Department of Defense

Climate Adaptation Plan 2022 Progress Report

FOREWORD

Every day, climate change affects the work we do at the Department of Defense.

Rising temperatures, changing precipitation patterns, and more frequent, extreme, and unpredictable weather conditions caused by climate change are worsening existing security risks and creating new challenges for the United States and our allies and partners. Climate change is increasing the demand and scope for military operations at home and around the world. At the same time, it is undermining military readiness and imposing increasingly unsustainable costs on the Department of Defense.

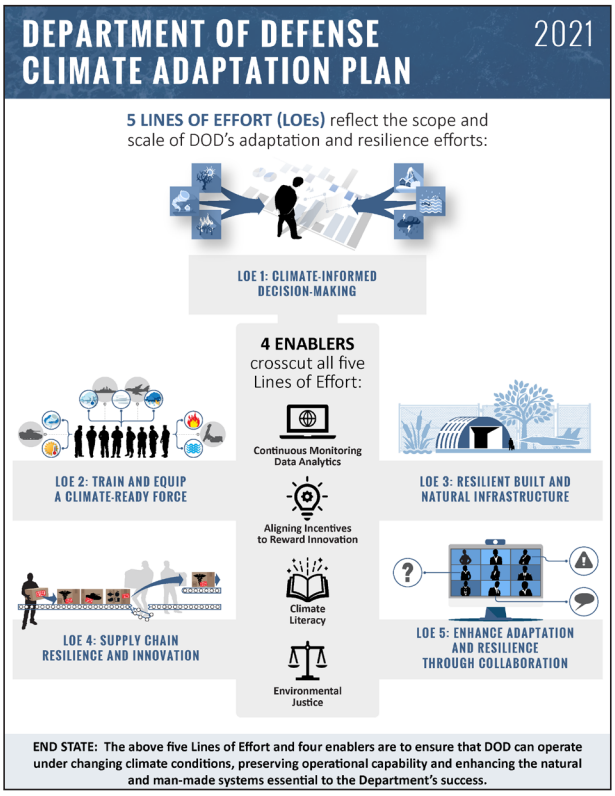
I am proud of the significant steps the Department has taken to address climate-related threats. We have invested in increasing our resilience and improving our combat capability, all while reducing the Department's own contributions to climate change. We have incorporated climate and energy resilience requirements into key strategy and planning documents, such as the National Defense Strategy and the National Military Strategy. In addition, each Military Department has published its own plan to adapt to climate change and mitigate its impact on the mission. We are also engaging with our allies and partners on these issues, consistent with the Department of Defense Climate Risk Analysis, which underscored the strategic and mission risks climate change poses around the world.

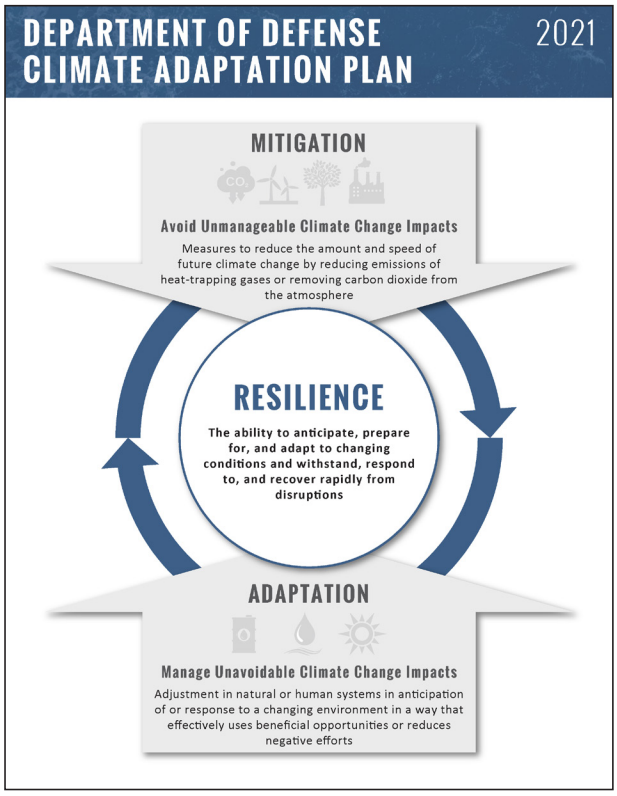
No country can find lasting security without tackling the climate crisis. Climate change will continue to shape the context for military operations—for the United States and for our competitors—which is why we must ensure that our combat forces are ready to respond to future risks and equipped to operate superbly no matter the changing conditions.

The 2022 Climate Adaptation Plan Progress Report describes some of our recent efforts to respond to this crisis, but we know that we have much more work to do. In the years ahead, the countries that are the most resilient and best prepared to manage the effects of climate change will gain significant security advantages.

I am confident that the Department will do what it takes to meet the security challenges posed by climate change and will continue to stand ready to defend the United States, now and in the future.

Lloyd J. Austin III, Secretary of Defense





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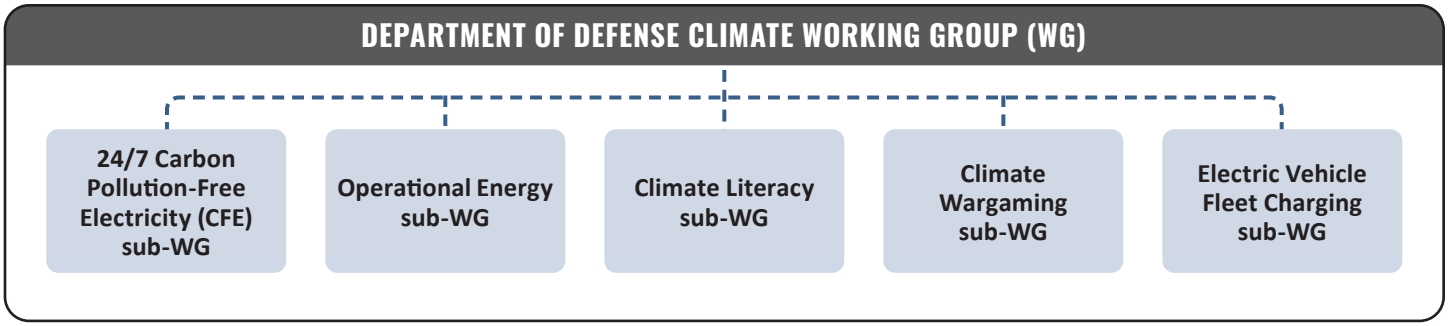
CLIMATE ADAPTATION OFFICIAL	Dr. Kate White, Kathleen.D.White.civ@mail.mil
AGENCY CLIMATE ADAPTATION WEBPAGE	https://www.defense.gov/spotlights/tackling-the-climate-crisis

