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for

Energy, Installations, and Environment

Department of Defense

Annual Energy Management and

Resilience (AEMR) Report

Fiscal Year 2016

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1. Introduction

The Department of Defense (DoD) energy program's chief priority is supporting the ability to carry out the mission. Both at installations and in combat platforms, energy is a critical and vulnerable resource across the full range of military operations. Energy availability and resilience define and enable the capabilities of weapons platforms, facilities, and equipment while remaining a substantial expense that competes with other investments in both manpower and equipment. These issues compel DoD to pursue cost-effective measures that increase energy resilience and reduce our cost of operations.

DoD's installation energy program integrates three objectives (Figure 1-1):

- Reduce Demand
- Expand Supply
- Enhance Energy Resilience

Figure 1-1: Installation Energy Approach

DoD's fixed installations are critical components of our ability to fight and win wars, accounting for nearly 30 percent of DoD's total energy use. Our Warfighters cannot do their jobs without bases from which to fight, train, or live when they are not deployed. Simply stated, the stakes are high; installations support our Warfighters' readiness.

An important opportunity for the Department to improve its energy resilience exists on its fixed installations, as the Department manages over 500 installations worldwide, comprising of nearly 300,000 buildings. The keys to transforming installation energy are investments in energy-efficient facilities and cost-effective energy sources for those facilities—including alternative energy sources—as well as the promotion of non-material and behavior-based solutions. Through such initiatives, the Department can help ensure the energy resilience and reliability of a large percentage of the energy it manages while treating installation energy as a force multiplier in support of military readiness.

Augmenting these principles, comprehensive measurement of installation energy helps DoD maintain an aggressive pace toward its larger energy objectives. To that end, this Annual Energy Management and Resilience (AEMR) report details the Department's Fiscal Year (FY) 2016 performance toward its objectives of energy efficiency and demand reduction, energy supply expansion, and energy resilience on fixed installations.

DoD reports on its annual installation energy performance in the FY 2016 AEMR.[1] Table 1-1 summarizes the Department's progress toward its FY 2016 energy goals, while Appendix D presents the Department's energy-related performance metrics in greater detail. As shown, although DoD fell short of its FY 2016 goal for renewable energy, it exceeded its energy intensity reduction goal and continued to exceed its goals for potable water intensity and petroleum consumption reduction.

[1] This report includes the installation energy activities of the Air Force, Army, Navy, and Marine Corps, and the following Defense Agencies: Defense Contract Management Agency (DCMA); Defense Commissary Agency (DeCA); Defense Finance and Accounting Service (DFAS); Defense Intelligence Agency (DIA); Defense Logistics Agency (DLA); Missile Defense Agency (MDA); National Geospatial-Intelligence Agency (NGA); National Reconnaissance Office (NRO); National Security Agency (NSA); and Washington Headquarters Services (WHS).

Table 1-1: FY 2016 DoD Progress Toward Installation Energy and Water Goals[2]

Goals & Objectives	Metric	Component	FY 2016	Goal (FY 2016)
Reduce Facility Energy Intensity Relative To FY 2003 Baseline (EISA 2007, EO 13693)	British Thermal Unit of energy consumed per gross square foot of facility space.	DoD	-5.1%	-2.5% (from 2015 baseline)
		USAF	-4.1%	
		Army	-6.6%	
		Navy	-7.2%	
		USMC	-4.5%	
Consume More Electric Energy From Renewable Sources (EO 13693, EPAct 2005)	Total renewable electricity consumption as a percentage of total facility electricity consumption.	DoD	4.8%	10%
		USAF	6.8%	
		Army	5.8%	
		Navy	0.9%	
		USMC	11.8%	
Produce Or Procure More Energy From Renewable Sources (10 U.S.C. §2911e)	Total renewable energy (electric & non-electric) produced or consumed as a percentage of total facility electricity consumption.	DoD	12.6%	25% by 2025
		USAF	7.9%	
		Army	9.5%	
		Navy	28.2%	
		USMC	8.4%	
Reduce Potable Water Intensity Relative To FY 2007 Baseline (EO 13693)	Gallons of water used per square foot of facility space.	DoD	-23.5%	-18%
		USAF	-24.5%	
		Army	-26.5%	
		Navy	-12.3%	
		USMC	-37.3%	

The FY 2016 AEMR is compiled based upon the following mandates (Appendix B):

- Section 548 of the National Energy Conservation Policy Act (NECPA) of 1978 (Title 42, United States Code (U.S.C.), Section 8258, which requires Federal agencies to describe their energy management activities;
- Title 10, U.S.C., §2925, which requires DoD to submit to Congress an AEMR describing its installation energy activities; and title 10, U.S.C., §2911, which requires DoD to establish energy performance goals for transportation systems, support systems, utilities, and infrastructure and facilities.

This report also responds to the following reporting requirements:

- Senate Report 114-255, to accompany S. 2943, the National Defense Authorization Act (NDAA) for FY 2017

[2] Energy Independence and Security Act of 2007 (EISA), Energy Policy Act of 2005 (EPAct), United States Code (U.S.C.), and Executive Order (EO). EO 13693 extended and modified the EPAct 2005 renewable energy goal. EO 13693 also extended and modified the energy intensity goal to rebaseline to 2015 from 2003.

    - Cybersecurity Guidelines for Microgrids, page 104
    - Energy Resiliency Metrics, page 110
    - Modernization of Energy Power Generation, page 118
    - Study on Power Storage Capacity Requirement, page 126
- House Report 114-537, to accompany HR 4909, the NDAA for FY 2017, page 108, Small Modular Reactors

DoD distinguishes installation energy from operational energy. Installation energy includes energy needed to power fixed installations and enduring locations as well as non-tactical vehicles (NTVs), whereas operational energy is the energy required for training, moving, and sustaining military forces and weapons platforms for military operations and training—including energy used by tactical power systems and generators at non-enduring locations.

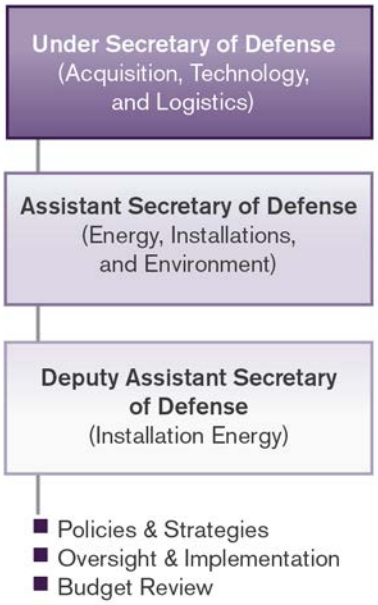
The remainder of this report discusses DoD's efforts related to managing its installation energy program, reducing energy demand, increasing distributed (on-site) and renewable energy, and enhancing energy resilience.

2. Installation Energy Program Management

The Office of the Deputy Assistant Secretary of Defense for Installation Energy (ODASD(IE)) Installation Energy Program

The ODASD(IE) is responsible for overseeing the Department's Installation Energy Program, its progress toward achieving installation energy goals, and achieving energy resilience in a cost-effective manner. The ODASD(IE) reports to the Office of the Assistant Secretary of Defense for Energy, Installations, and Environment (OASD(EI&E)) and is responsible for issuing installation energy policy and guidance to DoD Components; coordinating DoD installation energy strategies; overseeing energy programs (e.g., energy efficiency, distributed and renewable energy, and energy resilience); and engaging with the Military Services, Defense Agencies, and other stakeholders. The ODASD(IE) coordinates all congressional reports related to installation energy. Figure 2-1 illustrates the organizational structure related to the ODASD(IE) and OASD(EI&E). The following sections describe the Defense Components' installation energy programs.

