

116TH CONGRESS  
1ST SESSION

# S. 1498

To require the Secretary of Defense to enhance the readiness of the Department of Defense to challenges relating to climate change and to improve the energy and resource efficiency of the Department, and for other purposes.

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## IN THE SENATE OF THE UNITED STATES

MAY 15, 2019

Ms. WARREN (for herself, Mr. SCHATZ, and Mr. WHITEHOUSE) introduced the following bill; which was read twice and referred to the Committee on Armed Services

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## A BILL

To require the Secretary of Defense to enhance the readiness of the Department of Defense to challenges relating to climate change and to improve the energy and resource efficiency of the Department, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

### 3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Department of Defense  
5 Climate Resiliency and Readiness Act”.

### 6 **SEC. 2. DEFINITIONS.**

7 In this Act:

1           (1) CLIMATE CHANGE.—The term “climate  
2 change” means a change of climate that is—

3           (A) attributed directly or indirectly to  
4 human activity that alters the composition of  
5 the global atmosphere; and

6           (B) in addition to natural climate varia-  
7 bility observed over comparable time periods.

8           (2) CONGRESSIONAL DEFENSE COMMITTEES.—  
9 The term “congressional defense committees” has  
10 the meaning given that term in section 101(a)(16)  
11 of title 10, United States Code.

12           (3) NET ZERO ENERGY.—The term “net zero  
13 energy” means, with respect to each installation of  
14 the Department of Defense, a reduction in overall  
15 energy use, maximization of energy efficiency, and  
16 implementation and use of energy recovery and co-  
17 generation capabilities at each installation, and an  
18 offset of the remaining demand for energy with pro-  
19 duction of energy from onsite renewable energy  
20 sources at such installation, such that such installa-  
21 tion produces as much energy as it uses over the  
22 course of a year.

23           (4) RESILIENCY.—The term “resiliency”  
24 means, with respect to each installation of the De-  
25 partment of Defense, an anticipation, preparation

1 for, and adaptation of each installation to utility dis-  
2 ruptions and changing environmental conditions, and  
3 the achievement and maintenance by such installa-  
4 tion of the capability to withstand, respond to, and  
5 recover rapidly from utility disruptions while ensur-  
6 ing the sustainment of mission-critical operations.

7 (5) NON-OPERATIONAL SOURCES.—The term  
8 “non-operational sources”—

9 (A) means fixed installations, enduring lo-  
10 cations, and non-tactical vehicles of the Depart-  
11 ment of Defense; and

12 (B) does not include sources in connection  
13 with the training, moving, and sustaining of the  
14 Armed Forces and weapons platforms for mili-  
15 tary operations and training, including tactical  
16 power systems and generators at non-enduring  
17 locations of the Department of Defense.

18 (6) RENEWABLE ENERGY SOURCE.—The term  
19 “renewable energy source” has the meaning given  
20 that term in section 2924(6) of title 10, United  
21 States Code.

22 (7) UNITED STATES.—The term “United  
23 States” means the several States, the District of Co-  
24 lumbia, and any territory or possession of the  
25 United States.

1 **SEC. 3. NET ZERO ENERGY BY NON-OPERATIONAL**  
2 **SOURCES OF THE DEPARTMENT OF DE-**  
3 **FENSE.**

4 (a) IN GENERAL.—The Department of Defense shall  
5 achieve aggregate net zero energy in use of energy by non-  
6 operational sources by not later than December 31, 2029.

7 (b) STRATEGY.—

8 (1) IN GENERAL.—Not later than one year  
9 after the date of the enactment of this Act, the Sec-  
10 retary of Defense shall submit to Congress a report  
11 setting forth the strategy of the Department of De-  
12 fense to achieve the requirement under subsection  
13 (a).

14 (2) ELEMENTS.—The report required by para-  
15 graph (1) shall set forth the following:

16 (A) The strategy of the Department of De-  
17 fense to achieve the requirement under sub-  
18 section (a) for all installations under the juris-  
19 diction of the Department (other than the mili-  
20 tary departments).

21 (B) The strategy of each military depart-  
22 ment to achieve the requirement under sub-  
23 section (a) for all installations under the juris-  
24 diction of such department.

25 (C) An assessment of the manner in which  
26 the achievement by the Department of Defense

1 of the requirement under subsection (a) will en-  
2 hance the readiness of the Armed Forces to ad-  
3 dress threats posed by Russia, China, Iran,  
4 North Korea, and violent extremism.

5 (3) BIENNIAL UPDATE.—Not later than two  
6 years after the submittal of the report required by  
7 paragraph (1), and every two years thereafter  
8 through December 31, 2029, the Secretary shall  
9 submit to Congress a report setting forth the fol-  
10 lowing:

11 (A) A current assessment of the progress  
12 of the Department of Defense in implementing  
13 the strategy described in paragraph (1), set  
14 forth by military department, Defense Agency,  
15 and other component or element of the Depart-  
16 ment.

17 (B) Any updates to the strategy.

18 (4) CONSULTATION.—The Secretary shall con-  
19 sult with the National Academy of Sciences and a  
20 federally funded research and development center in  
21 developing the report required by paragraph (1) and  
22 any update to that report under paragraph (3).