SECTION 1: UPDATES ON PRIORITY ACTIONS

1. PRIORITY ACTION PROGRESS SUMMARY

PRIORITY ACTION PROGRESS

ACTION	STATUS	ESTIMATED DATE OF COMPLETION	BRIEF DESCRIPTION OF PROGRESS
Line of Effort (LOE) 1: *Climate-Informed Decision-Making*	In Progress	LOE 1 is a continuous action. The Department's progress will evolve as knowledge increases.	Climate-informed decision-making is in progress across the Department and continues to be prioritized with senior leader support. Building on the Department's landmark *Climate Adaptation Plan* (CAP), the Department is taking steps toward developing an overarching Climate Resilience Strategy that fully integrates the CAP, the *Sustainability Report and Implementation Plan*, the *Defense Climate Risk Assessment*, the *National Intelligence Estimate*, the *National Defense Strategy*, and other foundational documents as appropriate. See the LOE 1 example.
LOE 2: *Train and Equip a Climate-Ready Force*	In Progress	LOE 2 is a continuous action. The Department's progress will continue to evolve as climate changes.	Preparing a climate-ready force through appropriate training and equipping is in progress. The DOD is preparing combat forces capable of operating under the most extreme and adverse weather and terrain conditions. Current actions include assessing and reviewing testing and training programs, equipment, exercises and acquisition for integration of climate change considerations. See the LOE 2 example.
LOE 3: *Resilient Built and Natural Installation Infrastructure*	In Progress	LOE 3 is a continuous action. The Department's progress will evolve as installation infrastructure is adapted to observed and projected climate changes.	Improving the resilience of built and natural installation infrastructure is in progress across the Department. The DOD is engaging in comprehensive installation assessments including installation energy, water, and climate resilience, Integrated Natural Resource Management Plans, and through the Master Planning process. Expanded use of programs and partnerships, such as the Readiness and Environmental Protection Integration (REPI) Program, the Office of Local Defense Community Cooperation (OLDCC), and the Sentinel Landscapes Partnership, enhance natural infrastructure mission capabilities. See the LOE 3 example.
LOE 4: *Supply Chain Resilience and Innovation*	In Progress	LOE 4 is a continuous action. The Department's progress will evolve as conditions and priorities change.	Supply chain resilience and innovation is in progress across the Department. The DOD is continuing to assess its supply chain resilience and how it can leverage purchasing power to spur innovation and deployment of climate adaptation and mitigation technologies. The DOD is committed to strengthening the industrial base and establishing a network of domestic and allied supply chains to meet national security needs. See the LOE 4 example.
LOE 5: *Enhance Adaptation and Resilience Through Collaboration*	In Progress	LOE 5 is a continuous action. The Department's progress will evolve with the changing climate and as adaptation and resilience implementations occur within installations, surrounding defense communities, and for missions and operations globally.	Collaboration to enhance adaptation and resilience is in progress across the Department. The DOD has strengthened existing partnerships, formed new partnerships, and increased its adaptation and resilience program's capabilities and capacity. See the LOE 5 example.



2. PRIORITY ACTION PROGRESS EXAMPLES

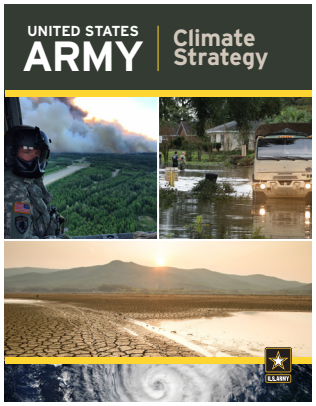
A. LOE 1 CLIMATE-INFORMED DECISION-MAKING: Over the past year, the DOD has incorporated and continues to incorporate climate considerations into relevant strategy, planning, and processes to enable climate-informed decision-making. In March 2022, the Honorable Secretary of Defense Lloyd J. Austin III submitted to Congress the classified National Defense Strategy (NDS), which included climate change considerations. In the fall of 2021, the Department published the *Climate Adaptation Plan (CAP)*, the CAP companion document *Highlights and Examples for the Department of Defense Climate Adaptation Plan*, and the *Defense Climate Risk Analysis*, all of which anchor Departmental initiatives focused on how to train, fight, and win with due consideration for the effects of climate change at every level of the enterprise.

With the publication of the classified NDS, climate considerations and energy resilience are now included in key DOD strategy and planning documents, in forums that bring together DOD leadership, and across DOD data and analytic tools. The Department's Climate Working Group (CWG), which coordinates responses and tracks implementation of climate and energy-related directives, actions, and progress, was established in March 2021 and is represented at the Assistant Secretary or three-star equivalent level. Two sub-working groups stood up in 2021: Operational Energy and 24/7 Carbon Pollution-Free Electricity (CFE). In February 2022, the CWG established three new sub-working groups to further the Department's climate informed decision-making efforts: Wargaming, Climate Literacy, and Electric Vehicle Fleet Charging. Recent updates to Advana (the Department's enterprise data analytics platform), illuminate climate-informed performance management and resource allocation decisions. The DOD Climate Assessment Tool (DCAT) now includes all major domestic installations and is being expanded to include all major international installations and to include capability to estimate climate-related vulnerabilities.

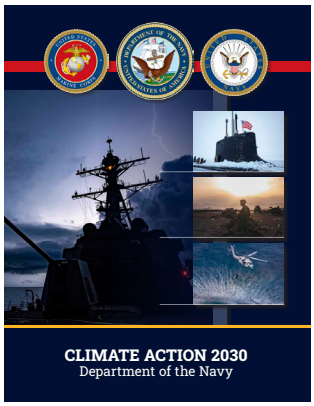
The Military Departments and Services are taking steps to accelerate climate adaptation and have aligned their work to the initiatives and activities contained in the CAP. Each Military Department has published a plan or strategy to operationalize climate adaptation and mitigation, with actions to enhance readiness, resilience, and capabilities of the force:

- The Army's *Army Climate Strategy* (February 8, 2022)
- The Navy's *Department of the Navy Climate Action 2030* (May 24, 2022)
- The Air Force's *Climate Action Plan* (October 5, 2022)

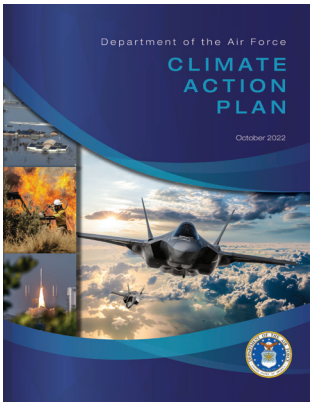
Other Defense Components are also integrating climate change considerations. For example, United States (U.S.) Africa Command (USAFRICOM) runs a monthly Climate Security Working Group with participation from across the command. They are integrating security implications of climate change into their theater strategy, plans, and engagements, including through a climate-specific annex to the theater campaign plan. For additional policies, guidance, and documents outlining the Department's climate-informed decision-making, see the timeline outlined in the CAP.