Figure 2-1: Under Secretary of Defense Organization Chart



Army Installation Energy Program

The Deputy Assistant Secretary of the Army for Energy and Sustainability (DASA(E&S)) is the Senior Energy Official for the Army. The Army Energy Team consists of the Office of the Assistant Secretary of the Army for Installations, Energy and Environment (OASA(IE&E)), Office of the Assistant Chief of Staff for Installation Management (OACSIM) and the Installation Management Command (IMCOM), Army National Guard (ARNG), U.S. Army Reserve (USAR), and Army Materiel Command (AMC), in collaboration with the U.S. Army Corps of Engineers (USACE), Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (OASA(ALT)), the Army Staff, other Army offices and commands.

Figure 2-2: Army Installation Energy Governance Structure

The Army's Senior Energy and Sustainability Council (SESC) functions as the overall governance of the Army's energy management efforts and provides strategic direction to integrate energy and water sustainability initiatives into Army plans and policies to meet Army's missions and objectives. These initiatives include matters of energy and water resilience, energy and fuel efficiencies, fossil fuel consumption and greenhouse gas (GHG) reductions, rightsizing and downsizing of the NTV fleet, water efficiency and conservation, waste minimization, procurement, and high-performance sustainable buildings.

Under the direction of the SESC, the Army published its Energy Security and Sustainability (ES^2) Strategy in May 2015. ES^2 is a roadmap to foster a more adaptable and resilient force that is prepared for a future defined by complexity, uncertainty, adversity, and rapid change. ES^2 is organized around a central theme that recognizes improved energy security and resilience to ensure mission readiness. Through the ES^2 goals, the Army is committed to long-term efforts that build and sustain a resilient force and secure resources for our installations at home and abroad.

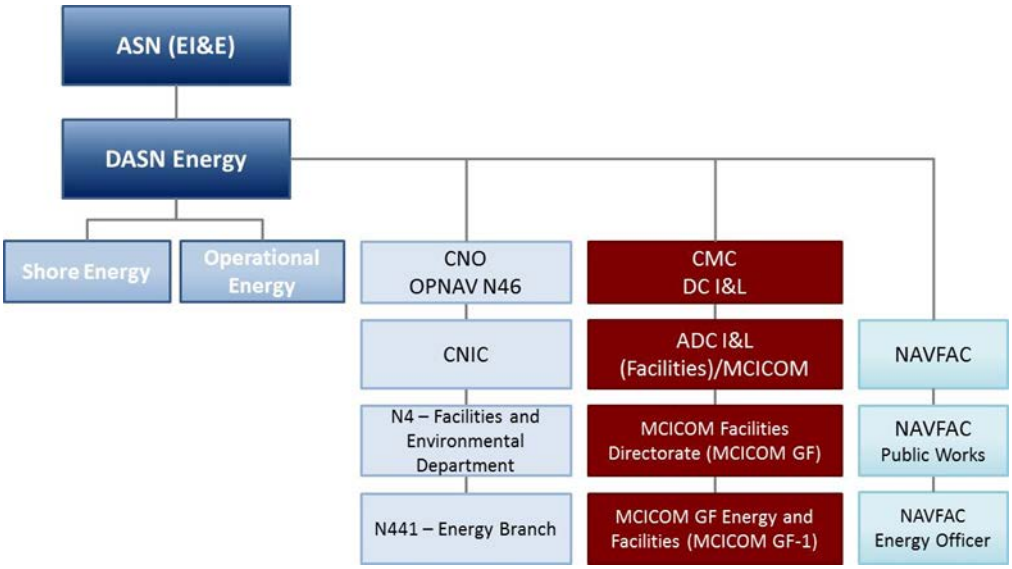
Department of the Navy (DON) Installation Energy Program

The Assistant Secretary of the Navy for Energy, Installations, and Environment (ASN(EI&E)) is the designated senior DON official for energy who is responsible for formulating Department-wide policies, procedures, advocacy, and strategic plans, as well as overseeing all DON functions and programs related to energy. The Deputy Assistant Secretary of the Navy for Energy (DASN(Energy)) reports to ASN(EI&E) and is the Chairman of the DON Shore Energy Policy Board. The DON energy community consists of a broad range of subject matter experts, analysts, and program managers who are led by senior Navy and Marine Corps officials.

The Office of the Chief of Naval Operations (CNO) Shore Installation Management Division (OPNAV N46) is responsible for developing policy and programming resources for the Navy's Facility Energy Program. OPNAV N46 also ensures compliance with DON shore energy goals. The Commander, Navy Installations Command (CNIC) is responsible for current and future shore energy requirements across warfare enterprises. CNIC N441 is the energy branch within the Facilities Division (N44) of the Facilities and Environmental Department, N4. CNIC N441 is responsible for developing and integrating shore energy requirements across the Shore Enterprise.

The Deputy Commandant for Installations and Logistics is responsible for establishing energy and water management policy for Marine Corps installations per direction from the Commandant to comply with Federal mandates. The Assistant Deputy Commandant for Installations and Logistics (Facilities) serves as the single point of contact responsible for program management and resourcing. The Commander, Marine Corps Installations Command (MCICOM) oversees program planning and execution. Direct support is provided by the Director, Facilities (MCICOM GF). The Energy and Facility Operations Section (MCICOM GF-1) serves as the Marine Corps Installations Energy Program Manager.

Figure 2-3: DON Installation Energy Governance Structure



The Naval Facilities Engineering Command (NAVFAC) provides facilities engineering support to the Navy and Marine Corps. The Deputy Commander for Public Works at NAVFAC Headquarters (HQ) serves as the NAVFAC Energy Officer and oversees the development of relevant energy guidance, standards, processes, and internal policy to NAVFAC.

With the bulk of the one gigawatt (1GW) goal attained or in pipe-line, the Renewable Energy Program Office (REPO) merged into NAVFAC HQ (Public Works) in late 2016 to support resilience efforts across DON and is retitled "Resilient Energy Program Office." In May 2014, the DON stood up a separate REPO to pursue renewable energy generation in order to improve Navy and Marine Corps energy security, operational capability, strategic flexibility, and resource availability. Through FY 2016, REPO reported directly to ASN(EI&E) and received administrative support from NAVFAC while leading efforts across both Services to execute renewable energy projects totaling 1GW in capacity while positioning DON to increase energy security and resilience through future project and technology integration efforts.

Air Force Installation Energy Program

The Air Force Energy Team comprises five entities that work together to meet the Service-wide energy priorities to (1) improve resilience, (2) optimize demand, and (3) assure supply. These priorities support the Air Force energy vision of "mission assurance through energy assurance."

Assistant Secretary of the Air Force for Installations, Environment, and Energy (SAF/IE): The Air Force Senior Energy Official provides guidance, direction, and oversight for all matters pertaining to the formulation, review, and execution of plans, policies, and programs addressing energy and water use within the Air Force, and stablishes Air Force energy strategy, policy, priorities, and goals.

The Air Force Staff: 1) Provides information to support governance and oversight of energy management activities, 2) Provides procedures and objectives to address and manage Air Force facility energy and water consumption, throughput, and requirements, in alignment with policies and strategic direction, and 3) Develops policies, guidance, procedures, and practices to enhance the Air Force energy security posture and productivity.

Air Force Installation and Mission Support Center (AFIMSC) and its primary subordinate unit, Air Force Civil Engineer Center (AFCEC): Develops and executes facility energy programs and plans in support of the Air Force strategic energy priorities and goals with integration of MAJCOM mission requirements. Assesses energy use and risks to identify investment opportunities and efficiency measures to enhance capability and mission success. Provides guidance on energy project development, utility recommendations and requirements validation, capabilities oversight and resource advocacy, and oversight and guidance on budgeting and execution funding. Promotes policies, procedures, and practices to enhance Air Force energy security and resilience. Develops standardized processes for facility energy program. Provides assistance to installations to meet energy goals and objectives.

