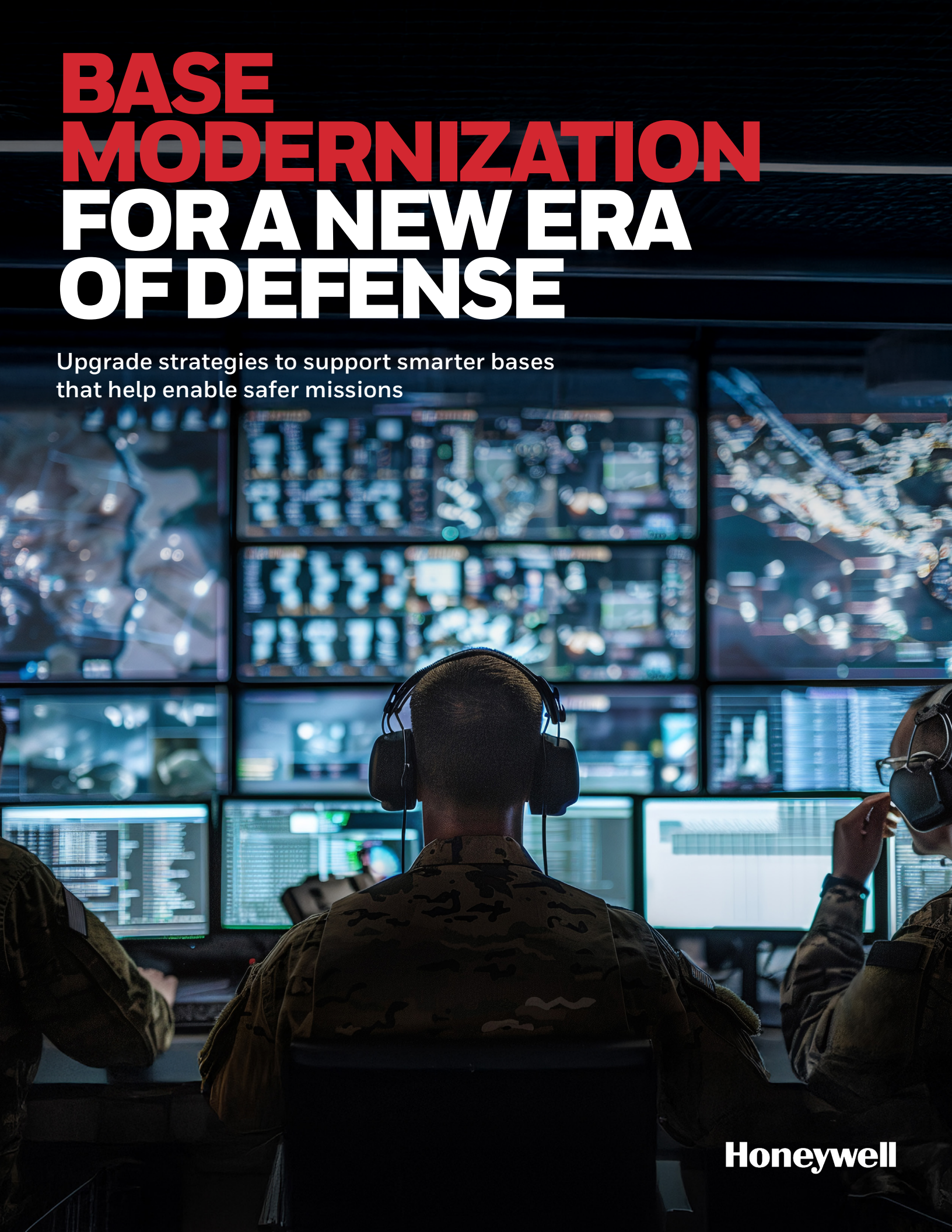
BASE MODERNIZATION FOR A NEW ERA OF DEFENSE

Upgrade strategies to support smarter bases that help enable safer missions



Honeywell

EXECUTIVE SUMMARY

Military bases form a critical foundation of national and global security. In today's defense landscape, where threats are more sophisticated and missions demand faster decision-making and tighter coordination, the pressure is rising to establish smarter and more modern base infrastructure.

From cyberattacks and drone swarms to energy grid instability and extreme weather, defense and military leaders are being called to act with a strategic, forward-thinking mindset. Future readiness requires targeted investments in more resilient, connected and viable defense environments.