Cover photo of the U.S. Army Climate Strategy.



Cover photo of the U.S. Navy Climate Action 2030.



Cover photo of the U.S. Air Force Climate Action Plan.

B. LOE 2 TRAIN AND EQUIP A CLIMATE-READY FORCE: By incorporating climate considerations into wargaming, the Department gains insight into how climate change could impact DOD's ability to achieve its mission, changes needed to policies, postures or capabilities, and adaptation opportunities to work with Allies and partners. The DOD Climate Working Group

Tyndall AFB, Florida. An F-22 Raptor and a T-38 Talon fly above Tyndall AFB. The T-38s are part of 325th Training Support Squadron and act as adversaries in simulated air-to-air combat missions, which are integral parts of the training of F-22 pilot students. U.S. Air Force Photo by Master Sergeant J S. Wilcox. September 25, 2021.

established a Wargaming sub-Working Group in February 2022. This sub-working group, led by the Joint Staff, is responsible for developing a plan to integrate climate change into modeling, simulation, exercises, and wargaming, including in extreme environments for ensuring the appropriate representation of climate impacts and climate change in wargames. One goal of this group is to identify and support analytical partnerships to expand understanding of the impacts of climate change and potential adaptation and mitigation measures for the Joint Force. These inform day-to-day operations, potential contingencies, and future warfighting environments which impact DOD readiness and investment strategies.

For example, the Office of the Assistant Secretary of Defense for Homeland Defense and Hemispheric Affairs (OASD(HDHA)) and Joint Staff Climate Change Action Group sponsored a tabletop exercise titled Security Impacts of Climate and Environmental Change in the Western Hemisphere on June 2, 2022. This exercise explored climate-related impacts in the region and informed how the DOD could expand engagement with Allies and partners. The OAS of the Navy for Energy, Installations, and Environment (EI&E) sponsored a climate change tabletop exercise on June 29, 2022. Further climate informed wargames are currently under development through the Wargame Incentive Fund (WIF). In FY22, WIF allocated $3M to fund five wargames examining the effects of climate change in South and Central Asia, identifying climate impacts to defense logistics, providing U.S. Indo-Pacific Command with data and analyses on locations at risk from climate change, exploring climate vulnerabilities, and providing assessments of costs and proactive investments in DOD installation resilience.

C. LOE 3 RESILIENT BUILT AND NATURAL INSTALLATION INFRASTRUCTURE: The Sentinel Landscape program has been a valuable way to connect landowners with voluntary state and federal assistance programs to strengthen military readiness, conserve natural resources, bolster agricultural and forestry economies, and increase climate change resilience. In 2022, the Sentinel Landscapes Partnership, composed of the DOD, the Department of the Interior (DOI), and U.S. Department of Agriculture (USDA), designated three new sentinel landscapes: the Camp Bullis Sentinel Landscape in Texas; Northwest Florida Sentinel Landscape; and Southern Indiana Sentinel Landscape. These new landscapes are building on the success of the seven existing sentinel landscapes. By coordinating with local, state, and federal partners, the newly designated sentinel landscapes will protect missions at 14 key DOD installations and ranges, enhance natural infrastructure solutions, and preserve critical species and habitats. In March 2022, the Sentinel Landscape Partnership also added a new Climate Adaptation Coordinator for the Eastern North Carolina Sentinel Landscape, as a pilot approach that the Partnership hopes to replicate in other sentinel landscapes during the next year.

In the Northwest Florida Sentinel Landscape, partners are already working to protect nine installations and ranges that are integral to U.S. Air Force, Navy, and Coast Guard testing and training: Eglin Air Force Base (AFB), Tyndall AFB, Naval Air Station (NAS) Pensacola, NAS Whiting Field, Naval Support Activity Panama City, Eglin Gulf Test and Training Range, Hurlburt Field, Saufley Field, and Corry Station. Tyndall AFB is working to create an "Installation of the Future" that is resilient to climate change impacts as part of its recovery from Hurricane Michael, a powerful Category 5 storm that destroyed almost 500 buildings on base. Local, state, and national partners are leveraging funds from the Readiness Environmental Protection Integration (REPI) Program and the National Fish and Wildlife Foundation's (NFWF) National Coastal Resilience Fund to construct living shorelines and oyster reef habitats adjacent to the base to preserve water quality, enhance overall ecosystem health, and strengthen flood resilience. The outcomes from this coastal resilience project will support the Northwest Florida Sentinel Landscape's goals to increase climate adaptation, restore habitat for threatened and endangered species, and improve water quality and quantity.

D. LOE 4 SUPPLY CHAIN RESILIENCE AND INNOVATION: The Department is working to leverage its buying power as the largest energy consumer in the federal government to accelerate the deployment of CFE. On February 3, 2022, the DOD and the U.S. General Services Administration released a request for information (RFI) aimed at gathering market information to guide the Department's and the federal government's transition to 100% CFE by 2030. Two additional RFIs issued in the fall of 2021 collected data that DOD can use to inform future approaches to obtaining greenhouse gas (GHG) emission data from companies in DOD's supply chain. Those RFIs generated significant feedback and identified companies willing to share data through a GHG disclosure pilot process.

DOD applications are increasingly reliant on lithium battery systems to enable mission success. From unmanned systems, to directed energy needs, lithium-ion (li-ion) batteries are delivering enhanced capability to the warfighter in support of the NDS priorities. While batteries are improving capability, they are also enabling the Department to operate warfighting platforms more efficiently. Silent Watch, as an example, enables ground tactical vehicles to sustain communication systems without having to idle a large diesel engine. This extends missions from three days to seven, using the same amount of fuel. Further, hybridization of the power train of ground

tactical vehicles can increase range and decrease fuel consumption in similar ways to commercial passenger vehicles. Both Silent Watch and hybridization utilize li-ion batteries. Batteries and other energy storage technologies can increase the feasibility of renewable sources such as solar and wind, while reducing fuel consumption for tactical power generation.

