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RELEASED BY THE SENATE
SUBCOMMITTEE ON MILITARY CONSTRUCTION,
VETERANS AFFAIRS, and RELATED AGENCIES,
COMMITTEE ON APPROPRIATIONS

STATEMENT OF

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(INSTALLATIONS, ENERGY AND FACILITIES)

BEFORE THE

SENATE SUBCOMMITTEE ON MILITARY CONSTRUCTION,
VETERANS AFFAIRS AND RELATED AGENCIES,

COMMITTEE ON APPROPRIATIONS

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Good afternoon Chairman Heinrich, Ranking Member Boozman, and distinguished members of the Subcommittee. Thank you for the opportunity to discuss climate resilience of the Department of Navy's (DoN) infrastructure.

Installations represent a visible demonstration of the nation's strength. The Department of the Navy generates, projects, and sustains naval power from installations; they are an essential component of current and future Navy and Marine Corps military capabilities. They are also home to our families. The Navy recognizes climate change as a national security issue and is fully aligned with the Administration and the Secretary of Defense on prioritizing actions to address and build climate resiliency.

Naval installations' ability to plan, prepare, adapt, and recover from a range of threats, either individually or in combination with others, is an essential mission. It is also a complex one; installation resilience presents a multi-domain, multi-dimensional challenge. DoN installations face environmental threats from natural disasters and climate change, as well as risks to energy, water supplies and industrial cyber controls.

These challenges are not insurmountable; however, deciding how and when to address them is both an art and a science. The decision calculus involved must balance the needs of current and future readiness with installation resilience which, by definition, includes design and construction standards that account for low probability, high consequence events. This results in assumption of risk and added cost to preserve and protect the Department's capital investments. With a real property portfolio valued at nearly one half trillion dollars, the Department's exposure to these threats is undeniable.

We are witnessing a real and measurable change in the probability and consequences of natural events at our installations. This makes a clear and compelling case why we must address these risks.

Installation resilience directly impacts the entire spectrum of military operations from force development through power projection and force sustainment. The Department is tackling these challenges holistically across the range of resiliency threats, by how we operate and the decisions we make in the planning, design, location and construction of facilities. The Department incorporates resiliency as a cross-cutting consideration in our master planning,

design and construction, and decision-making processes, rather than as a stand-alone program or specific set of actions.

The Department is grateful for the support of this committee, enabling the recovery from a range of natural events impacting DoN Installations over the past four years. The Department's ability to restore operations following these events ensures the nation's naval power remains ready. We saw what was possible following the China Lake earthquake. Within five months of the event, funding was authorized and appropriated, and the first projects were awarded four months later. In fact, all China Lake recovery work is scheduled to be awarded by July 30, 2021. Our successes at China Lake need to be replicated.

Energy & Water Resiliency

As our technologies and capabilities grow, so too will our Sailors' and Marines' need for reliable energy in future conflicts. To this end, the Department published in 2020 the *Secretary of the Navy's Installation Energy Resilience Strategy*, the first update since 2014. It reflects a fundamental shift of focus to resilience and provides leadership with direction to achieve energy reliability, resiliency and efficiency. It provides a disciplined approach to identify energy performance shortfalls and security gaps that impact operational readiness requirements, and establishes the means to mitigate those risks, working with DoD programs, energy utilities defense communities, Congress and the private sector.

The DoN has completed energy resiliency planning at 100 percent of its 70 Navy bases and 26 percent of its 19 Marine Corps bases. The product of these efforts is an Installation Energy Plan (IEP) tailored to each specific base and its resident missions, which identifies energy gaps, both on and off the installation. We've implemented a governance process to ingest all this information and make mission-informed investment decisions to close the most critical gaps first.

We are prioritizing critical power energy resiliency projects to install, repair, or upgrade various generation, switchgear, control, and uninterruptable power systems for the Fleet and other mission critical activities that provide special warfare, satellite, computer, and radio / telecommunications capabilities around the globe. Marine Corps Logistics Base (MCLB) Albany became the first United States Marine Corps Net Zero Installation in April 2021. This significant energy achievement will produce as much electricity from renewable energy as it

consumes from the community's utility providers. The result is improved installation resiliency, reduced reliance on traditional energy sources, and reduced greenhouse gas emissions.

