

Department of the Air Force

Presentation

Before the House Appropriations
Subcommittee on Military Construction and
Veterans Affairs, and Related Agencies



Installations and Engineering

Witness Statements of
Ms Jennifer L. Miller
Acting Assistant Secretary of the Air Force for
Installations, Environment and Energy

Brigadier General William H. Kale III
Director of Civil Engineers, Deputy Chief of
Staff for Logistics, Engineering and Force
Protection

May 18, 2021

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BIOGRAPHY



UNITED STATES AIR FORCE

JENNIFER L. MILLER

Jennifer L. Miller, a member of the Senior Executive Service, is the Acting Assistant Secretary of the Air Force for Installations, Environment and Energy, Headquarters Air Force, the Pentagon, Arlington, Virginia. Ms. Miller is responsible for the formulation, review and execution of plans, policies, programs and budgets to meet Air Force installations, energy, environment, safety and occupational health objectives.

Prior to assuming her current position, Ms. Miller served as the Deputy Assistant Secretary of the Air Force for Installations, Headquarters Air Force, the Pentagon, Arlington, Virginia. She was responsible for the management, policy and oversight of Air Force installation programs. These included base realignments and closures, installations planning and strategy, strategic basing, the Air Force Environmental Impact Analysis Process, compatible and joint land use, encroachment management, public/private partnerships, the Readiness and Environmental Protection Integration program, housing and real property transactions. She also previously served as Deputy General Counsel, Installations, Environment and Energy Division, Office of the Air Force General Counsel.



Prior to becoming a member of the Senior Executive Service, Ms. Miller spent several years supporting the Air Force's real property and housing privatization programs. Before that, she was a real estate attorney at a Seattle law firm. She is also an Army Reserve Judge Advocate. In 2013 and 2014, she deployed with a special operations joint task force in Afghanistan, and in 2018 and 2019, she served as the Deputy Staff Judge Advocate for United States European Command in Stuttgart, Germany. She currently supports United States Indo-Pacific Command exercises as an Operational Law Reserve Attorney.

EDUCATION

1997 Bachelor of Arts, Politics, Philosophy and Economics, magna cum laude, Claremont McKenna College, Calif.

2001 Juris Doctor degree, cum laude, Seattle University, Wash.

2001 Master of Business Administration, Seattle University, Wash.

CAREER CHRONOLOGY

1. 1997, Legal Intern, Smith & Zuccarini, P.S., Bellevue, Wash.
2. 1998–1999, Legal Intern, Kent City Attorney's Office, Kent, Wash.
3. 1999–2000, Tax Associate, Arthur Anderson, Seattle
4. 2000–2001, Legal Intern, Foster Pepper, PLLC, Seattle
5. 2001–2005, Associate, Foster Pepper, PLLC, Seattle
6. 2005–2007, Senior Counsel, Secretary of the Air Force/General Counsel - Air Force Housing Privatization (AFCEE/HP)
7. 2007–2008, Senior Counsel, SAF/GCN - Air Force Real Property Agency
8. 2008–2009, Chief Counsel, SAF/GCN - AFRPA
9. 2009–2011, Chief Counsel, SAF/GCN - San Antonio (AFCEE/HP and AFRPA)
10. 2011–2015, Deputy General Counsel, Installations, Energy and Environment

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11. 2015–2020, Deputy Assistant Secretary of the Air Force for Installations
12. 2020–2021, Principal Deputy Assistant Secretary of the Air Force for Installations, Environment and Energy, the Pentagon, Arlington, Va.
13. 2021–present, Acting Assistant Secretary of the Air Force for Installations, Environment and Energy, the Pentagon, Arlington, Va.

AWARDS AND HONORS

Presidential Rank Award
Meritorious Civilian Service Award
Bronze Star Medal
Meritorious Service Medal
Army Commendation Medal
Army Achievement Medal

PROFESSIONAL MEMBERSHIPS

District of Columbia Bar
Phi Beta Kappa

(Current as of January 2021)

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UNITED STATES AIR FORCE

BRIGADIER GENERAL WILLIAM H. KALE III

Brig. Gen. William H. Kale III is the Air Force Director of Civil Engineers, Deputy Chief of Staff for Logistics, Engineering and Force Protection, Headquarters U.S. Air Force, the Pentagon, Arlington, Virginia. He is responsible for providing policy and oversight for the planning, development, construction, maintenance, utilities and environmental quality of 183 Air Force bases worldwide valued at more than \$346 billion. This responsibility includes housing, fire emergency services, explosive ordnance disposal and emergency management services. He also influences resourcing for installation support functions with an annual budget of \$11 billion and is the focal point for organizing, training and equipping a 51,000-person engineering force.



Brig. Gen. Kale entered the Air Force in 1995 as a distinguished graduate of the Reserve Officer Training Corps at Pennsylvania State University. He has commanded at the squadron, group and wing levels. He has also served on three headquarters staffs and as a Legislative Fellow. He has deployed in support of operations Southern Watch, Joint Forge, Joint Guardian, Noble Eagle, Enduring Freedom and Iraqi Freedom.

