

117TH CONGRESS  
1ST SESSION

**S.** \_\_\_\_\_

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

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Ms. WARREN introduced the following bill; which was read twice and referred to the Committee on \_\_\_\_\_

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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) GREEN MANUFACTURING TECHNOLOGY.—  
13          The term “green manufacturing technology” means  
14          manufacturing processes that—

15                   (A) use low carbon materials;

16                   (B) reduce carbon emissions or have low  
17          global warming potential during the production  
18          of the material or product; and

19                   (C) use renewable resources to create the  
20          material or product; and

21          (4) NET ZERO ENERGY.—The term “net zero  
22          energy” means a reduction by an entity in overall  
23          energy use, maximization of energy efficiency, and  
24          implementation and use of energy recovery and co-  
25          generation capabilities, and an offset of the remain-

1       ing demand for energy with production of energy  
2       from onsite renewable energy sources, such that as  
3       much energy is produced by the entity as the entity  
4       uses over the course of a year.

5           (5)   RESILIENCY.—The    term    “resiliency”  
6       means, with respect to each installation of the De-  
7       partment of Defense, an anticipation, preparation  
8       for, and adaptation of each installation to utility dis-  
9       ruptions and changing environmental conditions, and  
10      the achievement and maintenance by such installa-  
11      tion of the capability to withstand, respond to, and  
12      recover rapidly from utility disruptions while ensur-  
13      ing the sustainment of mission-critical operations.

14           (6)   NON-OPERATIONAL   SOURCES.—The   term  
15      “non-operational sources”—

16                (A) means fixed installations, enduring lo-  
17                cations, and non-tactical vehicles of the Depart-  
18                ment of Defense; and

19                (B) does not include sources in connection  
20                with the training, moving, and sustaining of the  
21                Armed Forces and weapons platforms for mili-  
22                tary operations and training, including tactical  
23                power systems and generators at non-enduring  
24                locations of the Department of Defense.

1           (7) RENEWABLE ENERGY SOURCE.—The term  
2           “renewable energy source” has the meaning given  
3           that term in section 2924(6) of title 10, United  
4           States Code.

5           (8) UNITED STATES.—The term “United  
6           States” means the several States, the District of Co-  
7           lumbia, and any territory or possession of the  
8           United States.

9   **SEC. 3. NET ZERO ENERGY BY NON-OPERATIONAL**  
10                   **SOURCES OF THE DEPARTMENT OF DE-**  
11                   **FENSE.**

12           (a) IN GENERAL.—The Department of Defense shall  
13           achieve aggregate net zero energy in use of energy by non-  
14           operational sources by not later than December 31, 2031.

15           (b) STRATEGY.—

16           (1) IN GENERAL.—Not later than one year  
17           after the date of the enactment of this Act, the Sec-  
18           retary of Defense shall submit to Congress a report  
19           setting forth the strategy of the Department of De-  
20           fense to achieve the requirement under subsection  
21           (a).

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

24                   (A) The strategy of the Department of De-  
25           fense to achieve the requirement under sub-

1 section (a) for all installations under the juris-  
2 diction of the Department (other than the mili-  
3 tary departments).

4 (B) The strategy of each military depart-  
5 ment to achieve the requirement under sub-  
6 section (a) for all installations under the juris-  
7 diction of such department.

8 (C) An assessment of the manner in which  
9 the achievement by the Department of Defense  
10 of the requirement under subsection (a) will en-  
11 hance the readiness of the Armed Forces to ad-  
12 dress threats posed by Russia, China, Iran,  
13 North Korea, and violent extremism.

14 (3) BIENNIAL UPDATE.—Not later than two  
15 years after the submittal of the report required by  
16 paragraph (1), and every two years thereafter  
17 through December 31, 2031, the Secretary shall  
18 submit to Congress a report setting forth the fol-  
19 lowing:

20 (A) A current assessment of the progress  
21 of the Department of Defense in implementing  
22 the strategy described in paragraph (1), set  
23 forth by military department, Defense Agency,  
24 and other component or element of the Depart-  
25 ment.

1 (B) Any updates to the strategy.

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

7 (c) WAIVER.—

8 (1) IN GENERAL.—The Secretary of Defense  
9 may waive the requirement in subsection (a) if the  
10 Secretary—

11 (A) determines that achievement of such  
12 requirement would adversely affect operational  
13 safety, force protection, or the national security  
14 interests of the United States; and

15 (B) submits to the congressional defense  
16 committees a written notification of the waiver,  
17 together with a justification for the waiver.