As the benefits to capability and climate of fielding li-ion batteries have become clear, so too has the fragility of the global and domestic supply chain. As a result, the Department has initiated a series of actions to pursue recommendations laid out in the *Securing Defense-Critical Supply Chains: An Action Plan Developed in Response to President Biden's Executive Order (EO) 14017* Report published in February 2022. DOD has engaged with other federal agencies to stand up the Federal Consortium for Advanced Batteries (FCAB). FCAB brings together federal agencies to provide a coordinated approach to ensuring a domestic supply of lithium batteries and accelerating the development of a robust and secure domestic industrial base. In addition, the Department is developing a DOD lithium battery strategy, which is scheduled to be signed by the Under Secretary of Defense for Acquisition and Sustainment by the end of 2022. As part of these actions, the Department included nearly $200 million in the FY 2023 President's Budget request to enhance the resilience of energy storage supply chains.

Wright-Patterson AFB, Ohio. Flexible lithium-ion batteries developed by researchers at the Air Force Research Laboratory have the potential to power countless flexible electronic devices, including human performance sensors and flexible displays, and are able to maintain a steady voltage discharge following extreme mechanical stress testing. U.S. Air Force Photo by Marisa Alia-Novobilski. October 4, 2016.

Lackland AFB, Texas. At expeditionary microgrid system at Lackland AFB, monocrystalline silicon solar panels are placed on top of each tent for energy production while a trailer (center) holds the hardware, software, and lithium-ion batteries that form the smart grid. U.S. Air Force Photo by Donna Lindner. February 2, 2016.

E. LOE 5 ENHANCE ADAPTATION AND RESILIENCE THROUGH COLLABORATION: The Department is engaged in numerous collaborative activities to improve climate resilience. For example, one project undertaken by the OLDCC in the Hampton Roads region is working to reduce climate risks to 11 Navy installations from impacts of climate change, sea level rise, and encroachment. Four local jurisdictions are currently assessing military installation resilience, encroachment, and incompatible civilian development around these Navy installations, including Naval Station Norfolk (the world's largest naval installation). Many of these military sites suffer from repeated and increasingly severe flooding and stormwater management challenges that impact mission readiness. After completion of the assessments, the local jurisdictions (in partnership with the Navy), will enhance climate change adaptation strategies to address these concerns. Strong partnerships between the DOD, Navy, state, and local jurisdictions are key to effectively addressing national security concerns in the Hampton Roads region.

A $650,000 Defense Community Infrastructure Program (DCIP) grant is enabling Carteret County, North Carolina, to undertake a $1,950,000 project to implement shoreline and infrastructure protection measures to enhance installation resilience to severe weather and storm surges at Radio Island, a key U.S. Navy landing craft use area. The beach restoration project will conserve natural habitats and serve as a barrier to reduce risks to critical infrastructure that provides accessibility to the landing craft ramp and utility services. It will also promote compatible land use by preserving the established public access beach areas on the Island. Restoration of the shoreline and preservation of associated infrastructure on Radio Island ensures that landing craft crews from Joint Expeditionary Base Little Creek–Fort Story can maintain critical mission capabilities.

DOD is revitalizing the Defense Environmental International Cooperation (DEIC) program to support international Allies and partners in building environmental, water, and climate security resilience. To align with the priorities and guidance of the Office of the Under Secretary of Defense for Policy (OUSD(P)), future DEIC-funded activities will likely include projects that strengthen our strategic partnerships, improve Allied and partner capabilities and capacity, and sustain DOD mission resilience.

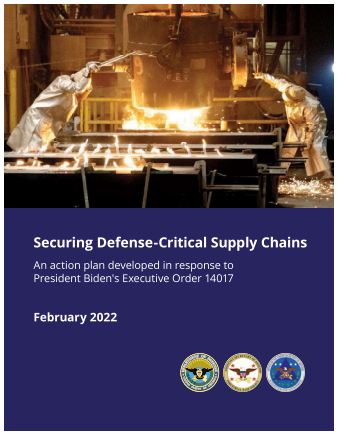
SECTION 2: UPDATES ON OTHER INITIAL PLAN TOPICS

1. CLIMATE RISK REDUCTION

The Department, through its DCAT, has produced a structured method for assessing operating risk to climate-related hazards. DCAT is maintained by the Office of the Deputy Assistant Secretary of Defense, Environment and Energy Resilience (ODASD(E&ER)). This online, Common Access Card-accessible data portal supports climate-informed decision-making to increase resilience against climate hazards while preserving operational capability and protecting systems essential to the DOD's success. The DCAT assesses climate exposure related to eight hazards: coastal flooding, riverine flooding, heat, drought, energy demand, land degradation, wildfire, and historical extreme weather events. The screening-level climate exposure information in the DCAT

improves understanding of an installation's exposure to specific, individual climate-related hazards and how these may relate to other ongoing energy and water resilience measures. Data development and climate exposure assessments for all Mission Assurance Installations for inclusion in the DCAT is complete.

The Department articulates its plans to ensure security of supply for items vital to national security in the February 2022 report, *Securing Defense-Critical Supply Chains: An Action Plan Developed in Response to President Biden's EO 14017*. This also provides the DOD's assessment of supply chains in the defense industrial base (DIB). The report prioritizes four areas in which critical vulnerabilities pose the most pressing threat to national security. These focus areas are:



Cover photo of Securing Defense-Critical Supply Chains Action Plan.

- **Kinetic capabilities**: Current missiles systems and advanced and developing missile capabilities, including hypersonic weapons technology and directed energy weapons
- **Energy storage and batteries**: High-capacity batteries, with a particular focus on lithium batteries as described previously in the LOE 4 example
- **Castings and forgings**: Metals or composites developed into key parts and manufacturing tools via high-intensity processes
- **Microelectronics**: State-of-the-practice (SOTP) and legacy microelectronics, as well as state-of-the-art (SOTA) microelectronics

The recommendations outlined in the report are initial steps on a longer-term effort to increase domestic manufacturing production and technology development capabilities, enhance efforts with Allies and partners, and ensure economic and national security. The DOD will use the recommendations to prioritize policy and investment decisions over the coming years to strengthen the DIB and improve the resilience of its supply chains.

2. CLIMATE VULNERABILITY ASSESSMENTS

DOD incorporates climate considerations into policies and decision-making that support climate vulnerability assessments at its installations and sites over the next several years. For example, DOD included criteria for climate vulnerability risk reduction measures, energy efficiencies, and clean energy technologies for ODASD Military Construction prioritization. Beginning next year, DCAT updates will support explicit climate scoring data for Combatant Commands (CCMDs) to incorporate into their assessments for nearly all posture locations globally. Using the DCAT as part of a comprehensive analysis helps the Department prioritize where best to invest resources to improve climate adaptation and resilience. These climate vulnerability considerations require validating climate-related impacts through site-specific analyses; determining potential mission impacts; and conducting detailed engineering studies to identify the most effective adaptation strategies. For example, the Services are using DCAT as a screening measure to select candidate projects vulnerable to extreme weather as they perform a sustainable building materials pilot to identify and assess low embodied carbon building materials. The Department is expanding and developing a secure version of DCAT to include vulnerability by adding metrics for climate sensitivity and adaptive capacity, with implementation planned over the next several years.