Prior to his current position, Brig. Gen. Kale led the Air Force Legislative Liaison Office in the U.S. House of Representatives.

EDUCATION

1993 Exchange Student, University of Leeds, United Kingdom
1995 Bachelor of Architectural Engineering, Pennsylvania State University
2001 Master of Science, Environmental and Engineering Management, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio
2001 Squadron Officer School, Maxwell AFB, Ala.
2005 Air Command and Staff College, Maxwell AFB, Ala., by correspondence
2008 Legislative Fellowship, Georgetown University, Washington, D.C.
2009 Air War College, Maxwell AFB, Ala., by correspondence
2013 Master of Science, National Resource Strategy, Dwight D. Eisenhower School for National Security and Resource Strategy, Washington, D.C.
2015 National Security Executive Leadership Seminar, Foreign Service Institute, Washington, D.C.
2015 Enterprise Leadership Seminar, University of North Carolina, Chapel Hill

ASSIGNMENTS

1. June 1995–March 1998, Chief of Support Group Project Team and Chief of Contract Management, 23rd and 43rd Civil Engineer Squadrons, Pope Air Force Base, N.C.
2. March 1998–August 1999, Chief of Contract Management and Architectural Engineer, 65th Civil Engineer Squadron, Lajes Field, Azores, Portugal
3. August 1999–April 2001, Graduate Student, Environmental and Engineering Management Department, School of Engineering, Air Force Institute of Technology, Wright-Patterson AFB, Ohio

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4. April 2001–May 2001, Student, Squadron Officer School, Maxwell AFB, Ala.
5. May 2001–June 2004, Project Engineer and Engineering Flight Commander, 819th Red Horse Squadron, Malmstrom AFB, Mo.
6. June 2004–July 2007, Beddown/Base Realignment and Closure Program Manager and Executive Officer, Civil Engineer and Installations and Mission Support, Headquarters Pacific Air Forces, Hickam AFB, Hawaii
7. July 2007–January 2009, Legislative Fellow, Air University, the Pentagon, Offices of the Secretary of the Air Force Congressional Budget and Appropriation Liaison and Legislative Liaison, and U.S. House of Representatives, Office of Congressman Daniel E. Lungren, Third Congressional District of California, Washington, D.C.
8. January 2009–July 2010, Legislative Affairs Program Manager, Office of the Civil Engineer, Deputy Chief of Staff for Installations and Logistics, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.
9. November 2009–June 2010, Commander, 380th Expeditionary Civil Engineer Squadron, Southwest Asia
10. July 2010–July 2012, Commander, 52nd Civil Engineer Squadron, Spangdahlem Air Base, Germany
11. July 2012–June 2013, Student and Research Fellow, Dwight D. Eisenhower School for National Security and Resource Strategy, Fort Lesley J. McNair, Washington, D.C.
12. June 2013–July 2015, Chief, Program and Requirements Branch, Policy and Programs Division, Deputy Directorate for Program Management Activities, Directorate for Joint Force Development (J7), Joint Staff, the Pentagon, Arlington, Va.
13. July 2015–July 2017, Commander, 11th Mission Support Group, Joint Base Andrews, Md.
14. July 2017–July 2019, Commander, 501st Combat Support Wing, Royal Air Force Alconbury, United Kingdom
15. July 2019–July 2020, Chief, House Liaison Division, Office of the Legislative Liaison, Secretary of the Air Force, the Pentagon, Arlington, Va.
16. July 2020–present, Director of Civil Engineers, Deputy Chief of Staff, Logistics, Engineering and Force Protection, Headquarters U.S. Air Force, the Pentagon, Arlington, Va.

MAJOR AWARDS AND DECORATIONS

Legion of Merit with oak leaf cluster

Bronze Star Medal with oak leaf cluster Defense Meritorious Service Medal

Meritorious Service Medal with three oak leaf clusters Joint Service Commendation Medal

Air Force Commendation with oak leaf cluster

OTHER ACHIEVEMENTS

2001 Professional Engineer License, State of Ohio 2002 Air Force Engineer of the Year

2002 National Society of Professional Engineers Federal Engineer of the Year Top 10 Finalist 2003 Air Force Civil Engineer Military Manager of the Year Runner-Up

2004 Army Air Assault Badge

2004 Pacific Air Forces Lance P. Sijan Leadership Award nominee 2004 Pacific Air Forces Company Grade Officer of the Year

2006 Army Combat Action Badge

2007 Project Management Professional Certification, Project Management Institute 2011 United States Air Forces in Europe Lance P. Sijan Leadership Award nominee

2012 Society of American Military Engineer Curtin Award

2012 United States Air Forces in Europe Senior Civil Engineer Manager of the Year

2013 Award for Outstanding Research, Center for the Study of Weapons of Mass Destruction

EFFECTIVE DATES OF PROMOTION

Second Lieutenant May 30, 1995

First Lieutenant May 30, 1997

Captain May 30, 1999

Major Oct. 1, 2005

Lieutenant Colonel March 1, 2009

Colonel Oct. 1, 2014

Brigadier General Aug. 7, 2020

(Current as of August 2020)

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Introduction

Installations are weapon systems. Every Department of the Air Force (DAF) mission starts and ends on an installation. We project power, generate readiness, test new platforms, train to support joint operations, and provide safe and healthy communities at our installations. Air and Space Force installations serve as key nodes in enabling Joint Force mission success around the world. More than 330,000 active duty personnel organize, train, and equip at DAF installations, and for thousands of Airmen, Guardians, and their families, installations also serve as their homes. The readiness and resiliency of installations is a matter of strategic importance.