Here are the suggested best practices to keep in mind when exploring base modernization:

THINK LONG-TERM, ACT IN PHASES

Transformation doesn't have to happen all at once. Making upgrades in phases can help minimize risk while delivering measurable gains at every step.

FOCUS ON FOUR KEY PILLARS

The most resilient bases pursue intelligent infrastructure, layered physical and cyber security, human-centric design and energy resilience.

INVEST IN PERSONNEL

Whether making HVAC upgrades to enhance air quality and control individual room temperatures, or redesigning living spaces to prioritize comfort and reduce maintenance needs, personnel-focused improvements (both big and small) can help boost morale and attract and retain top talent.

PRIORITIZE THREAT READINESS

Cyber threats, natural disasters and global conflicts are placing additional strain on bases, creating a need for agile infrastructure.

TAP INTO FLEXIBLE FUNDING

From Energy Savings Performance Contracts (ESPCs) to public-private partnerships, there are ways to fund upgrades while avoiding large upfront costs.

CHOOSE THE RIGHT PARTNER

Developing a coordinated plan alongside an experienced provider like Honeywell ensures stronger results and fewer missteps.

INTRODUCTION

Governments and military branches have an opportunity to elevate strategic bases and infrastructure into always-ready defense hubs. Technological advances, emerging threats, geopolitical shifts and energy demands are expanding the need for security and resilience. Leaders are responding by creating integrated forces that are backed by connected and resilient bases, ports and barracks, providing the appropriate posture and preparedness for each sovereign nation, military branch or installation purpose.

Many defense leaders recognize not only that significant investment is required due to aging infrastructure, but that to grow, attract and retain a modern defense force, facilities must better align with the digital age. Every upgrade helps lay the foundation for future operational success, enabling military branches to attract new generations of service personnel and adapt to modern expectations for digital integration in their daily lives. Depending on the country, in-depth strategic reviews are conducted to identify investment priorities at the government level or by specific military branches.

Currently, many of the world's most capable defense hubs are struggling with outdated power grids, scattered security systems and aging facilities that house personnel and equipment. In the United States, four out of five Department of Defense (DoD) buildings were established before 1970.[1] The U.S. DoD also faces more than $50 billion in deferred maintenance on its facilities.[2] In the United Kingdom, the National Audit Office (NAO) found in 2025 that the UK government's building maintenance backlog is at least £49 billion, with Ministry of Defence properties accounting for more than £10 billion of this total backlog.[3]

These lapses are leaving bases — and the nations that run them — potentially vulnerable to serious threats and disruptions, from sudden natural disasters to calculated physical and cyber intrusions.

In Australia, decisive action is being taken through its most ambitious Defence Strategic Review since World War II. Following a comprehensive audit of the Defence Security and Estate Group (SEG) in 2023, a biennial National Defence Strategy (NDS) was introduced in 2024.[4] Australian Defence leaders are now implementing strategic guidance that reorients the SEG to support the Australian Defence Force's (ADF) transformation agenda.

The 2024-26 Defence Strategy framework mandates the development of an SEG strategy that prioritizes and optimizes investment across defense infrastructure, recognizing that the Defence Estate serves as a critical enabler of combat for force posture, force generation and preparedness. With this coordinated approach, infrastructure modernization will directly align with national defense objectives, positioning Australia's bases and facilities better to meet evolving security challenges in the Indo-Pacific region.

Modernization is crucial to keeping military bases safe and mission-ready, but the path isn't always straightforward. Ideally, there should be a proactive mindset from the top down that takes a holistic view of the entire base infrastructure, from access points and perimeter security to energy use. By understanding the most pressing vulnerabilities and opportunities, defense leaders can identify the right partners and develop procurement plans to upgrade bases that meet the needs of the service members and the global citizens who depend on them.

WHY MODERNIZATION NEEDS TO BE A TOP PRIORITY

Defense and military leaders understand that when infrastructure falls behind, missions may take on greater risk. Military installations represent more than just places to live, train and deploy troops and tactics, which is why they deserve the latest technology and systems. Modernization should be a strategic priority; however, the transient nature of the military sometimes forces decision makers to take a more reactive approach that depends on these top catalysts to drive investment:

AGING INFRASTRUCTURE: Many installations were built more than 50 years ago, and aging infrastructure wasn't designed to handle the complexity or speed of modern operations. In Darwin, Australia, power grids that rely solely on gas and solar energy struggle with surge loads, increasing the potential for brownouts and prompting a greater reliance on diesel generators.[5] Often, upgrades aren't being made with enough urgency, though steps are being taken in the right direction. Connected energy management systems have helped the U.S. military cut total energy use by 23% since 2002. Today, around 8,000 smart meters are in place, and two-thirds of them feed data into an integrated monitoring platform. Connected water management tools have also cut portable water use intensity by 27% since 2007.[6]

EMERGING THREATS: Sophisticated cyberattacks, autonomous drones and even climate-driven events are forming a broader threat landscape, pushing military installations to establish more resilient infrastructure.

