(2) the National Science Foundation;

(3) the Department of Energy;

(4) the National Aeronautics and Space Administration;

(5) the Department of Defense;

(6) the Defense Advanced Research Projects Agency;

(7) the Department of Commerce;

(8) the Office of the Director of National Intelligence;

(9) the Office of Management and Budget;

(10) the Office of Science and Technology Policy;

(11) the Department of Health and Human Services;

(12) the Department of Education;

(13) the Department of Labor;

(14) the Department of the Treasury;

(15) the General Services Administration;

(16) the Department of Transportation;

(17) the Department of State;

(18) the Department of Veterans Affairs; and

(19) any other Federal agency as considered appropriate by the Director of the Office of Science and Technology Policy.

(d) RESPONSIBILITIES.—The Interagency Committee shall—

(1) provide for interagency coordination of Federal artificial intelligence research, development, and demonstration activities, development of voluntary consensus standards and guidelines for research, development, testing, and adoption of ethically developed, safe, and trustworthy artificial intelligence systems, and education and training activities and programs of Federal departments and agencies undertaken pursuant to the Initiative;

(2) not later than 2 years after the date of the enactment of this Act, develop a strategic plan for artificial intelligence (to be updated not less than every 3 years) that—

(A) establishes goals, priorities, and metrics for guiding and evaluating the Initiative's activities; and

(B) describes how the agencies carrying out the Initiative will—

(i) determine and prioritize areas of artificial intelligence research, development, and demonstration requiring Federal Government leadership and investment;

(ii) support long-term funding for interdisciplinary artificial intelligence research, development, demonstration, education and public outreach activities;

(iii) support research and other activities on ethical, legal, environmental, safety, security, and other appropriate societal issues related to artificial intelligence;

(iv) provide or facilitate the availability of curated, standardized, secure, representative, and privacy-protected data

sets for artificial intelligence research and development;

(v) provide or facilitate the necessary computing, networking, and data facilities for artificial intelligence research and development;

(vi) support and coordinate Federal education and workforce activities related to artificial intelligence;

(vii) reduce barriers to transferring artificial intelligence systems from the laboratory into application for the benefit of society and United States competitiveness;

(viii) support and coordinate the network of artificial intelligence research institutes described in section [5201(b)(7)(B)];

(ix) in consultation with the Council of Economic Advisers, measure and track the contributions of artificial intelligence to United States economic growth and other societal indicators; and

(x) leverage the resources of the Initiative to respond to pressing national

challenges, including economic and public health emergencies such as pandemics;

(3) propose an annually coordinated interagency budget for the Initiative to the Office of Management and Budget that is intended to ensure that the balance of funding across the Initiative is sufficient to meet the goals and priorities established for the Initiative; and

(4) in carrying out this section, take into consideration the recommendations of the Advisory Committee, existing reports on related topics, and the views of academic, State, industry, and other appropriate groups.

(e) ANNUAL REPORT.—For each fiscal year beginning with fiscal year 2022, not later than 90 days after submission of the President's annual budget request for such fiscal year, the Interagency Committee shall prepare and submit to the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report that includes—

(1) a summarized budget in support of the Initiative for such fiscal year and the preceding fiscal year, including a disaggregation of spending for each Federal agency participating in the Initiative and for

the development and acquisition of any research facilities and instrumentation; and

(2) an assessment of how Federal agencies are implementing the plan described in subsection (d)(2), and a description of those efforts.

**SEC. 5104. NATIONAL ARTIFICIAL INTELLIGENCE ADVISORY COMMITTEE.**

(a) IN GENERAL.—The Secretary of Energy shall, in consultation with the Director of the Office of Science and Technology Policy, establish an advisory committee to be known as the ''National Artificial Intelligence Advisory Committee''.

(b) QUALIFICATIONS.—The Advisory Committee shall consist of members, appointed by the Secretary of Energy, who are representing broad and interdisciplinary expertise and perspectives, including from academic institutions, companies across diverse sectors, nonprofit and civil society entities, and Federal laboratories, that are qualified to provide advice and information on science and technology research, development, ethics, standards, education, technology transfer, commercial application, security, and economic competitiveness related to artificial intelligence.

(c) MEMBERSHIP CONSIDERATION.—In selecting the members of the Advisory Committee, the Secretary of En-

ergy may seek and give consideration to recommendations from the Congress, industry, nonprofit organizations, the scientific community (including the National Academy of Sciences, scientific professional societies, and academic institutions), the defense community, and other appropriate organizations.

(d) DUTIES.—The Advisory Committee shall advise the President and the Initiative Office on matters related to the Initiative, including recommendations related to—

(1) the current state of United States competitiveness and leadership in artificial intelligence, including the scope and scale of United States investments in artificial intelligence research and development in the international context;

(2) the progress made in implementing the Initiative, including a review of the degree to which the Initiative has achieved the goals under the metrics established by the Interagency Committee under section **[**5103(d)(2)**]**;

(3) the state of the science around artificial intelligence, including progress towards artificial general intelligence;

(4) the need to update the Initiative;

(5) the balance of activities and funding across the Initiative;

(6) whether the strategic plan developed or updated by the Interagency Committee established under section [5103(d)(2)] is helping to maintain United States leadership in artificial intelligence;

(7) the management, coordination, and activities of the Initiative;

(8) whether ethical, legal, safety, security, and other appropriate societal issues are adequately addressed by the Initiative; and

(9) opportunities for international cooperation with strategic allies on artificial intelligence research activities and standards development.

(e) REPORTS.—Not later than 1 year after the date of the enactment of this Act, and not less frequently than once every 3 years thereafter, the Advisory Committee shall submit to the President, the Committee on Science, Space, and Technology of the House of Representatives, and the Committee on Commerce, Science, and Transportation of the Senate, a report on the Advisory Committee's findings and recommendations under subsection (d).

(f) TRAVEL EXPENSES OF NON-FEDERAL MEMBERS.—Non-Federal members of the Advisory Committee, while attending meetings of the Advisory Committee or while otherwise serving at the request of the head of the Advisory Committee away from their homes or regular

places of business, may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for individuals in the Government serving without pay. Nothing in this subsection shall be construed to prohibit members of the Advisory Committee who are officers or employees of the United States from being allowed travel expenses, including per diem in lieu of subsistence, in accordance with existing law.

(g) FACA EXEMPTION.—The Secretary of Energy shall charter the Advisory Committee in accordance with the Federal Advisory Committee Act (5 U.S.C. App.), except that the Advisory Committee shall be exempt from section 14 of such Act.

**SEC. 5105. NATIONAL ACADEMIES ARTIFICIAL INTELLIGENCE IMPACT STUDY ON WORKFORCE.**

(a) IN GENERAL.—Not later than 90 days after the date of the enactment of this Act, the National Science Foundation shall enter into a contract with the National Research Council of the National Academies of Sciences, Engineering, and Medicine to conduct a study of the current and future impact of artificial intelligence on the workforce of the United States across sectors.

(b) CONTENTS.—The study shall address—

(1) workforce impacts across sectors caused by the increased adoption of artificial intelligence, automation, and other related trends;

(2) workforce needs and employment opportunities generated by the increased adoption of artificial intelligence across sectors;

(3) research gaps and data needed to better understand and track both workforce impacts and workforce needs and opportunities generated by adoption of artificial intelligence systems across sectors; and

(4) recommendations to address the challenges and opportunities described in paragraphs (1), (2), and (3).

(c) STAKEHOLDERS.—In conducting the study, the National Academies of Sciences, Engineering, and Medicine shall seek input from a wide range of stakeholders in the public and private sectors.

(d) REPORT TO CONGRESS.—The contract entered into under subsection (a) shall require the National Academies of Sciences, Engineering, and Medicine, not later than 2 years after the date of the enactment of this Act, to—

(1) submit to the Committee on Science, Space, and Technology of the House of Representatives and

the Committee on Commerce, Science, and Transportation of the Senate a report containing the findings and recommendations of the study conducted under subsection (a); and

(2) make a copy of such report available on a publicly accessible website.

**SEC. 5106. GAO REPORT ON COMPUTATIONAL NEEDS.**

(a) IN GENERAL.—Not later than 1 year after the date of the enactment of this Act, the Comptroller General of the United States shall conduct a study of artificial intelligence computer hardware and computing required in order to maintain U.S. leadership in artificial intelligence research and development. The Comptroller General shall—

(1) assess the composition of civilian computing resources supported by the Federal Government at universities and Federal Laboratories, including programs with laboratory computing, high performance computing, cloud computing, quantum computing, edge computing, and other computing resources;

(2) evaluate projected needs for computing consumption and performance required by the public and private sector for the training, auditing, validation, testing, and use of artificial intelligence over the next five years; and

(3) offer recommendations to meet these projected needs.

**SEC. 5107. NATIONAL AI RESEARCH RESOURCE TASK FORCE.**

(a) ESTABLISHMENT OF TASK FORCE.—

(1) ESTABLISHMENT.—

(A) IN GENERAL.—The Director of the National Science Foundation, in coordination with the Office of Science and Technology Policy, shall establish a task force—

(i) to investigate the feasibility and advisability of establishing and sustaining a national artificial intelligence research resource; and

(ii) to propose a roadmap detailing how such resource should be established and sustained.

(B) DESIGNATION.—The task force established by subparagraph (A) shall be known as the ''National Artificial Intelligence Research Resource Task Force'' (in this section referred to as the ''Task Force'').

(2) MEMBERSHIP.—

(A) COMPOSITION.—The Task Force shall be composed of 12 members selected by the co-

chairpersons of the Task Force from among technical experts in artificial intelligence or related subjects, of whom—

(i) 4 shall be representatives from the Interagency Committee established in [section 5103], including the co-chairpersons of the Task Force;

(ii) 4 shall be representatives from institutions of higher education (as such term is defined in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001)); and

(iii) 4 shall be representatives from private organizations.

(B) APPOINTMENT.—Not later than 120 days after enactment of this Act, the co-chairpersons of the Task Force shall appoint members to the Task Force pursuant to subparagraph (A).

(C) TERM OF APPOINTMENT.—Members of the Task Force shall be appointed for the life of the Task Force.

(D) VACANCY.—Any vacancy occurring in the membership of the Task Force shall be

filled in the same manner in which the original appointment was made.

(E) CO-CHAIRPERSONS.—The Director of the Office of Science and Technology Policy and the Director of the National Sciences Foundation, or their designees, shall be the co-chairpersons of the Task Force. If the role of the Director of the National Science Foundation is vacant, the Chair of the National Science Board shall act as a co-chairperson of the Task Force.

(F) EXPENSES FOR NON-FEDERAL MEMBERS.—Non-Federal Members of the Task Force shall be allowed travel expenses, including per diem in lieu of subsistence, at rates authorized for employees under subchapter I of chapter 57 of title 5, United States Code, while away from their homes or regular places of business in the performance of services for the Task Force.

(b) ROADMAP AND IMPLEMENTATION PLAN.—

(1) IN GENERAL.—The Task Force shall develop a coordinated roadmap and implementation plan for creating and sustaining a National Artificial Intelligence Research Resource.

(2) CONTENTS.—The roadmap and plan required by paragraph (1) shall include the following:

(A) Goals for establishment and sustainment of a national artificial intelligence research resource and metrics for success.

(B) A plan for ownership and administration of the National Artificial Intelligence Research Resource, including—

(i) an appropriate agency or organization responsible for the implementation, deployment, and administration of the Resource; and

(ii) a governance structure for the resource, including oversight and decision-making authorities.

(C) A model for governance and oversight to establish strategic direction, make programmatic decisions, and manage the allocation of resources;

(D) Capabilities required to create and maintain a shared computing infrastructure to facilitate access to computing resources for researchers across the country, including scalability, secured access control, resident data engineering and curation expertise, provision of

curated, data sets, compute resources, educational tools and services, and a user interface portal.

(E) An assessment of, and recommend solutions to, barriers to the dissemination and use of high-quality government data sets as part of the national artificial intelligence research resource.

(F) An assessment of security requirements associated with the national artificial intelligence research resource and its research and recommend a framework for the management of access controls.

(G) An assessment of privacy and civil liberties requirements associated with the national artificial intelligence research resource and its research.

(H) A plan for sustaining the resources, including through Federal funding and partnerships with the private sector.

(I) The parameters for the establishment and sustainment of the national artificial intelligence resource, including agency roles and responsibilities and milestones to implement the resource.

(c) CONSULTATIONS.—In conducting its duties required under subsection (b), the Task Force shall consult with the following:

(1) The National Science Foundation.

(2) The Office of Science and Technology Policy.

(3) The National Academies of Sciences, Engineering, and Medicine.

(4) The National Institute of Standards and Technology.

(5) The Defense Advanced Research Projects Agency.

(6) The Intelligence Advanced Research Projects Activity.

(7) The Department of Energy.

(8) The Department of Defense.

(9) The General Services Administration.

(10) Private industry.

(11) Institutions of higher education.

(12) Such other persons as the Task Force considers appropriate.

(d) STAFF.—Staff of the Task Force shall comprise detailees with expertise in artificial intelligence, or related fields from the Office of Science and Technology Policy, the National Science Foundation, or any other agency the

co-chairs deem appropriate, with the consent of the head of the agency. The co-chairs shall also be authorized to hire staff from outside the Federal government for the duration of the task force.

(e) TASK FORCE REPORTS.—

(1) INITIAL REPORT.—Not later than 12 months after the date on which all of the appointments have been made under subsection (a)(2)(B), the Task Force shall submit to Congress and the President an interim report containing the findings, conclusions, and recommendations of the Task Force. The report shall include specific recommendations regarding steps the Task Force believes necessary for the establishment and sustainment of a national artificial intelligence research resource.

(2) FINAL REPORT.—Taking into account the findings of the Government Accountability Office report required in Section 106 of this Act, not later than 6 months after the submittal of the interim report under paragraph (1), the Task Force shall submit to Congress and the President a final report containing the findings, conclusions, and recommendations of the Task Force, including the specific recommendations required by subsection (b).

(f) TERMINATION.—

(1) IN GENERAL.—The Task Force shall terminate 90 days after the date on which it submits the final report under subsection (e)(2).

(2) RECORDS.—Upon termination of the Task Force, all of its records shall become the records of the National Archives and Records Administration.