Our Nation faces several challenges: the rise of great power competition with China and Russia, the increasing complexity of threats that emanate from several domains simultaneously, fiscal pressures, the rapidly increasing rate of technology change, and the fact that our installations are threatened in new ways. In particular, climate change poses a significant threat that must be accounted for in our infrastructure investments. The Fiscal Year 2022 (FY22) President's Budget Request supports the Interim National Security Strategic Guidance and lays out a plan to modernize our military capabilities. The Military Construction (MILCON) budget prioritizes nuclear enterprise modernization and Combatant Command (CCMD) infrastructure support in the European and Pacific theaters. The budget also provides for the wellbeing and quality of life of our service members and their families through investments in housing, dorms, and community support facilities. The result is a budget that supports installations capable of fulfilling mission requirements and the needs of our Airmen, Guardians, and their families.

Within the installation investment portfolio, the DAF is facing numerous challenges that are influencing our investment decisions and budget execution. We are committed to facing and overcoming these challenges and appreciate the continued help from Congress to address them and ensure the Air and Space Forces are enabled to defend the Nation and her allies.

Challenges

The DAF has continually accepted risk in installation investment as resources are prioritized to the most critical needs, ensuring the Service can continue to deliver combat capability to the Joint Force. Over time, this resulted in atrophied facilities and infrastructure with a deferred maintenance and repair backlog of more than \$30 billion. More than 1,500 facilities are considered poor (Building Condition Index of 55 or less on a 100 point scale) and require significant investment. If left unchecked, the condition of infrastructure will impact the Department's ability

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to safely and effectively execute our mission. Additionally, atrophied facilities and infrastructure are more susceptible to effects of routine or severe weather events. This was evident at Tyndall Air Force Base (AFB) during Hurricane Michael in 2018 where facilities constructed more recently, using updated building codes, weathered the storm better than degraded or older facilities which were constructed under outdated building codes and subject to longer term deferred maintenance. We also observed this during recent severe winter storms across the United States. In many instances, degraded facility systems and components failed which caused water and fire suppression liquids to freeze, expand, and eventually burst the pipes.

The DAF has also struggled to award MILCON projects in the year of appropriation. Sub-optimal design maturity, as a result of insufficient budgeting for Planning and Design (P&D), significantly contributed to cost overruns and drove the need to request additional funds or reprogram. Design maturity issues also led to the need to finish or re-design projects after funding was appropriated leading to additional cost increases and construction award delays. These delays have also left MILCON funds susceptible to rescission or reallocating. Reduced levels of P&D in the past exacerbated these problems.

Overcoming Challenges

The DAF is working to overcome these challenges 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. This strategy informs efforts to optimize facility and infrastructure investment decisions and project prioritization within the MILCON and Facilities Restoration, Sustainment, and Modernization (FSRM) programs. The I2S also focuses on the recapitalization of facilities and infrastructure by identifying opportunities to reduce costly infrastructure in poor condition which no longer sufficiently meets mission requirements.

In an effort to leverage advanced infrastructure risk analytics, the DAF continues to develop predictive models which use current building condition information to advance requirements. As a result, the DAF developed our first five-year Integrated Priority List (IPL) for FSRM projects for the FY21-25 program and continues it this year. It is a key step in our

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intentional shifting from a “worst-first” prioritization approach to investing at the optimal time of the lifecycle for a facility, otherwise known as “sweet spot” investing.

The DAF senior leaders oversee I2S implementation efforts through the biannual Infrastructure Program Management Review, where they 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 figures show 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 that affect not only execution of the program but future budget decisions as well.

In building the FY22 program, the DAF made great strides to build a mature, stable MILCON program to address award timeline issues and cost overruns. We defined 35% design criteria to ensure project documentation was consistent for every project, created a two-year program lock to stabilize the program and optimize P&D expenditures, and enforced admissibility criteria with requirement owners across the enterprise to ensure only ready projects were included in the budget proposal. All projects exceeding \$40 million include Design/Construction Agent cost assessments, to further build confidence in our program and estimates. We were also able to address under-designed projects over the last year. We used a portion of our FY21 appropriation to provide funding to bring all previously authorized and appropriated projects to full design.