GEOPOLITICAL PRESSURE: With increasing geopolitical tensions, bases are essential to the logistics of every mission. Spending is already rising in many countries — Japan's defense budget climbed to an all-time high of $55.1 billion for fiscal year 2025[7] — and securing commitment from leadership is crucial to ensure that funds are allocated appropriately.

CATASTROPHIC EVENTS: When Hurricane Michael hit Tyndall Air Force Base in Florida, United States, it caused $5 billion in damage and essentially halted operations.[8] The disaster sparked a unique initiative to transform Tyndall into the "installation of the future," featuring digital twin technology, which offers a real-time 3D model of the entire base, and plans for a microgrid that would independently power its facilities.[9] Other events, such as the flooding of a U.S. Army base in the Marshall Islands[10] and insider threat incidents, are driving new ways to improve resilience, surveillance and emergency planning with digital transformation.

FOUR KEY PILLARS FOR A FUTURE-READY BASE

Building an integrated network of bases that are equipped for today and ready for the future requires not only agile, embedded technology but also a mindset that promotes progress. From power outages and cyberattacks to talent attraction and global deployments, decision-makers must consider numerous factors when developing their agendas. One thing is certain: it's more challenging to optimize daily operations when you're working on a base built for an earlier era.

Modern missions and operations require modern infrastructure. As military leaders rethink how bases are connected, protected, designed and powered, investment should be directed toward these four key areas:

1 **Resilient Infrastructure Through Integrated, Data-Driven Platforms:** By combining building, energy and security networks into a data-driven platform like the Honeywell Enterprise Buildings Integrator (EBI), military installations can gain near real-time visibility across base operations. This enables them to standardize responses to incidents, automate routine procedures and manage energy use while improving environmental conditions in buildings. Honeywell EBI provides base operators with centralized control over major building systems — HVAC, lighting, fire and life safety, security and more. While EBI is a powerful tool, Honeywell can deliver a range of upgrades tailored to each site's unique needs and opportunities.

> **In 2021, U.S. Army Fort Benning** announced the next phase in a 25-year energy and resilience modernization project. In partnership with Honeywell, the current project phase is expected to deliver $1.4 million in annual savings for the base by implementing upgrades across more than 300 buildings, including a new utility monitoring and control system, enhanced communication and cybersecurity, LED lighting retrofits, lighting controls with occupancy sensors and external building renovations.[11]

UPGRADES ACROSS MORE THAN 300 BUILDINGS

EXPECTED TO DELIVER $1.4 MILLION IN ANNUAL SAVINGS

2 **Layered Security:** Modern, layered security strategies help provide the comprehensive protection that bases need to safeguard personnel and equipment in today's complex threat landscape. By using tools such as Honeywell's Vindicator and OnGuard platforms, bases can adopt advanced capabilities like unified alarms, access control, video networks and real-time threat detection to amplify personnel-led protocols.

> **At the Navy Yard in Washington, D.C., and Edwards Air Force Base in California,** security is becoming smarter and more efficient. Networks of cameras, ground-based radar and infrared sensors are connected to AI-driven software that helps locate problems in real time. Rather than relying only on people to watch video feeds, systems can now detect unusual behavior, such as a car driving the wrong direction and automatically flag it for review. At Edwards, the radar and sensors give security teams visibility across 308,000 acres. Other innovations include tethered drones that hover 24/7, facial recognition that speeds up secure access and edge computing that analyzes data to reduce bandwidth demands and alert teams to potential threats.[12]
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> **U.S. Air Force bases** are turning to infrared and thermal sensors as part of their perimeter defense. These systems can detect heat signatures or movement during the day or night, in any weather, and integrate with closed-circuit television (CCTV) and AI analytics. This leads to fewer false alarms from animals or foliage and quicker detection of actual intrusions.[13]

AT EDWARDS AIR FORCE BASE, THE NEW RADAR AND SENSORS GIVE SECURITY TEAMS VISIBILITY ACROSS 308,000 ACRES.