(g) DEFINITIONS.—In this section:

(1) NATIONAL ARTIFICIAL INTELLIGENCE RESEARCH RESOURCE AND RESOURCE.—The terms ''National Artificial Intelligence Research Resource'' and ''Resource'' mean a system that provides researchers and students across scientific fields and disciplines with access to compute resources, co-located with publicly-available, artificial intelligence-ready government and non-government data sets and a research environment with appropriate educational tools and user support.

(2) OWNERSHIP.—The term ''ownership'' means responsibility and accountability for the implementation, deployment, and ongoing development of the National Artificial Intelligence Research Resource, and for providing staff support to that effort.

**SEC. 5108. SENSE OF CONGRESS.**

It is the sense of Congress that—

(1) artificial intelligence systems have the potential to transform every sector of the United States economy, boosting productivity, enhancing scientific research, and increasing U.S. competitiveness; and

(2) the United States Government should use this Initiative to enable the benefits of trustworthy artificial intelligence while preventing the creation and use of artificial intelligence systems that behave in ways that cause harm, including—

(A) high-risk systems that lack sufficient robustness to prevent adversarial attacks;

(B) high-risk systems that harm the privacy or security of users or the general public; and

(C) artificial general intelligence systems that may become self-aware or uncontrollable.

# TITLE II—NATIONAL ARTIFICIAL INTELLIGENCE RESEARCH INSTITUTES

## SEC. 5201. NATIONAL ARTIFICIAL INTELLIGENCE RESEARCH INSTITUTES.

(a) IN GENERAL.—As part of the Initiative, the Director of the National Science Foundation shall establish a program to award financial assistance for the planning,

establishment, and support of Institutes (as described in subsection (b)(2)) in accordance with this section.

(b) FINANCIAL ASSISTANCE TO ESTABLISH AND SUPPORT NATIONAL ARTIFICIAL INTELLIGENCE RESEARCH INSTITUTES.—

(1) IN GENERAL.—Under the Initiative, the Secretary of Energy, the Secretary of Commerce, the Director of the National Science Foundation, and every other agency head may award financial assistance to an eligible entity, or consortia thereof, as determined by an agency head, to establish and support an Institute.

(2) ARTIFICIAL INTELLIGENCE INSTITUTES.—An Institute described in this subsection is an artificial intelligence research institute that—

(A) is focused on—

(i) a particular economic or social sector, including health, education, manufacturing, agriculture, security, energy, and environment, and includes a component that addresses the ethical, societal, safety, and security implications relevant to the application of artificial intelligence in that sector; or

(ii) a cross-cutting challenge for artificial intelligence systems, including trustworthiness, or foundational science;

(B) requires partnership among public and private organizations, including, as appropriate, Federal agencies, research universities, community colleges, nonprofit research organizations, Federal laboratories, State, local, and tribal governments, and industry (or consortia thereof);

(C) has the potential to create an innovation ecosystem, or enhance existing ecosystems, to translate Institute research into applications and products, as appropriate to the topic of each Institute;

(D) supports interdisciplinary research and development across multiple institutions and organizations involved in artificial intelligence research and related disciplines, including physics, engineering, mathematical sciences, computer and information science, robotics, biological and cognitive sciences, material science, social and behavioral sciences, cybersecurity, and technology ethics;

(E) supports interdisciplinary education activities, including curriculum development, research experiences, and faculty professional development across two-year, undergraduates, masters, and doctoral level programs; and

(F) supports workforce development in artificial intelligence related disciplines in the United States, including broadening participation of underrepresented communities.

(3) USE OF FUNDS.—Financial assistance awarded under paragraph (1) may be used by an Institute for—

(A) managing and making available to researchers accessible, curated, standardized, secure, and privacy protected data sets from the public and private sectors for the purposes of training and testing artificial intelligence systems and for research using artificial intelligence systems, pursuant to section [5301(b) and 5301(c)];

(B) developing and managing testbeds for artificial intelligence systems, including sector-specific test beds, designed to enable users to evaluate artificial intelligence systems prior to deployment;

(C) conducting research and education activities involving artificial intelligence systems to solve challenges with social, economic, health, scientific, and national security implications;

(D) providing or brokering access to computing resources, networking, and data facilities for artificial intelligence research and development relevant to the Institute's research goals;

(E) providing technical assistance to users, including software engineering support, for artificial intelligence research and development relevant to the Institute's research goals;

(F) engaging in outreach and engagement to broaden participation in artificial intelligence research and workforce; and

(G) such other activities that an agency head, whose agency's missions contribute to or are affected by artificial intelligence, considers consistent with the purposes described in section [5101(a)].

(4) DURATION.—

(A) INITIAL PERIODS.—An award of financial assistance under paragraph (1) shall be awarded for an initial period of 5 years.

(B) EXTENSION.—An established Institute may apply for, and the agency head may grant, extended funding for periods of 5 years on a merit-reviewed basis using the merit review criteria of the sponsoring agency.

(5) APPLICATION FOR FINANCIAL ASSISTANCE.—

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

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

(i) A plan for the Institute to include—

(I) the proposed goals and activities of the Institute;

(II) how the Institute will form partnerships with other research institutions, industry, and nonprofits to leverage expertise in artificial intelligence and access to data, including

non-governmental data and computing resources;

(III) how the institute will support long-term and short-term education and workforce development in artificial intelligence, including broadening participation of underrepresented communities; and

(IV) a plan for how the Institute will transition from planning into operations.

(ii) A description of the anticipated sources and nature of any non-Federal contributions, including privately held data sets, computing resources, and other types of in-kind support.

(iii) A description of the anticipated long-term impact of such Institute.

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

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

(B) ensure the focus areas of the Institute do not substantially duplicate the efforts of any other Institute.

(7) COLLABORATION.—

(A) IN GENERAL.—In awarding financial assistance under paragraph (1), an agency head may collaborate with Federal departments and agencies whose missions contribute to or are affected by artificial intelligence systems, including the agencies outlined in section [5103(c)].

(B) COORDINATING NETWORK.—The Director of the National Science Foundation shall establish a network of Institutes receiving financial assistance under this subsection, to be known as the ''Artificial Intelligence Leadership Network'', to coordinate cross-cutting research and other activities carried out by the Institutes.

(C) FUNDING.—The head of an agency may request, accept, and provide funds from other Federal departments and agencies, State, United States territory, local, or tribal government agencies, private sector for-profit entities, and nonprofit entities, to be available to the extent provided by appropriations Acts, to support

an Institute's activities. The head of an agency may not give any special consideration to any agency or entity in return for a donation.

# TITLE III—NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ARTIFICIAL INTELLIGENCE ACTIVITIES

## SEC. 5301. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY ACTIVITIES.

(a) IN GENERAL.—As part of the Initiative, the Director of the National Institute of Standards and Technology shall—

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

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

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

(C) data management and techniques to increase the usability of data, including strategies to systematically clean, label, and stand-

ardize data into forms useful for training artificial intelligence systems and the use of common, open licenses;

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

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

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

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

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

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

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

(3) support one or more institutes as described in section [5201(a)] for the purpose of advancing the field of artificial intelligence;

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

(5) taking into account the findings from the National Academies study in [section 5105], develop taxonomies and lexica to describe artificial intelligence tasks, knowledge, skills, abilities, competencies, and work roles to guide career development, education, and training activities in industry, academia, nonprofit organizations, and the Federal government, identify workforce gaps in the public and private sector, and create criteria and measurement for credentials in artificial intelligence-related careers; and

(6) enter into and perform such contracts, including cooperative research and development arrangements and grants and cooperative agreements or other transactions, as may be necessary in the conduct of the work of the National Institute of Standards and Technology and on such terms as the Director considers appropriate, in furtherance of the purposes of this division.

(b) RISK MANAGEMENT FRAMEWORK.—Not later than 2 years after the date of the enactment of this Act, the Director shall work to develop, and periodically update, in collaboration with other public and private sector organizations, including the National Science Foundation and the Department of Energy, a voluntary risk management framework for the trustworthiness of artificial intelligence systems. The framework shall—

(1) identify and provide standards, guidelines, best practices, methodologies, procedures, and processes for assessing the trustworthiness of, and mitigating risks to, artificial intelligence systems;

(2) establish common definitions and characterizations for aspects and levels of trustworthiness, including explainability, transparency, safety, privacy, security, robustness, fairness, bias, ethics, validation, verification, interpretability, and other properties re-

lated to artificial intelligence systems that are common across all sectors;

(3) provide guidance and implementation steps for risk management of artificial intelligence systems;

(4) provide sector-specific case studies of implementation of the framework;

(5) align with voluntary consensus standards, including international standards, to the fullest extent possible;

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

(7) not prescribe or otherwise require—

(A) the use of specific solutions; or

(B) the use of specific information or communications technology products or services.

(c) DATA SHARING AND DOCUMENTATION BEST PRACTICES.—Not later than 1 year after the date of enactment of this Act, the Director shall, in collaboration with other public and private sector organizations, develop guidance to facilitate the creation of voluntary data sharing arrangements between industry, federally funded research centers, and Federal agencies for the purpose of advancing artificial intelligence research and technologies, including—

(1) options for partnership models between government entities, industry, universities, and nonprofits that incentivize each party to share the data they collected; and

(2) best practices for datasets used to train artificial intelligence systems, including—

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

(i) the origins of the data;

(ii) the intent behind the creation of the data;

(iii) authorized uses of the data;

(iv) descriptive characteristics of the data, including what populations are included and excluded from the datasets; and

(v) any other properties as determined by the Director; and

(B) standards for privacy and security of datasets with human characteristics.

(d) STAKEHOLDER OUTREACH.—In carrying out the activities under this subsection, the Director shall—

(1) solicit input from university researchers, private sector experts, relevant Federal agencies, Federal laboratories, State and local governments, civil society groups, and other relevant stakeholders;

(2) solicit input from experts in relevant fields of social science, technology ethics, and law; and

(3) provide opportunity for public comment on guidelines and best practices developed as part of the Initiative, as appropriate.

# TITLE IV—NATIONAL SCIENCE FOUNDATION ARTIFICIAL INTELLIGENCE ACTIVITIES

**SEC. 5401. ARTIFICIAL INTELLIGENCE RESEARCH AND EDUCATION.**

(a) IN GENERAL.—As part of the Initiative, the Director of the National Science Foundation shall fund research and education activities in artificial intelligence systems and related fields, including competitive awards or grants to institutions of higher education or eligible nonprofit organizations (or consortia thereof).

(b) USES OF FUNDS.—In carrying out the activities under subsection (a), the Director of the National Science Foundation shall—

(1) support research, including interdisciplinary research on artificial intelligence systems and related areas;

(2) support collaborations among researchers across disciplines, including between social scientists and computer and data scientists, to advance re-

search critical to the development and deployment of trustworthy artificial intelligence systems, including support for interdisciplinary research relating advances in artificial intelligence to changes in the future workplace, in a social and economic context;

(3) use the existing programs of the National Science Foundation, in collaboration with other Federal departments and agencies, as appropriate to—

(A) improve the teaching and learning of artificial intelligence systems at all levels of education; and

(B) increase participation in artificial intelligence related fields, including by individuals identified in sections 33 and 34 of the Science and Engineering Equal Opportunity Act (42 U.S.C. 1885a, 1885b);

(4) engage with institutions of higher education, research communities, industry, Federal laboratories, nonprofit organizations, State and local governments, and potential users of information produced under this section, including through the convening of workshops and conferences, to leverage the collective body of knowledge across disciplines relevant to artificial intelligence, facilitate new collabo-

rations and partnerships, and identify emerging research needs;

(5) support partnerships among institutions of higher education and industry that facilitate collaborative research, personnel exchanges, and workforce development with respect to artificial intelligence systems;

(6) ensure adequate access to research and education infrastructure with respect to artificial intelligence systems, including through the development of new computing resources and partnership with the private sector for the provision of cloud-based computing services;

(7) conduct prize competitions, as appropriate, pursuant to section 24 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3719);

(8) coordinate research efforts funded through existing programs across the directorates of the National Science Foundation;

(9) provide guidance on data sharing by grantees to public and private sector organizations consistent with the standards and guidelines developed under section [5301(c)]; and

(10) evaluate opportunities for international collaboration with strategic allies on artificial intelligence research and development.

(c) ARTIFICIAL INTELLIGENCE RESEARCH GRANTS.—

(1) IN GENERAL.—The Director shall award grants for research on artificial intelligence systems. Research areas may include—

(A) artificial intelligence systems, including machine learning, computer vision, robotics, and hardware for accelerating artificial intelligence systems;

(B) artificial intelligence-enabled systems;

(C) fields and research areas that will contribute to the advancement of artificial intelligence systems, including information theory, causal and statistical inference, data mining, information extraction, human-robot interaction, and intelligent interfaces;

(D) fields and research areas that increase understanding of human characteristics relevant to artificial intelligence systems, including computational neuroscience, reasoning and representation, speech and language, multi-agent systems, intelligent interfaces, human-artificial

intelligence cooperation, and artificial intelligence-augmented human problem solving;

(E) fields and research areas that increase understanding of learning, adaptability, and resilience beyond the human cognitive model, including topics in developmental biology, zoology, botany, morphological computation, and organismal systems;

(F) fields and research areas that will contribute to the development and deployment of trustworthy artificial intelligence systems, including—

(i) algorithmic explainability;

(ii) methods to assess, characterize, and reduce bias in datasets and artificial intelligence systems; and

(iii) safety and robustness of artificial intelligence systems, including assurance, verification, validation, security, and control;

(G) privacy and security, including for datasets used for the training and inference of artificial intelligence systems, and software and hardware used in artificial intelligence systems;

(H) fields and research areas that address the application of artificial intelligence systems to scientific discovery and societal challenges, including economic and public health emergencies;

(I) societal, ethical, safety, education, workforce, and security implications of artificial intelligence systems, including social impact of artificial intelligence systems on different groups within society, especially historically marginalized groups; and

(J) qualitative and quantitative forecasting of future capabilities, applications, and impacts.

(2) ENGINEERING SUPPORT.—In soliciting proposals for funding under this section, the Director shall permit applicants to include in their proposed budgets funding for software engineering support to assist with the proposed research.

