DEPARTMENT OF THE NAVY

Installation Energy Resilience Strategy

February
2020

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ENERGY RESILIENCE means the ability to avoid, prepare for, minimize, adapt to, and recover from anticipated and unanticipated energy disruptions in order to ensure energy availability and reliability sufficient to provide for mission assurance and readiness, including mission essential operations related to readiness, and to execute or rapidly reestablish mission essential requirements. *- Section 101, Title 10, United States Code*

THOMAS B. MODLY
ACTING SECRETARY OF THE NAVY

"Today, the Department of the Navy faces many demanding challenges. We have entered an era of great power competition, characterized by increased complexity, interdependence, and uncertainty. Meanwhile, an unprecedented rate of technological change driven by artificial intelligence, robotics, autonomous systems, machine learning, and additive manufacturing are changing both society and the sea services. As noted in our National Defense Strategy (NDS), these new technologies will ultimately lead to changes in the character of warfare. As such, our nation's naval forces must quickly evolve accordingly guided by innovation in capabilities and processes. Our approach to management must empower leaders at every level to make decisions with greater speed, agility, and efficiency in the face of a rapidly changing operating environment. A ready naval force, operating forward, with the world's best-trained and educated warfighters, provides the nation with an unrivaled deterrence capability modeled after the tenet "peace through strength" that has served America so well throughout our history. With the guidance, priorities, and metrics in this energy plan, we can focus command attention and scarce resources at every level to deliver substantive results for the enhanced readiness and resilience of our forces."

Thomas B. Modly, Acting Secretary of the Navy

HONORABLE LUCIAN NIEMEYER

ACTING ASSISTANT SECRETARY OF THE NAVY (ENERGY, INSTALLATIONS AND ENVIRONMENT)

> "The Department defines installation resilience as the ability of naval platforms around the world to accomplish their missions despite the actions by adversaries or other events to deny, disrupt, exploit, or destroy installation-based capabilities." *– Honorable Lucian Niemeyer, Acting Assistant Secretary of the Navy (Energy, Installations and Environment)*

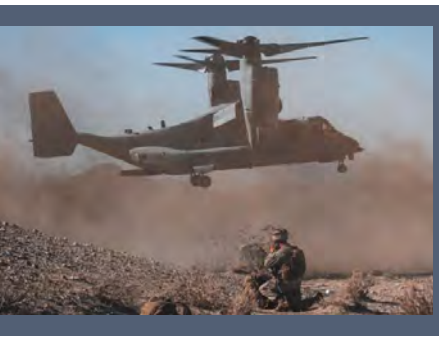
As our National Defense Strategy (NDS) notes, we live in unprecedented times. With the touch of a keystroke from anywhere in the world, an adversary can immediately threaten the infrastructure we depend on to live and prosper. For the Department of the Navy, we depend on our shore infrastructure as the platforms from which we launch military capabilities. As such, we have a responsibility to focus resources and efforts on initiatives that will demonstrably enhance the reliability, resilience, and efficiency of those platforms critical to our Nation's defense.

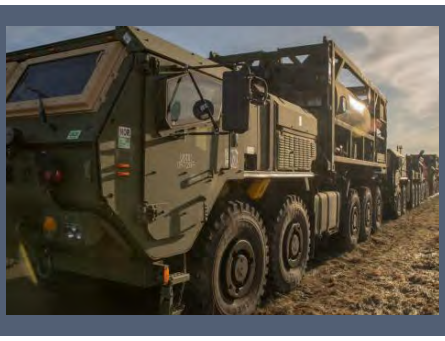
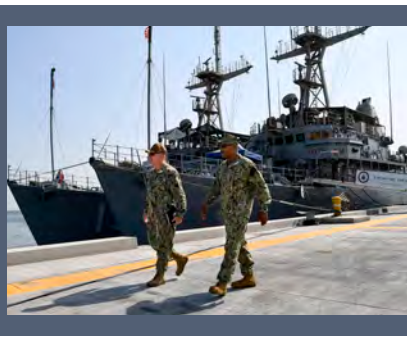
The revolutionary changes in capabilities and technologies described by the Secretary of the Navy have a common critical enabler – Energy. Smart technologies and increasing automation will drive an even greater dependence on electricity. As energy does more, we also need more to power new generations of vehicles, sensors, robots, cyber forces, directed energy weapons, and the expanded use of artificial intelligence. Future warfighters will need exponentially more energy with extremely quick recharge capabilities to adapt and prevail in future conflicts. Consequently, our adversaries will seek to counter our superior technologies with cheap methods to deny, disrupt, or attack our energy supply and distribution systems both at home and on future battlefields.

With a unity and urgency of effort, we have the opportunity to deter or mitigate the impacts of an attack to the point that our power systems for our shore infrastructure will no longer be priority targets. Energy resilience depends on the flexibility to counter these threats by using all available fuel sources to effectively and efficiently meet critical mission priorities. This is our charter. Delivering energy resilience will require unprecedented and continuous collaboration between naval mission owners and the Shore to adapt installation power to meet ever increasing demands for high quality and persistent energy in contested environments.

This plan is written for our installation energy managers to enhance energy security. Supported by Commander, Naval Installation Command (CNIC), and Marine Corps Installations Command (MCICOM), with Naval Facilities Engineering Command's (NAVFAC) technical and acquisition expertise, they are the first echelon of action to aggressively seek and provide the necessary energy solutions to improve energy reliability, resilience, and efficiency. It starts with individual efforts to identify the mission essential shore assets that must continue to operate in the event of a power outage. Then, we must develop installation energy plans to provide a long-term strategy for investments and projects to meet our resilience goals. We must also reach out to local utility service providers and experts in the private sector to collaborate on initiatives to reduce vulnerabilities, add redundancy, and improve energy management. We must pursue innovative methods to supplement funding through the privatization of assets, continued performance contracting, and the acquisition of energy as a service. Lastly, measuring performance is vital to ensure we can capture the progress towards achieving our strategic objectives.

Thank you for your dedication to this critical program as we improve the readiness posture and capabilities of our installations in support of our national security.



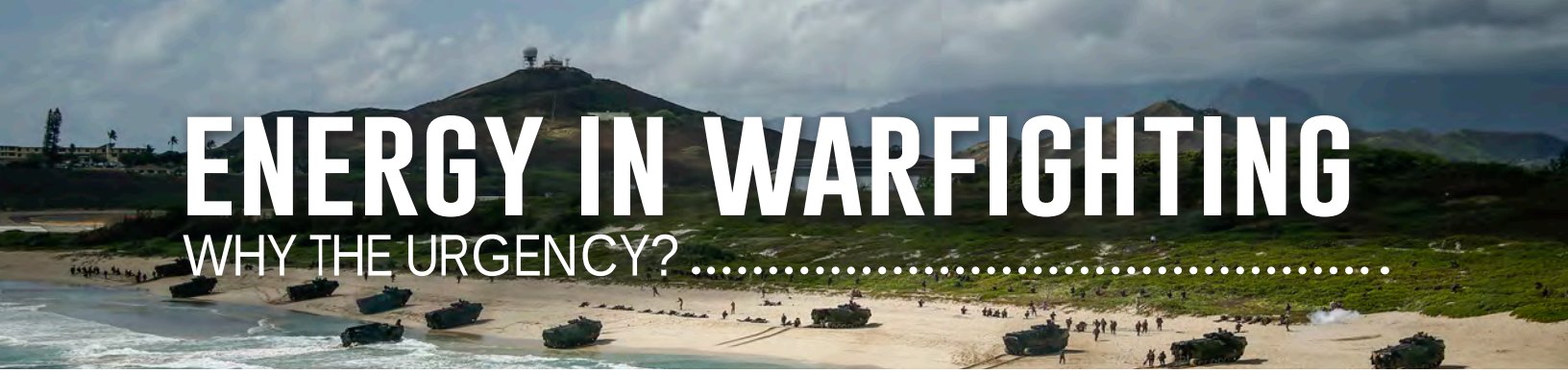



VISION: Assured energy whenever and wherever it's required to enable mission accomplishment.

