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**Statement of
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**Before the Senate Committee on Appropriations
Subcommittee on Military Construction, Veterans Affairs, and Related Agencies
Fiscal Year 2022 Department of Defense Budget Request for
Energy, Installations, and Environment Programs**

June 16, 2021

INTRODUCTION

Chairman Heinrich, Ranking Member Boozman, and distinguished members of the Subcommittee: Thank you for the opportunity to discuss the Department of Defense's (DoD) posture as it relates to energy, installations, and environment in the President's Fiscal Year (FY) 2022 budget request.

Our installations remain one of our primary weapon systems. For nearly 80 years, we have been able to operate from our bases around the world with near-impunity, which has afforded us unprecedented power projection capabilities. However, the stark reality is that the homeland is no longer a sanctuary. Therefore, we must ensure that our installations are not only postured to support the Joint Force, but that they are resilient against the full range of man-made and natural threats. The FY2022 President's Budget Request supports our efforts to address these resilience challenges, while also addressing mission requirements and ensuring Service members have a safe and resilient place to live and work.

KEY AREAS OF CONCERN

Before I review the details of the budget request, I would like to provide updates on two key issues, specifically climate change and the Military Housing Privatization Initiative (MHPI).

Climate Change

In the words of Secretary Austin, the Department faces a "growing climate crisis that is impacting our missions, plans, and capabilities and must be met by ambitious, immediate action." Climate change will continue to amplify operational demands on the force, degrade installations and infrastructure, increase health risks to our service members, and require modifications to much of our existing and planned equipment. Extreme weather events are already costing the Department billions of dollars and those costs are likely to increase as climate change accelerates.

As the Department's Chief Sustainability Officer, ASD(Sustainment) oversaw the development of the DoD Climate Adaptation Plan (CAP), that was developed per Executive Order (EO) 14008, Tackling the Climate Crisis at Home and Abroad, and will be finalized later this month. The CAP identifies five lines of effort: Climate-Informed Decision-Making; Train, Test, and Equip a Climate-Ready Force; Resilient Built and Natural Infrastructure; Supply Chain Resilience and Innovation; and Enhance Adaptation and Resilience Through Collaboration. The four cross-cutting enablers for these lines of effort are continuous monitoring and data analytics, innovation, climate literacy, and environmental justice.

To enhance the oversight and execution of these initiatives, the Department recently established the Deputy Assistant Secretary of the Defense for Environment and Energy Resilience with OASD(Sustainment). Given the alignment between mission and climate priorities and the energy-related nature of climate initiatives, this integrated team is ideally positioned to review, prioritize, and oversee the Department's holistic climate and energy portfolio. The FY2022 President's Budget request increases resources, staff, and expertise needed to achieve the goals of the Secretary of Defense and the President.

Military Housing Privatization Initiative (MHPI)

Under the overall direction of the Chief Housing Officer, the Department has made significant progress implementing actions to enhance the Military Housing Privatization Initiative (MHPI) program, consistent with our commitment to ensuring that MHPI projects provide safe, quality, well-maintained housing where our members and their families will want and choose to live.

The Department continues to prioritize MHPI reform actions that will improve the tenant experience, rebuild tenant trust, and maintain MHPI housing project financial viability. This includes implementing MHPI reforms enacted as part of the National Defense Authorization Acts for Fiscal Year (FY) 2020 and FY2021, including requirements for a Tenant Bill of Rights, a universal lease, a dispute resolution process, and other elements.

Our initial phase has predominantly focused on implementing the MHPI Tenant Bill of Rights and the NDAA requirements imbedded in those rights, as a visible commitment to military members and their families. Based on our efforts to date, the Department has issued all policy guidance necessary to implement all rights at all MHPI housing projects.

As Congress recognized in the FY2020 NDAA, retroactive application of the requirements at existing projects requires voluntary agreement by the respective MHPI company; the Department cannot unilaterally change the deal terms of the complex, public-private partnerships that established the MHPI projects. Nearly all of the MHPI companies have agreed to implement all eighteen tenant rights at their existing projects; however, the final right – standard documentation (focused on a universal lease framework) – is available at more than 30 installations with MHPI housing; with few exceptions, we expect all eighteen tenant rights to be fully available by the end of FY2021.

The Department issued housing policies to reinforce and expand the Department's programmatic oversight over MHPI housing projects, focusing on five key aspects that include: 1) senior leader engagement to collaborate internally and with MHPI companies on housing issues and necessary corrective actions; 2) rebuilding trust with military members and their families; 3) accountability at all levels within DoD and by MHPI companies to perform our oversight as originally intended at the outset of housing privatization; 4) transparency and more frequent communication with MHPI Tenants; and 5) ensuring the long-term financial viability of the MHPI projects and MHPI program. Further, the Department recently established a Deputy Assistant Secretary of Defense for Housing to enhance execution of the statutorily-defined Chief Housing Officer duties and responsibilities.

Our priority going forward is to implement the remaining MHPI reform provisions that improve safety, quality, and maintenance of the privatized housing, and to ensure accountability at all levels within DoD and the MHPI companies to perform our oversight as originally intended at the outset of housing privatization.

The Department of Defense understands that family is important and honors the sacrifice that military members and their families make to serve our nation. We recognize the environment where Service members (and their families) live impacts their quality of life, their ability to do their jobs, and the Department's ability to recruit and retain the force. We are committed to working closely with you and the committee staff to ensure the long-term success of the MHPI

program, and will continue to remain diligent in our oversight to ensure delivery of quality housing for military members and their families over the life of the projects.