(3) ETHICS.—

(A) SENSE OF CONGRESS.—It is the sense of Congress that—

(i) a number of emerging areas of research, including artificial intelligence, have potential ethical, social, safety, and

security implications that might be apparent as early as the basic research stage;

(ii) the incorporation of ethical, social, safety, and security considerations into the research design and review process for Federal awards may help mitigate potential harms before they happen;

(iii) the National Science Foundation's intent to enter into an agreement with the National Academies of Sciences, Engineering, and Medicine to conduct a study and make recommendations with respect to governance of research in emerging technologies is a positive step toward accomplishing this goal; and

(iv) the National Science Foundation should continue to work with stakeholders to understand and adopt policies that promote best practices for governance of research in emerging technologies at every stage of research.

(B) ETHICS STATEMENTS.—

(i) IN GENERAL.—Not later than 18 months after the date of enactment of this Act, the Director shall amend grant pro-

posal instructions to include a requirement for an ethics statement to be included as part of any proposal for funding prior to making the award. Such statement shall be considered by the Director in the review of proposals, taking into consideration any relevant input from the peer-reviewers for the proposal, and shall factor into award decisions as deemed necessary by the Director.

(ii) CONTENTS.—Such statements may include, as appropriate—

(I) the potential societal benefits of the research;

(II) any foreseeable or quantifiable risks to society, including how the research could enable products, technologies, or other outcomes that could intentionally or unintentionally cause significant societal harm; and

(III) how technical or social solutions can mitigate such risks and, as appropriate, a plan to implement such mitigation measures.

(iii) GUIDANCE.—The Director shall issue clear guidance on what constitutes a foreseeable or quantifiable risk described in clause (ii)(II), and to the extent practical harmonize this policy with existing ethical policies or related requirements for human subjects.

(iv) ANNUAL REPORTS.—The Director shall encourage grantees to update their ethics statements as appropriate as part of the annual reports required by all grantees under the grant terms and conditions.

(d) EDUCATION.—

(1) IN GENERAL.—The Director of the National Science Foundation shall award grants for education programs at the K-12, community college, undergraduate, graduate, postdoctoral, adult learning, and retraining stages of education that—

(A) support the development of a diverse workforce pipeline for science and technology with respect to artificial intelligence systems;

(B) increase awareness of ethical, social, safety, and security implications of artificial intelligence systems; and

(C) promote the widespread understanding of artificial intelligence principles and methods to create an educated workforce and general public able to use products enabled by artificial intelligence systems and adapt to future societal and economic changes caused by artificial intelligence systems.

(2) USE OF FUNDS.—Grants awarded under this section for education activities referred to in paragraph (1) may be used for—

(A) collaborative interdisciplinary research, development, testing, and dissemination of K-12, undergraduate, and community college curriculum development, dissemination, and other educational tools and methods in artificial intelligence related fields;

(B) curriculum development in the field of technology ethics;

(C) support for informal education activities for K-12 students to engage with artificial intelligence systems, including mentorship programs for underrepresented populations;

(D) efforts to achieve equitable access to K-12 artificial intelligence education for populations and geographic areas traditionally

underrepresented in the artificial intelligence field;

(E) training and professional development programs, including innovative pre-service and in-service programs, in artificial intelligence and related fields for K-12 teachers;

(F) efforts to improve the retention rate for researchers focusing on artificial intelligence systems at institutions of higher learning and other nonprofit research institutions;

(G) outreach programs to educate the general public about the uses of artificial intelligence and its societal implications;

(H) assessments of activities conducted under this subsection; and

(I) any other relevant activities the Director determines will accomplish the aim described in paragraph (1).

(3) ARTIFICIAL INTELLIGENCE TRAINEESHIPS AND FELLOWSHIPS.—

(A) ARTIFICIAL INTELLIGENCE TRAINEESHIPS.—

(i) IN GENERAL.—The Director of the National Science Foundation shall award grants to institutions of higher education

to establish traineeship programs for graduate students who pursue artificial intelligence-related research leading to a masters or doctorate degree by providing funding and other assistance, and by providing graduate students opportunities for research experiences in government or industry related to the students' artificial intelligence studies.

(ii) USE OF FUNDS.—An institution of higher education shall use grant funds provided under clause (i) for the purposes of—

(I) providing traineeships to students who are pursuing research in artificial intelligence leading to a masters or doctorate degree;

(II) paying tuition and fees for students receiving traineeships who are citizens, nationals, or lawfully admitted permanent resident aliens of the United States;

(III) creating and requiring courses or training programs in tech-

nology ethics for students receiving traineeships;

(IV) creating opportunities for research in technology ethics for students receiving traineeships;

(V) establishing scientific internship programs for students receiving traineeships in artificial intelligence at for-profit institutions, nonprofit research institutions, or government laboratories; and

(VI) other costs associated with the administration of the program.

(B) ARTIFICIAL INTELLIGENCE FELLOWSHIPS.—The Director of the National Science Foundation shall award fellowships to masters and doctoral students and postdoctoral researchers at institutions of higher education who are pursuing degrees or research in artificial intelligence and related fields, including in the field of technology ethics. In making such awards, the Director shall—

(i) ensure recipients of artificial intelligence fellowships are citizens, nationals,

or lawfully admitted permanent resident aliens of the United States; and

(ii) conduct outreach, including through formal solicitations, to solicit proposals from students and postdoctoral researchers seeking to carry out research in aspects of technology ethics with relevance to artificial intelligence systems.

(C) FACULTY RECRUITMENT FELLOWSHIPS.—

(i) IN GENERAL.—The Director of the National Science Foundation shall establish a program to award grants to institutions of higher education to recruit and retain tenure-track or tenured faculty in artificial intelligence and related fields.

(ii) USE OF FUNDS.—An institution of higher education shall use grant funds provided under clause (i) for the purposes of—

(I) recruiting new tenure-track or tenured faculty members to that conduct research and teaching in artificial intelligence and related fields and

research areas, including technology ethics; and

(II) paying salary and benefits for the academic year of newly recruited tenure-track or tenured faculty members for a duration of up to three years.

(D) FACULTY TECHNOLOGY ETHICS FELLOWSHIPS.—

(i) IN GENERAL.—The Director of the National Science Foundation shall establish a program to award fellowships to tenure-track and tenured faculty in social and behavioral sciences, ethics, law, and related fields to develop new research projects and partnerships in technology ethics, in collaboration with faculty conducting empirical research in artificial intelligence and related fields.

(ii) PURPOSES.—The purposes of such fellowships are to enable researchers in social and behavioral sciences, ethics, law, and related fields to establish new research and education partnerships with researchers in artificial intelligence and related

fields; learn new techniques and acquire systematic knowledge in artificial intelligence and related fields; shift their research to focus on technology ethics; and mentor and advise graduate students and postdocs pursuing research in technology ethics.

(iii) USES OF FUNDS.—A fellowship may include salary and benefits for up to one academic year and additional expenses to support coursework or equivalent training in artificial intelligence systems.

(E) UPDATE TO ROBERT NOYCE TEACHER SCHOLARSHIP PROGRAM.—Section 10(i)(5) of the National Science Foundation Authorization Act of 2002 (42 U.S.C. 1862n–1(i)(5)) is amended by inserting ''and artificial intelligence'' after ''computer science''.

(4) UPDATE TO ADVANCED TECHNOLOGICAL EDUCATION PROGRAM.—

(A) IN GENERAL.—Section 3(b) of the Scientific and Advanced-Technology Act of 1992 (42 U.S.C. 1862(i)) is amended by striking ''10'' and inserting ''12''.

(B) ARTIFICIAL INTELLIGENCE CENTERS OF EXCELLENCE.—The Director of the National Science Foundation shall establish national centers of scientific and technical education to advance education and workforce development in areas related to artificial intelligence pursuant to Section 3 of the Scientific and Advanced-Technology Act of 1992 (42 U.S.C. 1862(i)). Activities of such centers may include—

(i) the development, dissemination, and evaluation of curriculum and other educational tools and methods in artificial intelligence related fields and research areas, including technology ethics;

(ii) the development and evaluation of artificial intelligence related certifications for 2-year programs; and

(iii) interdisciplinary science and engineering research in employment-based adult learning and career retraining related to artificial intelligence fields.

# TITLE V—DEPARTMENT OF ENERGY ARTIFICIAL INTELLIGENCE RESEARCH PROGRAM

## SEC. 5501. DEPARTMENT OF ENERGY ARTIFICIAL INTELLIGENCE RESEARCH PROGRAM.

(a) IN GENERAL.—The Secretary shall carry out a cross-cutting research and development program to advance artificial intelligence tools, systems, capabilities, and workforce needs and to improve the reliability of artificial intelligence methods and solutions relevant to the mission of the Department. In carrying out this program, the Secretary shall coordinate across all relevant offices and programs at the Department, including the Office of Science, the Office of Energy Efficiency and Renewable Energy, the Office of Nuclear Energy, the Office of Fossil Energy, the Office of Electricity, the Office of Cybersecurity, Energy Security, and Emergency Response, the Advanced Research Projects Agency-Energy, and any other relevant office determined by the Secretary.

(b) RESEARCH AREAS.—In carrying out the program under subsection (a), the Secretary shall award financial assistance to eligible entities to carry out research projects on topics including—

(1) the application of artificial intelligence systems to improve large-scale simulations of natural and other phenomena;

(2) the study of applied mathematics, computer science, and statistics, including foundations of methods and systems of artificial intelligence, causal and statistical inference, and the development of algorithms for artificial intelligence systems;

(3) the analysis of existing large-scale datasets from science and engineering experiments and simulations, including energy simulations and other priorities at the Department as determined by the Secretary using artificial intelligence tools and techniques;

(4) the development of operation and control systems that enhance automated, intelligent decisionmaking capabilities;

(5) the development of advanced computing hardware and computer architecture tailored to artificial intelligence systems, including the codesign of networks and computational hardware;

(6) the development of standardized datasets for emerging artificial intelligence research fields and applications, including methods for addressing data scarcity; and

(7) the development of trustworthy artificial intelligence systems, including—

(A) algorithmic explainability;

(B) analytical methods for identifying and mitigating bias in artificial intelligence systems; and

(C) safety and robustness, including assurance, verification, validation, security, and control.

(c) TECHNOLOGY TRANSFER.—In carrying out the program under subsection (a), the Secretary shall support technology transfer of artificial intelligence systems for the benefit of society and United States economic competitiveness.

(d) FACILITY USE AND UPGRADES.—In carrying out the program under subsection (a), the Secretary shall—

(1) make available high-performance computing infrastructure at national laboratories;

(2) make any upgrades necessary to enhance the use of existing computing facilities for artificial intelligence systems, including upgrades to hardware;

(3) establish new computing capabilities necessary to manage data and conduct high perform-

ance computing that enables the use of artificial intelligence systems; and

(4) maintain and improve, as needed, networking infrastructure, data input and output mechanisms, and data analysis, storage, and service capabilities.

(e) ETHICS.—

(1) IN GENERAL.—Not later than 18 months after the date of enactment of this Act, the Secretary shall amend grant proposal instructions to include a requirement for an ethics statement to be included as part of any proposal for funding prior to making the award. Such statement shall be considered by the Secretary in the review of proposals, taking into consideration any relevant input from the peer-reviewers for the proposal, and shall factor into award decisions as deemed necessary by the Secretary. Such statements may include, as appropriate—

(A) the potential societal benefits of the research;

(B) any foreseeable or quantifiable risks to society, including how the research could enable products, technologies, or other outcomes that

could intentionally or unintentionally cause significant societal harm; and

(C) how technical or social solutions can mitigate such risks and, as appropriate, a plan to implement such mitigation measures.

(2) GUIDANCE.—The Secretary shall issue clear guidance on what constitutes risks as described in section (1)(B), and to the extent practical harmonize this policy with existing ethical policies or related requirements for human subjects.

(3) ANNUAL REPORTS.—The Secretary shall encourage awardees to update their ethics statements as appropriate as part of the annual reports required by all awardees under the grant terms and conditions.

(f) RISK MANAGEMENT.—The Secretary shall review agency policies for risk management in artificial intelligence related projects and issue as necessary policies and principles that are consistent with the framework developed under section **[**5301(b)**]**.

(g) DATA PRIVACY AND SHARING.—The Secretary shall review agency policies for data sharing with other public and private sector organizations and issue as necessary policies and principles that are consistent with the standards and guidelines submitted under section

【5301(c)】. In addition, the Secretary shall establish a streamlined mechanism for approving research projects or partnerships that require sharing sensitive public or private data with the Department.

(h) PARTNERSHIPS WITH OTHER FEDERAL AGENCIES.—The Secretary may request, accept, and provide funds from other Federal departments and agencies, State, United States territory, local, or Tribal government agencies, private sector for-profit entities, and nonprofit entities, to be available to the extent provided by appropriations Acts, to support a research project or partnership carried out under this section. The Secretary may not give any special consideration to any agency or entity in return for a donation.

(i) STAKEHOLDER ENGAGEMENT.—In carrying out the activities authorized in this section, the Secretary shall—

(1) collaborate with a range of stakeholders including small businesses, institutes of higher education, industry, and the National Laboratories;

(2) leverage the collective body of knowledge from existing artificial intelligence and machine learning research; and

(3) engage with other Federal agencies, research communities, and potential users of information produced under this section.

(j) DEFINITIONS.—In this section:

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

(2) DEPARTMENT.—The term ''Department'' means the Department of Energy.

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

(4) ELIGIBLE ENTITIES.—The term ''eligible entities'' means—

(A) an institution of higher education;

(B) a National Laboratory;

(C) a Federal research agency;

(D) a State research agency;

(E) a nonprofit research organization;

(F) a private sector entity; or

(G) a consortium of 2 or more entities described in subparagraph (A) through (F).

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Xochitl Torres Small

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Assessment of High-Powered Microwave Systems

The committee recognizes that directed energy technologies such as high-powered microwave (HPM) systems are being developed by the Department in order to provide non-lethal alternatives in combat and to maintain pace with our adversaries. The committee notes that as these technologies transition from the laboratory to an operational environment, it is critical that the Department assess and prepare for the maturation of these capabilities. Therefore, the committee directs the Under Secretary of Defense for Research and Engineering, in consultation with the heads of the military departments, to provide a briefing to the House Committee on Armed Services no later than January 15, 2021 on the development plan for HPM systems including the maturity of current research and development efforts, conformance to electromagnetic environmental effects requirements such as military standard 464 (MIL-STD-464), the status of the test capabilities required for verification and validation for all expected operational environments, the concept of operation of such systems, and potential vulnerabilities of Department systems to a HPM attack.