DOD recently released updates to the DCAT to meet the Secretary of Defense's April 2021 President's Leaders Summit on Climate Change deliverable to include all major domestic U.S. installations by April 2022. The update included an expanded set of all major domestic U.S. installations and related sites from 157 to 1,932, enhanced stability through a migration to cloud-based computing, refined standardized assessments, and easy integration with Defense Installations Spatial Data Infrastructure (DISDI) Geographic Information System (GIS) layers. These updates to the DCAT enhance the ability of Departmental leaders and installation staff to consistently incorporate climate change hazards into long-term planning and decision-making. For example, the ODASD(E&ER) is working with Military Components such as the Defense Health Agency (DHA), to crosswalk climate exposure data with critical DHA facilities for future project planning.

3. CLIMATE LITERACY

The DOD is incorporating climate change into education and training programs across the military and civilian workforce. In January 2022, the Deputy Secretary of Defense approved the establishment of a Climate Literacy Sub Working Group, led by the Deputy Assistant Secretary of Defense for Force Education and Training and reporting to the DOD Climate Working Group and Chief Sustainability Officer (CSO). That group achieved a key milestone in April 2022 when it reached consensus on a definition of "climate literacy" to inform DOD education, training, and engagement activities—understanding how the climate impacts DOD missions, how DOD operations impact the climate, and how to make climate-informed decisions. Senior leadership promotion of both the concept and the means of promulgating climate literacy across the Office of the Secretary of Defense (OSD), the Joint Staff, the Military Departments, and defense agencies will enable the DOD to build, develop, and maintain a workforce that engages proactively at the intersection of climate change and national security.

Educating, training, engaging, and empowering a climate-literate workforce puts the Department on a proactive footing. It ensures present and future mission success through factoring in the effects of the changing climate in all decision-making. Because this will require a tailored approach to meet a broad spectrum of climate workforce requirements, climate literacy is a top workforce development and talent management priority for the DOD, as highlighted in strategy and planning guidance. This includes supporting the development and promotion of professional development, retaining and growing climate-knowledgeable professionals, and attracting talent and expertise to foster a culture of climate action at the Department. Service members and DOD civilians will be educated on climate change, trained to use that knowledge, and engaged on climate issues in ways appropriate to their mission, function, and role.

WEATHER TO CLIMATE CONTINUUM

A team representing the OSD, Army, Navy, and Air Force drafted a graphical representation of activities, planning timeframes, key policies, responsible parties, relative confidence levels, and typical analyses over the weather-to-climate continuum (minus 30 years to 100 years in the future). This senior Department subject matter expert assessment identifies the proper points of entry for user questions along the continuum of weather to climate change, depending on their activities. As a result of the discussions, the technical subject matter experts identified the look-ahead period of 1 to 10 years as the most uncertain period, with activities in that timeframe requiring both weather and climate expertise.

4. TRIBAL ENGAGEMENT

The DOD is committed to respecting tribal sovereignty and self-determination; tribal treaty rights; the government-to-government relationship; and complying with all applicable laws, regulations, and policies related to tribal consultation requirements. In October 2021, Secretary Austin signed the 2021 interagency Tribal Treaty Rights Memorandum of Understanding (TTR MOU), joining 16 other signatory agencies. The DOD is an active participant on the interagency Tribal Treaty Rights Working Group and its legal subgroup to implement the TTR MOU. The TTR MOU outlines the development of an indexed Tribal Treaty Rights Database. The DOD Legacy Program is joining the DOI and the USDA to fund Phase II of the database. The DOD Components' access to digitized tribal treaties will assist the Components with determining early in the planning process whether proposed actions, plans, or ongoing activities on installations and testing and training ranges affect protected tribal rights, land, or resources.

Fort Bliss, Texas. Kevin Fenyak, a geographic system information specialist for archaeological contractor Cherokee Management and Consulting, looks for artifacts at a well-preserved archaeological site. U.S. Army Photo by Winifred Brown. July 19, 2018.

In the coming months, the DOD will host virtual regional listening sessions with Native Americans, Alaska Natives, Native Hawaiians, and Indigenous peoples of the U.S. territories on climate impact considerations to tribal treaty rights, subsistence, and on natural and cultural resources. These listening sessions will provide the DOD with a greater understanding and appreciation of tribal concerns to support progress toward creating solutions to minimize climate related risks at military installations and protect tribal resources, tribal rights, or adjoining Indian lands. Further, the DOD is adding a tribal lands mapping layer into the DCAT to help assess climate exposure hazards on DOD installations and potential adjoining tribal lands. In addition, the DOD will update its consultation policies with Federally Recognized Tribes (DODI 4710.02 "DOD Interactions with Federally Recognized Tribes," September 24, 2018) and with Native Hawaiian Organizations (DODI 4710.03 "Consultation with Native Hawaiian Organizations (NHOs)," October 25, 2011; Change 1 Effective: August 31, 2018), to include language on climate change and environmental justice.

The DOD is a participant on the interagency Indigenous Traditional Ecological Knowledge (ITEK) Working Group led by the Office of Science and Technology Policy and the Council on Environmental Quality (CEQ). The Working Group is researching and developing guidance for agencies on how to consider and use ITEK in federal decision-making and in research. The DOD looks forward to receiving guidance on how to use and consider ITEK in implementation of its CAP.

5. ENVIRONMENTAL JUSTICE

The Department has considered EJ in its 2021 *Climate Adaptation Plan* and is working to incorporate EJ into the implementation of the CAP. The DOD has developed an EJ strategy to address EJ in National Environmental Policy Act (NEPA) programs and policies. The strategy is intended to ensure that EJ is not limited to these processes, but rather is integrated into all of the DOD's missions, strategy, planning, and systems.

The DOD ODASD(E&ER) staff have evaluated the new White House CEQ Climate and Economic Justice Screening Tool (CEJST) for use in decision-making. They are assessing the data from CEJST and the Environmental Protection Agency's (EPA) EJScreen tool for inclusion in the DISDI Portal to perform installation climate exposure assessments through the DCAT. Representatives from the Department also regularly engage with the White House Environmental Justice Advisory Council (WHEJAC). Moving forward, the Department will review community resilience authorities to assess opportunities for improved energy efficiencies as a shared benefit that may lower cost for tribal, socially vulnerable, and disadvantaged communities around installations.