23 (c) WAIVER.—

1           (1) IN GENERAL.—The Secretary of Defense  
2       may waive the requirement in subsection (a) if the  
3       Secretary—

4           (A) determines that achievement of such  
5       requirement would adversely affect operational  
6       safety, force protection, or the national security  
7       interests of the United States; and

8           (B) submits to the congressional defense  
9       committees a written notification of the waiver,  
10      together with a justification for the waiver.

11          (2) PERIOD.—The period of any waiver under  
12      paragraph (1) may not exceed 30 days.

13          (3) RENEWAL.—Any waiver under this sub-  
14      section may be renewed one or more times, in the  
15      manner provided for the initial such waiver under  
16      paragraph (1) and for the period provided for in  
17      paragraph (2).

18   **SEC. 4. CLIMATE-CONSCIOUS BUDGETING OF DEPARTMENT**  
19                           **OF DEFENSE.**

20          (a) IN GENERAL.—The Secretary of Defense shall in-  
21      clude in the annual budget submission of the President  
22      under section 1105(a) of title 31, United States Code—

23           (1) a dedicated budget line item for adaptation  
24      to, and mitigation of, climate-related risks to mili-  
25      tary networks, systems, installations, facilities, and

1 other assets and capabilities of the Department of  
2 Defense; and

3 (2) an estimate of the anticipated adverse im-  
4 pacts to the readiness of the Department and the fi-  
5 nancial costs to the Department during the year cov-  
6 ered by the budget of the loss of, or damage to, mili-  
7 tary networks, systems, installations, facilities, and  
8 other assets and capabilities of the Department, in-  
9 cluding loss of or obstructed access to training  
10 ranges, as a result of climate change.

11 (b) DISAGGREGATION OF IMPACTS AND COSTS.—The  
12 estimate under subsection (a)(2) shall set forth the ad-  
13 verse readiness impacts and financial costs under that  
14 subsection by military department, Defense Agency, and  
15 other component or element of the Department.

16 **SEC. 5. INCLUSION IN ANNUAL ENERGY MANAGEMENT AND**  
17 **RESILIENCE REPORT OF DEPARTMENT OF**  
18 **DEFENSE OF LIST OF MILITARY INSTALLA-**  
19 **TIONS THAT EMIT THE MOST CARBON AND**  
20 **ESTIMATE OF ENERGY CONSUMPTION BY DE-**  
21 **PARTMENT.**

22 (a) IN GENERAL.—For every fiscal year beginning  
23 after the date of the enactment of this Act, the Secretary  
24 of Defense shall include in the Annual Energy Manage-  
25 ment and Resilience Report for that fiscal year—

1           (1) a list of the ten installations within each  
2       military department that emit the most carbon;

3           (2) an estimate of all energy consumption by  
4       the Department of Defense, including greenhouse  
5       gas emissions; and

6           (3) an assessment of greenhouse gas emissions  
7       at all installations of the Department, disaggregated  
8       by operational and non-operational sources.

9       (b) METRICS.—In determining energy consumption  
10     and greenhouse gas emissions under paragraphs (2) and  
11     (3) of subsection (a), the Secretary shall use metrics es-  
12     tablished by the Under Secretary of Defense for Acquisi-  
13     tion and Sustainment, in consultation with the National  
14     Academy of Sciences and a federally funded research and  
15     development center.

16     **SEC. 6. CLIMATE-CONSCIOUS CONTRACTING OF DEPART-**  
17                                 **MENT OF DEFENSE.**

18       (a) IN GENERAL.—Chapter 137 of title 10, United  
19     States Code, is amended by adding at the end the fol-  
20     lowing new section:

21     **“§ 2339b. Requirements relating to energy consump-**  
22                                 **tion and climate change**

23       “(a) PROJECTED ENERGY CONSUMPTION.—Each  
24     Department of Defense contract for the procurement of  
25     property or services entered into on or after October 1,

1 2019, shall include a written estimate by the Department  
 2 of the total projected energy consumption of all work to  
 3 be performed under the contract, and a statement of  
 4 whether the contract will include investments by the con-  
 5 tractor or the Department in renewable energy or energy-  
 6 efficient sources.

7 “(b) POLICY ON CONSIDERATION OF CERTAIN FAC-  
 8 TORS IN DETERMINATIONS TO AWARD CONTRACTS.—In  
 9 making any determination to enter into a contract de-  
 10 scribed in subsection (a), the Secretary of Defense shall  
 11 take into account—

12 “(1) whether the contractor verifiably produces  
 13 as much renewable energy as the total energy it con-  
 14 sumes; and

15 “(2) whether there is any order against the con-  
 16 tractor by the Environmental Protection Agency, the  
 17 Department of Justice, or a State attorney general  
 18 to pay a fine or take remedial action for a violation  
 19 of an environmental law or regulation of the United  
 20 States.