MILITARY CONSTRUCTION AND FAMILY HOUSING

The President's FY2022 budget requests \$9.8 billion for the Military Construction (MilCon) and Family Housing appropriation. This represents a \$2.0 billion or 26% increase from the FY2021 budget request of \$7.8 billion.

The request reflects the Department's priorities in supporting the Administration's Interim National Security Strategy to address critical mission requirements and life, health, and safety concerns within the current fiscal environment. In addition to new construction needed to recapitalize the nuclear enterprise, this funding will be used to restore and modernize enduring facilities to enhance their resilience to climate events and promotes elimination of excess or obsolete facilities. The FY2022 MilCon request includes projects that directly support operations, training, maintenance, production, and projects to take care of our people and their families, such as medical treatment facilities, unaccompanied personnel housing, and schools.

Military Construction

We are requesting \$8.4 billion in the budget for Military Construction across the Department, an increase of 30% from last year's request, primarily due to infrastructure requirements for the beddown of the B-21 aircraft, investments in KC-46A depot maintenance facilities, recruit dormitories, F-35A facilities in the United Kingdom, continued Guam relocation efforts, investments in the Shipyard Infrastructure Optimization Program, and the inclusion of previously deferred Section 2808 projects (16 projects totaling \$661 million). Slightly more than half of this request provides readiness improvements in facilities to support operations, training, maintenance and production, and supply. Another \$1.1 billion funds medical facilities, troop housing, and community support, and \$206 million funds DoD's continued support to the NATO Security Investment Program.

This request also includes \$2 billion for the Defense-Wide Components, including

- \$192 million for dependent educational facilities
- \$110 million for fuel infrastructure;
- \$238 million for recapitalization of National Security Agency facilities;
- \$304 million to address new capabilities/mission, force structure growth, and infrastructure for Special Operations Forces;
- \$51 million for Washington Headquarters Services facilities; and
- \$247 million for the Energy Resilience and Conservation Investment Program.

In addition, the Defense-Wide request contains \$508 million for medical facility recapitalization including \$153 million for the fifth increment (of a \$695 million project) for the Walter Reed Medical Center Addition/Alteration; \$160 million for the fourth increment (of a \$381 million) for a new hospital at Fort Leonard Wood, Missouri; \$73 million for three veterinary treatment facilities; and \$122 million for four smaller medical treatment facilities. These projects are critical for our continued delivery of the quality health care that our service members and their families deserve.

Facilities Sustainment and Recapitalization

Facilities sustainment represents the Department's largest category of facilities spending by providing for the regularly-scheduled maintenance and repair or replacement of facility components. These ongoing and predictable investments must be made throughout the service life of a facility to optimize its performance and support the safety, productivity, and quality of life of our personnel, while also reducing avoidable costs associated with premature deterioration.

The Department's FY2022 budget request includes \$12.3 billion for the Military Services and the major Defense-wide organizations. This represents a sharp increase from the \$11.3 billion in the FY2021 budget request but a slight decrease in the overall sustainment rate from 83 percent to 81 percent due to increased sustainment requirements resulting from a combination of higher sustainment costs, increased inventory, and the inclusion of costs for project design and standardized facility inspections.

In addition to facilities sustainment funding, the Department relies upon its Restoration and Modernization (R&M) program funding to provide ongoing support to assigned missions by countering obsolescence and reversing degraded conditions of existing facilities. The Department's FY2022 budget request includes \$4.0 billion in Operations and Maintenance appropriations for facilities R&M, a slight decrease compared to our \$4.3 billion FY2021 budget request.

Family and Unaccompanied Housing

One of the Department's principal priorities is to support military personnel and their families and improve their quality of life by ensuring access to suitable, affordable housing. Service members are engaged in the front lines of protecting our national security and they deserve the best possible living and working conditions. Sustaining the quality of life of our people is crucial to recruitment, retention, readiness and morale.

Our FY2022 budget request includes \$1.4 billion to fund construction, operation, and maintenance of government-owned and leased family housing worldwide; provide housing referral services to assist military members in renting or buying private sector housing; and oversight of privatized family housing. The FY2022 request is \$72 million (5.3%) higher than the FY2021 request, and \$22 million (1.6%) higher than the FY2021 enacted amount to sustain our increased focus on ensuring the delivery and maintenance of quality housing for military families. The FY2022 request includes \$293.2 million for construction and improvements to meet the Department's goal to maintain at least 90 percent of the world-wide Family Housing inventory at Good and Fair condition levels, to include \$92.3 million for construction of 130 Army housing units at Vicenza, Italy. The O&M budget request of \$1.12 billion represents a \$38.4 million (3.5%) increase compared to the FY2021 request. This funding request supports more than 34,000 government-owned family housing units, most of which are on enduring bases in overseas locations, and approximately 5,800 government-leased family housing units where government-owned or privatized housing is unavailable. The requested funding will ensure that U.S. military personnel and their families continue to have suitable housing choices.

The Department’s FY2022 budget request demonstrates our continued commitment to modernize Unaccompanied Personnel Housing (UPH) to improve privacy and provide greater amenities. The FY2022 budget request includes more than \$477 million for eight construction projects that will improve living conditions for permanent party personnel. This includes \$81 million for an Army barracks complex at Fort Meade, Maryland; \$172 million for two Air Force dormitory projects at Joint Base San Antonio, Texas, and \$43 million for a Navy barracks project in Joint Region Marianas, Guam.

