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Department of the Air Force



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Agencies

Installations Update

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Introduction

Chairwoman Wasserman-Schultz, Ranking Member Carter, and distinguished members of the Subcommittee. Thank you for the opportunity to discuss Department of the Air Force (DAF) energy, installations, and environment programs. Installations are platforms to enable and project combat power in support of the 2022 National Defense Strategy (NDS). Every DAF mission starts and ends on an installation. We train and equip for joint operations, provide portions of the nuclear deterrent, project power, generate readiness, test new weapon systems to build and maintain an enduring advantage, and provide safe and healthy communities at our Air and Space Force installations. DAF installations also serve as key nodes in a global network of operating locations enabling Joint Force mission success around the world. Additionally, for a significant number of our 700,000 Airmen, Guardians, and their families, DAF installations are “home.” Hence, the readiness, resiliency, and sustainability of installations are matters of strategic importance.

Our Nation faces the nexus of complex challenges: rise of great power competition with China and Russia; increasing complexity of multi-domain threats; fiscal pressures; competition for access to resources in the Global Commons; and increasing rates of technology change. The Fiscal Year 2023 (FY23) President’s Budget Request supports the NDS and lays out a plan to modernize our military capabilities. Finally, we continue to experience the effects of changing climate, exemplified by the growing strength and frequency of extreme weather events, wildfires and droughts. Unmitigated, these endanger not only our Airmen and Guardians, and the places where they live and work, but our weapon systems, infrastructure, and water and power networks.

In the face of these challenges, the DAF has made hard choices to prioritize decisions focused on integrated deterrence in an environment of shrinking advantage against aggressive competitors, operating in an evolving natural environment. The DAF Military Construction (MILCON) program prioritizes nuclear enterprise modernization and Combatant Command (CCMD) infrastructure support in the European and Pacific theaters. The centralized Facilities Sustainment, Restoration and Modernization (FSRM) portfolio continues to focus on infrastructure risk to mission, with prioritization based on “probability of failure” and “consequence of failure” methodology, ensuring timely maintenance and life-cycle repairs at our installations. We remain committed to sustaining the DAF’s power projection and enabling platforms—our installations—and appreciate the continued partnership with Congress to ensure Air and Space Forces are well-postured to compete, deter and win.

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Installations

The DAF continues to balance risk in installation investment in order to prioritize resources to our most mission-critical needs, ensuring the Department can continue to deliver combat capability to the Joint Force. The DAF is performing installation investment through implementation of our Infrastructure Investment Strategy (I2S), increased senior leader oversight of the portfolio, and reforms within our MILCON program. First introduced in 2019, the I2S is the Department's long-term strategy to cost-effectively modernize and restore infrastructure readiness, improve the resiliency of mission-critical nodes, and drive innovation in installation management practices.

DAF senior leaders oversee I2S implementation efforts through the biannual Infrastructure Program Management Review, where we review and provide guidance on the direction of I2S initiatives. In order to assess the impact of funding and asset management practices on infrastructure readiness, the DAF developed a series of metrics. These metrics quantify the impact of I2S policies on infrastructure condition, investment decisions, facility space use, and MILCON cost growth. Assessing the impact of I2S initiatives on a regular basis allows senior leaders to make timely decisions which impact execution of the program and future budget decisions.

Tackling the Climate Crisis

Last fall, the Secretary of Defense released the DOD Climate Adaptation Plan and DOD Climate Risk Analysis, emphasizing climate as a national security priority. Over the past several years, we have experienced first-hand the impacts climate and severe weather can have on our installations and operations. Increasing temperatures, changing precipitation patterns, and more extreme and unpredictable weather conditions pose new risks to DAF operations, readiness, installations, and facilities. The effects of climate change on the DAF are accelerating; the time for action is now. As the largest fuel consumer in the DOD, the DAF is not only addressing the need for climate adaptation to improve our resilience, but introducing climate mitigation efforts to optimize fuel consumption and reduce our logistics burden, while simultaneously reducing greenhouse gas emissions. Additionally, the DAF is developing a comprehensive Climate Action Plan aligned with our national security imperatives that lays out our climate priorities and actionable goals to address the complex threat of climate change.