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

20 (3) RENEWAL.—Any waiver under this sub-  
21 section may be renewed one or more times, in the  
22 manner provided for the initial such waiver under  
23 paragraph (1) and for the period provided for in  
24 paragraph (2).

1 **SEC. 4. INCLUSION IN ANNUAL ENERGY MANAGEMENT AND**  
2 **RESILIENCE REPORT OF DEPARTMENT OF**  
3 **DEFENSE OF LIST OF MILITARY INSTALLA-**  
4 **TIONS THAT EMIT THE MOST CARBON AND**  
5 **ESTIMATE OF ENERGY CONSUMPTION BY DE-**  
6 **PARTMENT.**

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

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

13 (2) an estimate of all energy consumption by  
14 the Department of Defense, including greenhouse  
15 gas emissions; and

16 (3) an assessment of greenhouse gas emissions  
17 at all installations of the Department, disaggregated  
18 by operational and non-operational sources.

19 (b) METRICS.—In determining energy consumption  
20 and greenhouse gas emissions under paragraphs (2) and  
21 (3) of subsection (a), the Secretary shall use metrics es-  
22 tablished by the Under Secretary of Defense for Acquisi-  
23 tion and Sustainment, in consultation with the National  
24 Academy of Sciences and a federally funded research and  
25 development center.

1 **SEC. 5. CLIMATE-CONSCIOUS CONTRACTING OF DEPART-**  
2 **MENT OF DEFENSE.**

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

6 **“§ 2339d. Requirements relating to energy consump-**  
7 **tion and climate change**

8 “(a) PROJECTED ENERGY CONSUMPTION.—Each  
9 Department of Defense contract for the procurement of  
10 property or services entered into on or after October 1,  
11 2021, shall include a written estimate by the Department  
12 of the total projected energy consumption of all work to  
13 be performed under the contract, and a statement of  
14 whether the contract will include investments by the con-  
15 tractor or the Department in renewable energy or energy-  
16 efficient sources.

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

22 “(1) whether the contractor verifiably produces  
23 as much renewable energy as the total energy it con-  
24 sumes; and

25 “(2) whether there is any order against the con-  
26 tractor by the Environmental Protection Agency, the



1 Department of Justice, or a State attorney general  
2 to pay a fine or take remedial action for a violation  
3 of an environmental law or regulation of the United  
4 States.

5 “(c) DISCLOSURE OF CLIMATE-RELATED RISKS.—  
6 Each prospective contractor with the Department of De-  
7 fense shall, as a prerequisite of bidding for a contract with  
8 the Department, submit a detailed statement to the De-  
9 partment that includes information regarding—

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

13 “(A) physical risks posed to the contractor  
14 by climate change; and

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

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

20 “(d) ASSESSMENT OF FEES TO COMBAT CLIMATE  
21 CHANGE.—(1) Each Department of Defense contract for  
22 the procurement of property or services entered into on  
23 or after October 1, 2021, shall include a requirement that  
24 the contractor pay to the Department of Defense a fee  
25 equal to one percent of the value of the contract in the

1 case of a contractor that is not, at the time of the Depart-  
2 ment's solicitation of the contract, verifiably producing as  
3 much renewable energy as the total energy it consumes.

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

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

11 “(A)(i) determines that such requirements  
12 would adversely affect operational safety, force pro-  
13 tection, or the national security interests of the  
14 United States; or

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

17 “(I) market conditions for the property or  
18 services have adversely affected (or will in the  
19 near future adversely affect) the acquisition of  
20 the property or services by the Department of  
21 Defense; and

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

1 “(B) submits to the congressional defense com-  
2 mittees a written notification of the waiver, together  
3 with a justification for the waiver.

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

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

10 (b) CLERICAL AMENDMENT.—The table of sections  
11 at the beginning of chapter 137 of title 10, United States  
12 Code, is amended by inserting after the item relating to  
13 section 2339c the following new item:

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

14 (c) ENERGY AND CLIMATE RESILIENCY FUND.—

15 (1) IN GENERAL.—There is established in the  
16 Treasury of the United States a fund, to be known  
17 as the “Energy and Climate Resiliency Fund” (in  
18 this subsection referred to as the “Fund”), to be ad-  
19 ministered by the Secretary of Defense.