ENVIRONMENTAL PROGRAMS

Installations are key platforms for our nation’s defense. We must maintain our ability to conduct realistic training and flexible operations. The Department’s environmental investments support this objective through activities ranging from managing critical habitat and avoiding training restrictions to addressing drinking water health advisories and making the best use of our cleanup dollars. The President’s FY2022 Budget requests \$3.6 billion for environmental programs, keeping pace with our FY2021 request.

Defense Environmental Restoration Programs

We are requesting \$1.3 billion to continue cleanup efforts at the remaining Installation Restoration Program (IRP) sites and Military Munitions Response Program (MMRP) sites. The IRP is focused on cleanup of hazardous substances, pollutants, and contaminants, while the MMRP is focused on responding to unexploded ordnance and munition constituents at former military ranges. This includes \$1.0 billion for “Environmental Restoration,” which encompasses active installations and Formerly Used Defense Sites (FUDS – sites that DoD transferred to other Federal agencies, States, local governments, or private landowners before October 17, 1986). The remaining \$264 million is for “BRAC Environmental.”

Progress Towards Cleanup Goals

Goal: Achieve Response Complete at 90% and 95% of Active and BRAC IRP and MMRP sites, and FUDS IRP sites, by FY 2018 and FY2021, respectively			
	Status as of the end of FY2019	Status as of the end of FY2020	Projected status at the end of FY2021
Army	91%	91%	92%
Navy	83%	83%	84%
Air Force	88%	85%	86%
DLA	84%	84%	85%
FUDS	87%	88%	89%
Total	88%	87%	88%

By the end of FY2020, the Department, in cooperation with State agencies and the Environmental Protection Agency, completed cleanup activities at 87 percent of Active and BRAC IRP and MMRP sites, and FUDS IRP sites, and is now monitoring the results. During FY2020 alone, the Department completed cleanup at 312 sites. Of the roughly 40,000 restoration sites, more than 33,900 are now in monitoring status or have completed cleanup.

Our focus remains on continuous improvement in the restoration program: minimizing overhead, adopting new technologies to reduce cost and accelerate cleanup, refining and standardizing our

cost estimating, and improving our relationships with State regulators through increased dialogue. All of these initiatives help ensure that we make the best use of our available resources to complete cleanup.

Per- and polyfluoroalkyl substances (PFAS) are a top priority and may cause the DoD to reopen previously-made decisions, which could cause delays in achieving our goals. Additionally, some sites have no feasible solution for cleanup and, as a result, the Department is making significant investments in environmental technology to identify new potential remediation methods.

Per- and Polyfluoroalkyl Substances

The presence of per- and polyfluoroalkyl substances (PFAS) in the environment is a national issue due to its wide-spread use in many industrial and consumer products. The Department recognizes the importance of this issue and is committed to addressing PFAS in a deliberative, holistic, and transparent manner, as we continue to pursue a PFAS-free fire-fighting alternative and address our PFAS releases.

The PFAS Task Force

The Department established a PFAS Task Force in July 2019. This Task Force provides strategic leadership and direction to ensure a coordinated, aggressive, and holistic approach on DoD-wide efforts to address PFAS. The Task Force continues unchanged and is postured to be responsive to the direction of this Administration. The Task Force continues to focus on four main goals:

- Mitigating and eliminating the use of the current aqueous film forming foam (AFFF);
- Fulfilling our cleanup responsibilities, and
- Understanding the impacts of PFAS on human health
- Public outreach

AFFF Replacement Research

AFFF formulations in use by DoD today do not contain detectable amounts of PFOS or PFOA, but they still contain PFAS. We have an aggressive initiative to develop and demonstrate PFAS-free alternatives for AFFF. We have identified a number of commercially-available and developmental PFAS-free alternative formulations that have acceptable fire extinguishment performance against jet fuel fires. Evaluation of the aging, materials compatibility, and toxicity of these formulations is underway. The Department is committed to finding an effective firefighting alternative that meets the life-saving performance standards of AFFF and does not have negative health or environmental effects.

PFAS Cleanup and Drinking Water Mitigation

DoD follows the existing federal cleanup law (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) and the long-standing EPA regulations for all chemicals in our cleanup program, including PFAS. The Defense Environmental Restoration Program statute provides authorities to DoD to perform and fund cleanup actions and requires they be carried out in accordance with CERCLA.

As of March 31, 2021, the Department has identified 698 installations where DoD used or potentially released PFAS. DoD has completed the initial assessment at 129 of these installations and of those, 63 were found to require no further action, while 66 are proceeding to the next step in the CERCLA process. During these initial assessments, DoD evaluates both groundwater and drinking water. If DoD identifies PFOS and/or PFOA from DoD activities in off-base drinking water above EPA's LHA, we quickly take action (i.e., a CERCLA removal action) to provide treatment or an alternative water source.

In addition, as part of our normal operations, the Department has sampled over 500 on-base DoD drinking water systems worldwide. Of those, we identified 34 with PFOS and/or PFOA above EPA's LHA and took quick action to bring those systems below 70 ppt. As of today, no one is drinking water above EPA's lifetime HA of 70ppt where DoD is the known source.