PURPOSE: To align the Department's leadership, from top to bottom, on the objective of achieving assured energy at our installations, in the quantity and of the quality we require to accomplish required missions.

Successful implementation of this strategic intent will require mission owners and stakeholders far beyond the traditional energy and utilities management community to work together to understand and address critical energy requirements with a sense of urgency. Installation-level leaders will need to engage surrounding communities who are a vital part of the mission assurance equation.

"A revolutionary transformation is unfolding in front of us. New generations of directed energy weapons, artificial intelligence, vehicles, sensors, cyber forces, and robots are being fielded. Energy is replacing kinetics as the foundation of these new weapons systems. The quality of electricity will matter too – the Department of Navy (DON) future infrastructure, weapons systems, and communications will be controlled by systems sensitive to fluctuations in voltage or frequency." *– Honorable Lucian Niemeyer, Acting Assistant Secretary of the Navy (Energy, Installations and Environment)*



ENERGY IN WARFIGHTING

WHY THE URGENCY?

The NDS, released in February 2018, acknowledged threats to the dominant superiority enjoyed for decades by the United States in every operating domain. Our armed forces could deploy when we wanted, assemble where we wanted, and operate how we wanted. This is no longer the case.

The NDS identified the re-emergence of long-term, strategic competition between nations that challenge our military advantage and create risks, two of which specifically guide this strategy, our assessment of, and need to prioritize installation and energy resilience:

1. The homeland is no longer a sanctuary. America is a target, whether from terrorists seeking to attack our citizens; malicious cyber activity against personal, commercial, or government infrastructure; or political and information subversion. During conflict, attacks against our critical defense, government, and economic infrastructure must be anticipated.

2. Today, every domain is contested - air, land, sea, space, and cyberspace.

The risks and vulnerabilities present in today's operating environment did not exist a decade, or even five years ago. Today's security environment is defined by rapid technological change and challenges from adversaries in every operating domain. While concerns in the past focused primarily on natural impacts to our installations, today the range of threats, both natural and man-made, are broader. They represent a growing, complex, and ever more demanding challenge to installation resilience.

The threats are multi-domain and multi-dimensional, present in the physical and virtual operating environments. This has created a requirement to continually assess the impact these risks place on naval forces' ability to accomplish assigned missions and address threats.

This strategy establishes the DON's priorities to align actions that address these threats, thereby ensuring naval installations, the platforms from which we generate and project naval power, are able to withstand an ever-growing range of risks. This strategy guides us to make difficult choices that prioritize competing resilience requirements.

This document is the cornerstone in a series of plans intended to enhance and improve installation resilience. We intend to publish subsequent plans that build on the foundation established here and broaden the Department's focus to address: cybersecurity, water, and environmental resilience.

> "The Department is tackling installation resilience challenges holistically across contingency operations, energy and water, data and network, controls system cybersecurity, physical security, and environmental resilience."
>
> *- Honorable Lucian Niemeyer, Acting Assistant Secretary of the Navy (Energy, Installations and Environment)*

STRATEGIC GOALS

The Shore is where naval combat power is developed, built and maintained; it is where we train and equip Sailors and Marines towards a unified goal of "ever-improving and innovating capability to project lethal power from the sea" (reference DON Business Operations Strategy 2019-2021). It is where readiness begins and ends. Resilient military power ensures the Navy and Marine Corps are able to fulfill their mission to the American people of providing security for the nation.

Naval readiness is threatened by aging energy infrastructure: generation, distribution, and back-up systems are degrading the ability of shipyards, piers, maintenance facilities, armories, magazines, training ranges, simulators, weapons systems, and shore-based communications to meet mission readiness. The Department is witnessing growing gaps between mission requirements and existing energy capabilities. These "energy gaps" will continue to grow as the Department delivers new capabilities to project increasing lethality, unless action is taken to address them.

In 2017, the DON published an Energy Security Framework (ESF) to focus on closing these gaps. It emphasized three primary objectives to enhance mission assurance through assured energy, defining benchmarks for: resiliency, reliability, and efficiency necessary for installations to enable assured missions. This strategy reinforces those goals:

Goal 1: Resiliency - Increase energy resiliency for Defense and Task Critical Assets and Infrastructure to ensure continuity of mission while minimizing vulnerable fuel supply chains.

Goal 2: Reliability - Improve assured access to reliable and quality energy for Defense and Task Critical Assets and Infrastructure and enable mission execution.

Goal 3: Efficiency - Increase energy efficiency to extend operational durations for Defense

and Task Critical Assets and Infrastructure and enable mission execution.

The following energy security principles apply to all DON installations and activities. All infrastructure facility projects will address energy resiliency, reliability, and efficiency in project development, planning, design, and construction.

1. Installation Commanders and Installation Energy Managers shall assess and account for the quantity and quality of power needed for core mission functions, in full consultation with mission owners and Mission Assurance representatives.
2. Installation Energy Plans (IEPs) shall be the primary tool to identify requirements to enhance energy resiliency for mission critical assets and prioritized projects enabling mission capabilities.
3. IEPs shall account for the power and transmission demands needed to support the introduction of new weapons systems.
4. IEPs will consider the consultative input of local utilities and other service providers to increase and extend energy resilience beyond the installation fence line.
5. The DON pursues enhanced and secure power generation to support installation missions using whichever fuel/energy source is the most economical, available, and resilient.

MISSION ALIGNMENT

The 2018 NDS describes how Joint Forces will be postured and employed to achieve wartime missions. The process for ensuring continuity of these missions is the purview of the Chairman, Joint Chiefs of Staff (CJCS) in coordination with all services and provides the basis for identifying threats and vulnerabilities to mission accomplishment.

The Department of Defense (DoD) Mission Assurance (MA) process provides a "stress test" of installation assets to support strategic priorities expressed in theater posture plans, operation plans, and core mission essential tasks by assessing strategic risks to U.S. interests and national security. After classifying asset criticality using tier terminology (see Figure 1 - Mission Assurance Criticality), the MA program assesses risks to critical assets and provides recommendations for leadership to accept, mitigate, or remediate identified risks and develop Corrective Action Plans.

A "mission-derived framework" based on the MA process is the approach we will use to capture and prioritize energy resilience requirements. Thus, addressing energy gaps becomes a component of the mission assurance process, and governs the implementation, execution, and sustainment of solutions to mitigate identified strategic and operational risk.

Installations shall leverage the specific results of MA assessments to determine critical energy risks and address those gaps in the next update to their IEP. The IEP provides a common operating picture of an installation's current and future energy gaps and should include the development of 'inside and outside the fence' energy solutions. The IEP is a living document updated continuously by the IEM to reflect current and projected energy requirements and capabilities. In the future, only DON projects identified and validated as part of an installation's IEP will receive approval for investments.

MISSION ASSURANCE CRITICALITY

TASK CRITICAL ASSET (TCA) – An asset of such extraordinary importance that its incapacitation or destruction will have a serious or debilitating effect on the ability to execute the mission essential task it supports

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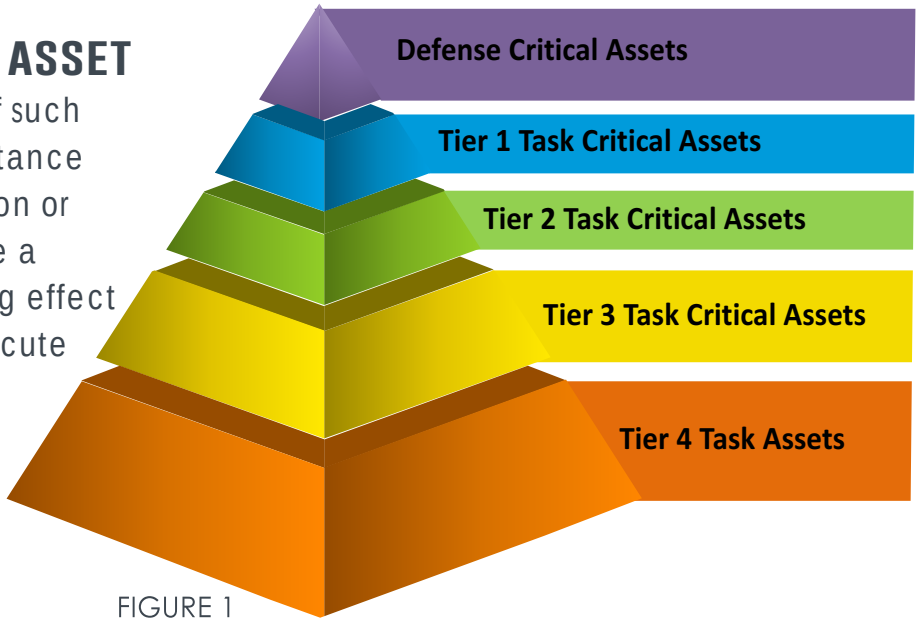