21 “(c) DISCLOSURE OF CLIMATE-RELATED RISKS.—  
 22 Each prospective contractor with the Department of De-  
 23 fense shall, as a prerequisite of bidding for a contract with  
 24 the Department, submit a detailed statement to the De-  
 25 partment that includes information regarding—

1           “(1) the identification of, the evaluation of po-  
2           tential financial impacts of, and any risk-manage-  
3           ment strategies relating to—

4                   “(A) physical risks posed to the contractor  
5                   by climate change; and

6                   “(B) transition risks posed to the con-  
7                   tractor by climate change; and

8           “(2) a description of any established corporate  
9           governance processes and structures to identify, as-  
10          sess, and manage climate-related risks.

11          “(d) ASSESSMENT OF FEES TO COMBAT CLIMATE  
12          CHANGE.—(1) Each Department of Defense contract for  
13          the procurement of property or services entered into on  
14          or after October 1, 2019, shall include a requirement that  
15          the contractor pay to the Department of Defense a fee  
16          equal to one percent of the value of the contract in the  
17          case of a contractor that is not, at the time of the Depart-  
18          ment’s solicitation of the contract, verifiably producing as  
19          much renewable energy as the total energy it consumes.

20          “(2) Any contractor required to pay a fee under para-  
21          graph (1) with respect to a contract may not offset the  
22          cost of such fee by increasing the amount of the proposal  
23          for such contract.

1       “(e) WAIVER.—(1) The Secretary of Defense may  
2 waive the requirements in subsections (a) and (b) if the  
3 Secretary—

4           “(A)(i) determines that such requirements  
5 would adversely affect operational safety, force pro-  
6 tection, or the national security interests of the  
7 United States; or

8           “(ii) with respect to particular property or serv-  
9 ices, determines that—

10           “(I) market conditions for the property or  
11 services have adversely affected (or will in the  
12 near future adversely affect) the acquisition of  
13 the property or services by the Department of  
14 Defense; and

15           “(II) the waiver will expedite or facilitate  
16 the acquisition of the property or services; and

17           “(B) submits to the congressional defense com-  
18 mittees a written notification of the waiver, together  
19 with a justification for the waiver.

20       “(2) The period of any waiver under paragraph (1)  
21 may not exceed 30 days.

22       “(3) Any waiver under this subsection may be re-  
23 newed one or more times, in the manner provided for the  
24 initial such waiver under paragraph (1) and for the period  
25 provided for in paragraph (2).”.

1 (b) CLERICAL AMENDMENT.—The table of sections  
 2 at the beginning of chapter 137 of title 10, United States  
 3 Code, is amended by inserting after the item relating to  
 4 section 2339a the following new item:

“2339b. Requirements relating to energy consumption and climate change.”.

5 (c) ENERGY AND CLIMATE RESILIENCY FUND.—

6 (1) IN GENERAL.—There is established in the  
 7 Treasury of the United States a fund, to be known  
 8 as the “Energy and Climate Resiliency Fund” (in  
 9 this subsection referred to as the “Fund”), to be ad-  
 10 ministered by the Secretary of Defense.

11 (2) USE OF AMOUNTS.—Amounts deposited in  
 12 the Fund shall be used only for climate-related im-  
 13 provements that contribute to the continued oper-  
 14 ational viability and the resiliency of the networks,  
 15 systems, installations, facilities, and other assets and  
 16 capabilities of the Department of Defense.

17 (3) DEPOSIT AND AVAILABILITY OF  
 18 AMOUNTS.—Notwithstanding section 3302 of title  
 19 31, United States Code, fees collected under section  
 20 2339b(b) of title 10, United States Code, as added  
 21 by subsection (a)—

22 (A) shall be deposited into the Fund to  
 23 carry out the activities described in paragraph  
 24 (2);

1 (B) to the extent and in the amounts pro-  
 2 vided in advance in appropriations Acts, shall  
 3 be available to the Secretary of Defense; and

4 (C) shall remain available until expended.

5 (4) CLIMATE-RELATED IMPROVEMENTS DE-  
 6 FINED.—In this subsection, the term “climate-re-  
 7 lated improvements” means efforts by the Depart-  
 8 ment of Defense to prepare for, or mitigate the ef-  
 9 fects of, the following:

10 (A) Extreme weather.

11 (B) Rising sea tides.

12 (C) Increased flooding.

13 (D) Drought.

14 (E) Desertification.

15 (F) Wildfires.

16 (G) Thawing permafrost.

17 (H) Such other conditions as the Secretary  
 18 determines necessary.

19 **SEC. 7. DEVELOPMENT OF CLIMATE VULNERABILITY AND**  
 20 **RISK ASSESSMENT TOOL.**

21 (a) IN GENERAL.—Not later than 180 days after the  
 22 date of the enactment of this Act, the Secretary of Defense  
 23 shall develop a climate vulnerability and risk assessment  
 24 tool to assist the military departments in measuring how  
 25 the risks associated with climate change impact networks,

1 systems, installations, facilities, and other assets, as well  
2 as the operational plans and capabilities of the Depart-  
3 ment of Defense.