In recent years, Congress has included numerous provisions in legislation to enhance installation resilience efforts across the Department of Defense. The DAF, in conjunction with the

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Office of the Secretary of Defense (OSD), is implementing these provisions. We are incorporating climate and energy resiliency considerations into Installation Development Plans (IDPs), while over 90 locations completed the hazard screening and risk assessment portions of the *DAF Severe Weather and Climate Hazard Screening and Risk Assessment Playbook*. The *Playbook* gives installation-level planners a consistent and systematic framework to screen for severe weather and climate hazards and assess current and future risks. We will include these results into Installation Climate Resilience Plans (ICRPs), serving as the military installation resilience component of our major military installation master plans by the end of FY25. Additionally, as of the end of 2021, we completed 42 Installation Energy Plans at our critical and high energy use installations to identify risks and track and adjust requirements to advance energy and water resilience goals.

The DAF is integrating resiliency considerations into MILCON and other construction projects as well. We assess all projects to determine if the planned facility could be impacted by current or future mean sea level fluctuations or if it is located in a 100-year floodplain for non-critical facilities and a 500-year flood plain for critical facilities. We implement resiliency actions when required by the mission or when feasible and cost-effective. The DAF drives changes to the Unified Facilities Criteria (UFCs) and then applies those revised building codes to all MILCON projects. Many of these UFCs have been updated to specifically incorporate resilience considerations, such as sea level rise scenario planning and updated structural engineering criteria to address wind, seismic, and flood threats.

To help address these challenges, the DAF is prioritizing the development of a climate-informed workforce, and leveraging data and analytics to make climate-informed decisions. Creating a climate literate workforce is fundamental to finding solutions to the climate crisis. The DAF must educate the force, including senior leaders, to create a culture where Airmen and Guardians understand the implications of climate change and are capable of making climate-informed decisions. Climate considerations will continue to be incorporated into our guidance, plans, and policies to ensure our Air Force and Space Force investments in facilities, infrastructure, and installation energy promote resilience to more frequent and severe weather events, while maximizing our readiness with a reduced energy footprint.

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Special Interest Items

Natural Disaster Recovery Efforts

Through the Natural Disaster Recovery program, the DAF will rebuild Tyndall AFB, FL, and Offutt AFB, NE, in a more efficient and resilient manner, incorporating design criteria from the latest UFCs. To buttress Tyndall AFB from future effects of climate change, the DAF made a policy decision to design beyond the minimum UFC criteria for civil and structural engineering. We used a minimum design wind speed of 165 miles per hour for all new mission-critical facilities, exceeding the highest wind speed captured during Hurricane Michael, and incorporated best practices from the Florida Building Code's High Velocity Hurricane Zone for Miami-Dade, Broward, and coastal Palm Beach Counties. Facilities are also being designed 14 to 19 feet above today's mean sea level, which incorporates a 7-foot projected sea level rise scenario through the year 2100.

Additionally, we emphasized coastal resiliency in the plan for Tyndall AFB. This partnered approach includes cost-shared investments, which combine with DAF investments to attenuate storm energy through natural infrastructure before it reaches built infrastructure. Key partners such as the Defense Advanced Research Projects Agency, Fish and Wildlife Service, Bay County, the Florida Department of Environmental Protection, and the University of Florida are working together as part of OSD's Readiness and Environmental Protection Integration Program. We are exploring several low life-cycle cost "Engineering with Nature" initiatives, to include sand fencing, submerged shoreline stabilization, living shorelines, oyster reefs, and marsh and seagrass enhancements.

At Offutt AFB, we are consolidating facilities to higher ground—out of the 100-year floodplain. Where relocation is not possible due to mission requirements, we are raising the finished floor elevation above the floodplain and building in a way to minimize clean-up should flooding occur again. *Taking Care of People*

In early 2020, the DAF established a cross-functional Child Care Capacity Initiative Working Group to address unmet child care needs. This team prioritized child development and school age care facility projects based on unmet child care demand, staffing, and building conditions. We issued a Strategic Enterprise Executive Decision memo directing installations to initiate planning actions for 14 projects identified on the prioritized list. The DAF is using the \$11 million in MILCON Planning and Design (P&D) funds provided in FY20 to initiate designs and

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posture these projects for future execution. Five of our top priority child development centers (CDCs)—Sheppard AFB, TX; Joint Base San Antonio (JBSA)-Lackland, TX; JBSA-Fort Sam Houston, TX; Wright-Patterson AFB, OH; and Royal Air Force (RAF) Lakenheath, in the United Kingdom—were authorized in the FY22 NDAA and funded within the FY22 Consolidated Appropriations Act. Construction of a new CDC at Tyndall AFB is scheduled to be complete by December 2022, and construction of a new CDC at Joint Base Andrews, MD, is expected to be ready to award in the summer of 2022. Additionally, we have turned to FSRM resources to address childcare facility concerns while we posture MILCON projects for future execution. We have secured FY22 funding for 6 FSRM projects, valued at \$19.7 million.