6. PARTNERSHIPS

The Department's decisions about climate change and those of neighboring communities, partners and allies, and fellow agencies, are intrinsically interconnected. Expanded partnerships across agencies include DOD's involvement in the recently established White House CEQ Interagency Working Groups (IWGs) on climate resilience (e.g., coastal, drought, extreme heat, flood, and wildfire). Expanded use of programs such as the Sentinel Landscape Partnership, the REPI Program, and programs within the OLDCC such as Compatible Use, Installation Resilience, and DCIP have enhanced built and natural infrastructure that preserves mission capabilities.

The REPI Program continued expanding its mutually beneficial partnership with NFWF to accelerate coastal resilience projects near DOD installations and ranges. For fiscal year (FY) 2022, the REPI Program will provide up to $15 million to support NFWF's National Coastal Resilience Fund and will assist in the proposal evaluation process. This interagency coordination aligns with the priorities of both the REPI Program and Sentinel Landscapes Partnership. Through FY20, projects across designated Sentinel Landscapes have leveraged over $178 million in DOD funds, $250 million in USDA funds, $57 million in DOI funds, $230 million in state funds, $16 million in local funds, and $104 million in private funds to permanently protect more than 515,000 acres of land. In OLDCC, funding for DCIP has increased significantly since its inception, from $50M in FY21, to $60M in FY22, and to $90M in FY23. This funding will enable OLDCC to competitively award construction contracts which enhance community infrastructure to support mission capabilities.

The 2022 NDS emphasizes that alliances and international partnerships are an enduring strength for the United States. Cooperation and coordination with Allies and partners are incorporated into the Department's CAP LOE 5: *Enhance Adaptation and Resilience Through Collaboration*. For example, Congress funded CCMDs for support to International Natural Resources Management and Security. Each CCMD can partner with the United States Forest Service to assist international programs that support national security priorities related to the destabilizing effects of extreme weather. U.S. European Command is coordinating with 7th Army Training Command to analyze installations in Poland and Romania to identify areas at risk of flooding. The study will include an assessment that determines the locations and types of upland erosion, e.g., channel erosion, down-cutting, vegetation shifts, and wildfire. Projects like these support theater training ranges to ensure long-term use by host nations and U.S. units.

Maritime security cooperation builds Ally and partner capacity and resilience in the face of climate change security concerns such as the sustainability of fisheries and aquaculture, modifying fish distribution, affecting fishery productivity, and creating potential challenges to the current international prohibition on Arctic fishing. For example, during August to November of 2021, Marine Forces Pacific's Task Force Koa Moana supported the Palau Division of Maritime Security Fish and Wildlife Protection by providing support to monitoring and surveillance efforts in Palau's exclusive economic zone (EEZ). Security cooperation activities that assist nations in exercising control over their EEZs are globally relevant and will be key to enabling Allies and partners to resist resource predation exasperated or driven by climate change.

In line with its roles and responsibilities, the OUSD(P) has newly established the ODASD Arctic and Global Resilience (ODASD(A&GR)). This office is supporting the integration of global climate change considerations into strategies, policies, plans, and programs, as well as working closely with Allies and partners to build resilience to climate change.

The Department is also meeting the commitment made by Secretary Austin at the April 2021 *President's Leaders Summit on Climate Change* to deliver versions of the DCAT to five close allies (Germany, Italy, Japan, South Korea, and the United Kingdom) as well as subsequent commitments to extend the tool to Australia. ODASD (A&GR) is also working with other bilateral partners and regional multilateral organizations, including the North Atlantic Treaty Organization (NATO), to incorporate adaptation and climate security concerns into engagements and programs.

SECTION 3: NEW TOPICS FROM E.O. 14057

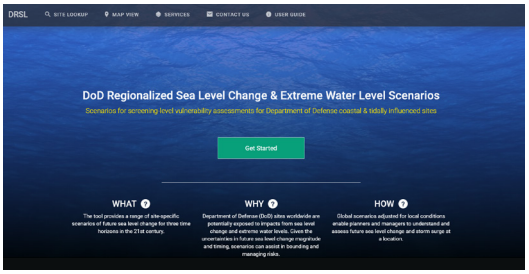
1. POLICY REVIEW

The Department's approach to the requirements of Section 209 of EO 14057 is to begin with a review of statutes, policy, and guidance to ensure climate-resilient investments, management decisions, and program implementation. This review encompasses adaptation, mitigation, and sustainability, with a focus on how each contributes to climate resilience. The current review of existing climate resilience policy and authority coverage is underway to develop an integrated policy for military installation resilience covering energy, water, climate, cyber, and other hazards to achieve all-hazards resilience. The DOD is fortunate in that robust mission focus across the Department, combined with strong leadership support for climate resilience, has averted many of the typical barriers an organization might face in implementing climate initiatives. As part of the review, potential maladaptive policies or elements will be identified and updated.

Recognizing the need to ensure the resilience and safety of DOD on-base facilities, Military Departments and Defense Components are developing new policies to reduce the adverse impacts of climate change and extreme weather events. The Department prioritizes resilience in its installation planning and basing processes, to include consideration of environmental vulnerabilities in installation master planning, management of natural resources, design and construction standards, utility systems/service, and emergency management operations.

The Army Sustainable Design and Development policy is being updated with sections on climate adaptation, climate mitigation and resilience, and with instructions regarding climate-informed investment decisions for new construction and renovations. On June 7, the OASD(EI&E) released Directive Type Memorandum (DTM) 2022-003: *Flood Hazard Area Management for DOD Installations*, which reflects the recent re-establishment of the Federal Flood Risk Management Standards (FFRMS). This DTM establishes policies, responsibilities, and procedures to incorporate climate-informed science approaches into flood hazard area delineation and analysis for siting, leasing, and construction within a flood hazard area.

2. CLIMATE SCENARIO ANALYSIS



The DOD Regionalized Sea Level (DRSL) Change and Extreme Water Level Scenarios online database tool was developed to enhance and increase the efficacy of screening-level vulnerability and impact assessments for DOD coastal sites worldwide.

DOD uses climate projections in its processes and decision-making. The Department has developed several tools to incorporate climate data into its future planning processes. In addition to the DCAT, the DOD Regional Sea Level (DRSL) Database provides projected sea level rise data for DOD coastal and tidally influenced military sites worldwide. Site-specific adjustments (vertical land movement, ocean circulation, and ice melt effects) are included in the assessment. DRSL is supported by an interagency Coastal Assessment Regional Scenario Working Group (CARSWG) that includes subject matter experts from the DOD, the U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautical and Space Administration (NASA), EPA, U.S. Geological Survey (USGS), and others.