- Air Force Office of Energy Assurance: Develops, implements, and oversees an integrated facility energy portfolio, including privately financed, large-scale clean energy projects that will provide uninterrupted access to the electricity necessary for mission success.

- Installations: Develop plans to support or supplement Air Force energy goals/strategies. Execute those plans, measure and evaluate their base energy usage, promote total energy awareness, and nominate their most successful people and units for energy awards.

- Installation Energy Managers: Provide daily management and oversight of the installation's Energy Management Plan, energy awareness, education and training, audits, utility billing, and energy and water consumption reporting.

The Air Force energy governance is in transition, but will comply with revised draft Air Force Policy Directive (AFPD) 90-17, Energy Management, which identifies the following roles and responsibilities:

The SAF/IE serves as the Secretary of the Air Force's agent within the energy domain, which includes Air Force Senior Energy Official with focus on installation energy and Senior Operational Energy Official with focus on operation energy, as well as resolving energy issues. In this capacity, SAF/IE roles and responsibilities include establishing and managing the Air Force energy governance structure, which will provide strategic direction and oversight, as well as resolve energy issues impacting more than one organization or functional area. SAF/IE will also represent Air Force on DoD-level energy governance forums.

The Deputy Chief of Staff for Operations (AF/A3) will provide SAF/IE with the information required to support governance and perform oversight of energy management within Air Force air, space, and cyberspace operations.

The Deputy Chief of Staff for Logistics, Engineering, and Force Protection (AF/A4) will perform oversight of energy management activities across Air Force installations, facilities, ground vehicles, equipment, logistics, and weapon systems sustainment, and will provide SAF/IE with the information required to support energy governance.

All Air Force Directorates will support the energy governance structure. All MAJCOMs, ANG, and Direct Reporting Units (DRUs) will support the energy governance structure, with an emphasis on the mission of the respective MAJCOM or DRU.

Defense Agencies Installation Energy Program

The Defense Agencies continue to develop and enhance their Installation Energy Management Programs. Each agency has a designated Senior Energy Official to administer their respective programs (Table 2-1).

Table 2-1: Defense Agencies Senior Energy Officials

DoD Component	Senior Energy Official
Defense Contract Management Agency (DCMA)	Energy Program Manager
Defense Commissary Agency (DeCA)	Energy Manager
Defense Finance and Accounting Service (DFAS)	Director, Support Services
Defense Intelligence Agency (DIA)	Chief, Engineering and Logistics Officer
Defense Logistics Agency (DLA)	Installation Support Director
Missile Defense Agency (MDA)	Environmental Executive
National Reconnaissance Office (NRO)	Director, Management Services and Operations
National Geospatial-Intelligence Agency (NGA)	Director, Installation Operations Office
National Security Agency (NSA)	Chief of Facilities and Infrastructure Services
Washington Headquarters Services (WHS)	Pentagon Sustainability Program Manager

The Intelligence Community (IC), in particular, has adopted a community-wide approach to maximizing energy opportunities. The Office of the Director of National Intelligence has established an IC Energy Management Working Group composed of representatives from the intelligence agencies with the subject matter expertise and authority to speak for their agency on energy matters.

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3. DoD's Progress in Reducing Energy Demand

The Department is reducing its demand of installation energy by investing in efficiency and conservation projects on its installations. DoD continues to reduce energy costs and maximize payback in order to have the best return on investment, with the majority of DoD investments being utilized for sustainment and recapitalization projects. Such projects typically involve retrofits to incorporate improved lighting; high-efficiency heating, ventilation, and air conditioning (HVAC) systems; energy management control systems; and new windows and roofs (improved building envelopes).

In addition to using appropriated funding to improve efficiency—both in the Components' own budgets and the DoD-wide Energy Conservation Investment Program (ECIP)—DoD Components are leveraging private capital through the use of performance-based contracts to improve the energy efficiency of existing facilities. Between 2011 and 2016, the Department awarded more than $2.2 billion in Energy Service Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs).

Installation Energy Demand Overview

This section describes the scope of the Department's installation energy demand in terms of cost and consumption. DoD is the largest single energy-consuming entity in the United States, both within the Federal Government and as compared to any private-sector entity. DoD operational and installation energy represent approximately 80 percent of total Federal energy consumption. Installation energy is nearly five times the total energy consumption of the next closest Federal agency (U.S. Postal Service).[3]

In FY 2016, DoD installation energy comprised approximately 21 percent of total Federal energy consumption.[4] The Department's total energy outlay was $12.4 billion. DoD spent approximately $3.7 billion on installation energy, which included $3.5 billion to power, heat, and cool buildings and $0.15 billion to supply fuel to the fleet of NTVs. The remaining $8.7 billion outlay was for operational energy. Installation energy represented 30 percent of the Department's total energy expenditures. DoD consumed 201,410 billion British thermal units (BBtus) of installation energy, which represented 29 percent of the Department's total energy consumption. Of that, DoD consumed 198,031 BBtus in buildings (stationary combustion) and 9,241 BBtus in NTV fleet (mobile combustion). The Army is the largest consumer of installation energy, followed by the Air Force and DON (Figure 3-1).

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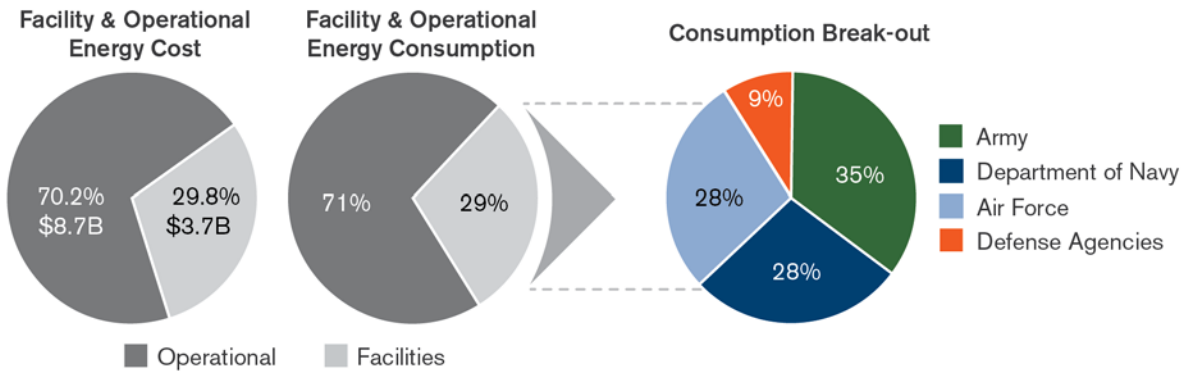
[3] FEMP, Comprehensive Annual Energy Data and Sustainability Performance [online source] (Washington, D.C. June 1, 2016, accessed February 13, 2017), available from http://ctsedwweb.ee.doe.gov/Annual/Report/TotalSiteDeliveredEnergyUseInAllEndUseSectorsByFederalAgencyBillionBtu.aspx

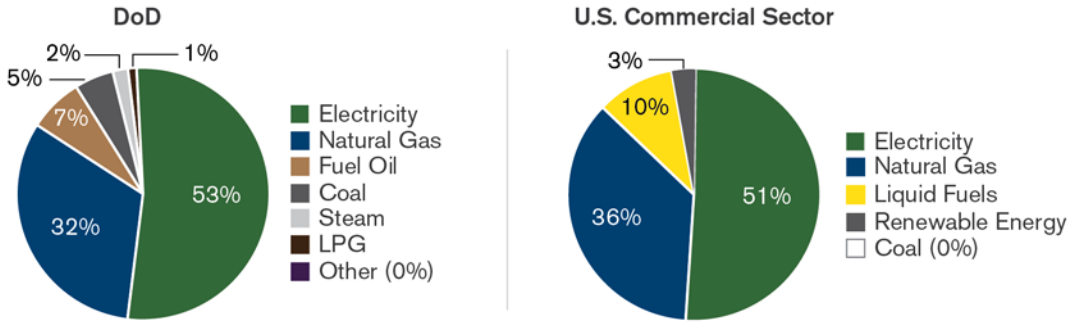
[4] Ibid.