Environmental Technology

The overall FY2022 budget request for Environmental Technology is \$131.9 million, centered on two key programs: the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). These Defense-wide environmental technology programs coordinate closely with the Military Services to ensure research, demonstration, test and evaluation are focused on the Departments most pressing environmental needs. Our request for SERDP, which is focused on basic and applied research, is \$51.9 million. For ESTCP, which is focused on validating more mature technologies to transition them to widespread use, we are requesting \$31.5 million for environmental technology demonstrations and \$39.9 million for energy technology demonstrations.

These programs have already achieved impactful results and have the potential to significantly reduce long-term costs by implementing new ways of treating sediment and groundwater contamination, to increase installation resilience by providing effective tools to planning staff to anticipate the impacts of climate change, and to reduce the life-cycle costs of multiple weapons systems through development and demonstration of innovative coatings and materials that avoid increasingly unavailable hazardous elements.

SERDP/ESTCP continue to invest in alternatives to incineration for disposal of AFFF-related per- and polyfluoroalkyl substances (PFAS) and development of analytical methods for PFAS in media other than drinking water in conjunction with the Environmental Protection Agency. In the critical area of installation energy, we are focused on proving technologies and solutions that cost-effectively incorporate energy storage into installation-level microgrids to improve the energy security and resiliency of our installations.

The Native American Lands Environmental Mitigation Program

Our budget request includes \$12 million for the Native American Lands Environmental Mitigation Program (NALEMP) to address environmental impacts to Indian lands, Alaska Native Claims Settlement Act (ANCSA)-conveyed properties, and tribal treaty rights attributable to past DoD activities. Impacts are typically associated with hazardous materials, munitions debris, underground fuel storage tanks, unsafe buildings, lead-based paint and asbestos, and abandoned equipment. Most Indian lands and ANCSA-conveyed properties are located in rural and remote areas with low population densities; thus, they might not qualify as high priority sites under

DoD's traditional environmental restoration programs. The NALEMP seeks to bridge the gap between tribal needs and these traditional risk-based environmental restoration programs and incorporate tribal priorities to address potential impacts to Indian lands, ANCSA-conveyed properties, and tribal treaty rights. The goal of the NALEMP is to complete mitigation of sites by restoring health and human safety, protecting natural resources, protecting cultural resources, and returning tribal lands to optimal use.

Under the NALEMP, the DoD fosters government-to-government relationships with tribes through a Memorandum of Agreement (MOA) and then enters into two-year Cooperative Agreements (CAs) with the tribal governments. Funding provided through CAs enables tribal governments to lead NALEMP projects, incorporate "traditional ecological knowledge" into design for cleanup, and build tribal capacity regarding environmental services and technical remediation skills. Tribal governments conduct the cleanup with technical assistance and mentorship from DoD and the U.S. Army Corps of Engineers.

Eighty-eight sites in the lower 48 states and Alaska have been fully mitigated. Ninety percent of the 1,000+ potential tribal impacts reported to DoD have been assessed and 294 have been found eligible for NALEMP or are under review. In FY2020, DoD executed a total of 13 NALEMP CAs, of which nine CAs were with Alaska Native tribes and four with Pueblo Indian tribes in New Mexico. By the end of FY2021, DoD will execute an additional 16 CAs, of which 11 CAs will be with Alaska Native tribes and five Indian tribes in the lower 48 states.

Environmental Conservation and Compatible Development

The Department's lands and waters are vital to readiness. However, they also support a diverse array of fish and wildlife species, as well as significant historic sites and resources. DoD lands provided habitats for nearly 500 that are federally protected under the Endangered Species Act, over 130,000 recorded archaeological sites, and 45 National Historic Landmarks. Our \$577 million request for Conservation will allow us to protect these resources in compliance with applicable federal statutes, and manage for healthy and resilient natural landscapes to reduce climate driven risks such as flooding and wildfire.

Regulatory protections related to threatened and endangered species and their habitats continue to pose significant mission challenges by restricting use of our existing ranges and training areas, or limiting our development of new infrastructure. However, these investments in conservation are making significant progress towards alleviating these restrictions by promoting species recovery. In partnership with the Department of the Interior and US Fish and Wildlife Service, DoD has worked to identify priority species and conservation actions which has led to the proposed down-listing or de-listing of 10 species affecting 20 military installations. Building on this success, we will continue to work with our federal, state and non-governmental partners to develop new and innovative regulatory approaches that streamline processes and provide greater mission flexibility.

Additionally, developing and implementing climate adaptation and resilience into both the natural and cultural resource programs will be a priority moving forward. Using the data and information currently available through the Defense Climate Assessment Tool (DCAT) and emerging adaptation planning guidance related to natural and cultural resource management programs, the DoD will be evaluating the use of nature based solutions, and sustaining our

natural infrastructure to address climate driven risks such as restoring salt marshes or wetlands to reduce flood risk, or altering forest management practices to reduce fire risks.

Continued investments in conservation will maximize our flexibility to use our land, water, and airspace for military purposes and to address incompatible land uses beyond our fence lines, and will ensure that our military and civilian personnel have the access they need to conduct mission-essential activities. Strategies to address these conservation and climate adaptation priorities can be most effective through landscape-scale initiatives to better capitalize on both our on-installation conservation programs and our off-installation conservation partnerships through the Readiness and Environmental Protection Integration (REPI) Program.