# AMENDMENT TO H.R. 6395

## OFFERED BY MS. SPEIER OF CALIFORNIA

At the appropriate place in title II, insert the following new section:

**SEC. 2___. MEASURING AND INCENTIVIZING PROGRAMMING PROFICIENCY.**

(a) IN GENERAL.—Not later than two years after the date of the enactment of this Act, the Secretary of Defense shall carry out the following activities:

(1) Leverage existing civilian software development and software architecture certification programs to implement coding language proficiency and artificial intelligence competency tests within the Department of Defense that—

(A) measure an individual's competency in using machine learning tools, in a manner similar to the way the Defense Language Proficiency Test measures competency in foreign language skills;

(B) enable the identification of members of the Armed Forces and civilian employees of the Department of Defense who have varying levels of quantified coding comprehension and skills

and a propensity to learn new programming paradigms, algorithms, and data analytics; and

(C) include hands-on coding demonstrations and challenges.

(2) Update existing record keeping systems to track artificial intelligence and programming certification testing results in a manner that is comparable to the system used for tracking and documenting foreign language competency, and use that record keeping system to ensure that workforce coding and artificial intelligence comprehension and skills are taken into consideration when making assignments.

(3) Implement a system of rewards, including appropriate incentive pay and retention incentives, for members of the Armed Forces and civilian employees of the Department of Defense who perform successfully on specific language coding proficiency and artificial intelligence competency tests and make their skills available to the Department.

(b) INFORMATION SHARING WITH OTHER FEDERAL AGENCIES.—The Secretary of Defense shall share information on the activities carried out under subsection (a) with the Secretary of Homeland Security, the Attorney General, the Director of National Intelligence, and the

heads of such other organizations of the intelligence community as the Secretary determines appropriate, for purposes of—

(1) making information about the coding language proficiency and artificial intelligence competency tests developed under such subsection available to other Federal national security agencies; and

(2) encouraging the heads of such agencies to implement tracking and reward systems that are comparable to those implemented by the Department of Defense pursuant to such subsection.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Andy Kim of New Jersey

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

GAO STUDY AND REPORT ON ELECTRONIC CONTINUITY OF OPERATIONS ON THE DEPARTMENT OF DEFENSE

The committee notes the centrality of electronic command, control, and communications to Department of Defense continuity of operations. To ensure that the committee is fully informed of how the Department of Defense is addressing issues related to the risk to electronic communications, the committee requests that the Comptroller General of the United States conduct a study of electronic communications continuity of operations of the Department of Defense. More specifically, this study should include:

(a) An assessment of the vulnerability of the Department's email and videoconferencing systems to widespread or systemic failure;
(b) An assessment of whether the Department is prepared in the event of a communications service failure where the Department's email and video conferencing systems are unable to operate;
(c) Lists of services or actions recommended to ensure the Department is prepared for continuity of operations in the event of a communications services failure; and
(d) Lists of actions recommended to prevent future electronic communications failure, including investments in services, technology or infrastructure.

The committee requests an interim briefing not later than December 31st, 2020 on the preliminary findings, with a final report to be presented so later than September 30th, 2021.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

# Offered by: Mr. Carbajal of California

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Airborne Augmented Reality Systems

The committee is concerned with the time and resources required to produce and develop fully qualified pilots and believes that airborne augmented reality systems could mitigate some of the resource constraints. The committee also acknowledges the potential cost savings and environmental benefit of implementing augmented reality systems. Use of synthetic entities reduces fuel consumption; maintenance; airframe degradation; and environmental impact while increasing training repetitions per hour and enabling pilots to fly against synthetic adversaries that mirror the appearance and performance of actual strategic rival aircraft.

Therefore, the committee directs the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics to submit a report to congressional defense and intelligence committees by January 31, 2021 detailing the potential cost savings; maintenance benefits; environmental benefits; counter-intelligence benefits; pilot readiness improvements; benefits of service life extension through reduced hours on key airframes; and any funding required to enable the use of airborne augmented reality systems by the Combat Air Forces. The report shall include any Air Force Program Executive Office efforts to take existing airborne augmented reality systems that have completed Phase II of the Small Business Innovative Research program by March 31, 2021 and explain how those efforts are resourced over the Fiscal Year Defense Plan to maximize benefit to the warfighters and taxpayers. The report shall be submitted in unclassified form. If necessary, a classified annex shall also be provided.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. WALTZ OF FLORIDA

At the appropriate place in title II, insert the following new section:

**SEC. 2___. MEASURES TO ADDRESS FOREIGN TALENT PROGRAMS.**

(a) LIST OF PROGRAMS.—The Secretary of Defense shall develop and maintain a list of foreign talent programs that pose a threat to the national security interests of the United States, as determined by the Secretary.

(b) CRITERIA.—In developing the list under subsection (a) the Secretary of Defense shall consider—

(1) the extent to which a foreign talent program—

(A) poses a threat to research funded by the Department of Defense; and

(B) engages in, or facilitates, cyber attacks, theft, espionage, or otherwise interferes in the affairs of the United States; and

(2) any other factors the Secretary determines appropriate.

(c) INFORMATION TO CONGRESS.—Not later than 90 days after the date of the enactment of this Act, the Sec-

retary of Defense shall submit to the Committees on Armed Services of the Senate and the House of Representatives a copy of the list developed under subsection (a).

(d) PUBLICATION IN FEDERAL REGISTER.—Not later than 30 days after making the submission required under subsection (c), the Secretary of Defense shall publish the list developed under subsection (a) in the Federal Register.

(e) NOTICE AND COMMENT PERIOD.—The list developed under subsection (a), and any guidance, rules, updates, or other requirements relating to such list, shall not take effect until such list, or any such guidance, rules, updates, or other requirements (as the case may be) have been—

(1) published in the Federal Register; and

(2) open for public comment for a period of not less than 60 days.

(f) FOREIGN TALENT PROGRAM DEFINED.—In this section, the term ''foreign talent program'' has the meaning given that term for purposes of section 1286 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232; 10 U.S.C. 2358 note).

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Brindisi of New York

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

National Guard Access to Classified Information

The committee recognizes the growing importance of ensuring National Guard members who require access to classified information to carry out their official duties have timely access to both classified and unclassified information remotely. The committee notes the necessity in ensuring that policies related to the remote access of classified information is consistent with those for the active and reserve forces. To this end, the committee directs the Chief of the National Guard Bureau to submit a report to the congressional defense committees no later than April 30, 2021, on the programs and systems it uses, or plans to use, to allow authorized National Guard members to access classified information remotely.

Log 465 [Revision 1]

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Ms. Sherrill of New Jersey

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

**Investment in research and development for decontamination technology to support civilian applications**

The committee recognizes the valuable contribution of the Department of Defense in developing decontamination technologies against biological threats. In response to the COVID-19 pandemic, the Chemical and Biological Defense Program quickly funded the Joint Biological Agent Decontamination System Lite (JBADS Lite), which adapts biothermal decontamination technology from the original JBADS program of record to decontaminate platforms after transport of COVID-19 positive personnel.

The committee believes JBADS Lite is critical for the military to maintain operations during a pandemic while ensuring the safety of passengers and crew; and that this has applications in the civilian sector to support the decontamination of civilian transportation systems (i.e. rail, buses, aircraft). Therefore, the committee directs Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs to provide a briefing to the House Committee on Armed Services by February 15, 2021 on how JBADS Lite could aid in the pandemic preparedness of civilian transportation systems in the United States.

**AMENDMENT TO H.R. 6395**

**OFFERED BY MS. STEFANIK OF NEW YORK**

At the end of title II, add the following new subtitle:

# Subtitle E—Additional Emerging Technology and Artificial Intelligence Matters

**SEC. 251. PART-TIME AND TERM EMPLOYMENT OF UNIVERSITY PROFESSORS AND STUDENTS IN THE DEFENSE SCIENCE AND TECHNOLOGY ENTERPRISE.**

(a) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense, jointly with the Secretaries of the military departments, and in consultation with the Under Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Personnel and Readiness, shall establish a program under which qualified professors and students may be employed on a part-time or term basis in an organization of the Defense science and technology enterprise for the purpose of conducting a research project.

(b) SELECTION.—

(1) SELECTION AND HIRING.—The head of an organization in the Defense science and technology enterprise at which positions are made available under subsection (a) shall be responsible for selecting qualified professors and students to fill such positions.

(2) SELECTION CRITERIA.—A qualified professor or student shall be selected for participation in the program under subsection (a) based on the following criteria:

(A) In the case of a qualified professor—

(i) the academic credentials and research experience of the professor; and

(ii) the extent to which the research proposed to be carried out by the professor will contribute to the objectives of the Department of Defense.

(B) In the case of qualified student assisting a professor with a research project under the program—

(i) the academic credentials and other qualifications of the student; and

(ii) the ability of the student to carry out the responsibilities assigned to the student as part of the project.

(c) IMPLEMENTATION.—

(1) MINIMUM NUMBER OF POSITIONS.—In the first year of the program under subsection (a), the Secretary of Defense shall establish not fewer than 10 positions for qualified professors. Not fewer than five of such positions shall be reserved for qualified professors to conduct research in the fields of artificial intelligence and machine learning.

(2) AUTHORITIES.—In carrying out the program under subsection (a), the Secretary of Defense and the heads of organizations in the Defense science and technology enterprise may—

(A) use any hiring authority available to the Secretary or the head of such an organization;

(B) enter into cooperative research and development agreements under section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a); and

(C) pay referral bonuses to professors or students participating in the program who identify—

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

(ii) 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.

(d) REPORTS TO CONGRESS.—

(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 a report on the status of the program. The report shall include—

(A) identification of the number of qualified professors 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.

(D) 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—

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

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

(iii) the number of students and recent graduates who, pursuant to a reference from a professor or student participating in the program as described in subsection (c)(2)(C), were hired by the Department of Defense or selected for participation in another program in the Defense science and technology enterprise.

(e) 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 1105 of the National Defense Authorization Act for Fiscal Year 2010 (Public Law 111–84; 10 U.S.C. 2358 note));

(C) the facilities of the Major Range and Test Facility Base (as defined in section 2358a(f)(3) of title 10, United States Code);

(D) the Defense Advanced Research Projects Agency; and

(E) such other organizations as the Secretary of Defense determines appropriate for inclusion in the enterprise.

(2) 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).

(3) The term ''qualified professor'' means a professor of an institution of higher education who has expertise in science, technology, engineering, and mathematics.

(4) The term ''qualified student'' means a student of an institution of higher education selected by a qualified professor to assist the professor in conducting research.

**SEC. 252. MICROELECTRONICS AND NATIONAL SECURITY.**

(a) MODIFICATION OF STRATEGY FOR ASSURED ACCESS TO TRUSTED MICROELECTRONICS.—Section 231 of the National Defense Authorization Act for Fiscal Year

2017 (Public Law 114–328; 10 U.S.C. 2302 note) is amended—

(1) in subsection (a), by striking ''September 30, 2019'' and inserting ''December 30, 2020'';

(2) in subsection (b), by adding at the end the following new paragraphs:

''(10) An approach to ensuring the continuing production of cutting-edge microelectronics for national security needs, including state-of-the-art node sizes, heterogeneous integration, boutique chip designs, and variable volume production capabilities.

''(11) An assessment of current microelectronics supply chain management practices, existing risks, and actions that may be carried out to mitigate such risks by organizations in the defense industrial base.

''(12) A plan for increasing commercialization of intellectual property developed by the Department of Defense for commercial microelectronics research and development.

''(13) An assessment of the feasibility, usefulness, efficacy, and cost of—

''(A) developing a national laboratory exclusively focused on the research and development of microelectronics to serve as a center for

Federal Government expertise in high-performing, trusted microelectronics and as a hub for Federal Government research into breakthrough microelectronics-related technologies; and

''(B) incorporating into such national laboratory a commercial incubator to provide early-stage microelectronics startups, which face difficulties scaling due to the high costs of microelectronics design and fabrication, with access to funding resources, fabrication facilities, design tools, and shared intellectual property.

''(14) Such other matters as the Secretary of Defense determines to be relevant.'';

(3) in subsection (d), by striking ''September 30, 2019'' and inserting ''December 30, 2020''; and

(4) in subsection (e), by striking ''September 30, 2019'' and inserting ''December 30, 2020''.

(b) ADVISORY PANEL ON MICROELECTRONICS LEADERSHIP AND COMPETITIVENESS.—

(1) ESTABLISHMENT.—Not later than 30 days after the date of the enactment of this Act, the President, in consultation with the National Security Council, the National Economic Council, and the Office of Science and Technology Policy, shall establish

an advisory panel on microelectronics leadership and competitiveness (referred to in this subsection as the ''Advisory Panel'').

(2) MEMBERSHIP.—The Advisory Panel shall be composed of the following members:

(A) The Secretary of Defense.

(B) The Secretary of Energy.

(C) The Director of the National Science Foundation.

(D) The Director of the National Institute of Standards and Technology.

(E) The heads of such other departments and agencies of the Federal Government as the President, in consultation with the National Security Council, determines appropriate.

(3) NATIONAL STRATEGY.—

(A) IN GENERAL .—Not later than 180 days after the date on which the Advisory Panel is established, the Panel shall develop a national strategy to—

(i) accelerate the development and deployment of state-of-the-art microelectronics; and

(ii) ensure that the United States is a global leader in the field of microelectronics.

(B) ELEMENTS.—The strategy developed under subparagraph (A) shall address the following:

(i) Activities that may be carried out to strengthen engagement and outreach between the Department of Defense and industry, academia, international partners of the United States, and other departments and agencies of the Federal Government on issues relating to microelectronics.

(ii) Science, technology, research, and development efforts to facilitate the advancement and adoption of microelectronics and new uses of microelectronics and components, including efforts to—

(I) accelerate leap-ahead research, development, and innovation in microelectronics; and

(II) deploy heterogeneously integrated microelectronics for machine learning and other applications.

(iii) The role of diplomacy and trade in maintaining the position of the United States as a global leader in the field of microelectronics, including the feasibility and advisability of—

(I) implementing multilateral export controls tailored through direct coordination with key allies of the United States, including through the Wassenaar Arrangement and other multilateral fora, for specific semiconductor manufacturing equipment such as extreme ultraviolet photolithography equipment and argon fluoride immersion photolithography equipment;

(II) additional trade enforcement actions that may be initiated by the United States to address any unfair or excessive foreign semiconductor subsidy programs or other unfair microelectronics trade practices; and

(III) the elimination of any trade barriers or unilateral export controls that harm United States companies

without producing a substantial benefit to the competitiveness or national security of the United States.