20 (2) USE OF AMOUNTS.—Amounts deposited in  
21 the Fund shall be used only for climate-related im-  
22 provements that contribute to the continued oper-  
23 ational viability and the resiliency of the networks,  
24 systems, installations, facilities, and other assets and  
25 capabilities of the Department of Defense.

1           (3)     DEPOSIT     AND     AVAILABILITY     OF  
2     AMOUNTS.—Notwithstanding section 3302 of title  
3     31, United States Code, fees collected under section  
4     2339d(d) of title 10, United States Code, as added  
5     by subsection (a)—

6           (A) shall be deposited into the Fund to  
7     carry out the activities described in paragraph  
8     (2);

9           (B) to the extent and in the amounts pro-  
10    vided in advance in appropriations Acts, shall  
11    be available to the Secretary of Defense; and

12          (C) shall remain available until expended.

13          (4)   CLIMATE-RELATED   IMPROVEMENTS   DE-  
14    FINED.—In this subsection, the term “climate-re-  
15    lated improvements” means efforts by the Depart-  
16    ment of Defense to prepare for, or mitigate the ef-  
17    fects of, the following:

18           (A) Extreme weather.

19           (B) Rising sea tides.

20           (C) Increased flooding.

21           (D) Drought.

22           (E) Desertification.

23           (F) Wildfires.

24           (G) Thawing permafrost.

1 (H) Such other conditions as the Secretary  
2 determines necessary.

3 (d) CONTRACTING PREFERENCE FOR GREEN MANU-  
4 FACTURING TECHNOLOGY.—

5 (1) CONTRACTS FOR GREEN MANUFACTURING  
6 TECHNOLOGY.—With respect to contracts awarded  
7 by the Department of Defense, the Department shall  
8 give a preference to qualified contractors.

9 (2) POLICY ON CONSIDERATION OF CERTAIN  
10 FACTORS IN DETERMINATIONS TO AWARD CON-  
11 TRACTS.—In making any determination to enter into  
12 a contract described in paragraph (1), the Secretary  
13 of Defense shall take into account—

14 (A) whether the qualified contractor  
15 verifiably produces as much renewable energy  
16 as the total energy it consumes;

17 (B) whether the qualified contractor  
18 verifiably uses green manufacturing technology;  
19 and

20 (C) whether there is any order against the  
21 qualified contractor by the Environmental Pro-  
22 tection Agency, the Department of Justice, or a  
23 State attorney general to pay a fine or take re-  
24 medial action for a violation of an environ-  
25 mental law or regulation of the United States.

1           (3) VERIFICATION AND REPORTING OF QUALI-  
2       FIED CONTRACTORS.—The Secretary of Defense  
3       shall prescribe such procedures as may be necessary  
4       for—

5           (A) contractors to verify that they are  
6       qualified contractors;

7           (B) qualified contractors meeting the re-  
8       quirements of paragraph (2) to certify that not  
9       more than 25 percent of the amount paid under  
10      the contract will be expended on a subcontract  
11      to a contractor that is not verifiably meeting  
12      those requirements, subject to such necessary  
13      and reasonable waivers as the Secretary may  
14      prescribe; and

15          (C) recording information on each use of  
16      the authority under paragraph (1), including  
17      details relevant to the nature of the contract  
18      and the qualified contractor, and providing that  
19      information to the Comptroller General of the  
20      United States.

21          (4) COMPTROLLER GENERAL OF THE UNITED  
22      STATES REPORT.—

23          (A) IN GENERAL.—Not later than five  
24      years after the date of the enactment of this  
25      Act, the Comptroller General of the United

1 States shall submit to the congressional defense  
2 committees a report on the individual and ag-  
3 gregate uses of the authority under paragraph  
4 (1), using such data as may be available up to  
5 that time.

6 (B) ELEMENTS.—The report under sub-  
7 paragraph (A) shall include—

8 (i) an assessment of the frequency  
9 and nature of the use of the authority  
10 under paragraph (1); and

11 (ii) the tendency of contractors to be-  
12 come qualified contractors in order to qual-  
13 ify for the authority under paragraph (1).

14 (5) QUALIFIED CONTRACTOR DEFINED.—In  
15 this subsection, the term “qualified contractor”  
16 means a contractor that uses green manufacturing  
17 technology.