In fiscal years (FYs) 2020 and 2021, the Department is leveraging planning and design funds to invest in updated and enhanced installation resilience design standards and decision-making tools for application by leaders and technical experts Department-wide in addition to designing specific projects addressing critical installation resiliency threats and vulnerabilities. In addition, the department made several important investments in 2020 using alternative financing to improve the efficiency, reliability, and resiliency of the utility infrastructure:

1. At Naval Submarine Base New London, Portsmouth Naval Shipyard, and Naval Support Activity Hampton Roads, Energy Savings Performance Contracts provided a total of \$13.9M in annual savings for the Navy and guaranteed performance improvements that are designed to pay the entire construction, operations and maintenance costs for the next 25 years. Distributed generation enhancements at Portsmouth will be achieved through the construction of a 7.4MW cogeneration power plant with a battery energy storage that will enhance the reliability of shipyard operations by balancing the power load with micro-grid control systems.
2. In California, the Navy executed an enhanced use lease at Naval Weapons Station Seal Beach Detachment Norco that will construct a 2.5-MW solar photovoltaic system with 2.5MW battery storage capacity. The lease will provide \$10M in critical infrastructure improvement and build a micro-grid, making the installation more resilient to grid outages and power quality disruptions.
3. In Hawaii, the Navy partnered with Kauai Island Utility Cooperative to improve energy resiliency at Pacific Missile Range Facility Barking Sands. A planned 19 MW solar system and 70 MWh battery energy storage system sited on Navy land will supply energy to the local grid and provide the installation with local, stable, renewable power in the event of a grid outage.

Installation resilience depends on innovation and flexibility. The Department successfully piloted the 10 U.S.C 2912 program in FY 2020, enabling accrued energy savings to be collected from expiring Operation and Maintenance (O&M) funds prior to cancellation and transferring them into a no-year shared energy savings O&M account. The program identified and documented \$40.3M Navy and \$4.8M in Marine Corps savings, which will in turn allow

timely development, implementation, and sustainment of innovative energy saving initiatives in an effort to provide energy reliability, resiliency, and efficiency to enhance the capability of the warfighter and to mitigate security gaps.

We have partnered with local communities, utility service providers, and experts in the private sector to collaborate on initiatives to reduce vulnerabilities, add redundancy, or improve energy management. In June 2020, Marine Corps Air Station (MCAS) Miramar conducted two successful black start tests of their microgrid. Power provided from San Diego Gas and Electric (SDG&E) was turned off, requiring the on-site power plant and micro-grid to support the full load of designated critical facilities. The black start was a resounding success, and the microgrid was used during California's historic heatwave in August 2020 to return 3.3 MW to the SDG&E power grid to help prevent regional brown outs. Similarly, the Navy is developing an Energy Resilience Readiness Exercise program built on multiple phases beginning with table top exercises and culminating with "pull the plug" events. These exercises will measure the installation's resilience to conduct critical and essential missions while disconnected from the commercial power grid. We have already completed table top exercises at Kings Bay, Georgia, and in San Diego, California and plan to complete five more by the end of FY 2022.

In pursuit of our goal to improve our water security and access to sustainable water sources in drought-prone areas, the Department is working on cooperative regional management action plans and a review of water rights to mutually benefit both the Department and local communities. Navy and Marine Corps installations have prioritized completion of the American Water Infrastructure Act (AWIA) assessments to address malevolent acts, natural hazards and the updating of emergency response plans for our community water systems.

Additionally, to improve water conservation, we have continued promoting policy that minimizes potable water use for non-core mission functions like irrigation, and engaged with industry leaders to improve water conveyance and treatment systems. For example, Camp Pendleton improved water security, expanding reclaimed water conveyance by installing new 'recycled water' lines, and new reservoirs for base irrigation and aquifer recharge. The use of recycled water helps to conserve potable water for core mission functions, and increases the health and sustainability of the aquifer basin for the greater San Diego area.

Climate Resilience

The Department views the effects of climate change as a significant installation resilience issue impacting readiness, and incorporates climate change as a cross-cutting consideration in our master planning, environmental conservation and restoration, design and construction, and decision making processes, not as a separate program or specific set of actions. Installations apply a variety of mitigation measures to maintain continuity of operations, which can range from exercising emergency action plans to evacuate personnel and weapons platforms during floods and storms to long term design adaptations to reinforce and raise buildings above the historic mean-high water of the 100-year flood plain.

The FY 2021 National Defense Authorization Act (NDAA) directed the Services to add a resiliency component to our installation master plans. The DoN is pleased to announce the first of these efforts is complete; Naval Magazine Indian Island in Washington State accomplished this task in February. Four other installations: Key West, Kings Bay, Hampton Road and San Diego are on track to complete their updated master plans incorporating resilience this calendar year.

Sea level rise and storm surge are real dangers, particularly to naval installations, which are mostly located along our nation's coast lines by the nature of their missions. The influence of high winds, rain, and elevated sea levels, especially in hurricane-prone areas, combine to impact coastal infrastructure. When new facilities are planned, facilities are sited to minimize the impact of these threats. The Department designs new facilities in accordance with the requirements in UFC 3-201-01, *Civil Engineering*, using the Department of Defense Regional Sea Level Rise (DRSL) data base, and the updated *Climate Change Installation Planning Handbook, Installation Adaption and Resiliency* (2019) to provide an analytical framework and methodology for mitigating flooding and environmental impacts. These techniques and tools use a combination of historical information, design criteria, and statutory requirements to aid in making design choices that improve the resilience of facilities and installations.