The DAF is also committed to ensuring unaccompanied service members are provided quality housing on our dormitory campuses. The Department has underscored the roles and responsibilities of Commanders in protecting the health and safety of unaccompanied Airmen and Guardians. Commanders enforce inspection criteria to identify and report conditions requiring immediate and future maintenance, as well as adequately resource maintenance and repair programs to effectively address requirements. Funded from the DAF FSRM account, the investment strategy for dormitories focuses on sustainment, restoration and modernization of these facilities in their existing configurations. This enables the DAF to focus MILCON funds on modern, formal training facilities for newly-recruited Airmen and Guardians, such as the Training Center at JBSA-Lackland.

Space Force

In accordance with Department of Defense direction that the Space Force be established as a lean, agile, mission-focused military Service, the Space Force will rely on the Air Force for infrastructure, logistics, security, medical services, and a host of other support functions at their bases. Formal agreements and implementation plans are in place to codify all stakeholder roles and responsibilities. In FY22, the Air Force transferred FSRM, unaccompanied housing, and facilities operations funds to the Space Force for planning, programming, budgeting, and execution. In FY23, the Department will allot MILCON funding based on Space Force's portion of the total plant replacement value rather than transferring MILCON funds. This approach was chosen to provide flexibility to resolve any resource challenges supporting Space Force requirements. The Space Force also developed a separate governance process for their

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infrastructure investments, leveraging current DAF processes, to ensure strategic alignment of investments to Space Force priorities.

FY23 DAF MILCON Program

In FY23, the DAF MILCON request was \$2.26 billion. This request will support the DAF's commitment to fulfilling National Defense Strategy (NDS) requirements, posturing for the future high-end fight, and taking care of our Airmen and Guardians by providing quality operational work spaces. The program supports Combatant Commanders with a focus on the Pacific and European theaters and modernizing the nuclear enterprise. Our request also focused on P&D to reinforce MILCON program stability and consistency. Additionally, the MILCON program continues efforts to bed down new weapons systems and seeks to recapitalize facilities that have outlived their useable life or no longer meet mission requirements.

Combatant Commander Infrastructure

The FY23 MILCON program prioritized Combatant Commander requirements with a particular emphasis on the Indo-Pacific and European theaters. Support to U.S. Indo-Pacific Command will enhance the United States defensive posture in the region, reassure allies and partners, and increase readiness capabilities. The request included \$451 million for projects in Alaska, Japan, and the Northern Mariana Islands to recapitalize key facilities, disperse resources, and construct operational and maintenance facilities, as well as provided Pacific-focused P&D. The request also included construction of fuel storage and aircraft parking apron on Tinian, aircraft operations and maintenance facilities in Japan, and a runway extension to increase airfield capacity in Alaska.

The DAF remains committed to European Defense Initiative (EDI) efforts to reassure North Atlantic Treaty Organization (NATO) allies and other European partners of United States commitment to collective security and territorial integrity. In FY23, the DAF requested \$244.9 million for EDI to include support for the prepositioning of equipment in Italy, Iceland, Spain, and Hungary, as well as base perimeter security in Norway. These projects will further improve deterrence efforts in the theater and enable joint and coalition forces to quickly respond to aggressive regional actors. The DAF request also included support to Combatant Commands within the United States to include a continued focus on Weapons Generation Facilities directly supporting U.S. Strategic Command; fuel and maintenance facilities supporting U.S. Central Command; and a dormitory supporting U.S. Space Command.