The Readiness and Environmental Protection Integration (REPI) program

Of the Department's \$577 million budget for conservation, \$150 million is directed to the Readiness and Environmental Protection Integration (REPI) program. REPI uniquely supports DoD's ability to seamlessly operate across domains by stimulating innovative and diverse partnerships between local communities, federal and state agencies, and non-governmental organizations to limit incompatible development and promote climate resilience around our installations and ranges. Through FY2020, DoD has leveraged \$1.08 billion with over \$975 million in non-DoD partner contributions to protect over 757,000 acres of land across 115 installations in 35 states and territories.

The increased request for FY2022 will allow the REPI program to build capacity and significantly expand projects that promote resilience to climate change. This includes opportunities that maintain and improve "natural infrastructure," implementing solutions outside installation boundaries to enhance the benefits provided by natural systems. Natural infrastructure solutions encompass a wide range of possible actions that can help promote installation resilience, preserve access to critical installation and range assets and capabilities, and enhance DoD's core training, testing and operational missions.

The FY2022 funding will also enable increased investment in the Pacific region, preserving and enhancing key mission capabilities critical to deterring adversaries in the Pacific, including missile defense; intelligence, surveillance, and reconnaissance; and joint force capabilities. In the Pacific region alone, DoD and its partners have invested over \$136 million at seven REPI projects across Hawaii, Alaska, and Guam.

Finally, the increased funding will enable DoD to expand the interagency Sentinel Landscapes Partnership between DoD, the U.S. Department of Agriculture, and the U.S. Department of the Interior. The Partnership promotes shared land use priorities, and works to identify landscapes across the country where the missions of the federal agencies – strengthening national defense, promoting sustainable agriculture and forestry, and building community resilience to climate change – intersect. From FY 2012 to FY2019, DoD has contributed \$141 million and leveraged \$542 million in funds from federal, state, local, and private partners to advance the goals and shared land use priorities of the seven sentinel landscapes. In cooperation with our federal partners, DoD intends to designate additional Sentinel landscapes in FY2022.

Military Aviation and Installation Assurance Siting Clearinghouse

The Military Aviation and Installation Assurance Siting Clearinghouse continues to protect the Department's ability to train, test, and operate as the nation expands its renewable and other commercial energy and power transmission capacity. Commercial wind development typically poses the greatest compatibility challenge to DoD due to physical obstruction of low-level flight routes and electromagnetic interference with DoD radar systems. DoD resolved project concerns through collaboration among the Clearinghouse, the Military Departments, local communities, states, and energy developers, thereby maintaining the Department's ability to train, test, and operate while enabling development of alternative energy resources. DoD negotiated and signed 29 Mitigation Agreements with wind energy developers to minimize the impacts from proposed projects on DoD missions. Through our collaborative efforts, none of the proposed projects warranted a DoD objection to the Secretary of Transportation or Administrator of the FAA.

The Department is actively implementing new approaches to protect DoD missions. The Clearinghouse intensified efforts to advocate for state-level legislation to protect military installations and operations from incompatible wind energy development. Indiana, Wyoming, and Alabama have passed protections for military missions in wind turbine permitting. Although DoD and developers have had success resolving issues related to incompatible energy development, state support is invaluable in the rare cases where developers choose not to voluntarily coordinate with DoD.

The Department has developed active interactions with the Bureau of Ocean Energy Management (BOEM) to manage increasing plans for offshore energy development. The Clearinghouse, Department of Interior, and BOEM have updated and implemented offshore review practices to allow for DoD input at every stage of planning, permitting and development.

DEPARTMENT OF DEFENSE ENERGY PROGRAMS

The FY2022 President's Budget aligns with direction from the President and the Secretary of Defense to ensure installations and forces are resilient in the face of a wide range of challenges to include climate change, disruptions to energy or water supplies, and direct physical or cyber-attacks. The FY2022 President's Budget includes approximately \$4.4 billion in energy investments, including both installation energy (the energy used to power permanent installations and non-tactical fleet vehicles) and operational energy (the energy required for training, moving, and sustaining military forces and weapons platforms for military operations). Achieving Joint lethality, forward force maneuver and posture resilience, and resilient and agile logistics in support of military combat operations, each require the Department to reconsider the assured availability of fuel and power around the globe.

In support of operational energy resilience, the Department is requesting \$3.2 billion to upgrade and procure new vehicles and aircraft, increase the range and endurance of platforms, enhance energy resiliency at contingency bases, and plan and execute wargames to account for increasing risks to logistics and sustainment. As the Department prepares to operate in contested environments around the globe, these investments increase range, endurance, and lethality while decreasing risks to warfighters.

In support of installation resilience, we are requesting \$1.2 billion for energy resilience and energy conservation initiatives, most of which are directed to existing buildings. This includes \$595 million in the Services' operation & maintenance accounts for sustainment and recapitalization projects, which generally involve retrofits to install improved lighting, high-efficiency HVAC systems, double-pane windows, facility related control systems (FRCS), and new roofs. In addition, the Energy Resilience and Conservation Investment Program (ERCIP) provides \$287 million in military construction funding, including planning and design, to enhance energy resilience through installing microgrids with renewable and clean energy generation and energy storage alternatives and projects that will improve energy efficiency at our installations. In particular, the FY2022 request includes \$10 million in ERCIP design funds specifically to plan and design projects to enable the installation of electrical vehicle charging stations in support of the President's Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad*, which requires the Department to electrify its non-tactical vehicle fleet.