(iv) The potential role of a national laboratory and incubator exclusively focused on the research and development of microelectronics, as described in section 231(b)(13) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328; 10 U.S.C. 2302 note) (as added by subsection (a)) in carrying out the strategy and plan required subparagraph (A).

(v) Such other activities as the Panel determines may be appropriate to overcome looming challenges to the innovation, competitiveness, and supply chain integrity of the United States in the area of microelectonics.

(c) BRIEFINGS.—Not later than 90 days after the date of the enactment of this Act—

(1) the Secretary of Defense shall provide to the congressional defense committees a briefing on the progress of the Secretary in developing the strategy and implementation plan required under section

231(a) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328; 10 U.S.C. 2302 note); and

(2) the Assistant to the President for National Security Affairs shall provide to the congressional defense committees a briefing on the progress of the Advisory Panel in developing the strategy required under subsection (b)(3).

**SEC. 253. ACQUISITION OF ETHICALLY AND RESPONSIBLY DEVELOPED ARTIFICIAL INTELLIGENCE TECHNOLOGY.**

(a) ASSESSMENT REQUIRED.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense, acting through the Board of Directors of the Joint Artificial Intelligence Center established under [section 218 (log 70936)], shall conduct an assessment to determine whether the Department of Defense has the ability to ensure that any artificial intelligence technology acquired by the Department is ethically and responsibly developed.

(b) ELEMENTS.—The assessment conducted under paragraph (1) shall address the following:

(1) Whether the Department of Defense has personnel with sufficient expertise, across multiple disciplines, to ensure the acquisition of ethically and

responsibly developed artificial intelligence technology, including personnel with sufficient ethical, legal, and technical expertise to advise on the acquisition of such technology.

(2) The feasibility and advisability of retaining outside experts as consultants to assist the Department in filling any gaps in expertise identified under paragraph (1).

(3) The extent to which existing acquisition processes encourage or require consultation with relevant experts across multiple disciplines within the Department to ensure that artificial intelligence technology acquired by the Department is ethically and responsibly developed.

(4) Quantitative and qualitative standards for assessing the extent to which experts across multiple disciplines are engaged in the acquisition of artificial intelligence technology by the Department.

(c) REPORT.—

(1) IN GENERAL.—Not later than 30 days after the date on which the Secretary completes the assessment under subsection (a), the Secretary shall submit to the congressional defense committees a report on the results of the assessment.

(2) ELEMENTS.—The report under paragraph (1) shall include, based on the results of the assessment—

(A) an explanation of whether the Department of Defense has personnel with sufficient expertise, across multiple disciplines, to ensure the acquisition of ethically and responsibly developed artificial intelligence technology;

(B) an explanation of whether the Department has adequate procedures to encourage or require the consultation of such experts as part of the acquisition process for artificial intelligence technology; and

(C) with respect to any deficiencies identified under subparagraph (A) or subparagraph (B), a description of any measures that have been taken, and any additional resources that may be needed, to mitigate such deficiencies.

**SEC. 254. ENHANCEMENT OF PUBLIC-PRIVATE TALENT EXCHANGE PROGRAMS IN THE DEPARTMENT OF DEFENSE.**

(a) PUBLIC-PRIVATE TALENT EXCHANGE.-- .—Section 1599g of title 10, United States Code is amended—

(1) in subsection (b)(1), by amending subparagraph (C) to read as follows:

''(C) shall contain language ensuring that such employee of the Department does not improperly use information that such employee knows relates to a Department acquisition, or procurement for the benefit or advantage of the private-sector organization.''.

(2) in subsection (f)—

(A) in paragraph (2)—

(i) by striking ''is deemed to be an employee of the Department of Defense for the purposes of'' and inserting ''is subject to'';

(ii) by striking subparagraph (D);

(iii) by redesignating subparagraphs (E) and (F) as subparagraphs (D) and (E), respectively;

(B) by striking paragraph (4);

(C) by redesignating paragraph (5) as paragraph (4); and

(D) by adding at the end the following new paragraph:

''(5) shall be required to file a Public Financial Disclosure Report (OGE Form 278) and the Public Financial Disclosure Report for a such a person and a description of any waivers provided to such person

shall be made available on a publicly accessible website of the Department of Defense.''.

(b) APPLICATION OF EXCHANGE AUTHORITY TO ARTIFICIAL INTELLIGENCE.—Not later than 90 days after the date of the enactment of this Act, the Secretary of Defense shall take steps to ensure that the authority for the Department of Defense to operate a public-private talent exchange program pursuant to section 1599g of title 10, United States Code, is used to exchange personnel with private sector entities working on artificial intelligence applications. Such application of the authority of section 1599g shall be in addition to, not in lieu of, any other application of such authority by the Department of Defense.

(c) GOALS FOR PROGRAM PARTICIPATION.—In carrying out the requirement of subsection (b), the Secretary shall seek to achieve the following objectives:

(1) In the Secretary of Defense Executive Fellows program, the nomination of an additional five uniformed service members and three government civilians by each service and by the Office of the Secretary of Defense, for sponsorship by private sector entities working on artificial intelligence applications.

(2) For the public-private talent exchange program of the Under Secretary of Defense for Acquisition and Sustainment—

(A) an additional ten government employees to work with private sector entities working on artificial intelligence applications; and

(B) an additional ten employees of private sector entities working on artificial intelligence applications to work in the Department.

(3) The establishment of the following new public-private talent exchange programs in the Office of the Secretary of Defense, comparable to the program referred to in paragraph (2)—

(A) in the office of the Undersecretary of Defense for Research and Engineering, a program with twenty participants, focused on exchanges with private sector entities working on artificial intelligence applications.

(B) in the office of the Chief Information Officer of the Department of Defense, a program with twenty participants, focused on exchanges with private sector entities working on artificial intelligence applications.

(4) In the Army, Navy, and Marine Corps, the establishment of new public-private exchange pro-

grams, comparable to the Air Force Education with Industry Program, each with twenty program participants, focused on private sector entities working on artificial intelligence applications.

(d) TREATMENT OF PROGRAM PARTICIPANTS.—

(1) The Army, Navy, and Marine Corps shall take steps to ensure that participation by a service member in a program described in subsection (c)(4) is treated, for purposes of promotion boards and subsequent assignments, as equivalent to attending resident professional military education.

(2) The Secretary of Defense shall establish a public-private exchange program billet office to temporarily hold billets for civilian employees who participate in programs described in subsection (b), to ensure that participating Department of Defense offices are able to retain their staffing levels during the period of participation.

(e) BRIEFING ON EXPANSION OF EXISTING EXCHANGE PROGRAMS.—Not later than 180 days after the date of the enactment of this Act, and annually thereafter, the Secretary of Defense shall provide to the Committees on Armed Services of the Senate and the House of Representatives a briefing on the efforts undertaken to expand existing public-private exchange programs of the Depart-

ment of Defense and to ensure that such programs seek opportunities for exchanges with private sector entities working on artificial intelligence applications, in accordance with the requirements of this section.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Xochitl Torres Small

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

RESEARCH OPPORTUNITIES IN CLOUD-AEROSOL EFFECTS AND ATMOSPHERIC SUNLIGHT REFLECTION

The United States faces a complex array of threats to our national security, as highlighted in a December 2018 GAO Report (GAO-19-204SP) which identified emerging threats of high consequence that will evolve as adversaries develop militarily, weapons and technology advances, and as environmental changes occur, including threats arising through extreme weather events—such as hurricanes, floods and droughts, that could intensify and affect energy resources, critical infrastructure and military installations.

The Committee is aware of basic research opportunities in cloud-aerosol effects and atmospheric sunlight reflection and believes this research has the potential to benefit the military by providing improvements to short-term prediction of operationally relevant weather behavior and by reducing uncertainty in medium and long-term forecasting of extreme weather and climate conditions affecting military infrastructure, tactical operations and readiness. This research also has the potential to expand the portfolio of options for reducing risks to military infrastructure, operations and readiness and to ensure U.S. leadership in an area of innovation with significant implications for national security. The Committee also understands that other nations have established research programs on the physical, chemical, and optical properties of atmospheric aerosols and to study, among other things, their impact on climate.

Furthermore, temperature data shows that the Arctic is getting warmer faster than any other region of the world, making it a bellwether for future climate damages and a major driver of tipping points with the potential to cause rapid and geopolitically destabilizing environmental changes. It is also a domain of renewed great power competition, as other nations position themselves to exploit the increasing accessibility of the Arctic even as US investment in Artic-ready platforms has lagged. The United States has the world's greatest concentration of military and civilian assets and technology to observe, assess, and predict changing conditions in the Arctic, but has not adequately invested in maintaining its northernmost scientific and national security infrastructure. The US capability to forecast near and long-term weather and environmental conditions in the Arctic

underwrites technical and tactical advantages essential for maintaining strategic security guarantees, and provides crucial intelligence essential to anticipate, prioritize, and counter suspicious patterns of activity in airborne and maritime traffic passing through or within the Arctic. At the same time, decadal projections of Arctic conditions are essential for prioritizing investments into Arctic-capable vessels and exercises to prepare personnel for the unique challenges of operating in the Arctic environment. Improving these forecasts will depend on increasing our scientific understanding of processes driving Arctic changes.

Therefore, to improve the Department's ability to forecast operationally relevant weather behavior, better understand climate risk, and ensure U.S. leadership in this field, the Committee directs the Chief of Naval Research to review research opportunities in cloud-aerosol effects and atmospheric sunlight reflection, and to report back to the Committee not later than 90 days after the enactment of this Act on the capabilities the Office of Naval Research can provide to the Department and the National Laboratories to support this critical research.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. KHANNA OF CALIFORNIA

At the appropriate place in title XVII, insert the following:

**SEC. 17___. RESOURCES TO IMPLEMENT A DEPARTMENT OF DEFENSE POLICY ON CIVILIAN CASUALTIES IN CONNECTION WITH UNITED STATES MILITARY OPERATIONS.**

(a) RESOURCES TO IMPLEMENT DEPARTMENT OF DEFENSE POLICY ON CIVILIAN CASUALTIES IN CONNECTION WITH UNITED STATES MILITARY OPERATIONS.—

(1) PURPOSE.—The purpose of this section is to facilitate fulfillment of the requirements in section 936 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 134 note).

(2) PERSONNEL.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall do the following:

(A) Add to, and assign within, each of the United States Central Command, the United States Africa Command, the United States Special Operations Command, the United States

European Command, the United States Southern Command, the United States Indo-Pacific Command, and the United States Northern Command not fewer than two personnel who shall have primary responsibility for the following in connection with military operations undertaken by such command:

(i) Providing guidance and oversight relating to prevention of and response to civilian casualties, promotion of observance of human rights, and the protection of civilians and civilian infrastructure.

(ii) Overseeing civilian casualty response functions on behalf of the commander of such command.

(iii) Receiving reports of civilian casualties and conduct of civilian casualty assessments.

(iv) Analyzing civilian casualty incidents and trends.

(v) Offering condolences for casualties, including ex gratia payments.

(vi) Ensuring the integration of activities relating to civilian casualty mitigation, protection of civilians, and promotion of

observance of human rights in security cooperation activities.

(vii) Consulting with non-governmental organizations on civilian casualty and human rights matters.

(B) Add to, and assign within, the Office of the Under Secretary for Policy not fewer than two personnel who shall have primary responsibility for implementing and overseeing implementation by the components of the Department of Defense of Department policy on civilian casualties resulting from United States military operations.

(C) Add to, and assign within, the Joint Staff not fewer than two personnel who shall have primary responsibility for the following:

(i) Overseeing implementation by the components of the Department of Defense of Department policy on civilian casualties resulting from United States military operations.

(ii) Developing and sharing in the implementation of such policy.

(iii) Communicating operational guidance on such policy.

(3) TRAINING, SOFTWARE, AND OTHER REQUIREMENTS.—

(A) IN GENERAL.—In each of fiscal years 2021 through 2023, the Secretary of Defense and each Secretary of a military department may obligate and expend, from amounts specified in subparagraph (B), not more than $5,000,000 for the following:

(i) Training related to civilian casualty mitigation and response.

(ii) Information technology equipment, support and maintenance, and data storage, in order to implement the policy of the Department related relating to civilian casualties resulting from United States military operations as required by section 936 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019.

(B) FUNDS.—The funds for a fiscal year specified in this subparagraph are funds as follows:

(i) In the case of the Secretary of Defense, amounts authorized to be appro-

priated for such fiscal year for operation and maintenance, Defense-wide.

(ii) In the case of a Secretary of a military department, amounts authorized to be appropriated for such fiscal year for operation and maintenance for the components of the Armed Forces under the jurisdiction of such Secretary.

(b) UNITED STATES MILITARY OPERATIONS DEFINED.—In this section, the term ''United States military operations'' includes any mission, strike, engagement, raid, or incident involving United States Armed Forces.