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New Mission Bed Downs

The FY23 budget request also supported the bed down of new weapons systems and missions, with a heavy focus on modernizing the nuclear enterprise. The request included two projects at Ellsworth AFB, SD, to bed down the first B-21 Raiders. It also included three projects at F.E. Warren AFB, WY; two projects at Hill AFB, UT; and one project at Vandenberg Space Force Base (SFB), CA, to support transition from the Minuteman III intercontinental ballistic missile weapon system to the Ground Based Strategic Deterrent (GBSD). The NDS directs the Department of Defense to build a force that is lethal, resilient, sustainable, survivable, agile, and responsive through modernization of key capabilities, the first of which are nuclear forces. Once on-line, these weapons systems will ensure the DAF can effectively supply two-thirds of the nation's nuclear triad well into the future.

The DAF appreciates the legislative authorities which posture the GBSD program for success. The FY21 NDAA provided significant flexibility for the Launch Facility/Launch Center conversion under MILCON authorization, authorized \$15 million of MILCON P&D for GBSD, enabled all GBSD construction to be carried out under direction and supervision by the Secretary of the Air Force, and allowed a single prime contractor to plan, design, and construct all GBSD projects. The DAF will continue to inform Congress on the Department's progress during design, construction, and commissioning of GBSD facilities.

The FY23 President's Budget did not include funding requests for the F-35A bed down program. After the generous FY22 F-35A bed down support for facilities at RAF Lakenheath and Luke AFB, AZ, funding requests will resume in future years to complete the full bed down program. Lastly, the budget request included a three-bay depot maintenance hangar at Tinker AFB, Oklahoma to directly support reliable and responsive infrastructure for the KC-46A weapons system depot maintenance.

Existing Mission Recapitalization

The FY23 request also sought \$218.3 million to recapitalize facilities that surpassed their useable life or no longer met mission requirements. This request included additional funding for our Basic Military Trainee Recruit Dormitory modernization, to include an increment for Dormitory 7 at JBSA-Lackland. Other recapitalization projects included a supplement to the MIT-LL West Lab CSL/MIF at Hanscom AFB, MA, and a RAPCON facility at Shaw AFB, SC which is a resilience project designed with previously appropriated resilience funds.

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Planning and Design

P&D remains a central focus of the DAF MILCON program to reinforce program stability and consistency. Sufficient P&D enables projects to progress rapidly through design and meet maturity criteria for admissibility into the program, provides more accurate cost estimates, and maximizes opportunity to award projects in the year of appropriation. With the FY23 P&D request of \$176 million, the DAF intends to fully fund designs for our planned FY24 and FY25 projects, as well as initiate design for FY26 projects. The outcome of our two year budget lock policy is a stable MILCON program allowing us to efficiently use P&D for future projects.

Facility Sustainment, Restoration, and Modernization (FSRM)

We view the FSRM and MILCON programs as interdependent; together, these two funding streams serve as the foundation of sustainable DAF installations. FSRM provides a non-MILCON pathway to repair facilities and infrastructure, maximizing their lifespan. Our I2S drove changes in how we execute the FSRM program by prioritizing projects based on mission risk and timing investments at the optimal point in the asset lifecycle. The centralized FSRM scoring model targets investments at an asset's "sweet spot" in its life cycle rather than at end-of-life failure, which is significantly more expensive. FSRM funding distributed directly to installations (considered decentralized FSRM), empowers Commanders to make the right local investment decisions, including day-to-day maintenance and smaller scale repair and sustainment projects, based on mission requirements and I2S guidance.

The DAF will continue to utilize I2S principles to restore the health of our installations by refining business processes and implementing private sector best practices. These include implementing cost management strategies specific to different spending categories, leveraging data to improve the timing of sustainment and recapitalization actions, and establishing standards of services and equipment to achieve economies of scale. In order to maximize the near-term impact of current funding levels, the DAF will also continue to assess mission thread vulnerabilities and prioritize infrastructure repair requirements which directly affect an installation's primary mission.

Housing Construction, Operation and Maintenance

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The DAF Housing program provides for housing construction, P&D, and operations and maintenance while maintaining a continued focus on eliminating inadequate housing from the DAF inventory and correcting health and safety deficiencies. In addition to enabling planning studies, design for future construction projects, and renovation of existing DAF-owned homes, and the military family housing construction program also supports the restructure of privatized housing projects.

The high cost of construction continues to present challenges to improvements of DAF-owned family housing. The increased cost of construction requires solutions within the DAF family housing construction program to include cancelling projects as a result of significant cost increases and using existing resources to achieve full scope on other projects.