Figure 3-1: DoD FY 2016 Installation Energy Consumption and Cost



Electricity and natural gas accounted for 85 percent of DoD installation energy consumption. The remaining portion of installation energy consumption included fuel oil, coal, and liquefied petroleum gas (LPG) (Figure 3-2). DoD's installation energy consumption mix mirrors that of the U.S. commercial sector, where natural gas and electricity dominate the supply mix.

Figure 3-2: DoD Installation Energy FY 2016 and U.S Commercial Sector Stationary Combustion Fuels by Type[5]



Energy Intensity

DoD measures energy intensity in Btus per gross square foot (GSF) of facility space.[6] Section 543 of the NECPA mandates a 3.0 percent annual reduction in energy intensity relative to a baseline year (FY 2003) or a 30 percent overall reduction from the baseline by FY 2015. Executive Order (EO) 13693 extended the goal to 2.5 percent annual reductions through 2025, with the baseline being reestablished to 2015. The Energy Independence and Security Act

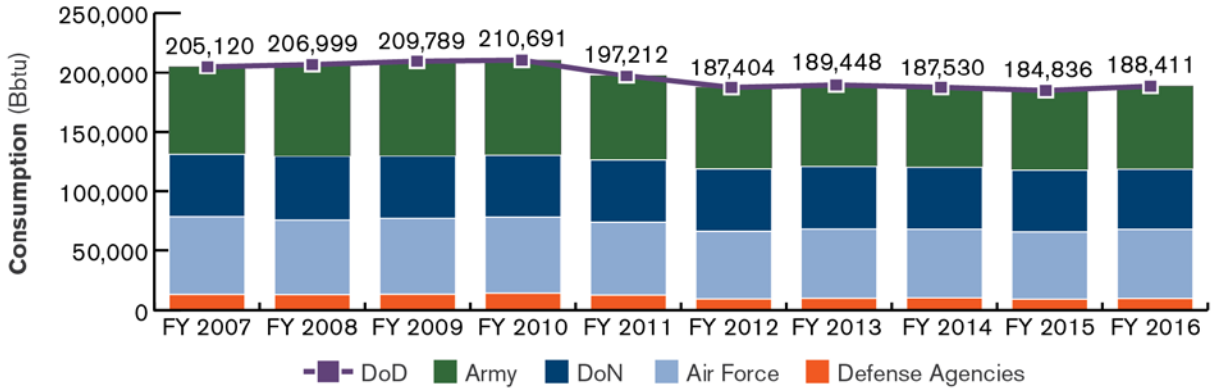
[5] EIA, 2014 Monthly Commercial Sector Energy Use, Table 2.1c [online source] (Washington, D.C. February 24, 2015 accessed March 2, 2015), available from http://www.eia.gov/totalenergy/data/monthly/

[6] Energy intensity does not include energy consumption from NTVs.

(EISA) of 2007 further distinguishes two categories of buildings: those subject to the energy intensity reduction goal and those that can be excluded.[7] This section discusses energy intensity for DoD goal-subject buildings.

In FY 2016, DoD consumed approximately 188,411 BBtus of energy in its goal-subject buildings and 9,620 BBtus in its goal-excluded buildings. Figure 3-3 illustrates recent historical trends in installation energy consumption by DoD Components across goal-subject buildings.

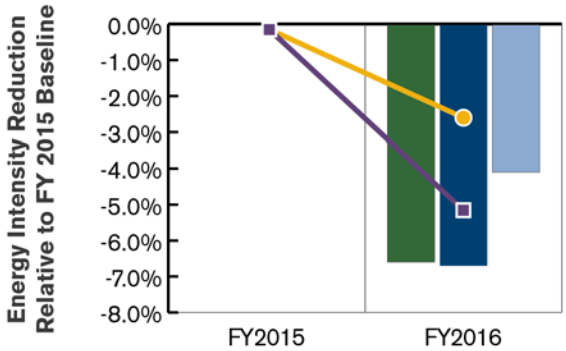
Figure 3-3: FY 2016 Installation Energy Goal Subject Consumption by Military Service



DoD energy intensity has decreased since FY 2003. Figure 3-4 illustrates DoD's and the Military Services' progress toward the E.O. 13693 from the FY 2015 baseline. DoD reduced its energy intensity by 5.1 percent from the new FY 2015 baseline, exceeding the goal of 2.5 percent. While DoD continues to invest in cost-effective energy efficiency and conservation measures to improve goal progress, there will be challenges in future reductions.

[7] The criteria evaluated for excluding facilities include impracticability due to energy intensiveness or national security function, completed energy management reports, compliance with all energy efficiency requirements, or implementation of all cost-effective energy projects in the buildings. This energy intensity section discusses only goal-subject buildings. Source: U.S. DOE, Energy Efficiency and Renewable Energy, Federal Energy Management Program, Guidelines Establishing Criteria for Excluding Buildings [online source] (Washington, D.C., 2006, accessed January 2, 2015), available from http://www1.eere.energy.gov/femp/pdfs/exclusion_criteria.pdf.

Figure 3-4: DoD Energy Intensity E.O. 13693 Goal Attainment[8]



	FY2015	FY2016
DoD	0.0%	-5.1%
Army	0.0%	-6.6%
DoN	0.0%	-6.7%
Air Force	0.0%	-4.1%
EISA 2007 Goal	0.0%	-2.5%

Further, DoD has reported its energy intensity progress to the Department of Energy (DOE) since FY 1975.[9] Since this time, DoD has reduced its energy intensity from 182,153 BBtus/ft^2 in FY 1975 to 93,010 BBtus/ft^2 in FY 2016 (adjusted for on-site renewables and source energy credits), a DoD energy intensity reduction of over 49 percent. Figure 3-5 illustrates historical trends in DoD reductions of energy intensity since FY 1975. These reductions were a result of substantial low- and no-cost energy efficiency and conservation measures that impacted behavioral changes, and project investments such as insulation or lighting upgrades. As similar, viable low- and no-cost energy efficiency and conservation initiatives continue to diminish, DoD will be challenged to make broad reductions in energy intensity. These challenges will become more prevalent as budget reductions continue, and priority is given to short-term payback rather than long-term savings. To continue to make progress toward annual congressional goals, greater focus may be required on more capital-intensive projects over longer timeframes that yield greater life-cycle savings.

[8] The DoD trend line accounts for the Defense Agencies. DoD continues to collect Navy and Marine Corps data separately. In FY 2016, the Navy achieved an intensity reduction of 7.2 percent in FY 2016 while the Marine Corps achieved an intensity reduction of 4.4 percent relative to their FY 2015 baseline.