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# AMENDMENT TO H.R. 6395

## OFFERED BY MR. KHANNA OF CALIFORNIA

At the appropriate place in title XVII, insert the following:

**SEC. 17___. SENSE OF CONGRESS REGARDING REPORTING OF CIVILIAN CASUALTIES RESULTING FROM UNITED STATES MILITARY OPERATIONS.**

It is the sense of Congress—

(1) to commend the Department of Defense for the measures it has implemented and is currently implementing to prevent, mitigate, track, investigate, learn from, respond to, and report civilian casualties resulting from United States military operations; and

(2) to agree with the Department that civilian casualties are a tragic and unavoidable part of war, and to recognize that the Department endeavors to conduct all military operations in compliance with the international law of armed conflict and the laws of the United States, including distinction, proportionality, and the requirement to take feasible precautions in planning and conducting operations to reduce the risk of harm to civilians and other pro-

tected persons and objects; and the protection of civilians and other protected persons and objects, in addition to a legal obligation and a strategic interest, is a moral and ethical imperative; that the Department has submitted to Congress three successive annual reports on civilian casualties resulting from United States military operations for calendar years 2017, 2018, and 2019, and has updated reports as appropriate; and to recognize the efforts of the Department, both in policy and in practice, to reduce the harm to civilians and other protected persons and objects resulting from United States military operations, and to encourage the Department to make additional progress in—

(A) developing at all combatant commands personnel and offices responsible for advising the commanders of such commands, and integrating into command strategy, the promotion of observance of human rights and the protection of civilians and other protected persons and objects;

(B) finalizing and implementing the policy of the Department relating to civilian casualties resulting from United States military operations, as required by section 936 of the John

S. McCain National Defense Authorization Act for Fiscal Year 2019 (10 U.S.C. 134 note);

(C) finalizing Department-wide regulations to implement section 1213 of the National Defense Authorization for Fiscal Year 2020 (Public Law 116–92) for ex gratia payments for damage, personal injury, or death that is incident to the use of force by the United States Armed Forces, a coalition that includes the United States, a military organization supporting the United States, or a military organization supporting the United States or such coalition; and

(D) professionalizing foreign partner forces to reduce civilian casualties, including in connection with train and equip programs, advise, assist, accompany, and enable missions, and fully combined and coalition operations.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

# Offered by Rep. Escobar of Texas

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

**University Consortium to Address Research Needs Unique to the Space Force**

The committee acknowledges the importance of a strong U.S. presence in the space domain and the foundational role of the newly established U.S. Space Force in providing for our national security. The committee also notes the historical importance of academic support in the research, development, test, and evaluation efforts of the established military services. The committee supports the creation of a university consortium for National Space Research to provide for the unique research and technological needs of the Space Force. The committee encourages the Department to consider for inclusion universities with established expertise and competencies in relevant research and engineering disciplines. The committee therefore directs the Chief of Space Operations to provide a briefing to the committee no later than January 31, 2021 on the Space Force's strategy to establish a consortium of institutions of higher education to lead foundational research in areas that the Chief determines to be critical to the mission of the Space Force.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Kendra S. Horn

At the end of title XI, add the following:

REPORT ON SPECIAL OPERATIONS COMMAND ARMED OVERWATCH CONCEPT

As the Department of Defense continues to refine the personnel and capability contributions and disposition of the U.S. Special Operations Command Armed Overwatch program, the committee encourages the Department to actively consider and include the robust capabilities of the Reserves and National Guard as critical components of the program's development and implementation. A trained and participatory Reserve and National Guard force ensures readiness, operational mobility, resiliency, and is the foundation of our nation's ability to rapidly mobilize and project power. Therefore, the committee directs the Commander of U.S. Special Operations Command to provide a briefing to the House Committee on Armed Services by March 1, 2020, on the planned utilization of the Reserve and National Guard components, including those National guard components currently projected as part of the Armed Overwatch program, and the role of these components in the development, testing, and operational employment of the Armed Overwatch platform.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021
# Offered by: Ms. Trahan of Massachusetts

In the appropriate place in the report to accompany H.R. 6395, insert the following new Item of Special Interest:

***Joint Artificial Intelligence Center Outreach to the Private Sector***

*The Committee notes the significant importance that artificial intelligence (AI) capability will provide to the warfighter, and more broadly, the Department of Defense over the coming years. The Committee also recognizes the strategic priority that the Department of Defense places on AI to meet the goals of the National Defense Strategy in a near peer competitor environment. The Department of Defense is investing significant funding in the President's Budget Request for Fiscal Year 2021 and anticipated in future budget requests for this important capability. The Committee is encouraged by this continued investment and development and notes the necessity of working collaboratively with the private sector to most effectively operationalize AI technologies on the battlefield. To this end, the encourages the Department's Joint Artificial Intelligence Center to leverage existing relationships between the Department and the private sector, to capitalize on the efforts already underway. These include, but are not limited to, Defense Innovation Unit (DIU); Kessel Run; SOFWERX; AFWERX and Navy Tech Innovation bridges. The Committee believes that if AI is to be a critical enabler for the warfighter and to achieve savings in efficiencies, then the Department must better understand and leverage the innovation in the private sector and academia. The committee directs a briefing from the Joint Artificial Intelligence Center by August 30, 2021 on the Center's established and prospective relationships with universities, academic consortia, and private sector institutions.*

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. K. Michael Conaway

In the portion of the report to accompany H.R. 6395 titled "Report on Ties between Russia and China" insert at the end of the first listed item, the following new text:

"(2) an assessment of the strength and impacts of increased defense cooperation, coordination, interoperability, and increased proficiencies between Russia and China, including defense industrial cooperation on dual-use technologies; bilateral training and exercises, cyberspace and electronic warfare capabilities, gray zone activities, coordination, and capability-sharing; and strategic goals of conventional and non-conventional arms and arms control agreements;

(3) an assessment of the locations of where Russia and China are enhancing their respective military and strategic presence and access around the world and the tools and mechanisms Russia and China are using to increase such presence and access;

(4) an assessment of the potential implications to United States military and security operations of increased defense cooperation, coordination, and interoperability between Russia and China as described in paragraphs (3) and (4);"

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Khanna of California

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Feasibility Study on the Adoption of AFRICOM CivCas Initiatives by each Combatant Command

The committee believes that the United States Africa Command (AFRICOM) has adopted important civilian casualty initiatives to prevent, mitigate, track, investigate, learn from, respond to, and report civilian casualties resulting from United States military operations and that the announcement by AFRICOM on March 31, 2020, that the command would be issuing a new quarterly report on the status of ongoing civilian casualty allegations and assessments was a welcome step to provide increased transparency and public accounting of U.S. military operations, demonstrating the commitment of the Department to minimize civilian casualties.

The committee directs the Secretary of Defense to submit a report to the congressional defense committees by February 1, 2021, on the opportunities and challenges for each combatant command to adopt civilian casualty initiatives undertaken by AFRICOM, to include:
(1) a public facing interface to submit CIVCAS incidents;
(2) quarterly public reports on the status of ongoing civilian casualty allegations and assessments;
(3) a mechanism for civilian victims and designated representatives to include family members and non-governmental organizations (NGOs) presenting or facilitating allegations, to access updated and unclassified information specific to their cause or claim, including the status and findings of assessments or investigation.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. BROWN OF MARYLAND

At the appropriate place in title II, insert the following new section:

**SEC. 2___. ENHANCED PARTICIPATION OF DEPARTMENT OF DEFENSE CONTRACTORS IN SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS ACTIVITIES.**

(a) IN GENERAL.—

(1) PROGRAM REQUIRED.—Chapter 111 of title 10, United States Code, is amended by inserting after section 2192b the following new section:

**"§ 2192c. Program to enhance contractor participation in science, technology, engineering, and mathematics activities**

''(a) IN GENERAL.—The Secretary of Defense shall carry out a program under which the Secretary shall seek to enter into partnerships with Department of Defense contractors to promote interest in careers in STEM disciplines.

''(b) OBJECTIVES.—The objectives of the program under subsection (a) are—

''(1) to maximize strategic partnerships between institutions of higher education and private sector organizations to build and strengthen communities involved in STEM disciplines;

''(2) to increase diversity, equity, and inclusion by providing access to career paths in STEM in historically underserved and underrepresented communities; and

''(3) to encourage employers in STEM disciplines to establish work-based learning experiences such as internships and apprenticeships.

''(c) ACTIVITIES.—As part of the program under subsection (a), the Secretary of Defense shall seek to encourage and provide support to Department of Defense contractors to enable such contractors to carry out activities to promote interest in careers in STEM disciplines. Such activities may include—

''(1) aiding in the development of educational programs and curriculum in STEM disciplines for students of elementary schools and secondary schools;

''(2) establishing volunteer programs in elementary schools and secondary schools receiving assistance under part A of title I of the Elementary and

Secondary Education Act of 1965 (20 U.S.C. 6311 et seq.) to enhance education in STEM disciplines.

''(3) enhancing education in STEM disciplines at institutions of higher education by—

''(A) making personnel available to advise and assist faculty at such institutions in the performance of research and instruction in STEM disciplines that are determined to be critical to the functions of the Department of Defense;

''(B) awarding scholarships and fellowships to students pursuing courses of study in STEM disciplines; or

''(C) establishing cooperative work-education programs in STEM disciplines for students; or

''(4) enhancing education in STEM disciplines at minority institutions by—

''(A) establishing partnerships between offerors and such institutions for the purpose of training students in STEM disciplines;

''(B) conducting recruitment activities at such institutions; or

''(C) making internships or apprenticeships available to students of such institutions.

''(d) ALLOWABILITY OF COSTS.—Activities described in subsection (c) shall be considered as allowable community service activities for the purposes of determining allowability of cost on a government contract.

''(h) DEFINITIONS.—In this section:

''(1) The terms 'elementary school' and 'secondary school' have the meanings given those terms in section 8101 of the Higher Education Act of 1965 (20 U.S.C. 7801).

''(2) 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).

''(3) The term 'minority institution' means—

''(A) a part B institution (as that term is defined in section 322(2) of the Higher Education Act of 1965 (20 U.S.C. 1061(2)); or

''(B) any other institution of higher education (as that term is defined in section 101 of such Act (20 U.S.C. 1001)) at which not less than 50 percent of the total student enrollment consists of students from ethnic groups that are underrepresented in the fields of science and engineering.

''(4) The term 'STEM disciplines' means disciplines relating to science, technology, engineering and mathematics, including disciplines that are critical to the national security functions of the Department of Defense and that are needed in the Department of Defense workforce (as determined by the Secretary of Defense under section 2192a(a)).''.

(2) CLERICAL AMENDMENT.—The table of sections at the beginning of such chapter is amended by inserting after the item relating to section 2192b the following new item:

''2192c. Program to enhance contractor participation in science, technology, engineering, and math activities.''.

(b) CONFORMING REPEAL.—Section 862 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81; 10 U.S.C. note prec. 2191) is repealed.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Ms. Kendra S. Horn of Oklahoma

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

REPORT ON USE OF AUTOMATED MANUFATURING TEHNOLOGIES

Not later than March 1, 2021, the Secretary of Defense, in consultation with the Undersecretary of Defense for Acquisition and Sustainment, and the Secretary of the Air Force, through the Assistant Secretary of Acquisition Technology and Logistics, the Secretary of the Army, through the Assistant Secretary of Acquisition, Logistics and Technology and the Secretary of the Navy through the Assistant Secretary of the Navy for Research, Development and Acquisition, shall submit to the congressional defense committees a report on the feasibility and advisability of using automated manufacturing technologies to increase the supply of suitable, mission-critical repair parts available to the Department of Defense and the Armed Forces.

The report under shall include the following:

(1) Identification of the elements within each Armed Force that would be primarily responsible for the use of automated manufacturing technology.

(2) An analysis of how software for the integration and automation of computer-aided design, computer-aided manufacturing, and computerized numerically controlled machining could be used at arsenals, depots, and fleet readiness centers to address spare part obsolescence issues.

(3) A list of United States-based industrial partners that could assist the Department of Defense in using computerized numerically controlled machining to address spare part obsolescence issues.

(4) An analysis of deployable manufacturing capabilities that may be integrated with manufacturing automation software.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Brown of Maryland

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Fourth Estate Network Optimization

The committee recognizes the importance of creating efficiencies and cost savings within the Fourth Estate and across the Department of Defense, to include the consolidation of information technology services away from legacy common use information technology services into a single service provider (SSP). The committee notes that on August 15, 2019 the Deputy Secretary of Defense directed the Defense Information Systems Agency (DISA) to execute such consolidation under the Fourth Estate Network Optimization (4ENO) effort over the period of fiscal year 2020 to fiscal year 2024. The committee directs the Secretary of Defense to provide a report to the congressional defense committees not later than February 1, 2021, on the status of the consolidation effort, including details on the schedule and plan for consolidation, progress on the transition of each Defense Agency and Field Activity (DAFA) from common use information technology services into the SSP environment, the list of assets and services being transitioned, a list of assets and services remaining within each DAFA, a justification for assets not transitioned, and the reallocation of funding as a result of the transition.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Brown of Maryland

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Digital Persona Protection

The committee recognizes the evolving challenge to protect our military leaders and service members from emerging threats on digital and social channels. The committee believes that protecting the digital personas of Department of Defense personnel is a core component of the current operating environment and that preventive measures must be taken to mitigate hostile actions against military, civil servants, military websites, domains and other digital assets in which these personas exist or may be impersonated. The committee is aware of commercially developed and tested technology that is available and is currently used by the Army to increase the protection of the digital personas of senior Army leaders. The committee directs the Secretary of Defense to provide a briefing to the House Committee on Armed Services no later than January 1, 2021 on the threat to the digital personas of senior military leaders and the use of technology to mitigate associated risks.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. TURNER of OHIO

At the appropriate place in title XVI, insert the following new section:

**SEC. 16___. LIMITATION ON AWARDING CONTRACTS TO ENTITIES OPERATING COMMERCIAL TERRESTRIAL COMMUNICATION NETWORKS THAT CAUSE INTERFERENCE WITH THE GLOBAL POSITIONING SYSTEM.**

The Secretary of Defense may not enter into a contract, or extend or renew a contract, with an entity that engages in commercial terrestrial operations using the 1525–1559 megahertz band or the 1626.5–1660.5 megahertz band unless the Secretary has certified to the congressional defense committees that such operations do not cause harmful interference to a Global Positioning System device of the Department of Defense.

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# AMENDMENT TO H.R. 6395

## OFFERED BY MR. LARSEN OF WASHINGTON

At the appropriate place in title II, insert the following new section:

**SEC. 2___. INFORMATION TECHNOLOGY MODERNIZATION AND SECURITY EFFORTS.**

(a) MODERNIZATION EFFORT.—

(1) DEFINITIONS.—In this subsection—

(A) the term ''Assistant Secretary'' means the Assistant Secretary of Commerce for Communications and Information;

(B) the term ''covered agency''—

(i) means any Federal entity that the Assistant Secretary determines is appropriate; and

(ii) includes the Department of Defense;

(C) the term ''Federal entity'' has the meaning given the term in section 113(l) of the National Telecommunications and Information Administration Organization Act (47 U.S.C. 923(l));

(D) the term ''Federal spectrum'' means frequencies assigned on a primary basis to a covered agency;

(E) the term ''infrastructure'' means information technology systems and information technologies, tools, and databases; and

(F) the term ''NTIA'' means the National Telecommunications and Information Administration.