The I2S also recommends programming annual Maintenance and Repair (M&R) funding at a minimum investment level of 2% of Plant Replacement Value (PRV), with an ultimate goal of 2.3% of PRV, to reduce the growing backlog of deferred maintenance and restore our facilities and infrastructure. M&R is made up of our FSRM portfolio as well as the portion of the MILCON program that recapitalizes existing infrastructure. The baseline funding level for FY22 demonstrates our deliberate efforts to align our budget request to the I2S.

Special Interest Items

Tackling the Climate Crisis

Secretary of Defense Austin recently released his top three priorities for the Department of Defense: Defend the Nation, Take Care of our People, and Succeed through Teamwork. He identified tackling the climate crisis as one of the lines of effort under the priority to defend the nation, elevating climate as a national security priority. Changing climate and severe weather

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events are a continual threat to our installations. Over the past several years, the DAF has seen first-hand the impacts climate and severe weather can have on our installations. The DAF is smartly moving forward with rebuild efforts at Tyndall AFB, Florida, following the devastation caused by Hurricane Michael in 2018 and Offutt AFB, Nebraska, following historic flooding in 2019. We are also recovering from recent winter storms that brought extreme cold to much of the United States, impacting dozens of DAF installations.

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 Office of the Secretary of Defense (OSD), is implementing these provisions. Climate and energy resiliency considerations are being incorporated into Installation Development Plans (IDPs). Last year, we published a Severe Weather and Climate Hazard Screening and Risk Assessment Playbook, which gives installation-level planners a consistent and systematic framework to screen for severe weather and climate hazards and assess current and future risks. We have completed initial assessments at all major installations and will be incorporating results into an Installation Resilience Component Plan for IDPs over the next several years. Additionally, we have completed twenty four Installation Energy Plans to identify risks and track and adjust requirements to advance energy and water resilience goals. We expect to complete an additional twenty this year.

The DAF is incorporating resiliency directly into MILCON projects as well. All projects are assessed 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. We implement mitigation actions to raise the elevation when required by the mission. One mitigation action example from Offutt AFB, addresses future flood concerns. As part of the rebuild of three critical campuses, we are importing approximately 600,000 cubic yards of fill material, or about 40,000 dump trucks, to raise the elevation of the entire site at least three feet above the 100 year floodplain. Additionally, the DAF provides inputs to drive changes to the Unified Facilities Criteria (UFCs) and then applies those evolving building codes to all MILCON projects. Many of these UFCs have been updated recently to specifically incorporate resilience considerations such as sea level rise scenario planning and updated structural engineering criteria to address wind, seismic, and flood threats.

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COVID-19

The COVID-19 pandemic has challenged the DAF to adapt to sustain our global operations. In particular, travel restrictions and social distancing measures affected personnel access at some installations, material production and delivery, and construction design reviews. Access and material production and delivery issues were alleviated as the world came to grips with the pandemic and markets and processes adapted to the new normal. The DAF adapted to design review challenges by utilizing virtual platforms to complete remote design reviews and charrettes, which typically require group gatherings, to prevent design delays and maintain quality reviews. Should any delays arise in the future, the DAF is prepared to work with our Design/Construction Agents and base level contracting professionals to address any Requests for Equitable Adjustments. While no significant requests for delay-driven compensation have arisen yet, contractors may quantify COVID-related costs in the future.

Additionally, the DAF is gathering data on potential footprint reductions resulting from implementation of long-term telework business models. We are looking at operational impacts and more subtle effects like DAF culture. The outcome of this analysis may inform future policy changes.

Winter Storms of 2021

Recent extreme winter storms throughout much of the Midwest and southern United States had a considerable impact on DAF installations. Initial assessments indicate some degree of damage at 28 installations. The DAF continues to assess the damage and will restore facilities to full mission capability.

A majority of the damage was the result of burst water and fire suppression lines due to freezing. Our personnel prepared our installations admirably, but numerous factors, including sustained periods of extreme cold, degraded facilities and infrastructure, and off-base power and water supply issues, led to damage and temporary interruptions. Several installations experienced limited power or water interruptions consistent with interruptions experienced by the local communities. Back-up energy sources and contingency plans, as well as effective coordination with commercial power and water suppliers, were generally effective in minimizing the length and impact of utility interruptions. In some cases, such as at Offutt AFB, installations were able to use on-base power plants and generators to supply their own power. These efforts were instrumental

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in helping the utility provider stabilize the power grid and minimize rolling blackouts in the community.

Natural Disaster Recovery Efforts

In 2019 and 2020, Congress appropriated \$3.6 billion for the recovery and rebuild of Tyndall AFB, Florida, from the devastation caused by Hurricane Michael and Offutt Base, Nebraska, from the effects of historic flooding. The funding will also enable construction at Joint Base Langley-Eustis, Virginia, to support the relocation of the F-22 Raptor training mission from Tyndall AFB. To date, the DAF has awarded five construction projects for \$72 million. Design efforts continue for the rest of the program. The DAF expects to award an additional \$2.25 billion of construction contracts by the end of 2021.