FIGURE 1

METRICS

Establishing goals and measuring performance ensures our efforts stay on track and we deliver the energy resilience naval forces require. The intent of these goals is to provide a starting point and path forward to improve the resilience of our shore power and meet warfighter needs for exponentially more power to prevail in future conflicts. These goals also address energy gaps identified by a DoD MA assessment or highlighted in an IEP.

The metrics and reporting requirements established in this plan will measure progress, focus investments, and enhance our data collection efforts to demonstrate achieving this strategy's objectives.

1. Develop IEPs: Complete and maintain energy assessments that baseline current and future energy generation and transmission requirements for reliability (availability, capacity, quality, and cybersecurity) and resilience for 100% of DON installations by September 2021.

2. Deliver Reliability: Use IEPs to identify energy reliability requirements for Defense and Task Critical Assets and Infrastructure by September 2022. Program and implement solutions using business case, commodity cost, and market value to increase energy reliability and sustain reliability of these assets to 95% by September 2025.

3. Deliver Resilience: Achieve 100% mission continuity for Defense and Task Critical Assets and Infrastructure by establishing the capability to operate off grid for 14 days or a longer duration as determined by the Installation's Commanding Officer in consultation with the Mission Owner(s) by September 2025.

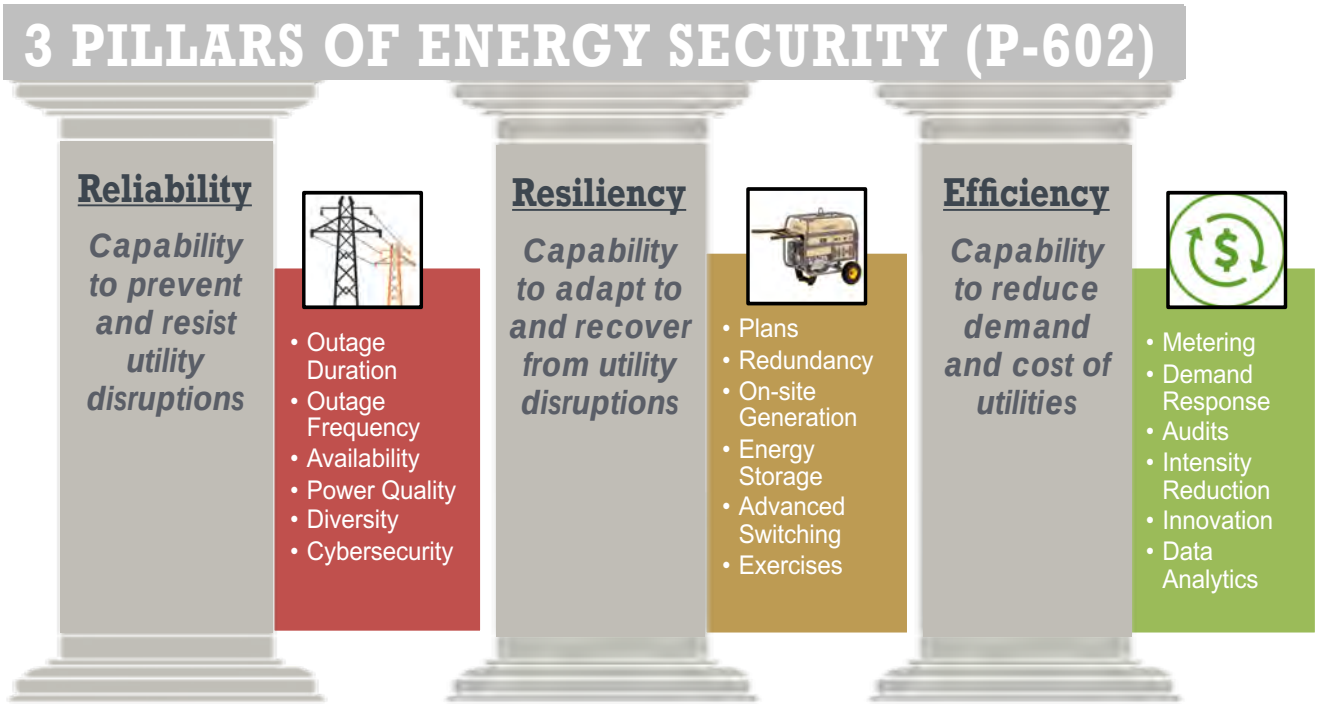
4. Test Mission Continuity: Conduct energy security Table Top or Energy Resilience Readiness Exercise (EERE) exercises at all DON installations at least once every five years, including after action reviews and lessons learned with the energy community. Incorporate these exercises with planned training events to identify Defense and Task

continued on next page

Critical Assets and Infrastructure gaps, and address mission critical vulnerabilities. Publish and implement an energy exercise plan for every installation by September 2023.

5. Invest in Energy Reliability, Resilience, and Efficiency: Starting in Program Objective Memorandum (POM) 2022, program and budget resources necessary to efficiently meet and sustain energy reliability and resilience to all Defense and Task Critical Assets and Infrastructure by 2030.

The Department must optimize the use of every available authority to accelerate delivery of secure and reliable energy. See Appendix A for Navy and Marine case studies highlighting the process for developing and deploying integrated energy solutions at their installations. Appendix B contains a compilation of Energy Mandates and Appendix C summarizes enabling authorities for installation energy security.



"Operating with a sense of urgency means you fix something when it's wrong. It's a habit of thought and action that recognizes a personal responsibility to continually improve our organization to be faster, more efficient, and more effective in complex and challenging environments."

- Acting Secretary of the Navy, Thomas B. Modly

For decades, the DON has been a leader in energy management, innovation, and industry partnerships. We have published this strategy to provide leaders and energy managers at every level with clear goals and metrics to guide continued resiliency initiatives at our Navy and Marine Corps installations. The following appendices list resources, tools, and programs the DON is using to enhance its energy security posture. The intent of these sections is to provide information and mechanisms for energy personnel to leverage in order to advance goals of the DON for resiliency and efficiency. Now is the time for us to come together and act with a sense of urgency in the relentless pursuit of the installation resilience necessary to meet the increasing mission demands for high quality energy in our current and future operational environments.

LET'S GO DO IT!

As we continue to assess the energy security requirements across critical assets and weapons systems, installations have emerged as prime platforms to test and evaluate new technologies for broad readiness applications across the DON.

Recent Navy and Marine Corps successes at Marine Corps Air Station Miramar and Guantanamo Bay reflect the IEM's pivotal role in developing energy security solutions. These projects showcase the ability for individual installations to identify, develop, and implement energy solutions that address mission capability gaps *(See pages 15-19 for details on these projects).*

The efforts of IEMs to carry out these plans should be informed by specific programs and initiatives; create transformational business processes, and increase readiness while reducing the cost of operating our installations. Furthermore, installations should be prioritizing future platform research, development, testing and evaluation (RDT&E) programs.

IDENTIFICATION OF REQUIREMENTS

IEPs: Identifying mission gaps at an installation level allows for the development of solutions that optimize funding and resources within the Department. For the DON, IEPs are the process the Navy and Marine Corps are using to integrate usage data, Mission Assurance, and cybersecurity requirements into the energy planning processes. The IEPs should be the installation's roadmap for process improvement and resourcing. In the future, the IEP will inform the budget process and funding decisions. Navy and Marine Corps Facility Related Control System (FRCS) Plans identify cybersecurity architecture and requirements for system accreditation that must be considered in the IEP.