Threats to Energy

Energy is an essential enabler of military capability, and the Department depends on energy-resilient forces, weapon systems, and facilities to achieve its mission. At home and abroad, installations are reliant on commercial, municipal, and host nation power grids for day-to-day operations, including command and control systems, communications, lighting, heating, and cooling. Similarly, the Department relies on organic capabilities and commercial partners to provide refined petroleum products to globally deployed forces, and maximizes the use of local sources to minimize the time, resources, and effort associated with acquiring, moving, and delivering fuel to deployed forces.

Adversaries recognize the strengths of U.S. power projection and sustainment, and possess long-range weapons, significant anti-access/area-denial (A2/AD) systems, and substantial cyber capabilities able to degrade the ability of the Department to provide energy to forces and facilities. In response to these threats and in alignment with statute, the Department shall "ensure readiness of the armed forces for their military missions by pursuing energy security and energy resilience" (10 U.S.C. § 2911) and "ensure the types, availability, and use of operational energy promote the readiness of the armed forces" (10 USC § 2926).

In addition, the Department's ability to provide energy to critical missions is affected by the climate. A climate-resilient supply chain is one in which the Department has ensured that key suppliers and industries can still operate though impacted by climate change, with special attention given to "last-mile" resilience.

Enterprise-wide Energy Initiatives

Facing the imperative to sustain critical operations in contested environments while also reducing our carbon footprint, the Department is implementing a series of initiatives to enhance the use of power or fuel and support informed decision-making with regard to investments and future force capabilities. In partnership with the Joint Staff, Defense Agencies, and the Services, the Department is pursuing the following initiatives to transform how the Department considers energy in planning and operations:

10 U.S.C. §2912 Energy Cost Savings

With the passage of the FY2020 and FY2021 National Defense Authorization Acts, 10 U.S.C. §2912 now allows the Military Departments to retain amounts equal to installation and operational energy cost savings in order to fund additional energy resilience, energy efficiency, and installation quality of life projects. In FY2019 and FY2020, the Military Departments piloted efforts to retain \$115 million in installation energy cost savings and \$20 million in operational energy cost savings using the authority. Presently, OASD(Sustainment) is supporting pilot initiatives by Military Departments to implement this authority across both installation and operational energy activities, pursuant to the statute and DoD financial regulations.

Integrating Climate Mitigation Considerations into DoD Procurement

While the Department has procured sustainable goods and services for many years, the Department now is preparing to consider greenhouse gas emissions in a broader set of energy procurement decisions. For instance, based on Executive Order 14008, the Department is evaluating how to procure carbon-free electricity for our installations. The Deputy Secretary of Defense also tasked OASD(Sustainment) to develop policy recommendations for the application of the social cost of carbon into DoD procurement. Finally, the FY2022 President's Budget provided an additional \$2.0 million to support additional testing and qualification of drop-in compatible alternative fuels already in commercial use to ensure the Department's ability to use any drop-in compatible fuels available in the global marketplace.

Operational Energy Resilience

In FY2020, the Department consumed nearly 78 million barrels of fuel to power ships, aircraft, combat vehicles, and contingency bases at a total cost of \$9.2 billion. To respond to the needs of a global force, the Department purchased 48% of this fuel outside of the U.S. Beyond liquid fuels, the Department also is relying on advanced energy storage to enable long-range, autonomous, directed energy, high-power sensors, and other warfighting capabilities across air, sea, and land domains.

The Department depends on the resilient delivery of energy to forces, weapon systems, and facilities around the globe. To prepare for peer competition where even the homeland is contested, the Department is addressing a range of technological, operational, and policy initiatives to enhance the use of energy in warfighting.

Investments in Operational Energy

FY2022 President's Budget significantly enhances resources dedicated to reducing operational energy risks and applying energy technologies to improve warfighter capabilities. Relative to the FY21 President's Budget, these operational energy enhancements include:

- Operational Capability Improvement Fund (OECIF): +\$74.3 million
- Operational Energy Prototyping Fund (OEPF): +\$23.2 million
- Alternative Fuels Certification: +\$2 million
- Air Force/Navy Operations and Planning Tools: +\$38.6 million
- Air Force Large Aircraft Drag Reduction: +\$14.1 million

- Navy Platform and Propulsion Upgrades: +\$19.5 million
- Army Tactical Vehicle Electrification: +\$5.2 million

The Department also uses the budget certification authority in 10 U.S.C. §2926 to quantify operational energy investments across the Military Departments and Defense Agencies and evaluate the alignment of the President’s Budget with the operational energy strategy. ASD(Sustainment) judged the FY22 President’s Budget as sufficient to meet the previous operational energy strategy and will provide this assessment to the Congress by the end of July 2021. As the Department develops a revised energy strategy that reflects the new guidance related to resilience and climate, the ASD(Sustainment) will use the budget certification authority to rigorously review the sufficiency and direction of investments in operational energy resilience.

Contested Logistics and Risks to Energy

To ensure that energy considerations are included in Joint and Service capability development and planning, we are participating in the Joint Concept for Contested Logistics (JCCL) as part of the broader Joint Warfighting Concept (JWC). We also promote capabilities that identify solutions to overcome fuels distribution challenges in contested environments, and support the development of interoperable, mobile, and survivable operating concepts. These capabilities include, but are not limited to, the Joint Petroleum Over the Shore (JPOTS) system of systems and the Navy’s Light Amphibious Warship (LAW). The JPOTS system of systems refreshes and advances the capability required to transfer bulk fuel from offshore to a land-based termination point during future contingency and crisis response operations.