[9] DOE, Energy Efficiency and Renewable Energy, Federal Energy Management Program, *Comprehensive Annual Energy Data and Sustainability Performance* [online source] (Washington, D.C.,2017, accessed February 13, 2017, available from http://ctsedwweb.ee.doe.gov/Annual/Report/Report.aspx

Figure 3-5: DoD Energy Intensity Progress Since FY 1975

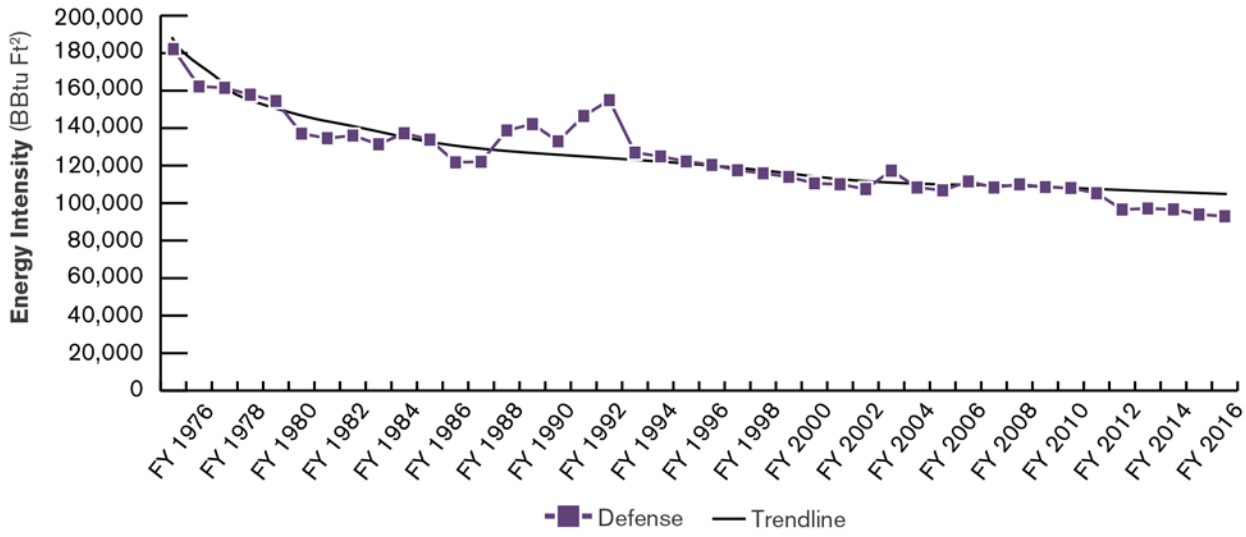


Table 3-1 summarizes annual energy intensity reduction progress across the Department from FY 2008 to FY 2016, as well as FY 2016 reductions from the FY 2003 baseline.

Table 3-1: Energy Intensity by DoD Component

DoD Component	FY 2015 Intensity (Btu/GSF)	FY 2016 Intensity (Btu/GSF)	FY 2016 Reduction Relative to Baseline
DoD	98,021	93,010	-5.1%
Army	86,017	80,329	-6.6%
DON	102,830	95,937	-6.7%
Air Force	110,069	105,503	-4.1%
DCMA	112,121	110,592	-1.4%
DeCA	129,722	126,664	-2.4%
DFAS	70,868	72,365	2.1%
DIA	162,466	152,999	-5.8%
DLA	48,644	46,177	-5.1%
NGA	101,028	107,606	6.5%
NSA	207,743	187,749	-9.6%
WHS	139,173	134,094	-3.6%
NRO	215,093	213,744	-0.6%
MDA	N/A	N/A	N/A

In FY 2010, DoD began to track and report energy consumption and square footage at individual installations. This has allowed the Department to monitor energy intensity by installation as well as at the component level. Appendix E summarizes FY 2016 installation-level data.

Army

In FY 2016, the Army reduced its energy intensity by 6.6 percent from its FY 2015 baseline. It achieved the highest reduction in energy intensity in the history of the program, while continuing its three-year trend in facility energy conservation measures, despite adding seven previously-excluded high-energy-consuming ammunition plants. The Army will continue to identify and implement the most cost-effective Energy Use Intensity (EUI) reductions while still maintaining mission readiness. Progress toward this goal must be considered in the context of the Army's pressing requirement to reduce costly, excess square footage.

The following are examples of energy efficiency projects completed in FY 2016:

- Fort Benning: Utility monitoring and control systems (UMCS), retro-commissioning and lighting projects contributed to a 25 percent reduction from FY 2016 along with transitioning 1.5 MSF of facilities in the Kelly Hill area to caretaker status.
- Fort Detrick: In February 2016, a 15MW solar PV ground-mounted array came on-line, reducing the amount of electricity needed from the utility grid.
- Anniston Army Depot: Achieved a 20 percent reduction in EUI over FY 2015 through lighting improvements and HVAC ECMs and UMCS upgrades.

DON

In FY 2016, the DON reduced its energy intensity by 6.7 percent compared to its FY 2015 baseline. The Navy reduced its energy intensity by 7.2 percent, while the Marine Corps reduced its energy intensity relative to the FY 2015 baseline by 4.5 percent. Both the Navy and the Marine Corps expect progress to continue to reduce its energy intensity in FY 2017 as renewable energy and third-party financed efficiency projects developed and procured during FY 2016 begin coming on-line.

In FY 2016, the Navy and Marine Corps invested approximately $208 million in projects targeting building-level energy conservation measures (e.g., upgrades to lighting, heating and cooling systems, natural gas distribution main upgrades). These investments are expected to help DON continue to reduce its energy intensity. The following are examples of energy efficiency projects in FY 2016:

- The $46.8 million ESPC awarded at Marine Corps Logistics Base (MCLB) Albany, Georgia includes a biomass steam turbine generator, lighting upgrades, HVAC improvements, and PV installation. In addition to implementing renewable assets capable of providing the entire electrical load on the installation, the project will also result in a significantly expanded controls system which will allow centralized monitoring of all generating assets on the installation as well as real-time base-wide load

shedding and peak shaving. This ESPC will result in MCLB Albany having net electricity purchases of $0 every year for the foreseeable future (based on current known load profiles).

- The $4.7 million UESC awarded at Marine Corps Support Facility (MCSF) Blount Island, South Carolina includes high-efficiency lighting retrofits, water conservation measures, infrared space heating, natural gas boilers with domestic hot water replacement, transformer upgrades at 32 buildings, and one 250kW rooftop solar PV array. The total annual payments for all financed projects will be between 29-45 percent of the installation's annual utilities cost.
- MCAS Beaufort, South Carolina awarded a $5.9 million ESPC Enable, which includes an energy conservation measure (ECM) for lighting. The ECM will upgrade existing lighting to LEDs and install motion sensors to selected warehouses' bay lighting. LED lighting will replace conventional exterior lighting at two buildings as well as runway, taxiway, and approach lighting systems.

Air Force

In FY 2016, the Air Force reduced energy intensity by 4.1 percent from its FY 2015 baseline. Energy consumption decreased and square footage increased in FY 2016 for the Air Force.

Key contributors to consumption reduction consistently identified across Air Force installations included aggressive awareness programs and the use of third-party funded (ESPC/UESC) projects. Air Force requested, validated, and executed direct-funded projects using both Sustainment, Restoration, and Modernization (SRM) and ECIP funds. HVAC upgrades and LED lighting were most often noted as contributing technologies. Not as often mentioned but highly commended are recommissioning and, where available, Resource Efficiency Manager (REM) building auditing efforts.

- Tinker Air Force Base (AFB), Oklahoma – the energy team has completed or is in the process of executing several ESPCs and UESCs, supplemented with ECIP and Federal Special Revenue Fund funding, to perform energy conservation upgrades on most of the covered facilities of the entire base. These efforts will enable the base to meet its energy performance goals and enhance mission operations by upgrading existing, aged equipment with modern, energy-efficient, and reliable replacements.
- Joint Base San Antonio, Texas – the installation continues a three pronged strategy to meet energy goals:

  1. Reduce energy and water consumption through conservation projects; and increase renewable and conventional energy generation to enhance security and lower dependence on grid.

  2. Joint Base San Antonio will continue to invest in metering and demand reduction initiatives to enhance control, identify system issues, and flatten demand curve – providing significant energy and financial savings.

3. Joint Base San Antonio will continue to develop and implement behavior and culture change programs to increase awareness in all energy areas.