Mission Assurance Assessments & Corrective Action Plans: MA is the comprehensive approach of assessing mission readiness by examining the assets required to support those missions, as well as the critical infrastructure needed to maintain asset capabilities and general installation operations. The program provides Commanders with a robust analysis of risk to mission resulting from threats, hazards, and vulnerabilities in the operating environment. This complete approach informs Commanders and the DON of the nature and extent of an installation's energy and water exposure, man-made threats (including cybersecurity), and environmental hazards, and informs prioritized decision making with a systematic, quantifiable, and mission-focused methodology.

The results of MA assessments provide recommendations for the Commander's consideration to improve energy and water capability, resiliency, and redundancy by thoroughly explaining risk to assets, utilities, and the DON and DoD missions reliant upon these assets. The interdependent nature of assets and critical infrastructure requires equal consideration of their risk exposure to ensure continued successful execution of the mission. The results of MA assessments including detailed corrective action plans should be incorporated as requirements into IEPs.

Energy Resilience Readiness Exercise (ERRE): DON installations rely heavily on the same grid as our nation's communities and require a reliable power supply to operate a multitude of critical systems that must be online 24/7. Prolonged widespread electrical outages would negatively affect numerous domestic installations, placing domestic and overseas operations at risk.

Although most military installations have backup power capabilities, these systems rely predominately on liquid fuel. Under a prolonged power outage scenario, if the fuel distribution system and transportation sector experience disruptions, the fuel supplies required to sustain backup power generation capabilities may not be available. Furthermore, the Defense Science Board noted that "the military's backup power is inadequately sized for its missions and military bases cannot easily store sufficient fuel supplies to cope with a lengthy or widespread outage."

Mission requirements are the driver for the development of ERREs to assess the performance of electric power infrastructure by testing energy resilience and reliability at full operational loads. The results of ERREs are the identification of infrastructure risks and gaps that should be incorporated as requirements into IEPs. EEREs are joint efforts conducted with utility providers and region and installation personnel in the functional areas of: Emergency Management, Facilities Operations, Naval Operations and Plans, Logistics, and MA.

The DoD Energy Office has partnered with the Massachusetts Institute of Technology Lincoln Laboratory to create a comprehensive framework for "pull-the-plug" exercises which are being conducted at DoD installations. The framework provides a baseline for what bases can do to maintain power and to look at vulnerabilities, requirements, and potential improvements starting with tabletop exercises to simulate responses and capabilities during an extended simulated outage. "Pull- the-plug" exercises provide awareness of actual system capabilities and are required to

ensure real-world preparedness for an outage scenario. DON installations with mission critical assets should be actively conducting tabletop and ERRE exercises working towards an eventual ERRE validating back-up and contingency operations perform as expected.

Grid Security Exercise (GRIDEX): GRIDEX is a multi-day tabletop exercise led by the North American Electricity Corporation (NERC) that includes utilities, state and local governments, law enforcement, and key federal agencies. Participants respond to a real world scenario in their specific roles (e.g. cyber and physical security, power system operators, plant operations, crisis management, and military). This is an excellent opportunity to assess DON installation crisis management, identify critical interdependencies, and improve communications across organizations. The lessons learned from GRIDEX enable the identification of energy and cybersecurity requirements for incorporation into DON IEPs. Lessons learned from prior exercises and planning for future exercises is available at the NERC website.

Data Collection: To improve the speed and quality of decision making at the installation, region, and headquarters levels, we must harness the power of the data produced by our utility systems and facility related equipment. For example, existing electric, water, steam, natural gas, compressed air, fuel handling, communications, lighting, traffic control, surveillance, access control, heat, ventilation, and air conditioning systems all collect or produce data that can provide insights into operational decision making for installation commanders. This type of "digitalization" of our infrastructure provides a platform for adopting predictive maintenance, system automation, and advanced business intelligence to support installation operations, streamline business processes, and ultimately reduce costs.

Digital Resilience: The power of aggregation works both ways, however. Aggregating data without securing it only helps our adversaries discover and exploit weaknesses, and can lead to physical vulnerabilities that threaten lives and missions. The rapidly advancing technology to enable smart cities and industries has outrun the security needed to protect our lives, privacy, and resources. The Department increasingly depends on integrated digital control systems to govern and monitor the energy related infrastructure for military installation and platform operations. Recent intelligence and government warnings cite control system cybersecurity as a critical national security vulnerability. Cyber attacks targeting building management systems can result in the exploitation of key systems, threatening privacy, safety, and lives. Energy managers must ensure that projects to enhance the resilience of our infrastructure also reduce our control system risk and vulnerability starting with enterprise-wide inventories, cyber-hygiene initiatives, and deployment of an enterprise architecture to provide control system security and monitoring. Energy managers should work with their Chief Information Officers to be informed about the progress and applicability of DoD efforts to detect, respond, and recover from cyber attacks to control systems by piloting the initial phases of More Situational Awareness for Industrial Control Systems (MOSAICS).

PRIORITIZATION OF REQUIREMENTS

DON Energy Integration Group (EMIG):
The EMIG provides an integrated forum for key DON mission owners to identify gaps, establish priorities, and determine solutions. The EMIG provides oversight and input to the Shore Investment process in alignment with strategic priorities. The process selects the best overall energy security solution after an analysis of alternatives (AoA) which include non-materiel solutions such as training, maintenance, development of standard operating procedures, documentation, engineering studies and planning. For those requirements that can only be resolved with a materiel or acquisition solution, the DON will consider technology agnostic solutions that are designed to deliver the required resilience and reliability at the lowest cost possible.

DON Energy Security Scope: The DON is developing a cutting-edge business analytics capability that synthesizes energy information collected from the field during the EMIG process phase to prioritize project investments through an operational lens. Information includes Advanced Metering data from Comprehensive Utilities Information Tracking System (CIRCUITS), reliability and resilience data from MAXIMO, and facility information from Internet Navy Facility Asset Data Storage (iNFADS) to provide unprecedented graphical insights on energy mission readiness to support the warfighter and the NDS. The Energy Security Scope leverages energy readiness scores based on the benchmarks from the Energy Security Framework and uses this information to evaluate how the implementation of energy projects will improve energy readiness and combat mission lethality.

DoD Energy Resilience Analysis (ERA) Tool: This DoD -funded software tool developed by Massachusetts Institute of Technology Lincoln Laboratory analyzes the cost effectiveness of possible energy resiliency solutions for a specific military installation. The ERA uses installation energy outage and cost data to model different technical solutions. The results inform project planning and the use of ERA is now required for all energy resilience project proposals submitted to the Energy Resilience and Conservation Investment Program. This tool is also used in the EMIG AoA process to verify Course of Action recommendations.

EXECUTION REQUIREMENTS

NAVFAC Acquisition Modernization Office (AMO): This office offers the DON comprehensive subject matter specialists capable of applying unique congressional authorities, innovative business practices, and rapid acquisition tools to transform and optimize installation capabilities. AMO's objective is to deliver facility, infrastructure, and utility (energy, water, etc.) capabilities at the best value for the DON by leveraging third party financing tools instead of direct appropriations. AMO will institutionalize alternative acquisition skills for incorporation at the regional and installation levels to execute projects.

Defense Community Infrastructure Program (DCIP): This program provides the authority for defense funds to be invested in off-base community infrastructure projects that support installation mission readiness and resilience, including water, wastewater, telecommunications, electric, gas, or other utility infrastructure that is owned by a state or local government. Projects outside the fence line, which will substantially enhance energy resilience, should be forwarded by installation commanders up through CNIC or MCICOM channels for consideration.

Installation Modernization: The DON is modernizing its bases and is expanding the role of its Energy Security Program Office to leverage third party financing tools to accelerate the delivery of modernized facilities and infrastructure.

