

*The Department of Defense (DoD) Climate Resiliency and Readiness Act*  
**Senator Elizabeth Warren and Representative Veronica Escobar**  
Section-by-Section Summary

**Section 1—Title: Department of Defense Climate Resiliency and Readiness Act**

**Section 2—Definitions**

- Climate change is a change of climate that is attributed directly or indirectly to human activity that alters the global atmosphere, including changes in climate observed over time.
- Net Zero Energy means producing as much renewable energy as total energy consumed.
- Resiliency means that each installation of the Defense Department (DoD) demonstrates the ability to anticipate, prepare for, and adapt to utility disruptions and changing environmental conditions, and to withstand, respond to, and recover rapidly from utility disruptions while continuing normal operations.
- Non-Operational Sources (i.e., installation energy) are energy-emitting or energy-consuming assets of the Defense Department that are fixed military bases and other fixed military infrastructure that do not support combat operations, as well as military vehicles that are not used for such operations.<sup>1</sup>

**Section 3—Net Zero Energy by Non-Operational Sources of the Department of Defense**

- Requires the Defense Department to achieve Net Zero Energy, in the aggregate, by Non-Operational Sources in the United States and overseas by 2030.
  - Within one year, the Defense Department must provide a written strategy for achieving Net Zero Energy from non-operational sources, in consultation with the National Academy of Sciences and a federally funded research and development center (FFRDC).
  - Within no later than two years after creating the initial strategy for achieving Net Zero Energy from non-operational sources, and every two years afterward, the Defense Department must submit a status report to the Senate and House Armed Services Committees on its progress in achieving this goal, including any updates to the strategy.
- Waiver: Secretary of Defense may waive the requirements of this section only if: 1) he determines that achieving either goal would adversely affect the national security interests of the United States, including the safety of U.S. service members AND 2) he submits a written justification of the waiver to the Senate and House Armed Services Committees. This waiver can be renewed, but each waiver only lasts a maximum of 30 days.<sup>2</sup>

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<sup>1</sup> U.S. Department of Defense, Office of the Assistant Secretary of Defense For Energy, Installations, and Environment, “Annual Energy Management and Resilience Report (AEMRR) Fiscal Year 2017,” July 2018, p. 1, <https://www.acq.osd.mil/eie/Downloads/IE/FY%202017%20AEMR.pdf>. For the purposes of this legislation, non-operational sources of energy are distinct from operational sources (i.e., operational energy), which are energy-emitting or energy-consuming assets of the Defense Department that involve training, moving, and sustaining members of the military and any weapons or other combat-related assets for operations and training. These sources also include generators and similar power systems at mobile DoD locations. U.S. Department of Defense, Office of the Assistant Secretary of Defense for Sustainment, “Operational Energy,” [https://www.acq.osd.mil/eie/OE/OE\\_index.html](https://www.acq.osd.mil/eie/OE/OE_index.html).

<sup>2</sup> This waiver is limited to Section 3 only.

#### **Section 4—Climate-Conscious Budgeting of Department of Defense**

- Requires the Defense Department to include in its annual base (i.e., normal, planned activities of the DoD, excluding contingency operations and emergency supplemental funding) budget proposal to Congress a stream of dedicated funds for adapting to, and mitigating, climate change-related risks to military networks, systems, installations, facilities, and other assets and capabilities.
- Requires the Defense Department to include in its annual budget proposal to Congress an estimate of the effects on military readiness and an estimate of the financial costs reasonably attributed to climate change-related events over the preceding year, including the loss of, or damage to, military networks, systems, installations, facilities, and other assets and capabilities. The estimate shall break down the readiness impacts and financial costs due to climate change by military department (i.e., Army, Navy/Marine Corps, and Air Force).

#### **Section 5—Inclusion in Annual Energy Management and Resilience Report of Department of Defense of List of Military Installations that Emit the Most Carbon and Estimate of Energy Consumption by Department**

- The Defense Department produces an Annual Energy Management and Resilience Report (AEMRR), which assesses the Air Force, Army, Navy, and Marine Corps, and ten Defense Agencies for “managing ... installation energy program, reducing energy demand, increasing distributed (on-site) and renewable energy, and enhancing energy resilience.”<sup>3</sup> This section would require the Defense Department to include in every subsequent AEMRR, in consultation with the National Academy of Sciences and a federally funded research and development center (FFRDC): 1) a list of the ten military bases within each service that emit the most carbon, 2) an estimate of all energy consumption by the Defense Department, including greenhouse gas emissions, and 3) an assessment of greenhouse gas emissions at all military bases, separated by Operational Sources and Non-Operational Sources.