Our military family housing operation and maintenance program sustains, improves, and modernizes our Government-owned inventory of approximately 15,200 family housing units and provide enhanced oversight of over 52,000 privatized homes. Combined, the family housing operations and maintenance and construction programs will ensure continued support for the housing needs of Airmen, Guardians, their families, and our Army, Navy, and Marine Corps teammates housed in DAF-owned and privatized inventory.

Privatized Housing

The DAF is committed to ensuring that Military Housing Privatization Initiative (MHPI) projects provide safe, quality, well-maintained housing where military members and their families will want and choose to live. We remain focused on improving our privatized housing portfolio and addressing the remaining elements of the MHPI reforms set out in the FY 2020, FY2021 and FY2022 National Defense Authorizations Acts (NDAA). The DAF has made significant progress implementing reforms to enhance our oversight of privatized housing and hold MHPI companies accountable for delivering quality housing that provides a positive living experience for tenants. An important effort is the DOD MHPI Tenant Bill of Rights. On August 1, 2021, DOD issued a revised and updated MHPI Tenant Bill of Rights that includes all 18 rights set out in 10 U.S.C. 2890. Applying many of these rights at existing MHPI housing projects requires voluntary agreement by the private companies who own, operate, and maintain the projects. Most DAF companies have agreed to implement all 18 rights at their existing projects. With few exceptions, all rights are fully available at all installations with DAF MHPI housing.

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The DAF has improved oversight by adding 218 government positions across the privatized housing program, increasing inspections, providing additional training to housing personnel and revamping housing governance. Resident Councils have been established at DAF sites to provide two-way communication between the residents and installation and project owner leadership. Additionally, we use the feedback from tenant satisfaction surveys to develop action plans for improving the resident experience. The DAF has also established Resident Advocates at DAF sites to engage with residents, installation leadership and the MHPI company and its property management representative to help resolve any disputes at the lowest level and improve communications with all stakeholders. In addition, the DAF established a toll free housing call center where tenants have 24-hour access to elevate concerns.

The DAF has expanded its metrics for assessing the health of the privatized housing portfolio, particularly with regards to resident satisfaction, maintenance quality and responsiveness, and property management operations. Many of these business health metrics are now also included in the new Performance Incentive Fee (PIF) agreements DAF has negotiated with its largest private partners giving them a financial incentive to meet or exceed the standards established for our MHPI program.

Timeliness and thoroughness of repairs continues to be a challenge, compounded by the national labor shortage and complications posed by COVID; however, indications are that maintenance quality is holding steady or improving, as evidenced by work order survey data and Military Housing Office change of occupancy maintenance inspections. The DAF has implemented a Portfolio Assessment Program that places increased emphasis on maintenance performance and change of occupancy maintenance, driving engagement at all levels with the project owners to improve performance.

The DAF continues to remain focused on improved oversight, long-term project health, and sustainment of the housing inventory to provide military families access to safe, quality, affordable, and well-maintained housing communities where they choose to live. Some privatized housing projects will require financial restructuring to continue to remain financially stable and market-comparable. The restructure goals are to fully fund operational expenses, debt servicing, and sustainment of the homes for the life of the lease and to fund reinvestment needs during the mid-term reinvestment period. The DAF included \$228 million in the FY23 request to complete the required DAF MHPI restructures at select locations.

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Environmental Stewardship

The safety and health of the Airmen and Guardians who work and live on our installations, their families, and the surrounding communities are DAF priorities. The DAF greatly appreciates Congressional support for our efforts to address per- and polyfluoroalkyl substances (PFAS) and continue Environmental Restoration Program progress.

Environmental Restoration

We remain focused on meeting our restoration obligations under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA). Investigation objectives and environmental response actions performed under these statutes aim to reduce risk to human health and the environment in a risk-based, prioritized manner at the approximately 13,000 restoration sites at our active and closed installations. Recently, much of our restoration program focus has been on chemicals of emerging concern, most notably, PFAS.

DAF PFAS Strategy

The DAF PFAS strategy focuses on using CERCLA authorities to investigate, define, and, as necessary, remediate groundwater and soil impacted by DAF activities. The DAF also conducts a robust effort to communicate and collaborate with local communities, State and Federal agencies, and elected officials at all levels. Recognizing the DOD is only one source of PFAS, we are actively engaged with other government agencies working to identify and address other sources, exposure pathways for humans and the environment, and health effects of PFAS. The DAF framework guiding our response to PFAS issues is built on these themes: Protect Human Health; Communication and Collaboration; and a Whole of Government Approach.