Through the Natural Disaster Recovery program, the DAF will rebuild these installations in a more efficiently and resiliently. Facilities are being designed and constructed using the latest Department of Defense building codes, or UFCs. In addition, given the extensive damage at Tyndall AFB, the DAF made a policy decision to design beyond the minimum UFC criteria for civil and structural engineering. The minimum design wind speed being used for all new facilities is 165 miles per hour, exceeding the highest wind speed captured during Hurricane Michael, and incorporates 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, coastal resiliency is one of the most important aspects to the plan at Tyndall. This partnered approach includes cost-shared investments which combine with DAF FSRM and MILCON 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 on key initiatives. 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

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raising the finished floor elevation above the floodplain and building in a way to minimize clean-up should flooding occur again.

Taking Care of Airmen

In December 2020, the Chief of Staff of the Air Force, General Charles Q. Brown, released a series of action orders providing guidance to implement his strategic approach, “Accelerate Change or Lose.” The first action order focuses on Airmen. If the Service is to ensure it has a quality future force where Airmen see continued service as an attractive career choice, we must consider the environments we provide for these Airmen and their families at DAF installations. Taking care of Airmen, and now Guardians, and their families is not just about quality of life, it is also about readiness. It is at the forefront of ensuring the DAF can continue to provide critical warfighting capabilities to the nation. Two programs with direct ties to quality of life are Child Development Centers (CDC) and dormitories.

In early 2020, the DAF established a cross-functional Child Care Capacity Initiative Working Group to address unmet child care needs. This team has prioritized child development and school age care facility projects based on unmet childcare 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 P&D funds provided in FY20 to initiate designs and posture these projects for future execution. CDCs historically have not completed well against other mission-related priorities in the MILCON program. We are addressing childcare facility concerns with FSRM while MILCON projects are being postured for future execution. Nine FSRM projects, valued at \$37 million, are in development and will be ready for award in FY22.

The DAF is also committed to ensuring unaccompanied service members are provided quality housing on our dormitory campuses. The Department has re-emphasized the roles and responsibilities of commanders in protecting the health and safety of unaccompanied Airmen and Guardians. Commanders are responsible for enforcing inspection criteria to identify and report conditions requiring immediate and future maintenance, as well as sustaining an adequately resourced maintenance and repair program to effectively address requirements. Funded from the DAF FSRM account, the investment strategy for dormitories focuses on restoration and modernization of these facilities in their existing configurations. This strategy will ensure the Service continues to meet the Department of Defense goal of 90% adequate dormitory rooms for

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permanent party unaccompanied Airmen and reduce the requirement for replacement construction. This enables the DAF to focus MILCON funds on modern, formal training facilities for newly recruited Airmen.

Space Force

The FY20 NDAA established the United States Space Force (USSF) as the sixth branch of the Armed Services. In implementing Administration, Congressional, and 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. Formal agreements and implementation plans are being finalized to codify all stakeholder roles and responsibilities. From an installation engineering perspective, Air Force civil engineer squadrons will continue to support Space Force installations as they did prior to establishment of the USSF. Air Force Material Command's Air Force Installation and Mission Support Center will provide enterprise level support for all installation and mission support programs and processes. In FY22, the DAF will transfer FSRM, unaccompanied housing, and facilities operations funds to the Space Force for execution. MILCON authorization is expected to be transferred to the Space Force by FY24. The Space Force is in the process of developing a separate governance process, leveraging current Air Force processes, to ensure strategic alignment of investments to Space Force priorities.

FY22 MILCON Program

In FY21, the DAF focused on MILCON program stability to ensure we are postured to award projects in the year of appropriation. Having improved policy to correct these measures in FY21, the DAF expects the FY22 program to return to a level similar to funding requests from previous years. This return to previous funding levels will support the DAF's commitment to fulfilling National Defense Strategy requirements and posturing for the future high-end fight.

The FY22 MILCON program supports Combatant Commanders with a focus on the Pacific and European Deterrence Initiatives and modernizing the nuclear enterprise. Our request also focuses on P&D to reinforce the Department's MILCON program stability and consistency. Additionally, the MILCON program continues efforts to beddown new weapons systems and seeks to recapitalize facilities that have outlived their useable life or no longer meet mission requirements.

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Combatant Commander Infrastructure

The FY22 MILCON program prioritizes Combatant Commander requirements with a particular emphasis on the Pacific and European theaters. The DAF remains committed to European Defense Initiative (EDI) efforts to reassure North Atlantic Treaty Organization allies and other European partners of United States commitment to collective security and territorial integrity.

New Mission Beddowns

The FY22 budget request also supports the bed down of new weapons systems and missions, with a heavy focus on modernizing the nuclear enterprise. The NDS directs the Department of Defense to build a more lethal force by modernizing 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 is appreciative of the legislative authorities which posture the Ground Based Strategic Deterrent (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. Furthermore, it established authorization expiration in 15 years or until GBSD fielding is complete (whichever is earlier), and allowed grouping of MILCON projects within each missile base and encouraged grouping by squadron. The DAF will continue to inform Congress on the Department's progress during design, construction, and commissioning of GBSD facilities.