#### **Section 6—Climate-Conscious Contracting of Department of Defense**

- Starting October 1, 2019, the Defense Department must include a written estimate of the total energy consumption of all work to be performed under any contract, regardless of monetary value, including a statement of whether the contract will include investments by the contractor or the Department in renewable energy or energy-efficient sources.
- Requires the Defense Department to consider, when determining whether to enter into any contract, whether 1) the contractor verifiably produces as much renewable energy as the total energy it consumes in its operations and 2) the contractor has been found by the Environmental Protection Agency, the Department of Justice, or a State attorney general to have violated any U.S. environmental law or regulation.
- Requires every prospective contractor with the Defense Department, in order to bid for any contract regardless of monetary value, to submit to the Department a detailed statement including

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<sup>3</sup> U.S. Department of Defense, Office of the Assistant Secretary of Defense For Energy, Installations, and Environment, “Annual Energy Management and Resilience Report (AEMRR) Fiscal Year 2017,” July 2018, p. 3, <https://www.acq.osd.mil/eie/Downloads/IE/FY%202017%20AEMR.pdf>.

any risks to the contractor's operations posed by climate change and any established company process to manage climate change-related risks. These requirements are similar to those included in Senator Warren's *Climate Risk Disclosure Act*, which would require publicly traded companies to disclose critical information about their exposure to climate change-related risks.<sup>4</sup>

- Starting October 1, 2019, each contract, regardless of monetary value, awarded by the Defense Department to a contractor requires the contractor to pay a monetary fee equal to one percent of the value of the contract if the contractor is not verifiably producing as much renewable energy as the total energy it consumes at the time of contract solicitation. Explicitly prohibits any contractor from circumventing this fee by attempting to incorporate it into its contract proposal and passing the cost onto the DoD.
- Creates an Energy and Climate Resiliency Fund, which contains the fees acquired from contractors that are not verifiably producing as much renewable energy as the total energy they consume. The Fund can only be used for improvements that adapt military networks, systems, installations, facilities, and other assets and capabilities to climate change.
- Waiver: the Secretary of Defense may waive the requirements of this section only if he determines that meeting these requirements would adversely affect the national security interests of the United States, including the safety of U.S. service members; OR he determines that the market conditions for a product or service make it difficult for the Department to acquire that product or service and the waiver will accelerate the Department's acquisition of the product or service. The Secretary must submit a written justification of the waiver to the Senate and House Armed Services Committees. This waiver can be renewed, but each waiver only lasts a maximum of 30 days.<sup>5</sup>

## **Section 7—Development of Climate Vulnerability and Risk Assessment Tool**

- Directs the Defense Department to create a Climate Vulnerability and Risk Assessment Tool, in consultation with multiple federal agencies (e.g., Energy Department, Environmental Protection Agency, National Oceanic and Atmospheric Administration, etc.) and consistent with the prevailing scientific consensus, to assist the military in determining how climate change-related risks impact military networks, systems, installations, facilities, and other assets, as well as the operational plans and capabilities.
- Within 180 days of the bill's passage, the Defense Department must submit an unclassified report to the Senate and House Armed Services Committees describing the Tool, including its methodology. The unclassified report must be published on a publicly available Defense Department website. A classified annex may be submitted.
- The Defense Department shall publish any updates as the Secretary deems necessary, in consultation with the enumerated federal agencies and consistent with the prevailing scientific consensus, to the Tool on a publicly available Defense Department website

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<sup>4</sup> Senator Elizabeth Warren, "Warren, Colleagues Unveil Bill to Require Every Public Company to Disclose Climate-Related Risks," September 17, 2018, <https://www.warren.senate.gov/newsroom/press-releases/warren-colleagues-unveil-bill-to-require-every-public-company-to-disclose-climate-related-risks>.

<sup>5</sup> This waiver is limited to Section 6 only.