18 (e) SET ASIDE CONTRACTS FOR SMALL BUSINESSES  
19 THAT USE GREEN MANUFACTURING TECHNOLOGY.—

20 (1) CONTRACTS FOR GREEN MANUFACTURING  
21 TECHNOLOGY.—With respect to contracts awarded  
22 by the Department of Defense, the Department shall  
23 award—

1 (A) in fiscal year 2022, not fewer than five  
2 percent of contracts to qualified small busi-  
3 nesses;

4 (B) by fiscal year 2027, not fewer than 20  
5 percent of contracts to qualified small busi-  
6 nesses; and

7 (C) by fiscal year 2030, not fewer than 50  
8 percent of contracts to qualified small busi-  
9 nesses.

10 (2) POLICY ON CONSIDERATION OF CERTAIN  
11 FACTORS IN DETERMINATIONS TO AWARD CON-  
12 TRACTS.—In making any determination to enter into  
13 a contract described in paragraph (1), the Secretary  
14 of Defense shall take into account—

15 (A) whether the qualified small business  
16 verifiably produces as much renewable energy  
17 as the total energy it consumes;

18 (B) whether the qualified small business  
19 verifiably uses green manufacturing technology  
20 or operates with net zero energy; and

21 (C) whether there is any order against the  
22 qualified small business by the Environmental  
23 Protection Agency, the Department of Justice,  
24 or a State attorney general to pay a fine or  
25 take remedial action for a violation of an envi-



1           ronmental law or regulation of the United  
2           States.

3           (3) VERIFICATION AND REPORTING OF QUALI-  
4           FIED SMALL BUSINESSES.—The Secretary of De-  
5           fense shall prescribe such procedures as may be nec-  
6           essary for—

7                   (A) contractors to verify that they are  
8                   qualified small businesses;

9                   (B) qualified small businesses meeting the  
10                  requirements of paragraph (2) to certify that  
11                  not more than 25 percent of the amount paid  
12                  under the contract will be expended on a sub-  
13                  contract to a contractor that is not verifiably  
14                  meeting those requirements, subject to such  
15                  necessary and reasonable waivers as the Sec-  
16                  retary may prescribe; and

17                  (C) recording information on awards under  
18                  paragraph (1), including details relevant to the  
19                  nature of the contract and the qualified small  
20                  business, and providing that information to the  
21                  Comptroller General of the United States.

22           (4) COMPTROLLER GENERAL OF THE UNITED  
23           STATES REPORT.—

24                   (A) IN GENERAL.—Not later than five  
25                  years after the date of the enactment of this

1 Act, the Comptroller General of the United  
2 States shall submit to the congressional defense  
3 committees a report on the individual and ag-  
4 gregate awards under paragraph (2), using  
5 such data as may be available up to that time.

6 (B) ELEMENTS.—The report under sub-  
7 paragraph (A) shall include—

8 (i) an assessment of the frequency  
9 and nature of awards under paragraph (1);  
10 and

11 (ii) the tendency of small business  
12 concerns to become qualified small busi-  
13 nesses in order to qualify for awards under  
14 paragraph (1).

15 (5) DEFINITIONS.—In this subsection:

16 (A) QUALIFIED SMALL BUSINESS.—The  
17 term “qualified small business” means a small  
18 business concern that verifiably uses green  
19 manufacturing technology or operates with net  
20 zero energy.

21 (B) SMALL BUSINESS CONCERN.—The  
22 term “small business concern” has the meaning  
23 given that term in section 3 of the Small Busi-  
24 ness Act (15 U.S.C. 632).

1 **SEC. 6. ANNUAL REPORT ON EFFECTS OF CLIMATE**  
2 **CHANGE ON DEPARTMENT OF DEFENSE.**

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

12 (b) ELEMENTS.—The report required by subsection  
13 (a) shall include the following:

14 (1) An explanation of the underlying method-  
15 ology behind the climate vulnerability analysis con-  
16 ducted in preparing the report under section 335(c)  
17 of the National Defense Authorization Act for Fiscal  
18 Year 2018.

19 (2) An assessment of how climate change af-  
20 fects low-lying military installations, military instal-  
21 lations of the Navy and the Marine Corps, and mili-  
22 tary installations outside the United States.

23 (3) An assessment of how climate change af-  
24 fects access of members of the Armed Forces to  
25 training ranges.

1           (4) With respect to a military installation in a  
2           country outside the United States, an assessment of  
3           the collaboration between the Department of De-  
4           fense and the military or civilian agencies of the gov-  
5           ernment of that country or nongovernmental organi-  
6           zations operating in that country to adapt to risks  
7           from climate change.