- Robins AFB, Georgia – the Robins ALC has ramped up its efforts to reduce industrial and process energy consumption associated with depot maintenance. The ALC consumes approximately 60 percent of the total facility energy on Robins. Additionally Robins will continue to partner with Georgia Power to conduct facility energy audits. Audit findings along with recommended improvements provide organizational facility managers with information in preparation of energy projects. Lastly, Robins AFB, together with the Air Force Office of Transformational Innovation (OTI) is in a partnership with Southern Company's Electric Vehicle / Electric Charging Station Pilot Program to study the use of third-party funding in easing budgetary burdens associated with transitioning Air Force fleet vehicles to plug-in electric vehicles.

Defense Agencies

In FY 2016, the Defense Agencies continued to pursue opportunities to reduce energy intensity. Some highlights of successes are included below.

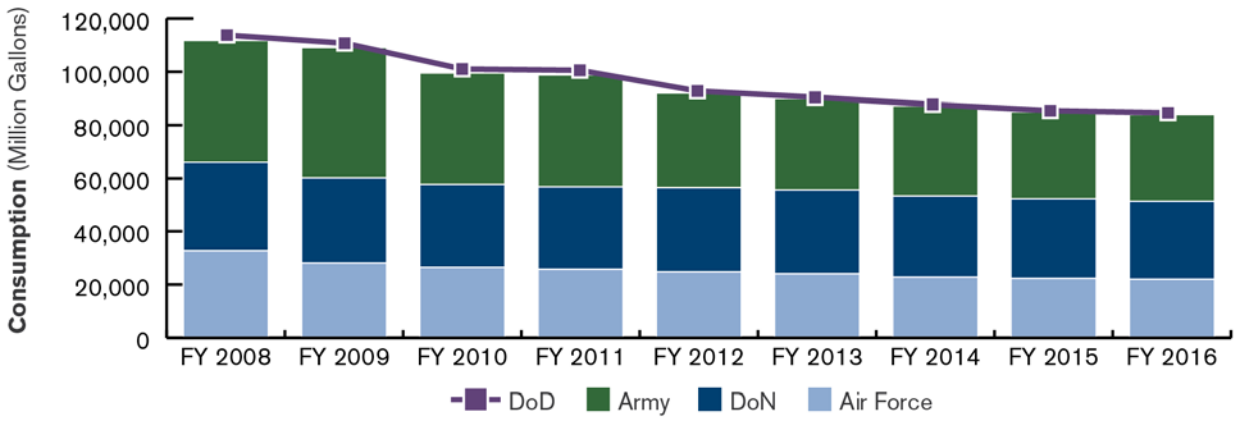
- DLA continued to reduce energy consumption significantly at multiple locations including Defense Supply Center Richmond, Virginia, Defense Distribution Center Susquehanna, Pennsylvania, and Defense Supply Center Columbus, Ohio. These Agencies are realizing savings through a variety of approaches including the demolition of old, inefficient buildings, the widespread replacement of light fixtures with high-efficiency fluorescent and LED bulbs with occupancy sensors, and the replacement of old HVAC systems with high-efficiency upgrades.
- Washington Headquarters Services (WHS) continues its effort to improve the energy performance of the Pentagon. Electricity demand continues to decline due to investments in energy conservation, such as commissioning, recommissioning, outside air reduction, and LED lighting, as well as increased awareness by building maintenance staff to prioritize and track energy efficiency opportunities. These resulted in a 3.2 percent reduction in electricity use in FY 2016 compared to FY 2015, despite an increase in cooling degree days. WHS will expand its efforts to reduce overall heating energy at the Pentagon, which decreased slightly (0.5 percent) in FY 2016 compared to FY 2015 by implementing a steam pipe insulation project.

Potable Water Consumption and Intensity

EO 13693 requires that Federal agencies achieve a potable water intensity reduction goal of 36 percent by FY 2025 relative to the FY 2007 baseline. DoD potable water consumption has been decreasing since FY 2008. In FY 2016, DoD facilities consumed 85.5 billion gallons of potable water (Figure 3-6), with the Military Departments accounting for over 98 percent of total DoD potable water consumption.

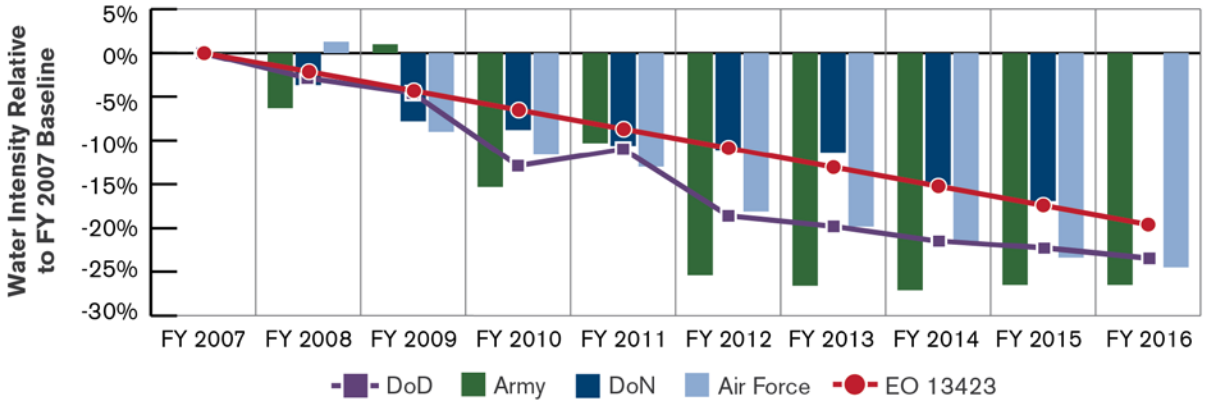
> ***Potable Water*** *includes water purchased from a utility (water) provider and all fresh water (e.g., well and streams) treated and added to the domestic (for human consumption) system.*

Figure 3-6: DoD Potable Water Consumption FY 2008 – FY 2016



DoD's potable water intensity in FY 2015 was 23.5 percent below its FY 2007 baseline (Figure 3-7), exceeding the 16 percent reduction goal.

Figure 3-7: DoD Water Intensity EO 13693Goal Attainment – FY 2016



Army
In FY 2016, Army's potable water intensity was 26.5 percent below the FY 2007 baseline. The Army is ahead of schedule to reduce its potable water intensity by 26 percent by FY 2020 and is currently 8.5 percent ahead of the FY 2016 target.

The Army's continuing success in water use reduction can be attributed to the implementation of water conservation measures and best management practices at the installations. The Net Zero Water success stories are being shared across the Army landholding commands. Fort Carson, Colorado has been particularly successful at implementing water efficiency projects. Using their existing ESPC program, Fort Carson retrofitted nearly 200 buildings with high-efficiency plumbing fixtures. The installation also implemented an advanced irrigation control system that uses weather data to optimize the irrigation schedule. These efforts have helped Fort Carson reduce water consumption by 208 million gallons since FY 2011, achieving a 47 percent reduction in site water use intensity.

In addition, the Army's robust utilities privatization program improves the reliability of Army water systems, which minimizes potential disruption to operations. It also contributes to saving 4 million gallons of water each year. The Army has privatized 40 water systems to date.

DON
In FY 2016, DON's potable water intensity was 23.5 percent below the FY 2007 baseline. This high level of performance is driven by the Marine Corps, with a reduction of more than 37.3 percent from its 2007 baseline.

The Navy's potable water intensity was 12.3 percent below its FY 2007 baseline. Although DON was below the 18 percent reduction target, the Navy is stepping up its focus on water conservation, particularly in areas that are interdependent with water.