Emerging Technologies: DON has had great success in using public-private partnerships to develop Distributed Energy Resources (DER) that improve installations ability to provide reliable, resilient, and efficient energy. Examples of currently deployed DER include solar, wind, fuel cells, battery storage systems, natural gas, diesel generators, and geothermal energy. Landfill gas conversion has already proven successful at DON installations. The DON is closely watching the development of future energy technologies. For example, advanced plasma gasification has the potential to solve the issue of waste management for deployed forces by producing portable energy from waste. Small micro nuclear reactors are under development and have the potential capability to provide 1-10 megawatts of power. These reactors are designed to act like nuclear batteries that provide years of assured base load power for critical missions and remote installations.

SUPPORT FROM OTHER FEDERAL AGENCIES

U.S. Department of Energy (DOE): The recently created Office of Cybersecurity, Energy Security and Emergency Response (CESER) leads the DOE's emergency preparedness and coordinates responses to disruptions of the energy sector, including physical and cyberattacks, natural disasters, and man-made events. Through an interagency working group, the DoD collaborates with DOE and other agencies, such as the Department of Homeland Security (DHS), to ensure our critical energy requirements are included in the planning for grid recovery after a significant disruption.

Defense Logistics Agency (DLA): In addition to providing fuel and energy products, DLA offers a number of energy and water-related services including: international fuel agreements, long-term facility water contracts, utilities privatization, research, support, and development of alternative fuels.

DOE Federal Energy Management Program (FEMP): FEMP works with its stakeholders to enable federal agencies to meet energy-related goals, identify affordable solutions, facilitate public-private partnerships, and provide energy leadership to the country by identifying government best practices. FEMP focuses on key services that help agencies meet energy- and water- reduction requirements and goals, including Annual Energy Management Reporting, training and tools enabling third party and performance contracting.

DOE's Energy Savings Performance Contracts (ESPC): Most federal ESPC projects and all of the DON's ESPCs have been executed as task orders awarded under DOE indefinite-delivery, indefinite-quantity (IDIQ) ESPCs. The DOE IDIQ ESPCs streamline the ESPC process, making ESPC procurements as practical and cost-effective for agencies as possible. DOE awarded these master IDIQ (or "umbrella") ESPCs to competing Energy Service Companies that were best qualified to serve federal agencies under the terms and conditions in the DOE IDIQ ESPCs. DOE has awarded more than 300 ESPC projects since their inception in 1998.

Utility Energy Service Contracts (UESCs): A UESC is an energy management services contract between a federal agency and its franchised serving utility for the purpose of producing measurable energy or water reductions or measurable amounts of demand reduction.

Access to National Laboratories: DON relies upon unbiased technical support, proven programs, experience, and unique technical infrastructure of the DOE and its federally funded research and development centers (such as Idaho National Laboratory (INL), National Renewable Energy Laboratory (NREL) and Sandia National Lab (SNL). Each laboratory provides unbiased subject matter expertise, and is a trusted advisor on matters related to cybersecurity, advanced materials, communications, energy, and water. As federally funded research and development centers, the laboratories are uniquely able to provide secure, unbiased, third-party integration of Commercial of the Shelf (COTS) tools, as well as custom development of tools, processes, algorithms, and approaches that an industry or academic partner would be unable to provide. The laboratories provide the DON the ability to deploy workable and supportable solutions more efficiently in the Naval operating environment.

ENERGY COMMUNITY COLLABORATION

Private Sector Engagement: The DON is modernizing its business practices to accelerate the acquisition and adoption of new technologies. The MCICOM Installation-werX (I-werX) program is working to advance the operational effectiveness of installations. This program uses technology and engagement with industry/communities to develop emerging state-of-the-art technology, processes, and efficiencies to further Marine Corps in its modernization efforts. NAVFAC's AMO offers energy managers an opportunity to engage with private sector experts for the exploration of public/private ventures, intergovernmental agreements, and other acquisition methods.

Professional Development: Forums like the Federal Utilities Partnership Working Group and the annual Energy Exchange enable the Department to exchange ideas and solve common problems with utility service providers, energy innovators, and other federal agencies around the world.

Workforce Development: The DON continues to develop installations expectations in parallel with DON goals. These expectations today require installations to have relevant skillsets that meet resiliency standards of excellence. They include energy managers, already proficient in energy efficiency and conservation, to be ready, able and willing to ensure mission readiness through an understanding of resilience, readiness, efficiency, and cyber security. To this end, the DON has developed energy tools that enable our "energy warriors" to ensure progress across all energy security requirements, which are captured, sustained and reviewed annually through the DON's Installation Energy Plans.

Communities: The Navy and Marine Corps maintain robust partnerships with cities, states, and regional boards who are committed to the success of our missions. By looking outside the fence line for solutions to common problems, the DON can improve the condition of our infrastructure and accelerate the delivery of solutions that will save taxpayer dollars while simultaneously supporting local employment.

Office of Economic Adjustment (OEA): OEA is one of the tools available to installations to work with communities. OEA provides planning and technical assistance to local communities and reviews their existing capabilities to protect and enhance the resilience of military installations. Installations should work with their Region Commanders to leverage OEA resources.

Military Energy Resilience Catalyst (MERC): MERC Online Community is a secure online resource center for energy resilience practitioners to connect, learn, and share expertise and to accelerate the adoption of energy resilience practices at DoD installations. Members of the MERC Online Community can engage in discussions with experts, share best practices, ask questions, and receive information on upcoming events.

MCAS MIRAMAR

"This program is pushing the DON beyond traditional standalone, diesel powered, backup generators."

- Mick Wasco, MCAS Miramar Energy Program Manager

LEADING BY EXAMPLE

Marine Corps Air Station (MCAS) Miramar's longstanding commitment to energy security has resulted in a more mission-capable Navy and Marine Corps and sets the example for installations around the globe. The air station's mission to support the 3rd Marine Aircraft Wing is vital to naval aviation readiness and in the defense of our nation. For over a decade, the installation has been pursuing the vision of achieving complete energy security and sustainability for critical installation operations.

MCAS Miramar began with a comprehensive, long range planning approach designed to reduce the impact on the surrounding community while meeting the mission needs of its assigned units under any circumstance. This winning strategy utilizes the DON's three pillars of energy security as the basis for measuring success.

FUNDING SOURCES

$25M Energy Resilience & Conservation Investment Program

$5M California Energy Commission Grant

$45M Energy Investment Program

$10M Research, Development, Testing & Evaluation

$600K Energy Support Budget

"We must get out in front of our energy security challenges. As the former MCAS Miramar Energy Manager, I am proud to have developed the foundation to help other installations achieve energy independence."

- Randy Monohan, Energy Projects Officer Marine Corps Installations Command

MCAS Miramar in San Diego, CA, is working to develop a microgrid that is powered by solar, landfill gas, natural gas, and diesel fuel.

THE MICROGRID

In 2019, MCAS Miramar's years of hard work, persistence, and dedication to the development of long-term energy security solutions culminated in the completion of an installation microgrid.

This impressive project constructed a power plant with both diesel and natural gas generation to supplement existing landfill gas and solar power, providing a total of 11.2 MW of on-site generation. Additionally, a new Energy and Water Operations Center (EWOC) was built to manage the microgrid control system and other utility management systems at MCAS Miramar. These targeted investments and combination of multiple technologies enable the base's electrical distribution system to deliver back-up power to mission critical facilities and ensures that flight line and other high priority operations on the air station are not disrupted due to a loss of power.

Achievements like this do not happen overnight. MCAS Miramar spent years researching, testing, and evaluating different technologies to provide cost-effective energy security by serving as a test bed for early battery technology, photovoltaic materials, control systems, and incorporation of electric vehicle energy storage into the base grid, to name a few.

The actions taken at MCAS Miramar over the last decade are shaping the future of the Marine Corps Energy Program and demonstrate the importance of collaboration, innovation and persistence in implementing the DON's energy security priorities.

"Installation energy managers bring vital expertise to formulate and execute realistic plans and projects. Together, the installation commander and energy manager wield influence, resources, and knowledge that attract public and private sector partners with mutual interests."