Planning and Design

Planning and Design 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. Without sufficient P&D, the DAF must award designs by design phase, which adds risk associated with costs and timely delivery of design. With the FY22 P&D request, the DAF intends to complete remaining design requirements for our FY22 program, fully fund designs for our planned FY23

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and FY24 projects, and initiate design for FY25. Our two year budget lock policy outcome is a stable MILCON program allowing us to efficiently use P&D for future projects.

Facilities Sustainment, Restoration, and Modernization (FSRM)

The FSRM and MILCON programs are interdependent. Together, these two funding streams are the foundation of 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.

In FY22, 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 continue to assess mission thread vulnerabilities and prioritize infrastructure repair requirements which directly affect an installation's primary mission.

Housing Construction and Operations and Maintenance

The DAF prioritizes providing safe and healthy homes to our families. The FY22 budget request seeks funding for housing construction, P&D, and operations and maintenance. These funds will support a continued focus on eliminating inadequate housing from the DAF inventory and correcting health and safety deficiencies. The military family housing construction request will fund planning studies and design for future construction projects, renovation of existing homes, and support the restructures of privatized housing projects.

The high cost of construction in the Pacific, specifically on Okinawa, Japan, continues to present challenges where the DAF is the executive agent for more than 7,800 family housing units. The increased cost of construction requires solutions within the DAF family housing construction

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program to include cancelling projects that are no longer necessary due to European posture changes and using existing resources to achieve full scope on multiple projects. The DAF continues to focus investment in the Okinawa housing inventory to provide adequate housing for all servicemembers and their families residing on the island.

Our military family housing operations and maintenance request will fund efforts to sustain, improve, and modernize our Government-owned inventory of approximately 15,200 family housing units and provide enhanced oversight of over 55,000 privatized homes. The additional \$20 million in Family Housing Support and Management funding provided in FY21 will ensure continued support for the housing needs of Airmen, Guardians, their families, and our Army, Navy and Marine Corps teammates housed in government-owned and privatized inventory.

Environmental Stewardship

The safety and health of our Airmen and Guardians, their families, and our community partners, is a DAF priority. The DAF greatly appreciates Congressional support for our efforts to address per- and polyfluoroalkyl substances (PFAS) and continue Environmental Restoration Program progress.

Environmental Restoration

The DAF remains focused on completing investigations and establishing remedial actions to reduce risk to human health and the environment in a risk-based, prioritized manner for all substances where DAF actions have impacted the environment. We currently have 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.

The DAF began using aqueous film-forming foam (AFFF) containing PFAS in 1970. Although PFAS are not regulated chemicals, the DAF can fund and execute environmental actions under fiscal law where Congress has provided specific statutory authority (e.g., via the Comprehensive Environmental Response Compensation and Liability Act [CERCLA] framework, the Safe Drinking Water Act, etc.). We are committed to following the CERCLA process to address PFAS impacts attributable to DAF activities and continuing to partner in good faith with local communities, state regulatory authorities, federal interagency partners, and Congress to tackle this national issue.

Environmental Restoration

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The DAF began using aqueous film-forming foam (AFFF) containing PFAS in 1970. Although PFAS are not regulated chemicals, the DAF can fund and execute environmental actions under fiscal law where Congress has provided specific statutory authority (e.g., via the Comprehensive Environmental Response Compensation and Liability Act [CERCLA] framework). We are committed to following the CERCLA process to address PFAS impacts attributable to DAF activities and continuing to partner in good faith with local communities, state regulatory authorities, federal interagency partners, and Congress to tackle this national issue.

DAF PFAS Strategy

The Environmental Protection Agency (EPA) has established lifetime drinking water Health Advisories (HAs) for two PFAS, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). The DAF PFAS strategy focuses first and foremost on assuring no one on or off our installations is drinking water with DAF-related PFOA or PFOS above the EPA HAs, and second on using CERCLA authorities to investigate, define and ultimately 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 are Protect Human Health, Communication and Collaboration, and a Whole of Government Approach.

The first objective, Protect Human Health, is the broadest and has the primary budget impact. Within this objective, the DAF is using authorities granted under CERCLA and the Defense Environmental Restoration Program to conduct on and off-base drinking water testing and cleanup actions related to PFAS. In prioritizing CERCLA environmental cleanup actions, the DAF uses a risk-based decision-making process with protection of drinking water as a top

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priority. Although the DAF does not program restoration funds by chemical, as of March 2021 it had spent \$685M identifying, investigating, and responding to PFAS releases, completing drinking water response actions at 33 installations (implementing bottled water, point-of-use filtration, whole-house filtration, municipal water supply hookup), and completing initial PFAS CERCLA site inspections at 38 of 190 installations. Our FY22 budget submission includes sufficient funds to complete the remaining site inspections. As of March 2021, the DAF had awarded remedial investigation contracts for 47 total force installations. Although the CERCLA process including efforts to collect data, coordinate with regulators, and evaluate options typically requires eight years or more to complete and then potentially decades before groundwater or soil are at acceptable levels, drinking water response actions can be taken at any point in the CERCLA process when there is a threat to public health.