8           (5) An assessment of how climate change af-  
9           fects housing safety and food security on military in-  
10          stallations.

11          (6) An assessment of the strategic benefits de-  
12          rived from isolating infrastructure of the Depart-  
13          ment of Defense in the United States from the na-  
14          tional electric grid and the use of energy-efficient,  
15          distributed, and smart power grids by the Armed  
16          Forces in the United States and overseas to ensure  
17          affordable access to electricity.

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

21                (A) Geographic location.

22                (B) Extreme weather.

23                (C) Rising sea tides.

24                (D) Increased flooding.

25                (E) Drought.

## 21

1 (F) Desertification.

2 (G) Wildfires.

3 (H) Thawing permafrost.

4 (I) Such other categories as the Secretary  
5 determines necessary.

6 (8) A climate vulnerability score, determined by  
7 the Secretary, for each military installation of the  
8 Department.

9 (9) An overview of mitigations, in addition to  
10 current efforts undertaken by the Department, that  
11 may be necessary to ensure the continued oper-  
12 ational viability and to increase the resiliency of the  
13 vulnerable military installations identified under  
14 paragraph (7), and the estimated costs of those miti-  
15 gations.

16 (10) An assessment of how adapting to climate  
17 change impacts the readiness of the Armed Forces  
18 to address the threats posed by Russia, China, Iran,  
19 North Korea, and violent extremism.

20 (c) CONSULTATION.—In developing each report  
21 under subsection (a), the Secretary of Defense shall con-  
22 sult with the Administrator of the Environmental Protec-  
23 tion Agency, the Secretary of Energy, the Administrator  
24 of the National Oceanic and Atmospheric Administration,  
25 the Administrator of the Federal Emergency Management

1 Agency, the Commander of the Army Corps of Engineers,  
2 the Administrator of the National Aeronautics and Space  
3 Administration, a federally funded research and develop-  
4 ment center, and the heads of such other relevant Federal  
5 agencies as the Secretary of Defense determines appro-  
6 priate.

7 (d) FORM OF REPORT.—The report required by sub-  
8 section (a) shall be submitted in unclassified form but may  
9 contain a classified annex if necessary.

10 (e) PUBLICATION.—Upon submittal of the report re-  
11 quired by subsection (a), the Secretary of Defense shall  
12 publish the unclassified portion of the report on an Inter-  
13 net website of the Department of Defense that is available  
14 to the public.

15 **SEC. 7. INCORPORATION OF CLIMATE RESILIENCY INTO**  
16 **EXISTING STRATEGIES OF THE DEPARTMENT**  
17 **OF DEFENSE.**

18 (a) CONSIDERATION OF RISKS OF CLIMATE CHANGE  
19 IN MAKING STRATEGIC DECISIONS RELATING TO MILI-  
20 TARY INSTALLATIONS.—The Secretary of each military  
21 department, with respect to any installation under the ju-  
22 risdiction of that Secretary, and the Secretary of Defense,  
23 with respect to any installation of the Department of De-  
24 fense that is not under the jurisdiction of the Secretary  
25 of a military department, shall consider the risks associ-

1 ated with climate change when making any strategic deci-  
2 sion relating to such installation, including where to locate  
3 such installation and where to position equipment, infra-  
4 structure, and other military assets.

5 (b) CODIFICATION OF DIRECTIVE ON CLIMATE  
6 CHANGE.—

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

11 (2) REPORTS ON IMPLEMENTATION OF DIREC-  
12 TIVE.—Each posture statement submitted to Con-  
13 gress by the Secretary of a military department, the  
14 Chairman of the Joint Chiefs of Staff, or the com-  
15 mander of a combatant command shall include a de-  
16 scription of the implementation and discharge by  
17 such official of the Directive referred to in para-  
18 graph (1), including the personnel assigned to imple-  
19 ment and discharge the Directive and the progress  
20 achieved in such implementation and discharge.