(2) INITIAL INTERAGENCY SPECTRUM INFORMATION TECHNOLOGY COORDINATION.—Not later than 90 days after the date of enactment of this Act, the Assistant Secretary, in consultation with the Policy and Plans Steering Group, shall identify a process to establish goals, including parameters to measure the achievement of those goals, for the modernization of the infrastructure of covered agencies relating to managing the use of Federal spectrum by those agencies, which shall include—

(A) the standardization of data inputs, modeling algorithms, modeling and simulation processes, analysis tools with respect to Federal spectrum, assumptions, and any other tool to ensure interoperability and functionality with respect to that infrastructure;

(B) other potential innovative technological capabilities with respect to that infrastructure, including cloud-based databases, artificial intelligence technologies, automation, and improved modeling and simulation capabilities;

(C) ways to improve the management of covered agencies' use of Federal spectrum through that infrastructure, including by—

(i) increasing the efficiency of that infrastructure;

(ii) addressing validation of usage with respect to that infrastructure;

(iii) increasing the accuracy of that infrastructure;

(iv) validating models used by that infrastructure; and

(v) monitoring and enforcing requirements that are imposed on covered agencies with respect to the use of Federal spectrum by covered agencies;

(D) ways to improve the ability of covered agencies to meet mission requirements in congested environments with respect to Federal spectrum, including as part of automated ad-

justments to operations based on changing conditions in those environments;

(E) the creation of a time-based automated mechanism—

(i) to share Federal spectrum between covered agencies to collaboratively and dynamically increase access to Federal spectrum by those agencies; and

(ii) that could be scaled across Federal spectrum; and

(F) the collaboration between covered agencies necessary to ensure the interoperability of Federal spectrum.

(3) SPECTRUM INFORMATION TECHNOLOGY MODERNIZATION.—

(A) IN GENERAL.—Not later than 240 days after the date of enactment of this Act, the Assistant Secretary shall submit to Congress a report that contains the plan of the NTIA to modernize and automate the infrastructure of the NTIA relating to managing the use of Federal spectrum by covered agencies so as to more efficiently manage that use.

(B) CONTENTS.—The report required under subparagraph (A) shall include—

(i) an assessment of the current, as of the date on which the report is submitted, infrastructure of the NTIA described in that paragraph;

(ii) an acquisition strategy for the modernized infrastructure of the NTIA described in that paragraph, including how that modernized infrastructure will enable covered agencies to be more efficient and effective in the use of Federal spectrum;

(iii) a timeline for the implementation of the modernization efforts described in that paragraph;

(iv) plans detailing how the modernized infrastructure of the NTIA described in that paragraph will—

(I) enhance the security and reliability of that infrastructure so that such infrastructure satisfies the requirements of the Federal Information Security Management Act of 2002 (Public Law 107–296; 116 Stat. 2135);

(II) improve data models and analysis tools to increase the effi-

ciency of the spectrum use described in that paragraph;

(III) enhance automation and workflows, and reduce the scope and level of manual effort, in order to—

(aa) administer the management of the spectrum use described in that paragraph; and

(bb) improve data quality and processing time; and

(IV) improve the timeliness of spectrum analyses and requests for information, including requests submitted pursuant to section 552 of title 5, United States Code;

(v) an operations and maintenance plan with respect to the modernized infrastructure of the NTIA described in that paragraph;

(vi) a strategy for coordination between the covered agencies within the Policy and Plans Steering Group, which shall include—

(I) a description of—

(aa) those coordination efforts, as in effect on the date on which the report is submitted; and

(bb) a plan for coordination of those efforts after the date on which the report is submitted, including with respect to the efforts described in paragraph (4);

(II) a plan for standardizing—

(aa) electromagnetic spectrum analysis tools;

(bb) modeling and simulation processes and technologies; and

(cc) databases to provide technical interference assessments that are usable across the Federal Government as part of a common spectrum management infrastructure for covered agencies;

(III) a plan for each covered agency to implement a modernization plan described in paragraph (4)(A)

that is tailored to the particular timeline of the agency;

(vii) identification of manually intensive processes involved in managing Federal spectrum and proposed enhancements to those processes;

(viii) metrics to evaluate the success of the modernization efforts described in that paragraph and any similar future efforts; and

(ix) an estimate of the cost of the modernization efforts described in that paragraph and any future maintenance with respect to the modernized infrastructure of the NTIA described in that paragraph, including the cost of any personnel and equipment relating to that maintenance.

(4) INTERAGENCY INPUTS.—

(A) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the head of each covered agency shall submit to the Assistant Secretary and the Policy and Plans Steering Group a report that describes the plan of the agency to modernize the infrastructure of

the agency with respect to the use of Federal spectrum by the agency so that such modernized infrastructure of the agency is interoperable with the modernized infrastructure of the NTIA, as described in paragraph (3).

(B) CONTENTS.—Each report submitted by the head of a covered agency under subparagraph (A) shall—

(i) include—

(I) an assessment of the current, as of the date on which the report is submitted, management capabilities of the agency with respect to the use of frequencies that are assigned to the agency, which shall include a description of any challenges faced by the agency with respect to that management;

(II) a timeline for completion of the modernization efforts described in that paragraph; and

(III) a description of potential innovative technological capabilities for the management of frequencies that

are assigned to the agency, as determined under paragraph (2);

(IV) identification of agency-specific requirements or constraints relating to the infrastructure of the agency;

(V) identification of any existing, as of the date on which the report is submitted, systems of the agency that are duplicative of the modernized infrastructure of the NTIA, as proposed under paragraph (3); and

(VI) with respect to the report submitted by the Secretary of Defense—

(aa) a strategy for the integration of systems or the flow of data among the Armed Forces, the military departments, the Defense Agencies and Department of Defense Field Activities, and other components of the Department of Defense;

(bb) a plan for the implementation of solutions to the use

of Federal spectrum by the Department of Defense involving information at multiple levels of classification; and

(cc) a strategy for addressing, within the modernized infrastructure of the Department of Defense described in that paragraph, the exchange of information between the Department of Defense and the NTIA in order to accomplish required processing of all Department of Defense domestic spectrum coordination and management activities; and

(ii) be submitted in an unclassified format, with a classified annex, as appropriate.

(C) NOTIFICATION OF CONGRESS.—Upon submission of the report required under subparagraph (A), the head of each covered agency shall notify Congress that the head of the covered agency has submitted the report.

(5) GAO OVERSIGHT.—The Comptroller General of the United States shall—

(A) not later than 90 days after the date of enactment of this Act, conduct a review of the infrastructure of covered agencies, as that infrastructure exists on the date of enactment of this Act;

(B) after all of the reports required under paragraph (4) have been submitted, conduct oversight of the implementation of the modernization plans submitted by the NTIA and covered agencies under paragraphs (3) and (4), respectively;

(C) not later than 1 year after the date on which the Comptroller General begins conducting oversight under subparagraph (B), and annually thereafter, submit a report regarding that oversight to—

(i) with respect to the implementation of the modernization plan of the Department of Defense, the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives; and

(ii) with respect to the implementation of the modernization plans of all covered agencies, including the Department of De-

fense, the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Energy and Commerce of the House of Representatives; and

(D) provide regular briefings to—

(i) with respect to the application of this section to the Department of Defense, the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives; and

(ii) with respect to the application of this section to all covered agencies, including the Department of Defense, the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Energy and Commerce of the House of Representatives.

(b) TELECOMMUNICATIONS SECURITY PROGRAM.—

(1) PROGRAM REQUIRED.—The Secretary of Defense shall carry out a program to identify and mitigate vulnerabilities in the telecommunications infrastructure of the Department of Defense.

(2) ELEMENTS.—In carrying out the program under paragraph (1), the Secretary shall—

(A) develop a capability to communicate clearly and authoritatively about threats by foreign adversaries;

(B) conduct independent red-team security analysis of Department of Defense systems, subsystems, devices, and components including no-knowledge testing and testing with limited or full knowledge of expected functionalities;

(C) verify the integrity of personnel who are tasked with design fabrication, integration, configuration, storage, test, and documentation of noncommercial 5G technology to be used by the Department of Defense;

(D) verify the efficacy of the physical security measures used at Department of Defense locations where system design, fabrication, integration, configuration, storage, test, and documentation of 5G technology occurs;

(E) direct the Chief Information Officer of the Department of Defense to use the Federal Risk and Authorization Management Program (commonly known as ''FedRAMP'') moderate or high cloud standard baselines, supplemented with the Department's FedRAMP cloud standard controls and control enhancements, to as-

sess 5G core service providers whose services will be used by the Department of Defense through the Department's provisional authorization process; and

(F) direct the Defense Information Systems Agency and the United States Cyber Command to Develop a capability for continuous, independent monitoring of packet streams for 5G data on frequencies assigned to the Department of Defense to validate availability, confidentiality, and integrity of Department of Defense communications systems.

(3) IMPLEMENTATION PLAN.—Not later than 90 days after the date of the enactment of this Act, the Secretary of Defense shall submit to Congress a plan for the implementation of the program under paragraph (1).

(4) REPORT REQUIRED.—Not later than 270 days after submitting the plan under paragraph (3), the Secretary of Defense shall submit to Congress a report that includes—

(A) a comprehensive assessment of the findings and conclusions of the program under paragraph (1);

(B) recommendations on how to mitigate vulnerabilities in the Department of Defense telecommunications infrastructure; and

(C) an explanation of how the Department of Defense plans to implement such recommendations.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Moulton

In the portion of the report to accompany H.R. 6395 titled "Information Technology Asset Management and Inventory", strike the following text:

"The committee commends the Department of Defense for the considerable improvement made on information technology, asset discovery, and asset management. However, the committee believes the Department would benefit from an established process for auditing software and hardware inventories. The lack of a single policy framework hinders the capacity of the Department to discover license duplication and the Department is at risk of wasting valuable resources on redundant or underutilized hardware and software. The private sector has successfully navigated this challenge through the use of automated software tools widely available on the commercial market.

The committee directs the Chief Information Officer of the Department of Defense, in coordination with chief information officers of the military services, to provide a briefing to the House Committee on Armed Services, not later than September 1, 2021, on the processes in place for asset discovery and management of hardware and software products. This briefing should present the following information:

(1) process for identifying duplicative software licenses;

(2) process for identifying redundant and/or duplicative software and hardware;

(3) process for identifying and cataloging usage information for both hardware and software; and

(4) process for identifying potential cost savings from the aforementioned briefing elements." and insert the following new text

"The committee commends the Department of Defense for the considerable improvement made on information technology, asset discovery, and asset management. However, the committee believes the Department would benefit from an established process for auditing software and hardware inventories. The lack of a single policy framework hinders the capacity of the Department to discover license duplication and the Department is at risk of wasting valuable resources on redundant or underutilized hardware and software. The Department also lacks real-time discovery of and visibility over its network attack surface, particularly its forward-facing internet assets and Department assets held in cloud environments, resulting in increased risk of exposures exploitable by malicious adversaries. The

private sector has successfully navigated this challenge through the use of automated software tools widely available on the commercial market.

The committee directs the Chief Information Officer of the Department of Defense, in coordination with chief information officers of the military services, to provide a briefing to the House Committee on Armed Services, not later than March 1, 2021**,** on the processes in place for asset discovery and management of hardware and software products. This briefing should present the following information:

(1) process for identifying duplicative software licenses;

(2) process for identifying redundant and/or duplicative software and hardware;

(3) process for identifying and cataloging usage information for both hardware and software; and

(4) process for using systems and capabilities, including Commercial Off The Shelf (COTS) solutions, to continuously discover, manage, and monitor all globally deployed Department of Defense internet assets, including in cloud environments;

(5) process for identifying potential cost savings from the aforementioned briefing elements; and

(6) process for identifying the specific responsibilities of Department of Defense components and headquarters in performing internet operations management across the global internet.".

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. LANGEVIN OF RHODE ISLAND

At the appropriate place in title II, insert the following new section:

**SEC. 2___. INDEPENDENT EVALUATION OF PERSONAL PROTECTIVE AND DIAGNOSTIC TESTING EQUIPMENT.**

(a) INDEPENDENT EVALUATION REQUIRED.—The Director of Operational Test and Evaluation shall conduct an independent evaluation of—

(1) any processes used to test the effectiveness of covered personal protective and diagnostic testing equipment; and

(2) the results of such tests.

(b) AVAILABILITY OF INFORMATION.—The Secretary of Defense shall provide the Director of Operational Test and Evaluation with such information as may be necessary for the Director to conduct the evaluations required under subsection (a), including any relevant documentation relating to testing processes and test results for covered personal protective and diagnostic testing equipment.

(c) REPORT TO CONGRESS.—Not later than 30 days after the completion of each evaluation under subsection

(a), the Director of Operational Test and Evaluation shall submit to the congressional defense committees a report on the results of the evaluation.

(d) COVERED PERSONAL PROTECTIVE AND DIAGNOSTIC TESTING EQUIPMENT DEFINED.—In this section, the term ''covered personal protective and diagnostic testing equipment'' means any personal protective equipment or diagnostic testing equipment developed, acquired, or used by the Department of Defense—

(1) in response to COVID–19; or

(2) as part of any follow-on, long-term acquisition and distribution program for such equipment.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. CROW OF COLORADO

At the appropriate place in title III, insert the following:

**SEC. 3___. BIODEFENSE ANALYSIS AND BUDGET SUBMISSION.**

(a) ANNUAL ANALYSIS.—For each fiscal year, the Director of the Office of Management and Budget shall—

(1) conduct a detailed and comprehensive analysis of Federal biodefense programs; and

(2) develop an integrated biodefense budget submission.

(b) DEFINITION OF BIODEFENSE.—In accordance with the National Biodefense Strategy, the Director shall develop and disseminate to all Federal departments and agencies a unified definition of the term ''biodefense'' to identify which programs and activities are included in annual budget submission referred to in subsection (a).

(c) REQUIREMENTS FOR ANALYSIS.—The analysis required under subsection (a) shall include—

(1) the display of all funds requested for biodefense activities, both mandatory and discretionary, by agency and categorized by biodefense enterprise

element, including threat awareness, prevention, deterrence, preparedness, surveillance and detection, response, attribution (including bioforensic capabilities), recovery, and mitigation; and

(2) detailed explanations of how each program and activity included aligns with biodefense goals.