- COL Charles Dockery
MCAS Miramar Commanding Officer

LESSONS LEARNED

- Collaboration and information sharing with internal and external organizations are key to realizing a long-term vision and maximizing the benefits of each energy investment project
- When executing a multi-phase project, reach outside the military to build teams comprised of national laboratories, industry, academia, local community, and other stakeholders
- Accessing non-traditional funding and acquisition mechanisms, such as state grants, cooperative research and development agreements, and inter-governmental support agreements often requires education and training of non-technical staff such as attorneys, comptrollers, and contracting officers

NS GUANTANAMO BAY, CUBA

Naval Station Guantanamo Bay (NSGB) project is an ESPC to improve the base's energy resiliency, sustain NSGB as the main U.S. naval presence in the Caribbean, and provide mission support for inter-agency joint operations.

NSGB is responsible for generating all the electrical power required to support its mission and the needs of residents as there is no utility company available to provide this function. Electrical power is crucial for operating the only potable water treatment plant, providing food storage refrigeration, security and communications, and residential power. The current power plant is nearly at its end of life and outages are likely given the age and continuous operation of the units.

NSGB needed a fence-line to fence-line solution to ensure power to critical facilities including the hospital, airfield and control tower, water treatment plants, telephone communications, and helicopter pad. Industry was asked to provide a comprehensive, cyber-secure solution to increase installation energy resiliency, reliability, and efficiency at NSGB.

To address these challenges and provide a whole-base solution, the NAVFAC sought an ESPC instead of a military construction project for a new power plant. After extensive research and analysis, industry found that the project would be more economical and effective if natural gas were used instead of diesel fuel.

"ESPCs allow us to leverage industry expertise and resources with a powerful financing contract for securing crucial infrastructure upgrades through utility savings."

- Katharine Martin, NAVFAC Southeast Energy Program Manager

BY THE NUMBERS

$368.8M Total estimated implementation cost of the project

$24.6M The project scope of work represents of total guaranteed savings annually

31 Month construction/acceptance period

22 Year performance period

PROJECT SCOPE

20MW Combined-Cycle Power Plant (CCPP) operating with **Liquefied Natural Gas (LNG)** or diesel

1.73MW Facility PV System

12MWdc of Grid-tied PV with Energy Storage Systems

Heating Ventilation and Air Conditioning – 10 buildings

Interior and Exterior Lighting Improvements – 118 buildings

Commercial Refrigeration Improvements – 9 facilities

Water Fixture Upgrades – 64 buildings

Water and Wastewater Upgrades – 3 locations

NS GUANTANAMO BAY, CUBA

This finding led to collaboration between NAVFAC and the Defense Logistics Agency (DLA) to negotiate a Liquefied Natural Gas (LNG) contract. The project marks the DoD's first ever LNG procurement and is the largest ESPC awarded by the Navy to date. Natural gas, transported as LNG, is a lower cost and lower emissions fuel than diesel while allowing NSGB to run on diesel if/when needed to improve resiliency during potential supply disruptions.

The ESPC includes a new power plant, photovoltaic (PV) power generation paired with energy storage systems, control system upgrades, and facility-level energy and water conservation measures.

The energy service company (ESCO), Siemens Government Technologies, will build, operate, and maintain all systems. The contract guarantees NSGB significant energy and water savings over the life of the project and eliminates a $44M military construction project.

The project provides an additional 12 megawatts (MW) of direct current PV capacity, new 8 MW / 4 MW-hour battery storage capacity, and increased electric grid resiliency, reliability, and stability from a new microgrid management system. In the summer, PV generation will be able to cover 75 percent of peak demand.

The ESPC and LNG procurement at NSGB is a powerful solution that enhances installation energy security and demonstrates the importance of collaboration between federal agencies and industry to improve our Navy infrastructure.

"The collaboration between NAVFAC HQ, Expeditionary Warfare Center (EXWC), the Region, and Installation, alongside DLA and contractors drove this project to award. Their dedication and commitment can serve as an example of how to execute and award other projects of this scope and scale in the future." *- Katharine Martin, NAVFAC Southeast Energy Program Manager*

All pictures provided by Siemens Government Technologies.

FOCUS AREA	STATUTE/EXECUTIVE ORDER	PROVISIONS
Facility Energy Efficiency	**Executive Order 13834**	**E.O. Sec. 2(a): Achieve and maintain annual reductions in building energy use and implement energy efficiency measures that reduce costs.**
	Energy Independence and Security Act of 2007 / 42 U.S.C. § 8253: Energy Management Requirements	• Reduce energy intensity in federal buildings by 30% from FY2003 baseline and demonstrate incremental reduction. Agencies may exclude facilities with energy intensive activities from intensity reduction goals by 2015. • Complete comprehensive energy and water evaluations for all covered facilities at least once every 4 years. • Implement energy and water conservation measures with a payback period of less than 10 years to the maximum extent practical until compliance with all conservation mandates is achieved. • Requires, in addition to electricity, natural gas and steam to be metered with advanced metering infrastructure.
	Energy Policy Act of 2005 / 42 U.S.C. § 6834: Federal Building Energy Efficiency Standards	• All federal buildings shall be metered for the purposes of efficient use of energy and reduction in the cost of electricity. • Dept of Energy's FEMP updates energy efficiency standards for federal buildings. The current standard for new buildings is ANSI/ASHRAE/IES Standard 90.1-2013, which became effective January 5, 2016.
Fleet Management	**Executive Order 13834**	**E.O. Sec 1: Agencies must continue to meet statutory fleet management requirements, including petroleum reduction, acquisition of alternative fueled and low emitting vehicles, and use of alternative fuel.**
	Energy Independence and Security Act of 2007 / 42 U.S.C. § 17142: Procurement and Acquisition of Alternative Fuels	• Achieve ≥ 20% reduction in annual petroleum consumption and a 10% increase in annual alternative fuel consumption from 2005 baseline.
High Performance Sustainable Buildings	**Executive Order 13834**	**E.O. Sec. 2(e): Ensure that new construction and major renovations conform to applicable building energy efficiency requirements and sustainable design principles; consider building efficiency when renewing or entering into leases; implement space utilization and optimization practices; and annually assess and report on building conformance to sustainability metrics.**
	Energy Independence and Security Act of 2007 / 42 U.S.C. 8259b	• Must procure Energy Star or FEMP designated appliances and facility related equipment.
	Energy Policy Act of 2005 and Energy Policy Act of 1992	• Federal buildings shall be designed to achieve energy consumption levels that are at least 30% below relevant ASHRAE Standard or International Energy Conservation Code.
	42 U.S.C. § 6834: Federal Building Energy Efficiency Standards	• Sustainable design principles shall be applied to the siting, design, and construction of all new and replacement buildings. • Not less than 30% of the hot water demand for new (or those undergoing a major renovation) Federal buildings must be met through the installation and use of solar hot water heaters.
	42 U.S.C. § 8253: Energy Management Requirements	• Ensure large capital energy investments in existing buildings that are not a major renovation but involves replacement of installed equipment (such as heating and cooling systems), or involves renovation, rehabilitation, expansion, or remodeling of existing space, employs the most energy efficient designs, systems, equipment, and controls that are life-cycle cost effective.
	42 U.S.C. § 17091: Leasing	• Federal agencies shall not enter into a contract to lease space in a building that has not earned the Energy Star label in the most recent year. Confirm with real estate program director.
Performance Contracting	**Executive Order 13834**	**E.O. Sec. 2(d): Utilize performance contracting to achieve energy, water, building modernization, and infrastructure goals.**