- At Naval Shipyard Portsmouth Virginia, an on-going water leak was finally repaired, reducing the shipyard's water consumption by 500,000 gallons a day. The location of the leak had been previously deemed inaccessible due to structural issues with the bridge abutment in question, but a recent bridge replacement project afforded the installation the opportunity to access the line and repair the damage, thereby resulting in significant water reduction.
- At Pacific Missile Range Facilities Barking Sands, Hawaii, high-efficiency faucet aerators were deployed in restrooms to conserve water.
- A UESC was awarded for conservation measures in 43 facilities at Naval Air Station Pensacola, Florida, which will result not only in energy savings but annual potable water savings of more than 42 million gallons
- DON kicked off a water-energy nexus initiative to examine water supply issues that affect DON installations and associated critical infrastructure. The analysis will consider existing and potential installation water resources, requirements for ensuring continued

viability of distribution systems, and market conditions affecting water resources and business transactions.

Air Force

In FY 2016, Air Force potable water intensity was 24.5 percent below the FY 2007 baseline. The Air Force exceeded its FY 2016 goal through leak detection and infrastructure repair, fixture replacement and upgrade, irrigation system disconnection, and using non-potable water sources for ILA water use.

Installation inputs indicate standard practices continue to support water conservation efforts. The primary factors include: (1) leak detection and infrastructure repair, (2) fixture replacement and upgrade, (3) moving toward xeriscaping; and (4) using non-potable sources whenever possible. Several water districts and utility companies around the country have initiated watering restrictions, which aid in goal achievement. By focusing on the above areas, along with other water conservation initiatives, the Air Force will continue to meet water conservation goals.

The following are specific improvements indicative of efforts around the Air Force:

- Joint Base McGuire-Dix-Lakehurst, New Jersey is installing two water wells and repairing water distribution and treatment systems to secure a more resilient water supply.
- Fairchild AFB, Washington installed a smart irrigation system, reduced fully landscaped grounds, and are investigating turfgrass.
- Vandenberg AFB, California has reduced irrigation requirements and encourages smart use of water resources through awareness programs.
- Patrick AFB, Florida is separating miles of joint potable/fire water piping with smaller separate pipe to reduce the amount of water required to flush fire lines.
- Holloman AFB, New Mexico requires all new facilities and remodels to install low flow and water saving fixtures.
- MacDill AFB, Florida repaired a leaking base swimming pool and has drastically cut irrigation.

The Air Force will continue to emphasize water conservation awareness through Energy Action Month (October) and various other educational and public awareness avenues. Many bases that produce potable water from fresh water sources reported that water costs are significantly less than if potable water is purchased.

Defense Agencies

In FY 2016, Defense Agencies reduced their potable water intensity from the FY 2007 baseline and continued to pursue opportunities to reduce potable water intensity.

- DeCA Design Criteria requires low-flow toilets and urinals with electronic flush sensors for new and renovated commissaries. Electronic sensor control valves are specified on

hand-wash lavatories. At locations where host installations maintain "waterless" urinals, the projects may include the "waterless" urinals.

- Defense Intelligence Agency (DIA) completed an installation of low-flow bathroom fixtures and urinals throughout its HQ campus, contributing significantly to water reductions at that location.

Industrial, Landscaping, and Agricultural (ILA) Water Consumption

In FY 2009, EO 13514 established a new water reduction goal. The goal requires Federal agencies to reduce ILA water consumption by 2 percent annually, or 20 percent by FY 2020, relative to an FY 2010 baseline. This was extended through 2025 in EO 13693, which is effective FY 2016. In FY 2015, DoD established supplemental guidance for Components to establish a baseline, and measure and estimate ILA water use that sets Components' baseline year to FY 2016 as opposed to EO 13693's baseline year of 2010.

ILA Water includes naturally occurring water (e.g., lake, well, river water that is not treated [fresh]) used in an ILA application. ILA also includes any non-potable water purchased from a third party.

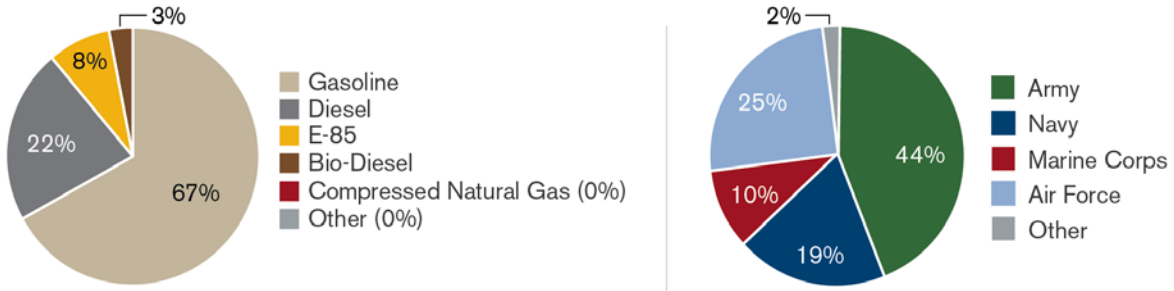
The Components continue to use standard methods to measure ILA consumption and identify strategies to reduce use. Projects such as xeriscaping, converting water-wash filtering systems to a dry filter system, and renovating athletic fields with artificial turf are being implemented across the Services. Policy changes to promote more efficient irrigation and mirroring local utilities by adopting water restrictions have enabled DoD to make strides in reducing consumption.

Non-Tactical Fleet Vehicle Petroleum Consumption

EO 13693 requires Federal agencies to reduce per-mile GHG emissions 30 percent by FY 2025 from a FY 2014 baseline. This requirement, along with alternative fuel progress, is reported in the DoD Strategic Sustainability Performance Plan (SSPP). Fleet vehicle fuel consumption in FY 2016 accounted for about 4.7 percent of DoD's installation energy consumption. The energy mix consisted of 67 percent gasoline, 22 percent diesel, and the remainder was alternative fuels. The Military Services accounted for slightly more than 98 percent of the Department's petroleum consumption (Figure 3-8).[10]

[10] "Other" category includes the Defense Agencies.

Figure 3-8: FY 2016 Fleet Vehicle Petroleum Consumption



In FY 2016, DoD fleet vehicles consumed 73.6 million gallons of gasoline equivalent (GGE), which includes gasoline and diesel/biodiesel blends. The mix of petroleum fuel types has remained relatively stable over the past seven years, and the use of alternative fuel vehicles (AFVs) has steadily increased. In FY 2016, 8 percent of the total fleet vehicle consumption was from alternative fuels, an increase over the 2005 baseline of 2.2 percent. Alternative fuels include biodiesel, compressed natural gas (CNG), 85 percent ethanol fuel (E85), and hydrogen. DoD continues to pursue replacement of fleet vehicles with more efficient models, AFVs, and hybrid-electric vehicles to decrease petroleum consumption.

Army

The Army is optimizing its NTV fleet annually through the Vehicle Allocation Methodology (VAM)/ Vehicle Utilization Review Board process. Every NTV not meeting utilization goals must be validated and approved by the Senior Commander for retention. The strategy is to replace passenger vehicles meeting age or mileage criteria with hybrid, plug-in hybrid, or zero emission vehicles. Buses and larger trucks are being replaced with CNG or LPG vehicles. This strategy facilitates fossil fuel reduction and lowers greenhouse gas emissions in the most economical and mission-effective manner. Army is utilizing a team of experts from the Federal Energy Management Program to conduct installation site surveys for properly locating electric vehicle charging infrastructure. Site surveys are considering current requirements and an estimate of future requirements to FY 2030.