## Section 8—Annual Report on Effects of Climate Change on Department of Defense

- Requires the Defense Department to submit an annual report, in consultation with multiple federal agencies and other entities (e.g., Environmental Protection Agency, Energy Department, National Oceanic and Atmospheric Administration, the Army Corps of Engineers, etc.) to the Senate and House Armed Services Committees assessing the vulnerabilities of military installations to climate change, using the Climate Vulnerability and Risk Assessment Tool required under Section 7.
- The annual climate vulnerability report must include: 1) an explanation of the methodology underlying the report’s assessment; 2) an assessment of how climate change affects low-lying military bases, Navy and Marine Corps bases, and training ranges; 3) for overseas military bases, an assessment of how the Defense Department coordinates with military and civilian authorities in foreign countries, or NGOs operating in those countries, to adapt those overseas bases to climate change-related risks; 4) an assessment of how climate change affects housing safety and food security on military bases; 5) an assessment of the potential readiness benefits of isolating military infrastructure from the national electric grid and using energy-efficient, dispersed power grids in the United States and overseas to ensure affordable electricity supply; 6) a list of the ten military bases within each military department that are most vulnerable to climate change; 7) a Climate Vulnerability Score for each of the 500 military installations of the Defense Department;<sup>6</sup> 8) an overview of the current efforts to adapt the ten most vulnerable military bases within each service to climate change, as well as any future mitigation efforts that may be necessary; and 9) an assessment of how adapting climate change impacts the readiness of the military to counter the threats posed by Russia, China, Iran, North Korea, and violent extremist organizations.
- An unclassified version of the annual report must be published on a publicly available Defense Department website. A classified annex may be submitted.

## Section 9—Incorporation of Climate Resiliency into Existing Strategies of the Department of Defense

- Requires the Defense Department to consider climate change-related risks when making any decision regarding where to locate a military installation and where to position equipment, infrastructure and other military assets.
- Codifies existing Defense Department Directive “Climate Change Adaptation and Resilience” into law.<sup>7</sup>
- Requires each “posture statement” (i.e., update on the state of, and the challenges facing, a military department) submitted to Congress by the Secretary of each military department to

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<sup>6</sup> U.S. Department of Defense, Office of the Assistant Secretary of Defense

For Energy, Installations, and Environment, “Annual Energy Management and Resilience Report (AEMRR) Fiscal Year 2017,” July 2018, p. 3, <https://www.acq.osd.mil/eie/Downloads/IE/FY%202017%20AEMR.pdf>.

<sup>7</sup> U.S. Department of Defense, “DoD Directive 4715.21 – Climate Change Adaptation and Resilience,” <https://dod.defense.gov/Portals/1/Documents/pubs/471521p.pdf>. The Directive states: “The DoD must be able to adapt current and future operations to address the impacts of climate change in order to maintain an effective and efficient U.S. military. Mission planning and execution must include: a. Identification and assessment of the effects of climate change on the DoD mission. b. Taking those effects into consideration when developing plans and implementing procedures. c. Anticipating and managing any risks that develop as a result of climate change to build resilience.”

describe its implementation of the Directive, including the personnel charged with the carrying it out and the progress achieved.

- Requires the Defense Department, in coordination with the Intelligence Community and other federal agencies (e.g., Environmental Protection Agency, Energy Department, National Oceanic and Atmospheric Administration, the Administrator of the Federal Emergency Management Agency, Army Corps of Engineers, etc.) must incorporate climate change-related risks into the National Defense Strategy,<sup>8</sup> the National Military Strategy,<sup>9</sup> and operational plans of the Defense Department.
- Directs the Defense Department to establish “Cross-Functional Teams,” an organizational structure to enhance the efficient performance of objectives, to implement the requirements of the Climate Change Adaptation and Resilience Directive.<sup>10</sup>

### **Section 10—Research, Development, and Demonstration Program on Energy Storage, Hybrid Microgrid, and Energy Resiliency**

- Requires the Defense Department, in consultation with the Energy Department, National Laboratories, states, Indian tribes, colleges and universities, including historically black colleges and universities and other minority-serving institutions, local governments, private companies, and other relevant stakeholders, to conduct a new research, development, and demonstration program for microgrids<sup>11</sup> and electric grid energy storage to improve the Department’s energy efficiency and climate resiliency.<sup>12</sup>
- The research, development, and demonstration program for microgrids and electric grid energy storage must prioritize a variety of factors, including, but not limited to: integrating renewable energy sources, such as wind, solar, and hydropower into microgrid and hybrid<sup>13</sup> microgrid systems; additive manufacturing; energy storage; location generation of zero-carbon fuels; developing and using fuel-efficient engines; empirical and science-based industry standards; using microgrid and hybrid microgrid systems to make Defense Department critical

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<sup>8</sup> U.S. Department of Defense, “Summary of the 2018 National Defense Strategy of the United States of America,” <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>. Climate change is neither referenced nor discussed in the Trump Administration’s unclassified summary of the National Defense Strategy.

<sup>9</sup> An unclassified version of the National Military Strategy is not publicly available at this time.