These tools use the best available, authoritative data from the U.S. government (e.g., NOAA, USGS, USDA, the Census Bureau, and EPA) and other sources (e.g., U.S. Global Change Research Program, World Meteorological Organization's Coupled Model Intercomparison Project Phase 5 (CMIP-5)) to measure exposure to historical extreme weather and reasonably foreseeable climate effects. The Department benefits from the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) projects to evaluate the latest science and technology for different ways to benefit from climate data (e.g., the development of the DRSL tool).

The Navy's Installation Geospatial Information and Services (IGI&S) Program maximizes geospatial data from other federal agencies (e.g., the Federal Emergency Management Agency (FEMA), National Geospatial-Intelligence Agency, NOAA, and NASA) to help inform shore infrastructure management decision-making. Furthermore, the BUILDER™ Sustainment Management Systems web-based software (for building assessments) considers the condition and mission of the facility. Facility condition combined with climate projections are considerations in repair and replacement projects.

The planning and implementation of resilience measures for extreme weather and climate change for the Military Departments are guided by the *Army Climate Resilience Handbook*, the *Naval Facilities Engineering Systems Command (NAVFAC) Installation Adaptation & Resilience Climate Change Planning Handbook*, the *Air Force Civil Engineer Severe Weather/Climate Hazard Screening and Risk Assessment Playbook*, and applicable Unified Facilities Criteria (UFC) in addition to DOD Instructions, Directives, Manuals, and Memoranda. For example, the September 2020 update to UFC 2-100-01: *Installation Master Planning* directs installations how to develop installation climate resilience plans, provides instruction on the use of climate scenario planning, and refers to the DCAT and the DRSL Database.

The organizational chart below shows how senior leadership is focused on addressing climate change on a Department-wide scale. Interactions with the White House Interagency Working Groups are largely through the Office of the Secretary of Defense:

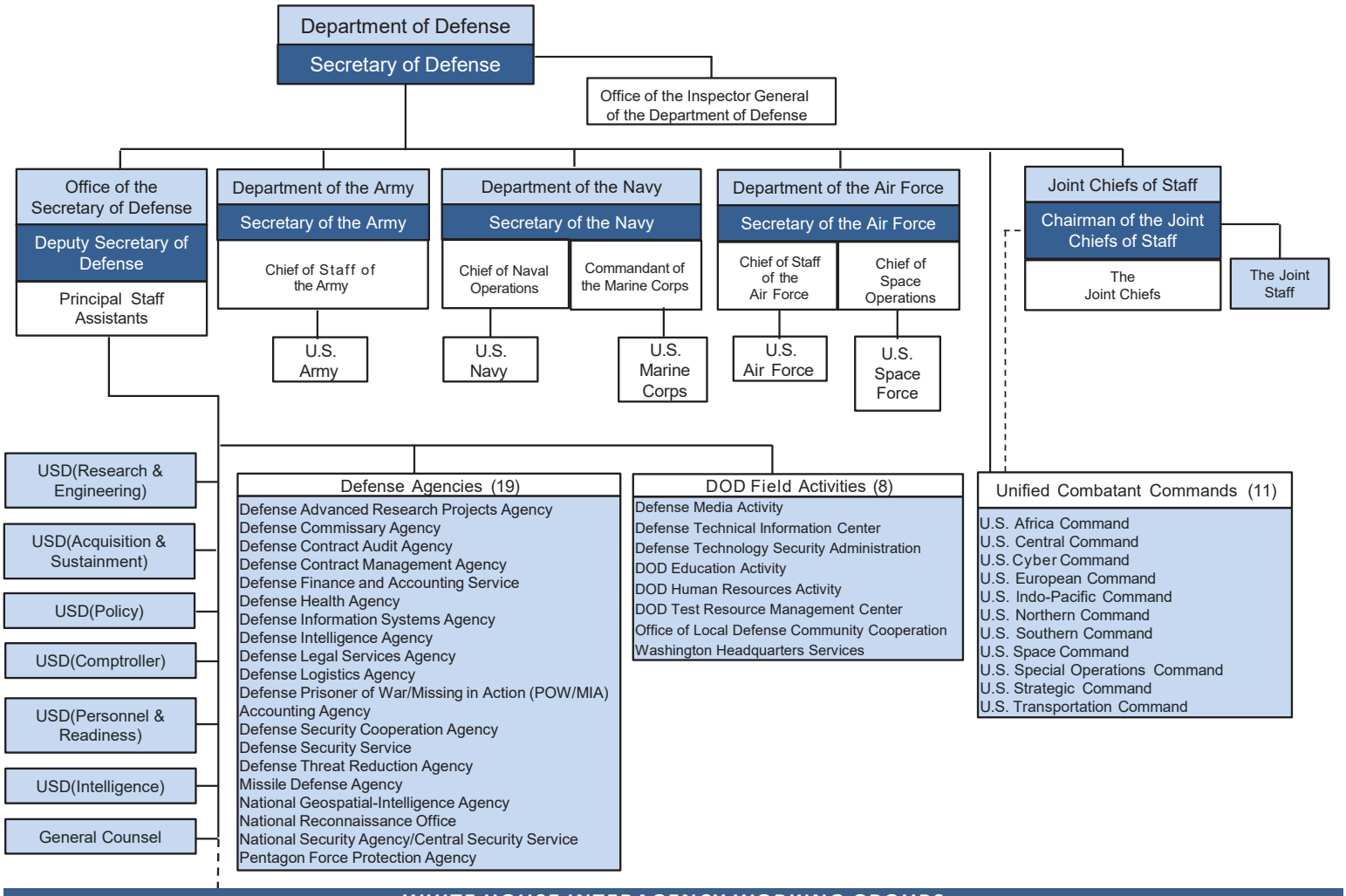
DOD CLIMATE ORGANIZATIONAL STRUCTURE

SENIOR ADVISOR TO THE SECRETARY ON CLIMATE AND CSO

- Reports to the Secretary and the Deputy Secretary and represents the Department on climate and sustainability-related matters within the Department and in the interagency.
- Authority to implement sustainability requirements and the responsibility to report to the White House on agency progress.
- Chairs the DOD Senior Sustainability Council.