4 (b) CONSULTATION.—In developing the tool under  
5 subsection (a), the Secretary shall consult with the Admin-  
6 istrator of the Environmental Protection Agency, the Sec-  
7 retary of Energy, the Administrator of the National Oce-  
8 anic and Atmospheric Administration, the Administrator  
9 of the Federal Emergency Management Agency, the Com-  
10 mander of the Army Corps of Engineers, the Adminis-  
11 trator of the National Aeronautics and Space Administra-  
12 tion, a federally funded research and development center,  
13 and the heads of such other relevant Federal agencies as  
14 the Secretary of Defense determines appropriate.

15 (c) PREVAILING SCIENTIFIC CONSENSUS.—Before  
16 completing development of the tool under subsection (a),  
17 the Secretary shall obtain from the National Academy of  
18 Sciences and a federally funded research and development  
19 center with which the Secretary has consulted under sub-  
20 section (b) a certification in writing that the tool contains  
21 a methodology that adequately incorporates the prevailing  
22 scientific consensus on climate change.

23 (d) REPORT.—

24 (1) IN GENERAL.—Not later than 180 days  
25 after the date of the enactment of this Act, the Sec-

1       retary shall submit to the congressional defense com-  
2       mittees a report describing the tool developed under  
3       subsection (a).

4           (2) CLASSIFIED ANNEX.—The report under  
5       paragraph (1) shall be submitted in unclassified  
6       form but may contain a classified annex if necessary.

7           (3) PUBLICATION.—Upon submittal of the re-  
8       port under paragraph (1), the Secretary shall pub-  
9       lish the unclassified portion of the report on an  
10      internet website of the Department that is available  
11      to the public.

12      (e) UPDATES TO TOOL.—

13           (1) IN GENERAL.—After submittal of the report  
14      under subsection (d), the Secretary of Defense shall  
15      update the climate vulnerability and risk assessment  
16      tool developed under subsection (a) as the Secretary  
17      considers necessary and appropriate, in consultation  
18      with the individuals and entities described in sub-  
19      section (b) and consistent with the prevailing sci-  
20      entific consensus as required under subsection (c).

21           (2) REPORT AND PUBLICATION.—Upon com-  
22      pleting an update to the tool under paragraph (1),  
23      the Secretary shall—

1 (A) submit to the congressional defense  
 2 committees a report describing such update;  
 3 and

4 (B) publish the unclassified version of such  
 5 report on an internet website of the Depart-  
 6 ment that is available to the public.

7 **SEC. 8. ANNUAL REPORT ON EFFECTS OF CLIMATE**  
 8 **CHANGE ON DEPARTMENT OF DEFENSE.**

9 (a) IN GENERAL.—Not later than 180 days after the  
 10 date of the enactment of this Act, and annually thereafter,  
 11 the Secretary of Defense shall submit to the congressional  
 12 defense committees a report on vulnerabilities to military  
 13 installations and combatant commander requirements re-  
 14 sulting from climate change that builds upon the report  
 15 submitted under section 335(c) of the National Defense  
 16 Authorization Act for Fiscal Year 2018 (Public Law 115–  
 17 91; 131 Stat. 1358).

18 (b) USE OF CLIMATE VULNERABILITY AND RISK AS-  
 19 SESSMENT TOOL.—In preparing the report required by  
 20 subsection (a), the Secretary shall use the climate vulner-  
 21 ability and risk assessment tool developed under section  
 22 7.

23 (c) ELEMENTS.—The report required by subsection  
 24 (a) shall include the following:

1           (1) An explanation of the underlying method-  
2           ology behind the climate vulnerability analysis con-  
3           ducted in preparing the report under section 335(c)  
4           of the National Defense Authorization Act for Fiscal  
5           Year 2018.

6           (2) An assessment of how climate change af-  
7           fects low-lying military installations, military instal-  
8           lations of the Navy and the Marine Corps, and mili-  
9           tary installations outside the United States.

10          (3) An assessment of how climate change af-  
11          fects access of members of the Armed Forces to  
12          training ranges.

13          (4) With respect to a military installation in a  
14          country outside the United States, an assessment of  
15          the collaboration between the Department of De-  
16          fense and the military or civilian agencies of the gov-  
17          ernment of that country or nongovernmental organi-  
18          zations operating in that country to adapt to risks  
19          from climate change.

20          (5) An assessment of how climate change af-  
21          fects housing safety and food security on military in-  
22          stallations.

23          (6) An assessment of the strategic benefits de-  
24          rived from isolating infrastructure of the Depart-  
25          ment of Defense in the United States from the na-

1 tional electric grid and the use of energy-efficient,  
 2 distributed, and smart power grids by the Armed  
 3 Forces in the United States and overseas to ensure  
 4 affordable access to electricity.

5 (7) A list of the ten military installations within  
 6 each military department that are most vulnerable to  
 7 climate change based on the effects of the following:

8 (A) Geographic location.

9 (B) Extreme weather.

10 (C) Rising sea tides.

11 (D) Increased flooding.

12 (E) Drought.

13 (F) Desertification.

14 (G) Wildfires.

15 (H) Thawing permafrost.

16 (I) Such other categories as the Secretary  
 17 determines necessary.

18 (8) A climate vulnerability score, determined by  
 19 the Secretary, for each military installation of the  
 20 Department.