DAF began using aqueous film forming foam (AFFF) in accordance with the DOD MILSPEC, published in 1969. This legacy AFFF contained perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Evolving science has identified risks to human health after PFOS and PFOA exposure and regulatory standards are under consideration by the Environmental Protection Agency (EPA) and a number of states. The DAF PFAS Strategy has focused on PFOS and PFOA based on the EPA lifetime drinking water Health Advisories (HAs) for these compounds. Our primary objective under the DAF PFAS strategy continues to be ensuring that no one, on or off our installations, is drinking water with PFOS/PFOA concentrations above EPA's 70 parts per trillion HA attributable to the DAF.

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In prioritizing CERCLA environmental response actions, the DAF uses a risk-based decision-making process with protection of drinking water as a top priority. Action is prioritized on a "worst first" basis, meaning sites that pose a greater potential risk to human health and the environment are addressed before sites posing a lesser risk. Although the DAF does not program restoration funds by chemical, the DAF has obligated \$974 million as of February 2022 identifying, investigating, and responding to PFAS releases, completing drinking water response actions at eight BRAC installations and a total 38 DAF installations (including implementing bottled water, point-of-use filtration, whole-house filtration, and municipal water supply hookups), and completing initial PFAS CERCLA Site Inspections at 128 installations. The FY22 Consolidated Appropriations Act provided \$214 million above the budget request to allow DAF to continue to address PFAS impacts at installations across the enterprise, of which \$50 million is allotted to address PFAS at BRAC installations. As of February 2022, the DAF awarded CERCLA Remedial Investigation contracts for 79 DAF installations, which includes 12 at BRAC installations. While the DAF takes quick actions under CERCLA to address drinking water impacts, the remaining cleanup efforts are intended primarily to address PFAS in groundwater and soil, which can be technically complex and take a long time to complete.

The complex nature of the challenges posed by PFAS remediation and the evolving regulatory environment require the use of a Whole of Government Approach. To facilitate inter-Service coordination, DAF is an active member of the DOD PFAS Task Force, which works toward finding ways to mitigate and eliminate use of AFFF as currently formulated, understanding the impacts of PFAS on human health, and fulfilling cleanup responsibilities related to PFAS. The DAF also conducts a robust effort to communicate and collaborate with local communities, State and Federal agencies and elected officials.

Environmental Quality

The DAF ensures a resilient natural infrastructure and maintains sound environmental stewardship by funding compliance with applicable environmental laws. The environmental compliance program focuses on regulatory compliance for our air, water, and land assets. Examples of compliance efforts include detailed air quality assessments to analyze environmental impacts from DAF activities, thorough management of our underground and above ground storage tanks, hazardous waste management and disposal, and compliant environmental plans and permits.

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Efforts in pollution prevention include maximizing the diversion of solid waste from landfills to reduce the volume and cost of disposal; recycling batteries, used oil, fluorescent light bulbs, and spent solvents; and supporting our hazardous materials pharmacies to effectively reduce and safely manage the use of hazardous materials. We also continue to protect the health of our Airmen, Guardians, and the environment by making investments to minimize hazardous waste disposal through the demonstration and validation of new technologies.

We remain firmly committed to a robust program of conservation management covering a full suite of environmental, natural, and cultural issues. Prior appropriations have allowed the DAF to invest in conservation activities on and around our training ranges that provide direct support to mission readiness. The conservation program in FY23 supports ongoing habitat and species management efforts for 123 threatened and endangered species found across 54 DAF installations, and provides for continued cooperation and collaboration with the other military Services and with other federal government agencies such as the United States Fish and Wildlife Service. The DAF Cultural Resources Program supports mission needs through 117 Integrated Cultural Resources Management Plans. These plans work to preserve 6,141 historic buildings and structures and protect 20,669 archaeological sites. Recent efforts carried out at Eglin AFB, FL, is one such example of integrated conservation management. Archaeologists at Eglin teamed with biologists and conservationists from the Choctawhatchee Basin Alliance to construct a series of “Living Shorelines” to protect sensitive archaeological sites from shoreline erosion while also enhancing natural habitat and water quality.