(d) SUBMITTAL TO CONGRESS.— The Director shall submit to Congress the analysis required under subsection (a) for a fiscal year concurrently with the President's annual budget request for that fiscal year.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Xochitl Torres Small

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Development of technology to increase the resiliency in mitigating viral pandemics

The committee commends the Department of Defense's response effort to COVID-19 to ensure the safety of military and civilian personnel in the United States and around the world. The committee is aware of maturing sensor capabilities that instantly screen and identify individuals infected with COVID-19 that are both presymptomatic or asymptomatic. As such, the committee encourages the Department of Defense to engage in research and development of detection approaches that are scalable, deployable, and provide detection for pre-symptomatic, symptomatic, and asymptomatic individuals. Furthermore, the committee understands that capabilities developed by the Department, such as infrared laser technology to detect trace explosives, can be applied to viral detection. The Department should consider a variety of technologies that would provide active remote viral detection capabilities and employ all means to fast-track research and development of promising technologies and approaches.

Therefore, the committee directs the Deputy Assistant Secretary of Defense for Chemical and Biological Defense to provide a briefing to the House Committee on Armed Services by March 15, 2021 on the development of technology to increase the resiliency in mitigating viral pandemics, including an assessment of the gaps in the Department's viral pandemic detection and surveillance capabilities, a summary of current viral pandemic research and development response efforts focused on remote or standoff testing of potentially infected individuals, an analysis of existing chemical or biological detection capabilities developed by the Chemical Biological Defense Program and the Defense Threat Reduction Agency to address gaps in viral pandemic detection and surveillance, a description of current advanced development efforts for improved disease detection, and an estimated time to delivery of functional capabilities for such technologies.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Speier of California

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Report on Department of Defense University Research COVID-19 Recovery

The committee is aware that most academic research has been suspended or slowed down due to the pandemic. With these setbacks, the university's workforce is also impacted, especially postdoctoral fellows, graduate students, and technical support staff. Recognizing that many of the technologies the nation uses today were derived from Department of Defense-funded fundamental research, the committee directs the Under Secretary of Defense for Research and Engineering, in collaboration with the research directors of the military services, to submit a report to the Committees on Armed Services of the Senate and the House of Representatives by January 1, 2021, addressing research impacts due to COVID-19, including, at a minimum, (1) the total number of grants and cooperative agreements that would need cost extensions to complete their original award scope fully funded; (2) total cost of providing cost extensions for such grants and cooperative agreements; (3) a best estimate taken from information on the number of grants affected of the total number of Department-funded postdoctoral fellows and graduate students unable to reach their desired academic or professional level because of a lack of research funding; and (4) any other negative impacts to the defense science and technology program as determined by the Under Secretary.

# AMENDMENT TO H.R. 6395

## OFFERED BY MR. ABRAHAM OF LOUISIANA

Add at the end of section 1625(c) the following:

(3) CYBER WORKFORCE PIPELINE AND EARLY CHILDHOOD EDUCATION.—

(A) ELEMENTS.—The Secretary of Defense shall, when completing the report required under paragraph (1), take into consideration existing Federal childhood cyber education programs, including the programs identified in the report required under section 1649 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92) and the Department of Homeland Security's Cybersecurity Education and Training Assistance Program (CETAP), that can provide opportunities to military-connected students and members of the Armed Forces to pursue cyber careers.

(B) DEFINITION.—In this paragraph, the term ''military-connected student'' means an individual who—

(i) is a dependent a member of the Armed Forces serving on active duty; and

(ii) is enrolled in a preschool, an elementary or secondary school, or an institution of higher education.

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# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Mr. Wilson of South Carolina

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Improving the cybersecurity of disadvantaged small businesses in the defense industrial base

The committee is aware that small and medium-sized businesses in the defense industrial base (DIB) are concerned about their ability to meet increasing cybersecurity requirements for the protection of Department of Defense (DOD) information and operations. To assist the DIB, the Department should consider a range of options, including purpose-built cloud infrastructure and virtualized hosted environments to store and work with DOD data in a protected cloud that meets stringent security accreditation requirements. The committee is aware that Department of Commerce Manufacturing Extension Partnership (MEP) offices are working with small and medium-sized DIB companies to develop options for local high-bandwidth hosting and computing environments that meet DOD security requirements and are capable of supporting thin-client operations.

The committee, therefore, directs the Under Secretary of Defense for Acquisition and Sustainment to provide a briefing to the House Committee on Armed Services by February 1, 2021, on the range of options available to the Department of Defense for the encouragement or establishment of secure hosting environments for DIB companies. The briefing should consider the global nature of the Department's supply-chain, as well as the existing set of programs, policies, and initiatives as identified by Sec. 1648 of the FY 2020 National Defense Authorization Act.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Houlahan

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

GAO Assessment on DOD Cyber Incident Management Efforts

The committee notes that the Department of Defense (DOD) has experienced a number of high-profile breaches to Department of Defense (DOD) systems and networks. For example, in July 2015, a phishing attack on the Joint Chiefs of Staff unclassified email servers resulted in the system being shut down for more than a week while cyber experts rebuilt the network, affecting the work of roughly 4,000 military and civilian personnel. In 2018, DOD disclosed a data breach to its contracted travel management system that allegedly affected approximately 30,000 military and civilian employees. In 2020, DOD similarly acknowledged that the Defense Information Systems Agency networks were breached that reportedly resulted in the personal data of approximately 200,000 network users being compromised.

The committee is concerned that while DOD established the Joint Force Headquarters-DOD Information Network (JFHQ-DODIN) to operationalize and defend DOD systems and networks, other DOD components still view these systems and networks as an administrative capability. Cyber incidents, such as those identified above, can disrupt critical military operations, lead to inappropriate access to and modification of sensitive information, result in long-term financial obligations for credit monitoring, and threaten national security.

Therefore, the committee directs the Comptroller General of the United States to provide the congressional defense committees with an assessment of DOD management of cyber incidents and efforts to mitigate future cyber incidents. The assessment should identify:

- Information about cyber incidents and breaches within DOD networks and systems since 2015. Such information should include number of incidents, number of individuals potentially affected, mission and other impacts associated with the incident, causal factors associated with the incident,

amount of resources (including time, personnel, and funds) used to address the incident;

- Information about financial costs incurred as a result of the incident including costs associated with credit monitoring;
- the extent to which DOD has established and implemented a process to notify DOD leaders and potential victims of cyber incidents in a timely manner;
- the extent to which DOD shares information about cyber incidents (including common attack techniques and forensics from the incident) with other DOD components and security operations centers; and
- Any other matters the Comptroller General determines to be relevant.

The committee further directs the Comptroller General to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives by March 1, 2021 on preliminary findings, and submit a final report to the congressional defense committees at a date agreed to at the time of the briefing.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Houlahan

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The committee is concerned that while DOD established the Joint Force Headquarters-DOD Information Network (JFHQ-DODIN) to operationalize and defend DOD systems and networks, other DOD components still view these systems and networks as an administrative capability. Cyber incidents, such as those identified above, can disrupt critical military operations, lead to inappropriate access to and modification of sensitive information, result in long-term financial obligations for credit monitoring, and threaten national security.

Therefore, the committee directs the Comptroller General of the United States to provide the congressional defense committees with an assessment of DOD management of cyber incidents and efforts to mitigate future cyber incidents. The assessment should identify:

- Information about cyber incidents and breaches within DOD networks and systems since 2015. Such information should include number of incidents, number of individuals potentially affected, mission and other impacts associated with the incident, causal factors associated with the incident,

amount of resources (including time, personnel, and funds) used to address the incident;

- Information about financial costs incurred as a result of the incident including costs associated with credit monitoring;
- the extent to which DOD has established and implemented a process to notify DOD leaders and potential victims of cyber incidents in a timely manner;
- the extent to which DOD shares information about cyber incidents (including common attack techniques and forensics from the incident) with other DOD components and security operations centers; and
- Any other matters the Comptroller General determines to be relevant.

The committee further directs the Comptroller General to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives by March 1, 2021 on preliminary findings, and submit a final report to the congressional defense committees at a date agreed to at the time of the briefing.

# Amendment to H.R. 6395
# National Defense Authorization Act for Fiscal Year 2021

## Offered by: Rep. Houlahan

In the appropriate place in the report to accompany H.R. 6395, insert the following new Directive Report Language:

Report and GAO Briefing on DOD Cyber Hygiene and Cybersecurity Maturity Model Certification Framework

In previous Congressional testimony, the DOD Principal Cyber Advisor told the committee that cybersecurity experts estimate 90 percent of cyberattacks could be defeated by implementing basic cyber hygiene practices. The U.S. Government Accountability Office (GAO) assessed DOD's progress in implementing cyber hygiene practices and found that DOD had not fully implemented three of its key initiatives and practices aimed at improving cyber hygiene. DOD had also developed lists of its adversaries' most frequently used techniques, and practices to combat them. Yet, DOD does not know the extent to which the department is using these practices.

The committee is concerned that while DOD leadership recognizes that certain cyber hygiene practices could effectively protect the department from a significant number of cybersecurity risks the department has not implemented its own cyber hygiene practices and yet it plans to require private sector companies to implement cyber hygiene practices through the Cybersecurity Maturity Model Certification (CMMC) framework.

Given the importance of implementing cyber hygiene practices that could effectively protect DOD missions, information, and systems and networks, we direct the Secretary of Defense to submit a report to the defense committees identifying the extent to which each of the DOD components have implemented cyber hygiene practices and levels identified in the CMMC framework. For each DOD component that does not achieve level 3 status (referred to as "good cyber hygiene" in CMMC Model ver. 1.02), the head of the component is to provide the Congressional defense committees, the DOD Chief Information Officer, the commander of JFHQ-DODIN a plan on how the component will implement those security measures within one year and mitigate potential consequences until those practices are implemented. In order to aid in the understanding of what cyber hygiene practices have been and have not been implemented by the DOD that the department requires private sector

companies to implement before they receive a contract where they would have access to controlled unclassified information, the Secretary of Defense shall submit the DOD report to the Congressional defense committees and the Comptroller General of the United States by March 1, 2021.

The committee further directs the Comptroller General to conduct an independent review of the Secretary's report and provide a briefing to the Congressional defense committees no later than the end of the fiscal year.

# AMENDMENT TO H.R. 6395

## OFFERED BY MRS. HARTZLER OF MISSOURI

At the appropriate place in title VIII, insert the following new section:

**SEC. _____. ADDITIONAL REQUIREMENTS PERTAINING TO PRINTED CIRCUIT BOARDS.**

(a) PURCHASES.—Beginning in fiscal year 2023, the Secretary of Defense shall require that any contractor or subcontractor that provides covered printed circuit boards for use by the Department of Defense to certify that, of the total value of the covered printed circuit boards provided by such contractor or subcontractor pursuant to a contract with the Department of Defense, not less than the percentages set forth in subsection (b) were manufactured and assembled within a covered country.

(b) IMPLEMENTATION.—In making a certification under subsection (a), a contractor or subcontractor shall use the following percentages:

(1) During fiscal years 2023 through 2027, the greater of—

(A) 50 percent; or

(B) 75 percent, if the Secretary of Defense has determined that suppliers in covered coun-

tries are capable of supplying 75 percent of Department of Defense requirements for printed circuit boards.

(2) During fiscal years 2028 through 2032, the greater of—

(A) 75 percent; or

(B) 100 percent, if the Secretary of Defense has determined that suppliers in covered countries are capable of supplying 100 percent of Department of Defense requirements for printed circuit boards.

(3) Beginning in fiscal year 2033, 100 percent.

(c) REMEDIATION.—

(1) IN GENERAL.—In the event that a contractor or subcontractor is unable to make the certification required under subsection (a), the Secretary may accept covered printed circuit boards from such contractor or subcontractor for up to one year while requiring the contractor to complete a remediation plan. Such a plan shall be submitted to the congressional defense committees and shall require the contractor or subcontractor that failed to make the certification required under subsection (a) to—

(A) audit its supply chain to identify any areas of security vulnerability and noncompliance with section 224 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92); and

(B) meet the requirements of subsection (a) within one year after the initial missed certification deadline.

(2) RESTRICTION.—No contractor or subcontractor that has supplied covered printed circuit boards while under a remediation plan shall be eligible to enter into another remediation plan under subsection (c) for a period of five years.

(d) WAIVER.—The Secretary of Defense may waive the requirement under subsection (a) with respect to a contractor or subcontractor if the Secretary determines that—

(1) there are no significant national security concerns regarding counterfeiting, quality, or unauthorized access created by accepting covered printed circuit boards under such waiver; and

(2) the contractor is otherwise in compliance with all relevant cybersecurity provisions relating to members of the defense industrial base, including

section 224 of the National Defense Authorization Act for Fiscal Year 2020 (Public Law 116–92).

(e) AVAILABILITY EXCEPTION.—Subsection (a) shall not apply to the extent that the Secretary of Defense or the Secretary of the military department concerned determines that covered printed circuit boards of satisfactory quality and sufficient quantity, in the required form, cannot be procured as and when needed from covered countries.

(f) DEFINITIONS.—In this section:

(1) COVERED COUNTRY.—The term ''covered country'' means—

(A) the United States; or

(B) a foreign country whose government has a memorandum of understanding or agreement with the United States that—

(i) where applicable, complies with the requirements of section 36 of the Arms Export Control Act (22 U.S.C. 2776) and with section 2457 of title 10, United States Code; and

(ii) either—

(I) requires the United States to purchase supplies from foreign sources for the purposes of offsetting

sales made the by United States Government or United States firms under approved programs serving defense requirements; or

(II) under which the United States and such government agree to remove barriers to purchase supplies produced in such foreign country or services performed by sources of such foreign country.

(2) COVERED PRINTED CIRCUIT BOARD.—

(A) IN GENERAL.—The term ''covered printed circuit board'' means any printed circuit board that is—

(i) a product that is not a commercial product (as defined in section 103 of title 41, United States Code); or

(ii) a commercial product (as defined in section 103 of title 41, United States Code), other than a commercially available off-the-shelf item (as defined in section 104 of title 41, United States Code) not described in subparagraph (B).

(B) COMMERCIALLY AVAILABLE OFF-THE-SHELF ITEMS DESCRIBED.—The commercially

available off-the-shelf items (as defined in section 104 of title 41, United States Code) described in this subparagraph are such items that are acquired under a contract with an award value that is greater than the micro-purchase threshold under section 2338 of title 10, United States Code, for use as an integral component in a system designed for—

(i) telecommunications, including data communications and fifth-generation cellular communications;

(ii) data storage;

(iii) medical applications;

(iv) networking;

(v) computing;

(vi) radar;

(vii) munitions; or

(viii) any other system that the Secretary of Defense determines should be covered under this section.

(3) SUBCONTRACTOR.—The term ''subcontractor'' includes subcontractors at any tier.

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