21 (9) An overview of mitigations, in addition to  
 22 current efforts undertaken by the Department, that  
 23 may be necessary to ensure the continued oper-  
 24 ational viability and to increase the resiliency of the  
 25 vulnerable military installations identified under

1 paragraph (7), and the estimated costs of those miti-  
2 gations.

3 (10) An assessment of how adapting to climate  
4 change impacts the readiness of the Armed Forces  
5 to address the threats posed by Russia, China, Iran,  
6 North Korea, and violent extremism.

7 (d) CONSULTATION.—In developing each report  
8 under subsection (a), the Secretary of Defense shall con-  
9 sult with the Administrator of the Environmental Protec-  
10 tion Agency, the Secretary of Energy, the Administrator  
11 of the National Oceanic and Atmospheric Administration,  
12 the Administrator of the Federal Emergency Management  
13 Agency, the Commander of the Army Corps of Engineers,  
14 the Administrator of the National Aeronautics and Space  
15 Administration, a federally funded research and develop-  
16 ment center, and the heads of such other relevant Federal  
17 agencies as the Secretary of Defense determines appro-  
18 priate.

19 (e) FORM OF REPORT.—The report required by sub-  
20 section (a) shall be submitted in unclassified form but may  
21 contain a classified annex if necessary.

22 (f) PUBLICATION.—Upon submittal of the report re-  
23 quired by subsection (a), the Secretary of Defense shall  
24 publish the unclassified portion of the report on an inter-

1 net website of the Department of Defense that is available  
 2 to the public.

3 **SEC. 9. INCORPORATION OF CLIMATE RESILIENCY INTO**  
 4 **EXISTING STRATEGIES OF THE DEPARTMENT**  
 5 **OF DEFENSE.**

6 (a) CONSIDERATION OF RISKS OF CLIMATE CHANGE  
 7 IN MAKING STRATEGIC DECISIONS RELATING TO MILI-  
 8 TARY INSTALLATIONS.—The Secretary of each military  
 9 department, with respect to any installation under the ju-  
 10 risdiction of that Secretary, and the Secretary of Defense,  
 11 with respect to any installation of the Department of De-  
 12 fense that is not under the jurisdiction of the Secretary  
 13 of a military department, shall consider the risks associ-  
 14 ated with climate change when making any strategic deci-  
 15 sion relating to such installation, including where to locate  
 16 such installation and where to position equipment, infra-  
 17 structure, and other military assets.

18 (b) CODIFICATION OF DIRECTIVE ON CLIMATE  
 19 CHANGE.—

20 (1) IN GENERAL.—Directive 4715.21 of the De-  
 21 partment of Defense, dated January 14, 2016, and  
 22 entitled “Climate Change Adaptation and Resil-  
 23 ience”, shall remain in effect.

24 (2) REPORTS ON IMPLEMENTATION OF DIREC-  
 25 TIVE.—Each posture statement submitted to Con-

1       gress by the Secretary of a military department, the  
2       Chairman of the Joint Chiefs of Staff, or the com-  
3       mander of a combatant command shall include a de-  
4       scription of the implementation and discharge by  
5       such official of the Directive referred to in para-  
6       graph (1), including the personnel assigned to imple-  
7       ment and discharge the Directive and the progress  
8       achieved in such implementation and discharge.

9       (c) INCORPORATION OF CLIMATE CHANGE INTO CER-  
10      TAIN DEFENSE STRATEGIES.—

11           (1) IN GENERAL.—The Secretary of Defense, in  
12      coordination with the heads of other elements of the  
13      intelligence community, the Administrator of the  
14      Environmental Protection Agency, the Secretary of  
15      Energy, the Administrator of the National Oceanic  
16      and Atmospheric Administration, the Administrator  
17      of the Federal Emergency Management Agency, the  
18      Commander of the Army Corps of Engineers, the  
19      Administrator of the National Aeronautics and  
20      Space Administration, and the heads of such other  
21      relevant Federal agencies as the Secretary of De-  
22      fense determines appropriate, shall incorporate cli-  
23      mate change into the National Defense Strategy, the  
24      National Military Strategy, and operational plans of  
25      the Department of Defense.

1           (2) INTELLIGENCE COMMUNITY DEFINED.—In  
2           this subsection, the term “intelligence community”  
3           has the meaning given that term in section 3 of the  
4           National Security Act of 1947 (50 U.S.C. 3003).

5           (d) IMPLEMENTATION AND DISCHARGE OF REQUIRE-  
6           MENTS.—

7           (1) CROSS-FUNCTIONAL TEAM ON INCORPORA-  
8           TION OF CLIMATE RESILIENCY INTO DEFENSE  
9           STRATEGIES.—Among the cross-functional teams es-  
10          tablished by the Secretary of Defense pursuant to  
11          subsection (c) of section 911 of the National De-  
12          fense Authorization Act for Fiscal Year 2017 (Pub-  
13          lic Law 114–328; 130 Stat. 2345; 10 U.S.C. 111  
14          note) in support of the organizational strategy for  
15          the Department of Defense required by subsection  
16          (a) of that section, the Secretary shall establish a  
17          cross-functional team on the implementation and  
18          discharge of the requirements under this section.