Partnerships like these help us preserve cultural resources and provide effective ecosystem and habitat management, including wildland fire and invasive species management. These partnerships also support ongoing natural resource management efforts that focus on addressing imperiled and invasive species, critical habitats, and other key natural resources on installations to avoid or minimize mission impacts. Working collaboratively with the United States Fish and Wildlife Service through the DOD Recovery and Sustainment Partnership, the DAF enhanced mission operations and increased range access while protecting at-risk species leading to the proposed down-listing of the red-cockaded woodpecker from Endangered to Threatened status, and the delisting of the Okaloosa Darter.

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The DAF remains committed to responsible environmental restoration and quality. As trustee for more than 8.3 million acres of land including forests, prairies, deserts, wetlands, and coastal habitats, the DAF understands the important role natural resources plays in maintaining our mission capability. To maintain military readiness the DAF needs realistic test and training environments, which themselves are ecosystems. Quite simply, if we do not maintain the ecosystems we rely upon to continue our test and training mission, and clean up the impacts of past mission activities, we understand we will not be able to achieve or maintain military readiness.

Base Realignment and Closure (BRAC)

The FY23 request includes \$107 million for the BRAC cleanup program for environmental restoration and property transfer activities at 34 former DAF installations closed through prior BRAC initiatives. Our BRAC cleanup program focuses on protecting human health and the environment, transferring acreage and achieving beneficial reuse of property, and completing investigations and response actions associated with PFAS. Through the BRAC process the DAF has closed 40 installations and sites and transferred more than 98% of the property back to communities for beneficial use, producing \$2.9 billion in annual savings. Property transfer is complete for 35 former installations, and we expect to complete transfer of the remaining 1,858 acres at five former installations by 2027. The DAF greatly appreciates Congressional support for our efforts to address PFAS contamination and continue the cleanup and transfer of BRAC properties.

Installation Energy and Water Resilience

Reliable access to both quality power and water enables the DAF to continue its operational and training missions. The DAF views energy and water as both essential and linked resources, so any energy initiative implies consideration to water as well. Accordingly, the DAF established the vision of “Mission Assurance through Energy and Water Assurance.” This vision focuses on sustaining warfighting capabilities despite potential disruptions to enabling systems, like energy and water, while simultaneously optimizing the use of those resources through enhanced planning, technology, and process improvements.

The DAF assesses near- and long-term energy and water needs based on resilience, cost considerations, and the opportunity to leverage clean sources. Resilience is at the core of DAF’s assessments because we seek continual operations in the face of challenges and the ability to recover from adversity. All DAF installation energy and water projects must improve resilience in

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some capacity across the key attributes (the “5Rs”): robustness, resourcefulness, redundancy, response, and recovery. Qualifying resiliency projects include, but are not limited to, microgrids, clean energy generation and storage, and energy conservation efforts.

Installation Energy Resilience

The DAF applies the “5Rs” to assess gaps, prioritize energy projects, and ensure enabling system investments are effective in supporting mission needs in order to reduce potential vulnerabilities from energy and water. The “5Rs” help describe how a system plans for crises, with the preventative attributes of robustness, redundancy, and resourcefulness, as well as how the system functions during crises, with the performance attributes of response and recovery.

Natural hazards and adversarial threats pose a growing risk for prolonged power outages for installations. Using a mission thread perspective, we identify key nodes on and off installations that, in a denial-of-service scenario, may result in a significant impact on our ability to deliver key capabilities. A comprehensive understanding of mission requirements, current system operations, accurate reporting, and historical outage data assist in identifying possible service vulnerabilities. Through increased investment in, and improved maintenance of, these energy systems, we strive to decrease the number of outages on installations.

The DAF is conducting Energy Resilience Readiness Exercises (ERREs) to help installations assess mission readiness during a controlled denial of service. Under an ERRE, also referred to as “pull-the-plug” and “black start” exercises, an installation intentionally shuts down its primary power for as long as 12 hours to test its onsite backup power systems and identify how infrastructure, mission interdependencies and enabling system capability will react during a denial of service. Through FY21, the DAF has completed six ERREs, including the DOD’s first joint base ERRE, the first concurrent exercise, and the first Control System Readiness Exercise. The DAF is planning to conduct at least five ERREs in FY22 encompassing installations with a broad spectrum of missions and locations to ensure a comprehensive perspective is included in future implementation guidance. Future ERRE efforts could focus on carrying out the first regional exercise, as well as the creation of supplemental guidance highlighting lessons learned and best practices to enable more installations to conduct ERREs and enhance energy resilience.