Emerging PFAS Requirements

Emerging and evolving federal and state actions on PFAS have impacted the DAF-wide restoration program and are expected to continue to do so for the near future. Evolving state-specific regulatory standards for PFOS, PFOA, and other PFAS that are significantly lower than EPA's HA level, could expand DAF CERCLA response activities. Moreover, due to the scope and scale of PFAS-related restoration activities, we expect this issue to require continued attention for the next decade or longer.

Environmental Quality

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

Efforts in pollution prevention include maximizing the diversion of solid waste from landfills to reduce the volume and cost of disposal, recycling used oil, fluorescent light bulbs, 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

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materials usage and hazardous waste disposal through the demonstration and validation of new technologies.

We remain firmly committed to a robust environmental conservation program. 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 FY22 supports ongoing habitat and species management efforts for 123 threatened and endangered species on 54 DAF installations and provides for continued cooperation and collaboration with other government agencies like the U.S. Fish and Wildlife Service. These partnerships help us to provide effective ecosystem and habitat management, including wildland fire management, which helps avoid losses in our capability to support the military mission due to the presence of endangered species on our installations. Working collaboratively with the Fish and Wildlife Service in the DoD Recovery and Sustainment Partnership, the DAF enhanced mission operations and increased range access while protecting endangered species by facilitating the downlisting or delisting of six threatened or endangered species over the last two years.

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 play 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 need to test and train and clean up the impacts of past mission activities, we will not be able to maintain military readiness.

Installation Energy and Water Resilience

Energy and water are essential resources that often require long, complex, interdependent, and vulnerable logistics tails. The DAF must have reliable power and water to accomplish both operational and training missions. As stated in the DAF Installation Energy Strategic Plan, which was released in January 2021, the overarching vision for the DAF's installation energy and water program is "Mission Assurance through Energy and Water Assurance." This vision is focused on securing the ability to perform our warfighting mission in the face of disruptions to traditional sources, while simultaneously optimizing energy and water availability and productivity through better planning, technology, and process improvements.

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When assessing near-and long-term energy and water infrastructure needs and requirements, the DAF emphasizes resilience, or the ability to continue operating in the face of challenges and bounce back from adversity, while carefully considering cost and factoring in the ability to leverage clean sources. From the DAF's perspective, all energy and water projects must improve resilience in some capacity across the spectrum of robustness, resourcefulness, redundancy, response, and recovery. Projects to improve resilience may include initiatives such as microgrids, clean energy generation, or energy conservation efforts.

Installation Energy Resilience

Energy enables DAF missions. The DAF Installation Energy Program focuses on ensuring Air and Space Force installations have the energy required to fight from our critical bases, at all times, no matter the circumstances. The DAF is therefore committed to reducing installation energy vulnerabilities through the incorporation of the five key resilience attributes, the "5Rs," in assessing gaps, prioritizing energy projects, and ensuring enabling system investments are effective in supporting mission needs. The "5Rs" help describe how a system plans for crises (preventative attributes: robustness, redundancy, and resourcefulness) and how the system performs in the event of crises, dependent on risk, events, and time (performance attributes: response and recovery).

One key focus area is to address the growing risk associated with natural hazards or adversarial threats that may result in a denial of service, such as missions being separated from the bulk power grid as well as the increasing potential for long-duration power outages. Using a mission threat perspective, the DAF is working to identify key nodes on and off installations that, in a denial of service scenario, may result in a significant impact on the DAF's ability to deliver key capabilities. This begins with a comprehensive understanding of mission requirements and current system operations. Additionally, through increased situational awareness and more accurate reporting of outages, the DAF is using historical data on past power outages to better understand the causes and impacts of such outages. Through increased investment in, and improved maintenance of, these energy systems, the DAF is striving to decrease the number of outages on installations.

Finally, the DAF has partnered with the Office of the Assistant Secretary of Defense for Sustainment and the Massachusetts Institute of Technology Lincoln Laboratory to develop a comprehensive Energy Resilience Readiness Exercise (ERRE) framework to baseline installation

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power resilience capabilities and validate vulnerabilities, requirements and system enhancements. ERREs are also referred to “pull-the-plug” and “black start” exercises throughout the defense industry. Thus far in FY21, the DAF has completed one ERRE at Joint Base McGuire-Dix-Lakehurst in New Jersey and commenced planning for two additional exercises at JBLE in Virginia and Eielson AFB in Alaska. The DAF has created supplemental guidance to provide lessons learned and best practices that enable installations to conduct their own ERREs once an initial exercise has been conducted on site.

Water Resource Management

The DAF is placing a new emphasis on water resilience, recognizing that water is essential to mission sets yet is under increasing pressure. Threats to water availability include aging infrastructure, water scarcity, malicious attacks and natural hazards, changes in climate, rising costs of supply, quality issues, and encroachment. The DAF is taking a risk-based approach to water management and linking water security more directly to mission assurance, with activities focused on increasing transparency into mission needs and readiness, identifying and assessing water risks comprehensively, expanding external stakeholder engagement, and analyzing capability gaps and developing mitigation strategies.