3 **Human-Centric Design:** By using solutions designed to reduce the time spent on manual tasks, such as the Honeywell Self-Testing Smoke Detectors, or simplifying the product installation process with the Honeywell Advance Control for Buildings family of systems that can leverage existing TL1 wiring, teams at military base facilities can manage resources more efficiently. Comfortable and connected environments are also an investment area that can lead to improved working and living conditions, supporting morale and productivity.[14]

> **Robertson Barracks, located near Darwin, Australia,** is undergoing a $22 million infrastructure overhaul designed to have a direct and positive impact on personnel. They are installing electrical systems, site-wide fire water and portable water systems, utility submeters and building communications networks, making it easier to automate lighting and temperature, track energy use, connect various technologies and speed up repairs.[15]

4 **Energy Independence, Resource Management and Resilience:** Modernization efforts also often focus on strengthening energy resilience. By integrating renewable energy sources and energy storage systems, along with updating building control systems, bases can better manage operational uptime during emergencies or public utilities outages.

> **At Fort Bragg in North Carolina,** Honeywell rolled out a microgrid that connects existing backup generators across multiple buildings and puts them under a single intelligent control system. When there's an outage or disruption, the system shares the power load efficiently, keeping operations online and avoiding wasted fuel or overworked generators.[16]
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> **At HMAS Stirling, located on Garden Island near Perth,** the Australian Navy is developing the country's first military base to run on a microgrid designed to keep the base running even when the primary grid fails. It includes solar panels that generate 2 megawatts of power, battery storage that can hold and release energy when it's needed most and smart controls that automatically manage how power is shared with the primary grid.[17] The effort is part of a $5 billion upgrade in preparation for the ongoing Submarine Rotational Force West program with the U.S. Navy leading up to 2027.[18]

PRODUCT HIGHLIGHT:
HOW VINDICATOR CAN HELP

When addressing base security, one of the biggest challenges is connecting new and aging systems that often don't integrate properly with each other. These might include alarms, cameras, access points and communication tools. Honeywell Vindicator can help facilitate this much-needed connection. Designed to meet the rigorous requirements of high-security environments, such as defense bases, Vindicator integrates security systems under one platform. It allows base personnel to monitor threats in real time, manage access to secure areas and automatically respond to potential intrusions. Whether detecting motion near a fence line, managing multiple alert levels or responding to a physical breach, Vindicator offers a layered approach that protects people and property, helping bases remain mision-ready.

What makes Vindicator valuable for modernization efforts is its seamless integration into broader infrastructure upgrades. As bases invest in smarter, more connected systems, from HVAC to microgrids, Vindicator can become a crucial part of that ecosystem. It integrates with other Honeywell platforms and works alongside existing third-party tools to create a single, streamlined system. Vindicator helps bases achieve better situational awareness, faster decision-making and fewer blind spots in an era when threats are evolving and even minor missteps can lead to large problems.

REALITIES AND STRATEGIES OF FUNDING AND PROCUREMENT

Modernizing military bases isn't always an easy journey, and there are a few common roadblocks that can slow down the process. One major challenge is that procurement is often handled in silos, making it more difficult to integrate solutions into a unified network. Additionally, funding can be inconsistent and tends to shift in response to evolving mission goals and personnel priorities. In countries like the United States, base leadership often changes every few years, adding friction to the alignment of long-term plans, even when they're already in motion.

INFORMING LEADERSHIP OF MODERNIZATION PATHS AND BENEFITS CAN HELP TRANSITION INSTALLATIONS FROM A REACTIVE TO A PROACTIVE APPROACH, AND FROM SHORT-TERM FIXES TO LONG-TERM INVESTMENTS.

FUNDING AVENUES IN THE UNITED STATES, THE UNITED KINGDOM AND JAPAN

While budgets are carefully managed and defense priorities are influenced by who's in charge, thoughtful funding strategies can help infrastructure projects move forward without sacrificing spending on other key initiatives. In many cases, there may be funding avenues that can help reduce upfront costs, mitigate risk and unlock long-term value.

ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPCs):

ESPCs are federally approved paths for funding energy upgrades through future savings. Under this model, a private energy service company, such as Honeywell, designs, installs and maintains energy-efficient systems at no upfront cost to the government. The company is then repaid through the actual energy cost savings generated over time, typically ranging from 10 to 25 years.