FOCUS AREA	STATUTE/EXECUTIVE ORDER	PROVISIONS
Performance Tracking and Reporting	**Executive Order 13834**	**E.O. Sec. 2(h): Track and, as required by section 7(b) of this order, report on energy management activities, performance improvements, cost reductions, greenhouse gas emissions, energy and water savings, and other appropriate performance measures.**
	10 U.S.C. § 2925	• Support OSD submission of an annual an installation energy report detailing the fulfillment during that fiscal year of the energy performance goals for the Department of Defense under 10 U.S.C. 2911.
	Energy Independence and Security Act of 2007 / 42 U.S.C. § 8253: Energy Management Requirements	• Directs the Office of Management and Budget (OMB) to issue semiannual scorecards for energy management activities carried out by each Federal agency, including of implementation of statutory requirements and any other means of measuring performance that the Director considers appropriate.
	42 U.S.C. § 17143 and 17144	• Requires federal agencies to submit energy management information to OMB to complete scorecards.
	42 U.S.C. § 8258: Reports	• Requires federal agencies to submit an annual report to the Department of Energy that describes activities to meet the energy management requirements in 42 U.S.C. 8253.
	42 U.S.C. § 13218: Reports	• Requires federal agencies to submit an annual report to Congress summarizing compliance with alternative fuel purchasing requirements for Federal fleets.
	DoD Instruction 4107.11	• This policy memorandum is an update to the Office of the Assistant Secretary of Defense for Energy, Installations, Environment (OSD(EI&E)) memorandum, "Installation Energy Plans," issued March 31, 2016. The purpose of this update is to: Expand the Installation Energy Plan (IEP) requirement to include all Department of Defense (DoD) installations; clarify energy resilience requirements; and clarify cybersecurity requirements.
Renewable Energy	**Executive Order 13834**	**E.O. Sec. 2(b): Meet statutory requirements relating to the consumption of renewable energy and electricity.**
	Energy Policy Act of 2005 / 42 U.S.C. § 15852: Federal Purchase Requirement	• Not less than 7.5% of the total amount of electric energy consumed each fiscal year shall be renewable energy.
	10 U.S.C. § 2911	• Produce or procure ≥ 25% of the total facility energy from renewable sources beginning in 2025 and each fiscal year thereafter. • Produce or procure facility energy from renewable energy sources whenever it is consistent with the energy performance goals of the DoD . • Authorizes DoD to use energy security and energy resilience, including the benefits of on-site generation resources that reduce or avoid the cost of backup power, as factors in the cost-benefit analysis for procurement of energy. • Pursue energy security and energy resilience by giving favorable consideration to projects that provide power directly to a military facility or into the installation electrical distribution network.
Water Management	**Executive Order 13834**	**E.O. Sec. 2(c): Reduce potable and non-potable water consumption, and comply with storm water management requirements.**
	Energy Independence and Security Act of 2007 / 42 U.S.C. § 8253: Energy Management Requirements /42 U.S.C. § 6834: Federal Building Energy Efficiency Standards	• Complete comprehensive energy and water evaluations for all covered facilities at least once every 4 years. • Not less than 30% of the hot water demand for new (or those undergoing a major renovation) Federal buildings must be met through the installation and use of solar hot water heaters.
	Energy Policy Act of 2005	• Achieve 20% reduction in water use from 2007 baseline.

TOOLS	SUMMARY	EXAMPLE
Demand Reduction and Response (DR) Programs	Allows participation in utility programs for the management of water demand or for water conservation. Military installations may accept financial incentives, goods, or services generally available from a utility. Allows participation in demand response programs for the management of energy demand or the reduction of energy usage during peak periods conducted by an electric utility, independent system operator, state agency or third party entity.	In California, Florida, Georgia, and Texas, most municipal water utilities offer rebates for the installation of low-flow water fixtures and water efficient landscaping projects. *(Reference: 10 U.S.C. § 2866)* Navy Region Mid-Atlantic produced 35 megawatts of electricity during an emergency demand response program with the PJM Interconnection electrical grid in order to prevent area-wide power outages. The contract with PJM paid $60,000 per megawatt enrolled and has the potential to earn the Region up to $2M in utility bill credits in a single year. *(Reference: 10 U.S.C. § 2919)*
Easement	Allows the grant of an easement for: railroad tracks; utility pipelines/substations/pumping stations/poles/transmission lines; canals; ditches; flumes; tunnels; certain damns/reservoirs; roads; signal transmission/reception/relay; and other purposes.	I. The DON granted an easement to the State of California for Interstate-5, which passes through MCB Camp Pendleton. II. At MCB Quantico, the DON granted an easement to a telecommunications provider to install a cell tower. III. At NADWC China Lake, the DON granted an easement to the City of Ridgecrest to install and operate a sanitary wastewater treatment plant. *(Reference: 10 U.S.C. 2668)*
Energy Resilience and Conservation Investment Program (ERCIP)	Allows the Secretary of Defense to carry out a military construction project for energy resilience, energy security, or energy conservation, not previously authorized, using funds appropriated or otherwise made available specifically for that purpose. Services nominate projects to OSD annually and those selected are funded from DoD ERCIP funds.	For FY19, four Navy projects and one USMC projects were selected for ERCIP funds, for a total of $82M. Improvements include water treatment upgrades, wind turbine upgrades, electrical distribution system upgrades and Smart Grid installation. *(Reference: 10 U.S.C. § 2914)*
Energy Savings Performance Contract (ESPC)	Allows entry into a contract (up to 25 years) with an energy service company (ESCO) for the purpose of achieving energy savings, which are guaranteed. The DOE holds IDIQ contracts with the ESCOs which the DON uses to issue task orders on those contracts.	The Marine Corps awarded a $91.1M ESPC to ESCO Amaresco for energy improvements at MCRD Parris Island. Under the ESPC, Ameresco constructed solar and biomass power generation facilities that generate $10M/year in guaranteed energy savings. The Marine Corps makes an annual payment of $6.1M for the 22-year contract term. *(Reference: 42 U.S.C. § 8287)*
Incentives	Allows military installations to accept any financial incentive, goods, or services generally available from a gas or electric utility or from a state or local government to adopt technologies and practices that the Secretary determines are in the interests of the United States and consistent with the energy performance goals for the DoD.	Space and Naval Warfare (SPAWAR) Systems Center Atlantic received a rebate check for over $797,000 from the South Carolina Electric and Gas "EnergyWise for your Business Program" at the Naval Weapons Station Joint Base Charleston. The rebate check was for successful energy conservation measures implemented under an ESPC project. *(Reference: 10 U.S.C. § 2913)*

TOOLS	SUMMARY	EXAMPLE
Intergovernmental Support Agreement (IGSA)	Allows entry into an IGSA (up to 10 years) with state or local government to provide, receive, or share installation support services if determined to be in the best interests of the DON. IGSA may use prevailing wage grades (vice Davis-Bacon) and must be limited to services that the DON/ state/local government already provide for their own use.	At MCLB Barstow, the Marine Corps entered into an IGSA with the City of Barstow for the provision of water and wastewater testing/ treatment services. The IGSA allowed Marine Corps to avoid costs associated with staging and maintaining water analysis equipment, with projected savings of $397k annually or ~$2M over the 5-year term. *(Reference: 10 U.S.C. § 2679)*
Land Exchange	Allows entry into an agreement to exchange real property and any improvements thereon when determined to be advantageous to the United States. The fair market value (FMV) of the real property to be obtained by the DON shall be at least equal to the FMV of the conveyed real property (exceptions apply).	At the Philadelphia Navy Yard, the Navy is close to an agreement with the Philadelphia Industrial Development Corporation (PIDC) to exchange 26 acres of Navy land for 26 acres of PIDC land. The parcels acquired by Navy will be used to improve security of existing NAVSEA assets, and to site a future MILCON project. *(Reference: 10 U.S.C. § 2679)*
Leases	Allows the out-lease of real or personal property in exchange for payment (cash or in-kind) not less than the FMV of the lease interest (exceptions apply).	I. At MCAS Miramar, the DON leases land to a commercial nursery to grow plant materials for landscaping. In exchange for the lease, the nursery pays the Marine Corps cash rent. II. At the Pacific Missile Range Facility (PMRF) at Barking Sands, Hawaii, the Navy leased 140 acres of land to the Kauai Island Utility Cooperative (KIUC) to build a 19 megawatt solar facility with 70 megawatt hours of battery storage. In exchange for the lease, KIUC will provide uninterrupted power to PMRF's critical operations while improving the reliability and reducing the cost of power for the entire island. *(Reference: 10 U.S.C. § 2667)*
Power Purchase Agreement (PPA)	Allows entry into a contract (up to 30 years) for the provision and operation of new energy production facilities and the purchase of energy produced from such facilities.	I. The DON entered into a 20-year power purchase agreement to install 13.7MW of solar capacity to supply ~30% of NAWS China Lake's load inside the fence line. Using this financing structure, the DON is not required to provide any capital investment or O&M over the term of the contract. II. On behalf of DON, the Western Area Power Administration (WAPA) signed a 25 year PPA with Sempra Energy to build a 210MW dc solar PV array to supply approximately 30% of the load for 14 Navy and Marine Corps installations in southern CA. The solar array is located outside the fence line. *(Reference: 10 U.S.C. § 2922a)*