Installation Energy and Water Planning

Installation Energy Plans (IEPs) are a standardized framework for all DAF installations to advance their energy and water goals and ensure resilience to meet critical mission assurance using the “5R” framework. The DAF has completed 24 Installation Energy Plans as of CY20 and is on track to finalize IEPs for all priority installations and the top 75 percent of energy-consuming installations by the end of FY22. To address the installation energy and water vulnerabilities identified through the IEPs, “pull-the-plug” exercises, and mission thread analyses, the DAF had over 125 resilience initiatives in development across the enterprise at the start of FY21.

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 the Facility Sustainment, Restoration and Modernization (FSRM) account or the Energy Resilience and Conservation Investment Fund (ERCIP), while third-party financing includes such vehicles as Energy Savings Performance Contracts (ESPCs)

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and Utility Energy Service Contracts (UESCs). In total, the DAF awarded one ESPC project and modified three contracts totaling \$75M in CY20.

The DAF is also continuing to explore innovative funding solutions, such as our development of Energy-as-a-Service business model pilots at Altus AFB and Hanscom AFB and the Resilient Energy Savings Resource Vault (RESRV), which leverages authorities provided by Congress under Title 10 USC 2912.

Industrial Control Systems Cyber Resilience

Industrial control systems are essential to DAF core missions as they support critical infrastructure that enables mission capabilities across the enterprise. Technological advancements have created more efficient control systems but have also opened up additional avenues for adversaries to attack. In compliance with the National Defense Authorization Act (FY) 2017, we have conducted assessments of critical infrastructure to identify vulnerabilities. These assessments have exposed risks to missions that the DAF was unknowingly accepting and validated the mitigation measures we were already pursuing to increase control systems' cybersecurity and resiliency. The DAF is developing the Strategic Plan for Control Systems to reduce system vulnerabilities and published the Department of the Air Force Instruction 90-1701, *Installation Energy and Water Management*, which requires energy and water control systems become more cyber-secure.

Privatized Housing

The Department of the Air Force, with the support of Congress, has taken substantive actions to address the concerns and make meaningful, enduring changes to our privatized military housing program. The Fiscal Year 20 National Defense Authorization Act (NDAA) identified measures to improve privatized housing, and as of April 2021, 92 percent of the measures have been implemented. The Department expects to implement the final measures by the summer of 2021. The SecDef and Service Secretaries signed the DoD Tenant Bill of Rights on the 25th of February 2020 which established 14 of the 18 rights required by the Fiscal Year 2020 NDAA. We expect the remaining four tenant rights – standard documents to include the newly-developed universal lease framework, a dispute adjudication process, rent segregation during formal disputes, and provision of a home's 7-year maintenance history to prospective/current tenants – to be available at the vast majority of installations with MHPI housing by June 1, 2021.

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Some highlights regarding the improvements the DAF implemented last year include increased program and project oversight. The DAF added 147 authorizations to increase installation-level oversight. These additional personnel are receiving training to conduct change of occupancy inspections consistent with national industry standards. Additionally, the DAF added 60 authorizations to provide Resident Advocates to directly support residents ensuring they have multiple avenues to raise and resolve issues. Resident Advocates report directly to the wing leadership to increase commander awareness of concerns raised by residents. The DAF has also added 11 authorizations for Headquarters DAF, Air Force Civil Engineer Center and our legal staff. Finally, the Department instituted a revised governance structure to review programmatic and systemic issues, best practices, and financial health of the program. The revised governance structure culminates with a council that includes the uniform chain of command and advised by military housing office professionals. Overall, the DAF added 218 authorizations and to date has filled all 218 positions to improve oversight, quality assurance, and advocacy at all installations.

The DAF also approved a revised performance incentive fee (PIF) framework to increase both the commander and resident voice in assessing earned PIF. The new performance incentive fees will improve tracking and reporting of maintenance operations at each project. The DAF is in the process of re-negotiating the PIF framework with project owners, reaching agreement with two of the nine project owners that have a PIF as part of their agreements. As part of the DAF's plan to increase transparency and accountability, all the project owners implemented automated work order systems, allowing residents to submit electronic work orders, schedule repairs, and provide satisfaction feedback. Lastly, the DAF centrally contracted for the annual tenant satisfaction survey, coordinating with the Army and Navy to ensure a consistent survey DoD-wide as well as issuing the survey to collect resident input from both privatized and government owned housing.

In spite of these successes, the DAF is planning to restructure several under-performing projects to ensure long-term sustainment. There is still more work to accomplish to ensure quality and safe homes for our Airmen, Guardians and their families. Therefore 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.

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Base Realignment and Closure (BRAC)

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 34 former installations, and we expect to complete transfer of the less than 2,000 acres at the remaining six former installations by 2027.

Our BRAC cleanup program focuses on protecting human health and the environment, projects that transfer acreage and achieve beneficial reuse of property, and investigations and response actions associated with PFAS.