Honeywell worked on a $28 million modernization project for Kunsan Air Base, a U.S. Air Force Base located in South Korea. Starting in 2019, upgrades were made to enhance facilities and equipment reliability, aiming to manage the base's energy and water consumption and save an estimated $1.7 million annually in energy costs. The project was funded by a 25-year ESPC, with coordination from Kunsan Air Base, the Air Force Civil Engineer Center and the Defense Logistics Agency-Energy.[19]

UTILITY ENERGY SERVICE CONTRACTS (UESCs):

UESCs are partnerships with local utility providers that focus on energy and water efficiency. Like ESPCs, these agreements fund infrastructure improvements via future cost savings. UESCs can be effective for projects that involve grid upgrades or coordination with energy suppliers.

Just outside of Augusta, Georgia, Fort Eisenhower has entered a large-scale UESC project with Georgia Power via the U.S. Army's Huntsville Center. This deal replaces diesel generators that date back to the 1960s with modern natural gas units, upgrades central plant chillers, improves HVAC controls and enhances lighting systems. The project covers 449 buildings spanning 6.6 million square feet and is expected to generate roughly $5 million per year in energy savings.[20]

PUBLIC-PRIVATE PARTNERSHIPS (P3s):

Public-private partnerships are long-term collaborations between government agencies and private-sector firms where risk, financing and rewards are shared. Under these agreements, a private partner helps design, build, finance or operate infrastructure over a multi-year period, while the government retains ownership or oversight.

In the United Kingdom, the Ministry of Defence (MOD) has a history of using public-private models for modernization initiatives. Project Allenby/Connaught represents a successful partnership between the MOD and Aspire Defence, which transformed the daily experience of soldiers stationed at Salisbury Plain and Aldershot Garrison by replacing outdated facilities with modern, purpose-built accommodations and improving working environments.[21]

Australia's Single Living Environment and Accommodation Precinct (Single LEAP) was a nationwide P3 initiative aimed at transforming defense accommodation in two phases. While it was more focused on constructing physical facilities, the project sparked upgrades for 4,400 single-occupant homes and added amenities such as basketball courts, lounges and community areas, thanks to a partnership between the Department of Defence and the Plenary Living Consortium.[22]

DIRECT GOVERNMENT APPROPRIATIONS AND JOINT DEFENSE AGREEMENTS:

For critical infrastructure needs, especially those closely tied to mission readiness or national security, military departments can seek direct funding through government budgets. This route enables full government ownership and control of new assets from the outset, though it's usually a slower process.

Joint defense agreements involve countries collaborating on the modernization of their military installations. For example, a joint defense agreement exists between Australia and the United States, where Australia funds and manages the bases that both nations can use in times of crisis, while the United States invests in critical upgrades.[23] A recent partnership with the U.S. DoD and the Government of Japan will modernize United States military installations in Japan to enhance the United States-Japan alliance and improve the preparedness of both countries.[24]

THE HONEYWELL ADVANTAGE

Modernizing a military base requires more than replacing outdated equipment. To achieve an infrastructure that's fast, resilient, and mission-ready, a unified approach and guidance from the right partner are necessary.

Honeywell has supported defense programs around the world, bringing decades of expertise across building automation, integrated security, human-centric digital systems and energy management. Honeywell's solutions are field-tested, scalable and purpose-built for the evolving needs of military installations.

HONEYWELL'S PRODUCT SPOTLIGHT:

ENTERPRISE BUILDINGS INTEGRATOR (EBI)

Provides seamless master systems integration (MSI), enables robust control and integrates critical building domains — building management systems (BMS), security, fire and more — for holistic data and better decision making.

VINDICATOR

Unifies alarms, sensors, video systems and access control to help detect and respond to threats faster — from the perimeter fence to inside the Sensitive Compartmented Information Facility (SCIF).

ONGUARD

Delivers a flexible, modern access control and security management system that adapts to missions and integrates easily with other platforms.

OT CYBERSECURITY SOLUTIONS

Features a suite of software, hardware and professional services designed to identify operational technology (OT) cybersecurity threats early, mitigate potential risks and maintain base uptime while protecting people and important assets.

HONEYWELL'S SYSTEMS WORK TOGETHER AND WITH OTHER PLATFORMS TO PROVIDE GREATER SITUATIONAL AWARENESS, MORE CONTROL AND GREATER CONFIDENCE. CONTACT A HONEYWELL REPRESENTATIVE TO DISCUSS A BASE MODERNIZATION STRATEGY THAT FOCUSES ON STRATEGIC AND FUTURE-FORWARD UPGRADES WITHOUT DISRUPTING WHAT'S WORKING WELL.

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