TOOLS	SUMMARY	EXAMPLE
Repair of Facilities	Allows the use of O&M funds to execute a repair project for an entire single-purpose facility, or one or more functional areas of a multipurpose facility. Repair includes restoration of a facility for its designated functional purpose or conversion to a new functional purpose without increasing the footprint.	I. At MCB Camp Pendleton, the Marine Corps converted a BEQ to a Consolidated Training Facility for 1st Marine Division schools. The project cost is $7.9M, with an estimated cost of avoidance of $9M. II. At NS Rota, Spain, the Navy converted a vacant admin facility to command and control space supporting forward-deployed Naval forces. The project cost is $5.3M with an estimated cost avoidance of $2.1M. *(Reference: 10 U.S.C. § 2811)*
Sale of Electricity from Alternative Energy Production	Allows the military departments to sell, contract to sell, or authorize the sale of electrical energy generated from alternate energy or cogeneration type production facilities which are under the jurisdiction of the Secretary concerned. Military departments can retain 50% proceeds from the sale.	NAWS China Lake hosts a geothermal power plant, owned and operated by a contractor, who sells electricity to the grid. The Secretary of the Navy retains a portion of the proceeds to fund high priority energy security programs across the Department. *(Reference: 10 U.S.C 2916)*
Unspecified Minor Construction	Allows execution of unspecified minor military construction (UMC) projects (approved cost up to $6M of MILCON funds). UMC projects may be funded with O&M up to $2M. Congressional notification requirements apply. Allows for adjustment on dollar limitation (up to $10 million) based on area construction cost index.	I. The Marine Corps executed a $2.6M UMC project (MILCON funds) to construct and prepare a site for an outdoor Infantry Immersion Trainer at MCB Camp Lejeune. II. The Navy executed a $1.6M UMC project (O&M funds) to construct an addition to the avionics maintenance shop at NAS Lemoore. *(Reference: 10 U.S.C. § 2805)*
Utility Energy Service Contract (UESC)	Allows entry into a contract (up to 25 years) with a gas/electric utility to design and implement energy resilient and cost-effective demand and conservation incentive programs, including energy management services, facilities alterations, and installation/ maintenance of energy saving devices/technology. Unlike ESPCs, UESC energy savings are not guaranteed by statute.	The Navy awarded a $24.9M UESC to utility Pensacola Energy for energy improvements at NAS Pensacola. Under the UESC, Pensacola Energy upgraded chillers and control systems on 43 buildings. These improvements are expected to generate $2.95M/ in energy savings. The Navy makes an annual payment to the utility of $2.9M for the 12-year contract term. *(Reference: 10 U.S.C. § 2913(d) DFARS 241.103(2)*
Utilities Privatization (UP)	Allows the conveyance of a utility system to a municipal, private, regional, district, or cooperative utility company or other entity as part of a privatization effort.	The DON is in the process of reinvigorating its utility privatization program. In FY19-21, NAVFAC will execute pilots (NAS Pax River, NSWC Indian Head, NS Mayport) in order to evaluate the business case analysis for total ownership cost reduction and the ability to improve reliability, resilience, and efficiency for priority missions. *(Reference: 10 U.S.C. § 2688)*

APPENDIX D: REFERENCES & RESOURCES

FUNDING AND REQUIREMENTS RESOURCES

- **ASN(EI&E) Policy Memo, "IEPB Charter"** (9 Mar 18)
- **CNIC EMIG Charter** (11 Jun 2018)
- **DoD ERCIP Supplemental Guidance FY19-FY20** (04 May 2018)
- **DoD Installation Energy Plans** (30 May 2018)

These documents are located on the ASN EI&E website: https://www.secnav.navy.mil/eie/Pages/default.aspx

PROFESSIONAL DEVELOPMENT RESOURCES

- **CNIC G2 PORTAL** - https://g2.cnic.navy.mil/teamsites/SitePages/Home.aspx (If you cannot access G2 go to the G2 Self Registration site: https://g2.cnic.navy.mil/selfregistration/)
- **Cyber Security Infrastructure Security Agency (CISA)** - https://www.us-cert.gov/
- **Federal Energy Management Program (FEMP)**https://www.eere.energy.gov/femp/training/
- **MCICOM PORTAL** - https://www.mcicom.marines.mil/
- **MERC Online Community** - https://innovatedefense.net/merc/
- **NAVFAC PORTAL** - https://www.navfac.navy.mil/
- **Office of Assistant Secretary of Defense for Sustainment (OASD)** - https://www.acq.osd.mil/eie/IE/FEP_Energy_Resilience.html
- **SECNAV SECURE PORTAL** - https://portal.secnav.navy.mil/Pages/default.aspx
- **Whole Building Design Guide (WBDG)** - https://www.wbdg.org/education/cont_education.php

NATIONAL LABORATORY RESOURCES

- **Idaho National Lab (INL)** - https://inl.gov/
- **Massachusetts Institute of Technology Lincoln Labs (MIT LLT)** - https://www.ll.mit.edu/
- **National Renewable Energy Laboratory (NREL)** https://www.nrel.gov/

ADDITIONAL RESOURCES

- **ASN(EI&E) Policy Memo, Installation Energy Security Framework** (7 Jun 2017)
- **CNIC Energy Guide**
- **Defense Critical Infrastructure** (19 Jul 2018)
- **Defense Critical Infrastructure Line of Effort Security Classification Guide** (27 Jul 2018)
- **Department of the Navy Business Operations Plan Version 1.2** (25 Oct 2018)
- **DoD Demand Response Guidance** (30 Mar 2018)
- **DoD Enhancing Cybersecurity Risk Management for Control Systems Supporting DoD -Owned**
- **DoD ESPC/UESC Oversight Reporting Requirements** (13 Jul 2018)
- **DoD Interim Baseline Elements of Information for Mission Assurance** (26 Jul 2018)
- **DoD I 3020.45 Mission Assurance Construct** (27 Jul 2018)
- **DoD I 4170.11 Energy Resilience** (16 Mar 2016)
- **DoD I 8510.01 Risk Management Framework (RMF) for DoD Information Technology** (28 Jul 2017)
- **Executive Order 13834: Efficient Federal Operations** (17 May 2018)
- **FY19 NDAA** (13 Aug 2018)
- **NAVFAC P-602 3 Pillars of Energy Security (Reliability, Resiliency, & Efficiency)** (Jun 2017)
- **NAVFAC P-804 Facility Related Control System (FRCS) Standardization Strategy** (Jul 2019)
- **OASD Energy Resilience: OM&T Strategy and Implementation Guidance Memo** (17 Mar 2017)
- **OEA Assistance** https://beta.sam.gov/fal/1ca4fc7cfb8c4e2e9f1a0b2a81a0d1db/view?keywords=12.003&sort=-relevance&index=&is_active=true&page=1
- **OPNAV Instruction 5239.1 US Navy Cybersecurity Program** (18 Jul 2018)
- **SECNAVINST 4101.3A "DON Energy Program"** (19 Jan 17)
- **SECNAV Instruction 5239.3C Department of the Navy Cybersecurity Policy** (02 May 2016)

These documents are located on the ASN EI&E website: https://www.secnav.navy.mil/eie/Pages/default.as

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