CLIMATE COLLABORATION

- Office of Management and Budget (OMB)/CEQ
  - National Climate Task Force (NCTF)
  - Federal CSO Council
- Deputy Secretary of Defense Chaired Climate Working Group
  - 24/7 CFE sub-Working Group
  - Operational Energy sub-Working Group
  - Climate Literacy sub-Working Group
  - Electric Vehicle Fleet Charging sub-Working Group
  - Wargaming sub-Working Group
- DOD, Military Department and Defense Agencies
  - Climate Change Adaptation Working Group
  - Water Resilience Working Group
  - Joint Staff Climate Change Action Group
  - DOD Sustainability Working Group
  - CARSWG



WHITE HOUSE INTERAGENCY WORKING GROUPS

NCTF Resilience IWGs
Coastal Resilience
Drought Resilience
Extreme Heat
Flood Resilience
Wildfire Resilience

NCTF Clean Power IWGs
Federal Procurement
Siting/Permitting for Renewables & Transmission
Policy/Programs for Renewables & Transmission
Offshore Wind
Distributed Energy Resources

Other NCTF IWGs
Federal Fleet Zero-Emission Vehicle Sprint Team
Hydrofluorocarbon (HFCs)
GHG Monitoring and Measurement
Carbon Capture Utilization & Sequestration
America the Beautiful
White House Environmental Justice Advisory Council

Executive Order 14057 IWGs
100% 24/7 Federal CFE
Zero-Emission Vehicle Fleets
Net-Zero Emission Buildings
Federal Buy Clean Policy
Federal Climate Adaptation and Resilience

SENIOR LEADERSHIP FOCUSED ON ADDRESSING CLIMATE CHANGE ON A DEPARTMENT-WIDE SCALE

REFERENCES

Advisory Council on Historic Preservation, CEQ, Department of Homeland Security, Department of Commerce, DOD, Department of Energy, DOI, Department of Justice, Department of Labor, Department of State, Department of Transportation, Department of Education, EPA, Housing and Urban Development, Office of Personnel and Management, USDA, Department of Veterans Affairs. 2021. Memorandum of Understanding Regarding Interagency Coordination and Collaboration for the Protection of Tribal Treaty Rights and Reserved Rights. https://www.doi.gov/sites/doi.gov/files/interagency-mou-protecting-tribal-treaty-and-reserved-rights-11-15-2021.pdf

Department of the Air Force. 2020. Air Force Civil Engineer Severe Weather/Climate Hazard Screening and Risk Assessment Playbook. Alexandria, Virginia: Department of the Air Force.

DOD, Office of the Under Secretary of Defense (Acquisition and Sustainment). 2021. Department of Defense Climate Adaptation Plan. Report Submitted to National Climate Task Force and Federal Chief Sustainability Officer. 1 September 2021.

DOD, Office of the Under Secretary of Defense (Acquisition and Sustainment). 2021. Highlights and Examples for the Department of Defense Climate Adaptation Plan.

DOD, Office of the Under Secretary of Defense (Acquisition and Sustainment). 2022. Securing Defense-Critical Supply Chains: An action plan developed in response to President Biden's Executive Order 14017. February 2022.

DOD, Office of the Under Secretary for Policy (Strategy, Plans, and Capabilities). 2021. Department of Defense Climate Risk Analysis. Report Submitted to National Security Council.

Department of the Army, Office of the Assistant Secretary of the Army for Installations, Energy and Environment. February 2022. United States Army Climate Strategy. Washington, DC.

DOD. 2018. DOD Instruction 3020.45, Mission Assurance Construct. Office of the Under Secretary of Defense for Policy. Washington, DC. Effective: August 14, 2018, Change 1, May 2, 2022. https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/302045p.pdf?ver=4Jg-492hgfA2cDsUPGmREA%3D%3D

DOD. 2018. DOD Instruction 4710.03, Consultation with Native Hawaiian Organizations (NHOs). Effective: October 25, 2011, Incorporating Change 1 Effective: August 31, 2018. https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/471003p.pdf?ver=2018-11-13-124941-517

DOD. 2018. DOD Instruction 4710.02, DOD Interactions with Federally Recognized Tribes. Effective September 24, 2018. https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/471002p.pdf?ver=2018-11-28-143903-320

DOD. 2020. UFC 2-100-01 Installation Master Planning, with Change 2. https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-2-100-01

EO 14008. Tackling the Climate Crisis at Home and Abroad. January 27, 2021. https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad

EO 14057. Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability. December 8, 2021. https://www.federalregister.gov/documents/2021/12/13/2021-27114/catalyzing-clean-energy-industries-and-jobs-through-federal-sustainability

Gade, J.T., P.M. Seman, A.O. Pinson, A.K. Jordan, J.R. Arnold, B.A. Thames, P.S. O'Brien, C.A. Hiemstra, P.M. Loechl, K.D. White, and E.E. Ritchie. 2020. Department of Defense Climate Assessment Tool. U.S. Army Corps of Engineers: Washington DC.

Hall, J.A., S. Gill, J. Obeysekera, W. Sweet, K. Knuuti, and J. Marburger. 2016. Regional Sea-Level Scenarios for Coastal Risk Management: Managing the Uncertainty of Future Sea-Level Change and Extreme Water Levels for Department of Defense Coastal Sites Worldwide. U.S. DOD, Strategic Environmental Research and Development Program. 224 pp. https://apps.dtic.mil/sti/citations/AD1013613

NAVFAC. 2017. Climate Change Planning Handbook: Installation Adaptation and Resilience. Washington, DC: Naval Facilities Engineering Command Headquarters. https://www.fedcenter.gov/Documents/index.cfm?id=31041

Office of the Director of National Intelligence. 2021. Climate Change and International Responses Increasing Challenges to U.S. National Security Through 2040: National Intelligence Estimate on Climate Change. NIC-NIE-2021-10030-A. https://www.hsdl.org/?view&did=859812

Pinson, A. O., K. D. White, S. A. Moore, S. D. Samuelson, B. A. Thames, P. S. O'Brien, C. A. Hiemstra, P. M. Loechl, and E. E. Ritchie. 2020. Army Climate Resilience Handbook. Washington, DC: U.S. Army Corps of Engineers.

U.S. EPA. 2021 version EJScreen (Version 2.0). https://ejscreen.epa.gov/mapper/

Front cover: Top Left: The USS Lake Champlain transits the Pacific Ocean. Photo by Navy Petty Officer 2nd Class Haydn Smith. February 9, 2022. Top Right: Test vehicles for the Warfighter Information Network-Tactical. Photo courtesy of Highlights and Examples for the Department of Defense Climate Adaptation Plan. 2021. Bottom Left: A Texas Army National Guard UH-60 Black Hawk helps fight wildfires threatening homes and property near Bastrop, Texas. Photo by Sgt. 1st Class Malcolm McClendon. October 14, 2015. Bottom Middle: Sailors clear snow and ice from the forecastle of the USS McCampbell in the Sea of Japan. Photo by Navy Petty Officer 2nd Class Jeremy Graham. February 3, 2017. Bottom Right: An aerial view shows extensive flooding from Harvey in a residential area in Southeast Texas. Staff Sgt. Daniel Martinez. August 31, 2017.