21 (c) INCORPORATION OF CLIMATE CHANGE INTO CER-  
22 TAIN DEFENSE STRATEGIES.—

23 (1) IN GENERAL.—The Secretary of Defense, in  
24 coordination with the heads of other elements of the  
25 intelligence community, the Administrator of the

1 Environmental Protection Agency, the Secretary of  
2 Energy, the Administrator of the National Oceanic  
3 and Atmospheric Administration, the Administrator  
4 of the Federal Emergency Management Agency, the  
5 Commander of the Army Corps of Engineers, the  
6 Administrator of the National Aeronautics and  
7 Space Administration, and the heads of such other  
8 relevant Federal agencies as the Secretary of De-  
9 fense determines appropriate, shall incorporate cli-  
10 mate change into the National Defense Strategy, the  
11 National Military Strategy, and operational plans of  
12 the Department of Defense.

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

17 (d) IMPLEMENTATION AND DISCHARGE OF REQUIRE-  
18 MENTS.—

19 (1) CROSS-FUNCTIONAL TEAM ON INCORPORA-  
20 TION OF CLIMATE RESILIENCY INTO DEFENSE  
21 STRATEGIES.—Among the cross-functional teams es-  
22 tablished by the Secretary of Defense pursuant to  
23 subsection (c) of section 911 of the National De-  
24 fense Authorization Act for Fiscal Year 2017 (Pub-  
25 lic Law 114–328; 130 Stat. 2345; 10 U.S.C. 111



1 note) in support of the organizational strategy for  
2 the Department of Defense required by subsection  
3 (a) of that section, the Secretary shall establish a  
4 cross-functional team on the implementation and  
5 discharge of the requirements under this section.

6 (2) ESTABLISHMENT AND ACTIVITIES.—The  
7 cross-functional team required by paragraph (1)  
8 shall be established in accordance with subsection (c)  
9 of section 911 of the National Defense Authorization  
10 Act for Fiscal Year 2017, and shall be governed in  
11 its activities in accordance with the provisions of  
12 such subsection (c).

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

17 **SEC. 8. RESEARCH, DEVELOPMENT, AND DEMONSTRATION**

18 **PROGRAM ON ENERGY STORAGE, HYBRID**

19 **MICROGRID, AND ENERGY RESILIENCY.**

20 (a) PROGRAM REQUIRED.—The Secretary of De-  
21 fense, in consultation with the Secretary of Energy, shall  
22 conduct a program of research, development, and dem-  
23 onstration of hybrid microgrid systems and electric grid  
24 energy storage.

25 (b) MULTIDISCIPLINARY TEAMS.—

1           (1) IN GENERAL.—In carrying out the program  
2           under subsection (a), the Secretary of Defense shall  
3           organize activities among multidisciplinary teams to  
4           leverage, to the maximum extent practicable, exper-  
5           tise from the Department of Energy, the National  
6           Laboratories, institutions of higher education, and  
7           the private sector.

8           (2) GOALS.—The multidisciplinary teams orga-  
9           nized under paragraph (1) shall pursue aggressive,  
10          milestone-driven, and basic research, development,  
11          and demonstration goals to carry out the program  
12          under subsection (a).

13          (3) RESOURCES.—The Secretary of Defense  
14          shall provide sufficient resources to the multidisci-  
15          plinary teams organized under paragraph (1) to  
16          achieve the goals described in paragraph (2) over a  
17          ten-year period.

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

20               (1) addressing electrical power intermittency;

21               (2) integrating renewable energy sources into  
22          microgrid systems, hybrid microgrid systems, energy  
23          storage, grid security, and local generation of zero-  
24          carbon fuels;

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

3           (4)       materials,       electric       thermal,  
4           electromechanical, and electrochemical systems re-  
5           search;

6           (5) power conversion technologies research;

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

8           (7) additive manufacturing;

9           (8) developing—

10               (A) empirical and science-based industry  
11               standards to compare the storage capacity,  
12               cycle length and capabilities, and reliability of  
13               different types of electricity storage; and

14               (B) validation and testing techniques;

15           (9) other fundamental and applied research  
16           critical to widespread deployment of electricity stor-  
17           age;

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

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

1           (12) microgrid systems and hybrid microgrid  
2 systems to increase the resilience of critical infra-  
3 structure of the Department of Defense;

4           (13) the potential for energy storage and re-  
5 newable resources, including wind, solar, and hydro-  
6 power, to be integrated into microgrid systems or  
7 hybrid microgrid systems of installations of the De-  
8 partment of Defense;

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

12           (15) opportunities to develop the capacity to op-  
13 erate, maintain, and repair a hybrid microgrid sys-  
14 tem;

15           (16) leveraging existing capacity within local or  
16 regional research organizations, such as organiza-  
17 tions based at institutions of higher education, to  
18 support development of hybrid microgrid systems,  
19 including by testing novel components and systems  
20 prior to field deployment;

21           (17) electricity storage device safety and reli-  
22 ability, including potential failure modes, mitigation  
23 measures, and operational guidelines;

1           (18) standards for performance, control inter-  
2           face, grid interconnection, and interoperability of  
3           electricity storage devices;

4           (19) maintaining a public database of energy  
5           storage projects, policies, codes, standards, and reg-  
6           ulations; and

7           (20) such other criteria as the Secretary of De-  
8           fense, in consultation with the Secretary of Energy,  
9           determines appropriate.