Advanced Energy Storage

Faced with increasing kinetic and non-kinetic threats, the Department is shifting toward more distributed, austere, and autonomous operational concepts carried out by platforms and installations with escalating power requirements. Advanced energy storage is emerging as a critical enabler of these new capabilities. Similar to the Nation as a whole, however, the Department lacks a strong domestic supply chain and depends on foreign sources.

As part of this response, the ASD(Sustainment) joined four other inter-agency partners in September 2020 to establish the Federal Consortium for Advanced Batteries (FCAB) to accelerate the development of a robust secure domestic industrial base for advanced batteries. DoD was part of the inter-agency team that developed an inter-agency national strategy for lithium batteries designed to guide future investments in the domestic lithium battery manufacturing value chain; Department of Energy will release the strategy later this year. The Department also is supporting the implementation of Executive Order 14017, *America’s Supply Chains*, and ASD(Sustainment) will continue to provide a single voice regarding advanced energy storage requirements for national security applications.

Installation Energy Resilience

At over 500 worldwide military installations, the Department spent \$3.5 billion in FY2020 on energy to power over 500 installations and 170,000 non-tactical vehicles.

Investments in Installation Energy

The FY2022 President's Budget includes \$1.2 billion in investments in installation energy. Reflecting a strong track of record and alignment with Administration priorities, the FY2022 President's Budget included enhancements totaling over \$181 million relative to the previous budget request. These enhancements include:

- ERCIP for resilience and conservation: +\$104.1 million
- ERCIP Planning & Design for resilience and conservation: +\$15.9 million
- ERCIP Planning & Design for electric vehicle charging infrastructure: +\$10 million
- Smart Grid pilot initiatives: +\$48 million
- Net Zero Installations: +\$3 million

Installation Energy Resilience Policy and Governance

The Department continues to be proactive in developing policy, guidance, and tools to advance installation energy and climate resilience.

The Department is coordinating an updated policy with the Military Departments to implement energy resilience requirements (10 U.S.C. 2920) that resulted from the Fiscal Year 2021 National Defense Authorization Act, and anticipates issuing the guidance this fiscal year. The policy memorandum sets forth energy availability standards for critical missions. In addition, it directs the military departments to promote the use of multiple and diverse sources of energy in their planning, prioritization of energy resources originating on the installation, encourages the use of micro grids, and favors the use of full-time, installed energy sources rather than emergency generation in their energy resilience solutions.

Black Start Exercises

Black start exercises are a growing component of the Department's approach to risk assessment. In alignment with statute, the Department is conducting full-scale black start exercises to evaluate risks to the readiness of our military installations. These exercises have proven invaluable in identifying gaps in our installations' electrical infrastructure, such as previously-unknown interdependencies between various systems, so that we can best prioritize our resilience resources and planning.

Last year, the Department issued the "Framework for Planning and Executing Black Start Exercises" that facilitates the planning and execution of future exercises. An "Energy Resilience Tabletop Exercise Framework" was also issued to promote continued modeling of black start exercises in times of restricted travel and social distancing. In FY2021, the Department has executed an additional two exercises at Marine Corps Air Station Miramar and Joint Base McGuire-Dix-Lakehurst. In the remainder of FY2021 and beyond, the Department will execute exercises at Eielson AFB, Wright-Patterson AFB and Springfield-Beckley Air National Guard Base, Robins AFB, JB Langley-Eustis, Fort Hood, Fort Leavenworth, Rock Island Arsenal, Naval Construction Battalion Center Gulfport and more.

Energy Resilience and Conservation Investment Program (ERCIP)

Supported by black start exercises, installation energy plans provide the basis for prioritizing resources toward critical gaps. ERCIP is a critical element of DoD's strategy to improve the energy resilience, energy security, and energy conservation of its fixed installations.

The Department increased the budget request for ERCIP to reflect the significance of risks to energy systems as well as the need to mitigate the causes of climate change. In FY2022, DoD's combined ERCIP request is \$286.75 million for ERCIP, including \$243.64 million for energy/water resilience projects, \$2.96 million for energy/water conservation projects, \$30.15 million for associated planning and design efforts, and \$10 million to plan and design EV utility infrastructure upgrades.

The FY2022 ERCIP request include two energy resilience projects, including a 10 megawatt (MW) Microgrid Project at Fort Bragg and a Landfill Gas (LFG) Power Meter Station at Marine Corps Air Station Miramar. Fort Bragg's ERCIP project consists of a 10 megawatt microgrid to increase energy resilience by providing continuous power for critical missions. Even during a commercial power outage, this microgrid technology will route continuous power to Joint Special Operations Command during contingency operations, increasing reliability of operations and mission assurance. Marine Corps Air Station Miramar is developing one of the nation's largest renewable energy microgrids to create a resilient and self-sustaining air station. The Landfill Gas Power Meter Station will enhance the microgrid controls as well as it will also incorporate and store renewable energy for use. The enhanced MCAS Miramar microgrid will result in improved energy resilience during grid outages in support of mission assurance.

For FY2022, the Department is taking a more proactive approach with an ERCIP program comprised of a variety of technologies such as renewable and clean energy power generation, energy storage systems, industrial control systems, microgrids, and improvements to distribution systems to enhance installation energy resilience, security, and control. Just as the Department ERCIP Construction request increased, our Planning and Design request increased from \$14.25 million to \$40.15 million to support increasingly complex microgrids, renewable and clean energy generation, and advanced energy storage. Included in this amount is \$10 million specifically for planning and design of the charging infrastructure needed to accommodate the electrification of DoD's non-tactical vehicle fleet.