1. In California, forecast sea level rise data for the year 2100 was used during the environmental planning and design phases of the new Coastal Campus project at Naval Base Coronado. The design configuration of five buildings was modified to incorporate the 1.6- to 6.5- foot science-based projected range to resist sea level rise over the buildings' projected lifecycle.

2. In Virginia, the Defense Regional Sea Level Database (DRSL) was used for design adaptation at Norfolk Naval Shipyard that will build flood protection walls around submarine maintenance dry docks and low-lying portions of the shipyard.
3. In support of our Shipyard Infrastructure Optimization Program (SIOP), we will complete a sea level rise study for each of our four public shipyards. These studies will ensure that Shipyard Area Development Plans incorporate sea level rise mitigation in all future development.

DoN's Approach to Resilience

We approach installation resilience challenges within the context of a fixed topline budget requiring the Navy and Marine Corps to prioritize and balance investments among competing requirements. We follow DoD policy and work to mitigate the effects of climate change through the master planning and construction processes. Given our mission's link to the sea, many of our facilities will remain in flood and hurricane-prone areas. The Department primarily employs the Mission Assurance Program to identify risks and impacts to our installations and ranges and recently we partnered with DoD to utilize the DoD Climate Change Assessment Tool (DCAT) at 60 installations to highlight climate exposure risks. Ultimately, our objective is to incorporate impacts from climate change and severe weather along with lessons learned into every aspect of our institutional planning process. We will continue to work with DoD to expand the implementation of DCAT and develop a mature and standard climate exposure tool.

The Department has observed that more recently constructed buildings perform better under extreme weather and environmental conditions than those that were built many years ago. Hurricane Florence at Marine Corps Base Camp Lejeune and the earthquake at Naval Air Weapons Station China Lake provide two recent examples where more recently constructed buildings performed better under extreme conditions than older buildings. All newly constructed or repaired Navy and Marine Corps buildings are designed in accordance with the most current standards (Unified Facilities Criteria 1-200-01 DoD Building Code). Our Design and construction standards change over time in response to changes in conditions, materials and construction techniques. Continuing to design in accordance with the latest standards allows the DoN to construct the most resilient features in our facilities.

The Navy and Marine Corps conduct operational planning to ensure our critical missions continue regardless of any natural or man-made threat. Every installation has extreme weather plans, and Installation Commanding Officers work with local communities to plan for natural disasters and collaborate on shared emergency roles and responsibilities (e.g. mutual aid and support agreements).

Additionally, we recognize the interdependencies between our installations and the surrounding communities. We must look beyond our fence lines and collaborate with local communities, States, other federal agencies, and industry leaders in the development of regional plans that protect military capabilities. In Hampton Roads, Virginia, Navy Region Mid-Atlantic has several partnerships to increase understanding of current and future risks of sea level rise, and storm surge. These risks have the potential to affect Navy operations as well as local emergency response plans. In California, Navy Region Southwest successfully worked with the California Department of Forestry and Fire Protection (CALFIRE) to promote joint training opportunities in an effort to protect key infrastructure and communities within San Diego County. We are seeking increased opportunities addressing similar issues in coordination with federal, state, and local partners at all our installations. Following the guidance in Executive Order 14008 and the newly-established Secretary of Defense Climate Working Group, the Department of the Navy will continue to incorporate climate risk analysis into installation planning and deploy new solutions to strengthen the resilience of critical capabilities at installations and with the surrounding communities. Through shared long-term vision, planning, and development, we continue to address and resolve community concerns and execute infrastructure projects, implement force movements, minimize financial obligations for mitigation measures, and maintain full naval training, testing, and operation capabilities.

Conclusion

Looking to the future, the Navy and Marine Corps will need to prioritize installation resiliency within existing resources while also ensuring a proper balance of capabilities, capacity, and readiness to maximize our naval power contribution to the Joint Force. Navy and Marine Corps installations will continue providing an integral element of that lethality, but in order to do so, must improve their resiliency and mission readiness through prudent planning, design, and execution of adaptive measures. Additionally, we will work with the Office of the Secretary of Defense and the other Military Departments to regularly update and revise the UFCs,

incorporating new design and planning criteria to mitigate the effects of climate change. The quality of installation resilience directly impacts the entire spectrum of military operations from force development through power projection and force sustainment.

I appreciate the opportunity today to discuss DoN's varied initiatives towards the improvement of climate resiliency on Navy and Marine Corps installations. The dynamic challenges faced by our naval forces in the face of an increasing number of operational threats across all domains provide an opportunity to reevaluate old assumptions and develop adaptable, sustainable solutions. I look forward to the Department's continued partnership with the Congress to make progress in this vital area.