19          (2) ESTABLISHMENT AND ACTIVITIES.—The  
20          cross-functional team required by paragraph (1)  
21          shall be established in accordance with subsection (c)  
22          of section 911 of the National Defense Authorization  
23          Act for Fiscal Year 2017, and shall be governed in  
24          its activities in accordance with the provisions of  
25          such subsection (c).

1           (3) DEADLINE FOR ESTABLISHMENT.—The  
 2           cross-functional team required by paragraph (1)  
 3           shall be established by not later than 90 days after  
 4           the date of the enactment of this Act.

5   **SEC. 10. RESEARCH, DEVELOPMENT, AND DEMONSTRATION**  
 6                           **PROGRAM ON ENERGY STORAGE, HYBRID**  
 7                           **MICROGRID, AND ENERGY RESILIENCY.**

8           (a) PROGRAM REQUIRED.—The Secretary of De-  
 9           fense, in consultation with the Secretary of Energy, shall  
 10          conduct a program of research, development, and dem-  
 11          onstration of hybrid microgrid systems and electric grid  
 12          energy storage.

13          (b) MULTIDISCIPLINARY TEAMS.—

14               (1) IN GENERAL.—In carrying out the program  
 15          under subsection (a), the Secretary of Defense shall  
 16          organize activities among multidisciplinary teams to  
 17          leverage, to the maximum extent practicable, exper-  
 18          tise from the Department of Energy, the National  
 19          Laboratories, institutions of higher education, and  
 20          the private sector.

21               (2) GOALS.—The multidisciplinary teams orga-  
 22          nized under paragraph (1) shall pursue aggressive,  
 23          milestone-driven, and basic research, development,  
 24          and demonstration goals to carry out the program  
 25          under subsection (a).

1           (3) RESOURCES.—The Secretary of Defense  
2       shall provide sufficient resources to the multidisci-  
3       plinary teams organized under paragraph (1) to  
4       achieve the goals described in paragraph (2) over a  
5       10-year period.

6       (c) AREAS OF FOCUS.—The program under sub-  
7       section (a) shall focus on—

8           (1) addressing electrical power intermittency;

9           (2) integrating renewable energy sources into  
10       microgrid systems, hybrid microgrid systems, energy  
11       storage, grid security, and local generation of zero-  
12       carbon fuels;

13          (3) the inspection and structural health moni-  
14       toring of critical energy infrastructure;

15          (4)       materials,       electric       thermal,  
16       electromechanical, and electrochemical systems re-  
17       search;

18          (5) power conversion technologies research;

19          (6) developing and using fuel-efficient engines;

20          (7) additive manufacturing;

21          (8) developing—

22               (A) empirical and science-based industry  
23       standards to compare the storage capacity,  
24       cycle length and capabilities, and reliability of  
25       different types of electricity storage; and

1 (B) validation and testing techniques;

2 (9) other fundamental and applied research  
3 critical to widespread deployment of electricity stor-  
4 age;

5 (10) device development that builds on results  
6 from research described in paragraphs (4), (5), and  
7 (9), including combinations of power electronics, ad-  
8 vanced optimizing controls, and energy storage as a  
9 general purpose element of the electric grid;

10 (11) micro-scale testing and analysis of storage  
11 devices, including test-beds and field trials;

12 (12) microgrid systems and hybrid microgrid  
13 systems to increase the resilience of critical infra-  
14 structure of the Department of Defense;

15 (13) the potential for energy storage and re-  
16 newable resources, including wind, solar, and hydro-  
17 power, to be integrated into microgrid systems or  
18 hybrid microgrid systems of installations of the De-  
19 partment of Defense;

20 (14) the capacity of the workforce of the De-  
21 partment of Defense to operate, maintain, and re-  
22 pair a microgrid system or hybrid microgrid system;

23 (15) opportunities to develop the capacity to op-  
24 erate, maintain, and repair a hybrid microgrid sys-  
25 tem;

1           (16) leveraging existing capacity within local or  
 2           regional research organizations, such as organiza-  
 3           tions based at institutions of higher education, to  
 4           support development of hybrid microgrid systems,  
 5           including by testing novel components and systems  
 6           prior to field deployment;

7           (17) electricity storage device safety and reli-  
 8           ability, including potential failure modes, mitigation  
 9           measures, and operational guidelines;

10          (18) standards for performance, control inter-  
 11          face, grid interconnection, and interoperability of  
 12          electricity storage devices;

13          (19) maintaining a public database of energy  
 14          storage projects, policies, codes, standards, and reg-  
 15          ulations; and

16          (20) such other criteria as the Secretary of De-  
 17          fense, in consultation with the Secretary of Energy,  
 18          determines appropriate.

19          (d) COLLABORATION.—The program under sub-  
 20          section (a) shall be carried out in collaboration with rel-  
 21          evant stakeholders, including, as appropriate—

22               (1) States;

23               (2) Indian tribes;

24               (3) regional entities and regulators;

25               (4) units of local government;

1           (5) institutions of higher education, including  
2           historically Black colleges or universities and other  
3           minority-serving institutions; and

4           (6) private sector entities.