The Energy Resilience Assessment Tool

The Department is enabling the identification of solutions beyond backup generators to meet critical energy requirements. To accomplish this, the Department continues to upgrade the Energy Resilience Assessment (ERA) Tool for use by the DoD Components. The ERA Tool allows users to evaluate and select energy resilience investments that best meet the cost and performance requirements of their critical missions. In addition to conducting continuous virtual training for installation energy personnel, recent upgrades include improved visualization of results and site-specific courses of action. Use of the ERA Tool to validate energy resilience enhancements is a requirement for all ERCIP project submissions throughout the Department.

Performance Contracting Authorities

The Department continues to utilize performance contracting (i.e., ESPCs/UESCs) as a significant part of its efforts to enhance energy resilience through energy efficiency. Guided by the installation energy planning process, DoD will continue to use these contracts where they enhance DoD mission readiness, mission assurance, and ultimately DoD's warfighting capability.

For example, through an ESPC at Marine Corps Recruitment Depot (MCRD) Parris Island the Marine Corps has enhanced readiness through the installation of a 3.5 megawatt combined heat and power plant (CHPP), 6.7 megawatts of solar photovoltaic panels with integrated energy storage, and a microgrid control system. Built above the flood zone, the CHPP is less susceptible to hurricanes, storms and sea level rise. Based in part to savings from the ESPC, MCRD Parris Island decreased its electricity purchased from the commercial grid by more than 50% in FY20 compared to FY19, which is contributing to greenhouse gas reductions.

Additionally, Misawa Air Force Base awarded a \$206 million-dollar ESPC that includes energy conservation and resilience measures such as a smart grid, solar arrays, and a cogeneration power plant capable of generating 6.2 MW of power and 83,000 lbs/hour of steam. The new generation plant will cut energy waste by an estimated 20% across 679 buildings, generate 70% of the peak electrical demand, and reduce 60% of the annual electrical load.

Cyber Resilience

To enable the projection, sustainment, and direct support to forces around the globe, DoD installations rely on a range of Facility-Related Control Systems (FRCS) to operate critical missions and facilities. FRCS in DoD are subject to a growing range of cyber threats as these systems have increasingly become more automated and connected. The attack surface for potential adversaries has increased exponentially as result of the integration of network-based building management systems, Internet of Things (IoT) devices, as well as the connection of legacy control systems into these networks.

As cyber threats continue to expand, the Department has responded by integrating cybersecurity into the overall policy and governance for energy resilience. For example, DoD installations now include cybersecurity considerations in the development of installation energy plans, and cyber secure FRCS are now integral to utility privatization agreements, energy savings performance contracts (ESPCs), and utility energy service contracts (UESCs). The Department now requires the DoD Components to submit annual FRCS Cybersecurity Plans to capture their efforts to collect inventory, complete assessments, implement mitigations, and maintain sustainment for FRCS cybersecurity. These complement installation energy plans and are due by the end of June 2021. The Department has also codified an FRCS Master List and associated security rankings to standardize the resourcing, training, education, and budgetary spend around a common definition of FRCS.

Energy Innovation

OASD(Sustainment) oversees three Department-wide research, development, test, and evaluation programs that support resilient, efficient, and clean energy for use by installations and forces.

The overall FY2022 budget request for Operational Energy Technology is \$97.5 million, centered on two key programs: the Operational Energy Capability Improvement (OECI) program and the Operational Energy Prototyping (OEP) program. These Defense-wide energy technology programs coordinate closely with the Military Services to ensure research, demonstration, test and evaluation are focused on the Departments most pressing operational energy needs. For OECI, which is focused on advanced technology demonstrations, we request \$59.3 million for baseline efforts and \$15.0 million for nuclear fuel efforts. Our request for OEP, which is focused on demonstration of operational energy technology and validation prototyping, is \$23.2 million.

To prepare for tomorrow's energy challenges and combat climate change, OECI/OEP invest in three lines of effort. Projects focused on Powering the Force support the deployment of more mobile and distributed operations with decreased and more agile logistics, especially through contested environments. Efforts in Electrifying the Battlespace enable the electrification of weapons, platforms, unmanned systems, and soldiers which drastically reduces fossil fuel resupply and enables new capabilities such as silent watch and exportable power. Finally, Commanding Energy efforts focus on capturing and understanding platform and weapon system energy profiles, including adversarial profiles, to transform the Joint Force from reactive to predictive with energy management and control.

The FY2022 budget request for Installation Energy Technology is \$39.9 million, implemented through the Environmental Security Technology Certification Program's (ESTCP) Installation Energy and Water Program Area (EW). The ESTCP EW Program Area focuses on improving the resilience of DoD's energy and water systems and reducing carbon emissions from buildings and non-tactical vehicles. To achieve these outcomes, the Program identifies, demonstrates, and transitions innovative technologies that increase the energy and water efficiency of DoD buildings, improve the security and reliability of energy and water supply, reduce the life-cycle cost of DoD facilities, and reduce carbon emissions from on-site fuel consumption.

CONCLUSION

Thank you for the opportunity to present the President's FY2022 budget request for DoD programs supporting energy, installations, and environment. We appreciate Congress' continued support for our enterprise and look forward to working with you as you consider the budget request.