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

13               (1) States;

14               (2) Indian tribes;

15               (3) regional entities and regulators;

16               (4) units of local government;

17               (5) institutions of higher education, including  
18          historically Black colleges or universities and other  
19          minority-serving institutions; and

20               (6) private sector entities.

21          (e) REPORT.—

22               (1) IN GENERAL.—Not later than 180 days  
23          after the date of the enactment of this Act, and an-  
24          nually thereafter until 2031, the Secretary of De-  
25          fense shall submit to the congressional defense com-

1       mittees a report on the efforts to implement the pro-  
2       gram under subsection (a), including any strategy  
3       developed to implement such program.

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      (f) ASSISTANCE TO STATES.—The Secretary of De-  
13      fense may provide technical and financial assistance to  
14      States, Indian tribes, units of local government, institu-  
15      tions of higher education, or private sector entities to par-  
16      ticipate in or use research, development, or demonstration  
17      of technology developed under this section.

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

21           (1) For fiscal year 2022, \$10,000,000.

22           (2) For fiscal year 2023, \$25,000,000.

23           (3) For fiscal year 2024, \$50,000,000.

24           (4) For fiscal year 2025, \$75,000,000.

25           (5) For fiscal year 2026, \$125,000,000.

1 (6) For fiscal year 2027, \$200,000,000.

2 (7) For each of fiscal years 2028 through 2030,  
3 \$250,000,000.

4 (h) NO EFFECT ON OTHER PROVISIONS OF LAW.—

5 Nothing in this section authorizes regulatory actions that  
6 would duplicate or conflict with regulatory requirements,  
7 mandatory standards, or related processes under section  
8 215 of the Federal Power Act (16 U.S.C. 824o).

9 (i) USE OF FUNDS.—To the maximum extent prac-  
10 ticable, in carrying out this section, the Secretary of De-  
11 fense shall ensure that the use of funds to carry out this  
12 section is coordinated with the Secretary of Energy and  
13 among different offices within the Grid Modernization Ini-  
14 tiative of the Department of Energy and other programs  
15 conducting energy storage research.

16 (j) DEFINITIONS.—In this section:

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

22 (2) HYBRID MICROGRID SYSTEM.—The term  
23 “hybrid microgrid system” means a stand-alone elec-  
24 trical system that—

1 (A) is comprised of conventional generation  
2 and at least one alternative energy resource;  
3 and

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

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

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

12 **SEC. 9. CONDITIONS ON BASE REALIGNMENT AND CLO-**  
13 **SURE ACTIVITIES FUNDED THROUGH BASE**  
14 **CLOSURE ACCOUNT OF DEPARTMENT OF DE-**  
15 **FENSE.**

16 (a) CONSIDERATION OF FACTORS REQUIRED.—With  
17 respect to any Base Realignment and Closure round begun  
18 by the Department of Defense after the date of the enact-  
19 ment of this Act, the Department shall consider current  
20 and potential vulnerabilities to installations and operations  
21 of the Department of Defense resulting from climate  
22 change and the resiliency of installations of the Depart-  
23 ment.

24 (b) BASE REALIGNMENT AND CLOSURE ROUND DE-  
25 FINED.—In this section, the term “Base Realignment and



1 Closure round” means base realignment and closure ac-  
2 tivities, including real property acquisition and military  
3 construction projects, as authorized by the Defense Base  
4 Closure and Realignment Act of 1990 (part A of title  
5 XXIX of Public Law 101–510; 10 U.S.C. 2687 note) and  
6 funded through the Department of Defense Base Closure  
7 Account established by section 2906 of such Act (as  
8 amended by section 2711 of the Military Construction Au-  
9 thorization Act for Fiscal Year 2013 (division B of Public  
10 Law 112–239; 126 Stat. 2140)).