5       (e) REPORT.—

6           (1) IN GENERAL.—Not later than 180 days  
7           after the date of enactment of this Act, and annually  
8           thereafter until 2031, the Secretary of Defense shall  
9           submit to the congressional defense committees a re-  
10          port on the efforts to implement the program under  
11          subsection (a), including any strategy developed to  
12          implement such program.

13          (2) CLASSIFIED ANNEX.—The report under  
14          paragraph (1) shall be submitted in unclassified  
15          form but may contain a classified annex if necessary.

16          (3) PUBLICATION.—Upon submittal of the re-  
17          port under paragraph (1), the Secretary shall pub-  
18          lish the unclassified portion of the report on an  
19          internet website of the Department that is available  
20          to the public.

21       (f) ASSISTANCE TO STATES.—The Secretary of De-  
22       fense may provide technical and financial assistance to  
23       States, Indian tribes, units of local government, institu-  
24       tions of higher education, or private sector entities to par-

1 ticipate in or use research, development, or demonstration  
 2 of technology developed under this section.

3 (g) AUTHORIZATION OF APPROPRIATIONS.—There is  
 4 authorized to be appropriated to the Secretary of Defense  
 5 to carry out this section the following:

6 (1) For fiscal year 2020, \$10,000,000.

7 (2) For fiscal year 2021, \$25,000,000.

8 (3) For fiscal year 2022, \$50,000,000.

9 (4) For fiscal year 2023, \$75,000,000.

10 (5) For fiscal year 2024, \$125,000,000.

11 (6) For fiscal year 2025, \$200,000,000.

12 (7) For each of fiscal years 2026 through 2030,  
 13 \$250,000,000.

14 (h) NO EFFECT ON OTHER PROVISIONS OF LAW.—  
 15 Nothing in this section authorizes regulatory actions that  
 16 would duplicate or conflict with regulatory requirements,  
 17 mandatory standards, or related processes under section  
 18 215 of the Federal Power Act (16 U.S.C. 824o).

19 (i) USE OF FUNDS.—To the maximum extent prac-  
 20 ticable, in carrying out this section, the Secretary of De-  
 21 fense shall ensure that the use of funds to carry out this  
 22 section is coordinated with the Secretary of Energy and  
 23 among different offices within the Grid Modernization Ini-  
 24 tiative of the Department of Energy and other programs  
 25 conducting energy storage research.

1 (j) DEFINITIONS.—In this section:

2 (1) HISTORICALLY BLACK COLLEGE OR UNI-  
3 VERSITY.—The term “historically Black college or  
4 university” has the meaning given the term “part B  
5 institution” in section 322(2) of the Higher Edu-  
6 cation Act of 1965 (20 U.S.C. 1061(2)).

7 (2) HYBRID MICROGRID SYSTEM.—The term  
8 “hybrid microgrid system” means a stand-alone elec-  
9 trical system that—

10 (A) is comprised of conventional generation  
11 and at least one alternative energy resource;  
12 and

13 (B) may use grid-scale energy storage.

14 (3) MICROGRID SYSTEM.—The term “microgrid  
15 system” means a standalone electrical system that  
16 uses grid-scale energy storage.

17 (4) NATIONAL LABORATORY.—The term “Na-  
18 tional Laboratory” has the meaning given that term  
19 in section 2 of the Energy Policy Act of 2005 (42  
20 U.S.C. 15801).

1 **SEC. 11. CONDITIONS ON BASE REALIGNMENT AND CLO-**  
2 **SURE ACTIVITIES FUNDED THROUGH BASE**  
3 **CLOSURE ACCOUNT OF DEPARTMENT OF DE-**  
4 **FENSE.**

5 (a) CONSIDERATION OF FACTORS REQUIRED.—With  
6 respect to any Base Realignment and Closure round begun  
7 by the Department of Defense after the date of the enact-  
8 ment of this Act, the Department shall consider current  
9 and potential vulnerabilities to installations and operations  
10 of the Department of Defense resulting from climate  
11 change and the resiliency of installations of the Depart-  
12 ment as described in section 2(3)(B).

13 (b) BASE REALIGNMENT AND CLOSURE ROUND DE-  
14 FINED.—In this section, the term “Base Realignment and  
15 Closure round” means base realignment and closure ac-  
16 tivities, including real property acquisition and military  
17 construction projects, as authorized by the Defense Base  
18 Closure and Realignment Act of 1990 (part A of title  
19 XXIX of Public Law 101–510; 10 U.S.C. 2687 note) and  
20 funded through the Department of Defense Base Closure  
21 Account established by section 2906 of such Act (as  
22 amended by section 2711 of the Military Construction Au-  
23 thorization Act for Fiscal Year 2013 (division B of Public  
24 Law 112–239; 126 Stat. 2140)).