<sup>10</sup> National Defense Authorization Act for Fiscal Year 2017, S. 2943, <https://www.congress.gov/114/plaws/publ328/PLAW-114publ328.pdf>. The National Defense Authorization Act (NDAA) for Fiscal Year 2017 described the purpose of “cross-functional teams” as an organizational structure “(A) to provide for effective collaboration and integration across organizational and functional boundaries in the Department of Defense; (B) to develop, at the direction of the Secretary, recommendations for comprehensive and fully integrated policies, strategies, plans, and resourcing decisions; (C) to make decisions on cross-functional issues, to the extent authorized by the Secretary and within parameters established by the Secretary; and (D) to provide oversight for and, as directed by the Secretary, supervise the implementation of approved policies, strategies, plans, and resourcing decisions approved by the Secretary.”

<sup>11</sup> A microgrid is “an integrated energy system consisting of interconnected loads and distributed energy resources (including generators, energy storage devices, and smart controls) that can operate with the utility grid or in an intentional islanding mode.” Ike Skelton National Defense Authorization Act for Fiscal Year 2011, H.R. 6523, <https://www.govinfo.gov/content/pkg/PLAW-111publ383/pdf/PLAW-111publ383.pdf>.

<sup>12</sup> “The Department spends approximately \$4 billion a year on energy that powers its fixed installations. Moreover, these bases are largely dependent on a commercial power grid that is vulnerable to disruption from aging infrastructure, weather-related events and direct attack.” U.S. Department of Defense, Office of the Assistant Secretary of Defense for Sustainment, “Installation Energy,” [https://www.acq.osd.mil/eie/IE/FEP\\_index.html](https://www.acq.osd.mil/eie/IE/FEP_index.html).

<sup>13</sup> “Hybrid microgrid system” is defined in this legislation as “a stand-alone electrical system that—(A) is comprised of conventional generation and at least one alternative energy resource; and (B) may use grid-scale energy storage.”

infrastructure more resilient; the capacity of the Defense Department workforce to maintain and repair a microgrid system; electricity storage device safety and reliability, and mitigation measures; and grid interconnectivity and interoperability of electricity storage devices.

- Authorizes escalating appropriations for the research, development, and demonstration program for microgrids and electric grid energy storage: \$10 million for FY 2020, \$25 million for FY 2021, \$50 million for FY 2022, \$75 million for FY 2023, \$125 million for FY 2024, \$200 million for FY 2025, and \$250 million annually from FY 2026 to FY 2030.
- Requires the Defense Department to submit an annual report to the Senate and House Armed Services Committees, and made available to the public, until 2031 on efforts to implement the research, development, and demonstration program for microgrids and electric grid energy storage.
- Directs the Defense Department to ensure that its use of funds to carry out the research, development, and demonstration program is coordinated with the Energy Department and avoids measures that would duplicate or conflict with existing energy reliability laws or standards.

### **Section 11—Conditions on Base Realignment and Closure Activities Funded Through Base Closure Account of Department of Defense**

- Requires the Defense Department to consider current and potential vulnerabilities of military installations to climate change, as well those installations' resiliency to climate change, in any future process of base realignment and closure (BRAC), in which the Department closes, reduces, relocates, or otherwise reorganizes its installation infrastructure (e.g., a base, camp, post, station, yard, homeport facility for any ship, etc.).

### **Section 12—Assistant Secretary of Defense and Of the Military Departments for Energy and Climate Resiliency**

- Requires the creation of an Assistant Secretary of Defense for Energy and Climate Resiliency within the office of the Secretary of Defense and an equivalent position within each military department, as well as a requirement that the Joint Staff and each of the combatant commands<sup>14</sup> have a general officer dedicated to carrying out the energy and climate resiliency requirements of this legislation.<sup>15</sup>

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<sup>14</sup> U.S. Department of Defense, "Combatant Commands," <https://www.defense.gov/Our-Story/Combatant-Commands/>.

<sup>15</sup> Currently, the Office of the Under Secretary of Defense for Acquisition and Sustainment is one of the primary entities at the Defense Department responsible for climate change adaptation, and prepared the "Report on Effects of a Changing Climate to the Department of Defense" pursuant to the FY 2018 NDAA. However, this office has a wide-ranging portfolio that goes beyond climate change adaptation. U.S. Department of Defense, Office of the Under Secretary of Defense for Acquisition & Sustainment, <https://www.acq.osd.mil/>. As the climate change threat to our military demands significant attention, the legislation seeks to highlight the responsibility of adapting to climate change by creating a separate, Assistant Secretary-level position.