Water Resource Management

The DAF is placing greater emphasis on water resilience, recognizing that water resources are finite yet essential to sustained mission capabilities. Water availability faces many threats

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including aging infrastructure, scarcity, malicious attacks, natural hazards, changes in climate, rising costs of supply, quality issues, and encroachment. The DAF takes a risk-based approach to water management and links water security more directly to mission assurance.

Current water initiatives include increasing transparency into mission needs and readiness, comprehensively identifying and assessing water risks, expanding external stakeholder engagement, analyzing capability gaps, and developing mitigation strategies. The DAF is currently developing its Installation Water Dashboard, an interactive data repository for all installations—Active, Guard, and Reserve—to streamline water data and reporting, as well as support our goal of determining water vulnerabilities and supporting future water resilience planning.

Installation Energy and Water Planning

Installation Energy Plans (IEPs) utilize a standardized framework based on the “5Rs” to integrate strategic guidance, plans, and policies into a holistic roadmap for each installation to advance mission critical energy and water goals. The DAF has completed 42 Installation Energy Plans through the end of CY21 and has approximately 150 resilience initiatives in development across the enterprise to address installation energy and water vulnerabilities identified through IEPs, ERREs, and mission thread analyses. By June 2022, all outside the continental United States priority installations and the top 75% of energy-consuming installations within the continental United States will complete IEPs to improve installation energy and water resilience.

Financing Energy and Water Infrastructure

The DAF Installation Energy Program does not have a dedicated budget line; rather, it relies on direct investment, third-party financing, and innovative funding solutions. Direct investment typically comes from FSRM, MILCON, or the Energy Resilience and Conservation Investment Fund (ERCIP). Third-party financing and other contracts include vehicles such as Energy Savings Performance Contracts (ESPCs), Utility Energy Service Contracts (UESCs), and Utilities Privatization contracts (UP).

Control Systems Cybersecurity & Resilience

Underpinning our installations are increasingly automated and interconnected control systems that, when vulnerable, open our multi-domain operations to adversarial cyber threats. In compliance with the FY17 NDAA, we have conducted assessments of critical infrastructure to identify vulnerabilities. These assessments have exposed risks to missions we unknowingly accepted, and validated the mitigation measures we were already pursuing to increase control

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systems' cybersecurity and resiliency. In March 2021, we published our DAF Strategic Plan for Control Systems, detailing a dynamic, unified, and enduring approach to protecting and defending these control systems, which assure our critical infrastructure and mission capabilities. Additionally, we published implementation guidance to strengthen energy and water control systems cybersecurity.

Climate Responsive Infrastructure

With renewed focus on climate impacts to mission, the Installation Energy Program is updating DAF policy, projects, and assessments to address climate response and support the Administration's current climate initiatives. To ensure resilient, mission-critical facilities, the DAF is mitigating risks to vulnerable installation energy and water infrastructure, prioritizing efficient renewable energy technologies, and reducing greenhouse gas emissions where possible. Recently, the DAF announced a micro-reactor pilot project at Eielson AFB, AK, and Zero Emissions Vehicle pilot programs at Joint Base Andrews, MD, and Joint Base McGuire-Dix-Lakehurst, NJ, to deliver an alternative energy supply and support federal fleet electrification.

Conclusion

The DAF supports the 2022 National Defense Strategy and laid out a plan to defend the homeland, deter pacing threats, and modernize our military capabilities while taking care of our Airmen, Guardians, and families. The I2S continues to guide MILCON and FSRM budget decisions and business practices as we endeavor to deliver ready, resilient installations as cost effectively as possible. The MILCON program prioritizes nuclear enterprise modernization and supports Combatant Commanders, with particular focus on the European and Pacific theaters. The housing program provides the resources needed to sustain and improve the DAF's inventory of government-owned homes, and oversight of privatized housing project owners. The Department remains committed to working through challenges affecting this portfolio and delivering effective, efficient installation engineering services. DAF energy, installation, and environment priorities ensure that our Airmen, Guardians, weapon systems, and installations continue to be ready to defend American interests now and in the future.

Thank you for the opportunity to discuss DAF's programs supporting energy, installations, and environment. We appreciate Congress' continued support for our enterprise and look forward to working with you on our FY23 priorities.