1 **SEC. 12. ASSISTANT SECRETARY OF DEFENSE AND OF THE**  
 2 **MILITARY DEPARTMENTS FOR ENERGY AND**  
 3 **CLIMATE RESILIENCY.**

4 (a) ASSISTANT SECRETARY OF DEFENSE FOR EN-  
 5 ERGY AND CLIMATE RESILIENCY.—

6 (1) IN GENERAL.—Section 138 of title 10,  
 7 United States Code, is amended—

8 (A) in subsection (a)(1), by striking “13”  
 9 and inserting “14”; and

10 (B) in subsection (b), by adding at the end  
 11 the following new paragraph:

12 “(5) One of the Assistant Secretaries is the Assistant  
 13 Secretary of Defense for Energy and Climate Resiliency.  
 14 The principal duty of the Assistant Secretary shall be the  
 15 overall supervision of energy and climate resiliency mat-  
 16 ters of the Department of Defense.”.

17 (2) DUTIES.—Not later than 90 days after the  
 18 date of the enactment of this Act, the Secretary of  
 19 Defense shall prescribe the duties of the Assistant  
 20 Secretary of Defense for Energy and Climate Resil-  
 21 iency under section 138(b)(5) of title 10, United  
 22 States Code (as added by paragraph (1)). In pre-  
 23 scribing such duties, the Secretary shall—

24 (A) specify the duties currently performed  
 25 by the Assistant Secretary of Defense for In-  
 26 stallations, Energy, and the Environment that

shall be performed instead by the Assistant Secretary of Defense for Energy and Climate Resiliency; and

(B) specify the duties and responsibilities of the Assistant Secretary of Defense for Energy and Climate Resiliency for oversight of the implementation of the requirements of this Act by the Department of Defense.

(b) ASSISTANT SECRETARIES OF THE MILITARY DEPARTMENTS.—

(1) DEPARTMENT OF THE ARMY.—Section 7016 of such title is amended—

(A) in subsection (a), by striking “five” and inserting “six”; and

(B) in subsection (b), by adding at the end the following new paragraph:

“(6) One of the Assistant Secretaries shall be the Assistant Secretary of the Army for Energy and Climate Resiliency. The principal duty of the Assistant Secretary shall be the overall supervision of energy and climate resiliency matters of the Department of the Army.”.

(2) DEPARTMENT OF THE NAVY.—Section 8016 of such title is amended—

(A) in subsection (a), by striking “four” and inserting “five”; and

1 (B) in subsection (b), by adding at the end  
 2 the following new paragraph:

3 “(5) One of the Assistant Secretaries shall be the As-  
 4 sistant Secretary of the Navy for Energy and Climate Re-  
 5 siliency. The principal duty of the Assistant Secretary  
 6 shall be the overall supervision of energy and climate resil-  
 7 iency matters of the Department of the Navy.”.

8 (3) DEPARTMENT OF THE AIR FORCE.—Section  
 9 9016 of such title is amended—

10 (A) in subsection (a), by striking “four”  
 11 and inserting “five”; and

12 (B) in subsection (b), by adding at the end  
 13 the following new paragraph:

14 “(5) One of the Assistant Secretaries shall be the As-  
 15 sistant Secretary of the Air Force for Energy and Climate  
 16 Resiliency. The principal duty of the Assistant Secretary  
 17 shall be the overall supervision of energy and climate resil-  
 18 iency matters of the Department of the Air Force.”.

19 (4) DUTIES.—Not later than 90 days after the  
 20 date of the enactment of this Act, each Secretary of  
 21 a military department shall prescribe the duties of  
 22 the Assistant Secretary of such military department  
 23 for energy and climate resiliency under the applica-  
 24 ble amendments made by this subsection. In pre-  
 25 scribing such duties, such Secretary shall—

1 (A) specify the duties currently performed  
 2 by the Assistant Secretary of such military de-  
 3 partment for installations, energy, and the envi-  
 4 ronment that shall be performed instead by the  
 5 Assistant Secretary of such military department  
 6 for energy and climate resiliency; and

7 (B) specify the duties and responsibilities  
 8 of the Assistant Secretary of such military de-  
 9 partment for energy and climate resiliency for  
 10 oversight of the implementation of the require-  
 11 ments of this Act by such military department.

12 (c) EXECUTIVE SCHEDULE MATTERS.—Section 5315  
 13 of title 5, United States Code, is amended by striking the  
 14 items relating to the Assistant Secretaries of Air Force,  
 15 the Assistant Secretaries of the Army, and the Assistant  
 16 Secretaries of the Navy and inserting the following new  
 17 items:

18 “Assistant Secretaries of the Air Force (5).

19 “Assistant Secretaries of the Army (6).

20 “Assistant Secretaries of the Navy (5).”.

21 (d) ADDITIONAL POSITIONS OF RESPONSIBILITY FOR  
 22 ENERGY AND CLIMATE RESILIENCY.—

23 (1) IN GENERAL.—Not later than 90 days after  
 24 the date of the enactment of this Act, each officer  
 25 specified in paragraph (2) shall establish within the

1       command under the jurisdiction of such officer a po-  
2       sition of responsibility for oversight of the implemen-  
3       tation of the requirements of this Act by such com-  
4       mand. Any individual assigned to such a position  
5       shall be an officer of the Armed Forces on active  
6       duty in a general or flag officer grade.

7               (2) OFFICERS.—The officers specified in this  
8       paragraph are the following:

9               (A) The Chairman of the Joint Chiefs of  
10       Staff.

11              (B) The commander of each combatant  
12       command.

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