DON

In FY 2016, the Navy continued its aggressive approach to reducing petroleum consumption and GHG emissions. NAVFAC established and filled a new Echelon II position, Program Manager, Alternative Fuel Vehicles, to provide focused oversight on achieving its NTV fleet energy goals. The Navy initiated Phase II of the agency's electric vehicle support equipment (EVSE) infrastructure development projects by hosting project kick-off meetings at Facility Engineering Commands (FEC) Northwest, Washington, Mid-Atlantic, Marianas, and Hawaii. FEC Southwest finalized an EV lease contract for up to 430 assets with deliveries scheduled throughout the first two quarters of FY 2017. Phase II projects continue to focus on zero-emission vehicle states such as California to enhance opportunities for taking advantage of state

and Federal incentives. A car-sharing study was completed at FEC Southeast to identify key opportunities at NAS Jacksonville, Florida for reducing its NTV fleet and maximizing asset utilization through this strategic mobility initiative. In addition, the Navy completed its goal of disposing of more than 1,300 excess vehicles from its inventory.

In FY 2016, The United States Marine Corps (USMC) established a Mobility Transformation Working Group that engaged with the transportation industry to define mobility best practices and adopt leading transportation technologies. The ultimate goal is to employ a holistic approach that transforms mobility from 1) just-in-case to just-in-time transportation, 2) fossil fuel to alternative fuel, and 3) owned/assigned to shared vehicles - all while achieving energy mandates and meeting non-tactical vehicle requirements at all Marine Corps installations.

Air Force

The Air Force has centralized the cradle-to-grave supply-chain management of the registered fleet in order optimize mission support capabilities while maximizing utilization and utility of the fleet. Air Force fleet managers are actively implementing best practice and programs to reduce vehicle usage and fuel consumption primarily through the employment of the Fleet Management Decision Support System and Vehicle Validations. In FY 2016 the Air Force "right-typed" more than 415 vehicle authorization at 19 Air Force bases and reduced or right-sized 11 percent of the vehicle fleets. These actions saved over $66 million in capitalization and sustainment costs without the loss of mission capability or fidelity.

The Air Force is pursuing technology development and deployment to support missions world-wide in a manner that is economically sustainable while also supporting goals to reduce petroleum and GHG emissions. Telematics on over 25,000 vehicles at 171 Air Force locations in the United States and Europe have helped to identify inefficient behaviors, like idling, which has the potential to save approximately $6.8 million annually in total fuel cost. Other fuel saving technology demonstrations include: converting existing vehicles from conventional fuel to LPG fuel; installing idle reduction technology for Security Forces vehicles to maintain auxiliary functions and climate controls without constant engine combustion; and hybrid-electric conversion for specialized aircraft towing and aircraft pallet loading vehicular equipment which could lead to a significant increases in MPG and allow for possible alternative fuel source (electric) in austere deployed locations.

Defense Agencies

In FY 2016, the Defense Agencies accounted for less than 5 percent of DoD fleet petroleum consumption and continued to pursue opportunities to reduce petroleum consumption.

- DIA has exceeded its fuel reduction requirement by reducing the amount of miles driven by its vehicles, along with replacing many of its larger sedans with more fuel-efficient vehicles. In FY 2016, DIA increased its inventory of hybrid-electric vehicles by 20 percent, and increased the number of its compact and subcompact vehicles by 10 percent.

- DLA continues to make positive efforts in consumption of vehicle petroleum use. Columbus and Richmond successfully focused on reducing their overall consumption of petroleum fuels by 37.7 percent and 16.35 percent, respectively, compared to FY 2015. San Joaquin has reduced its fleet vehicle count by 5.4 percent in FY 2016. Susquehanna has increased its use of electric vehicles and hybrids.

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4. Increasing DoD's Distributed (On-site) and Renewable Energy Resources

In addition to reducing facility energy demand, DoD is increasing the supply of distributed (on-site) and renewable energy on installations. DoD continues to invest in cost-effective renewable and distributed energy solutions. DoD's strategy considers not only the cost-effectiveness of renewable and distributed energy solutions, but also the energy resilience benefits to help achieve mission assurance.

DoD Renewable Energy Performance

As DoD pursues renewable energy to advance its energy resilience, it also seeks to comply with legal requirements to increase its renewable energy supply. The Department is subject to two renewable energy goals 1) 10 U.S.C. § 2911(e) and 2) Section 203 of the Energy Policy Act (EPAct) 2005 (42 U.S.C. §15852). In addition, the Departments of the Army, Navy, and Air Force have each established Service-level goals of 1GW of renewable energy on or near their installations.

Title 10, U.S.C. §2911(e) established a goal for DoD to produce or procure not less than 15 percent by FY 2018[11] and 25 percent of the total quantity of facility energy it consumes within its facilities by FY 2025 and each fiscal year thereafter from renewable energy sources. DoD's progress toward the 10 U.S.C. § 2911(e) renewable energy goal in FY 2016 was 12.6 percent.

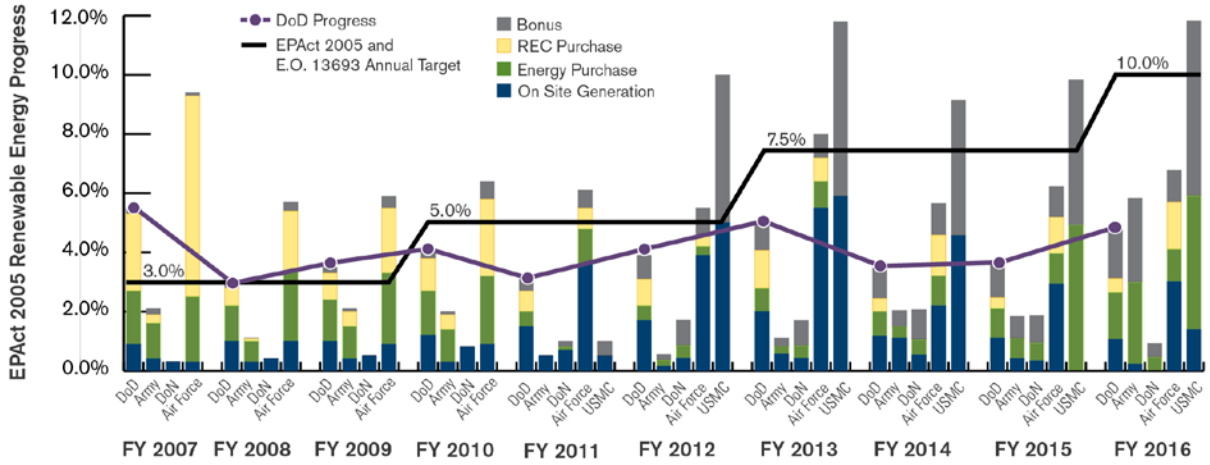
The EPAct 2005 goal considers total renewable electricity consumption as a percentage of total facility electricity consumption, with the goal of 7.5 percent by 2015. EO 13693 continued and extended the EPAct goal to 25 percent by 2025 with the intermediate goal for FY 2016 set at 10 percent. In FY 2016, DoD did not achieve the EPAct or EO 13693 goals. Renewable electricity consumption subject to these requirements was 4.8 percent of DoD's total electricity consumption, falling short of the 10 percent goal (Figure 4-1).

[11] This interim renewable energy goal was established as part of the Energy Performance Master Plan in the FY 2011 AEMR. See Appendix C for details on DoD energy goals.

Table 4-1: Renewable Energy Goals: Understanding the Differences between EPAct 2005, 10 U.S.C. 2911(e), and the DoD 3 GW Initiative[12]

	EPAct 2005/E.O. 13693 Goal	10 U.S.C. §2911(e) Goal	DoD 3 GW Initiative
Measure	5 percent in FY 2010-2012 7.5 percent in FY 2013 onwards (EPAct 2005), 10 percent by 2016 (E.O. 13693)	15 percent by FY 2015 25 percent by FY 2025	3 GW of Renewable Capacity by FY 2025
Unbundled Renewable Energy Credits (RECs) Purchases	Yes	No	No
Renewable Energy Purchases	Yes	Yes	Yes

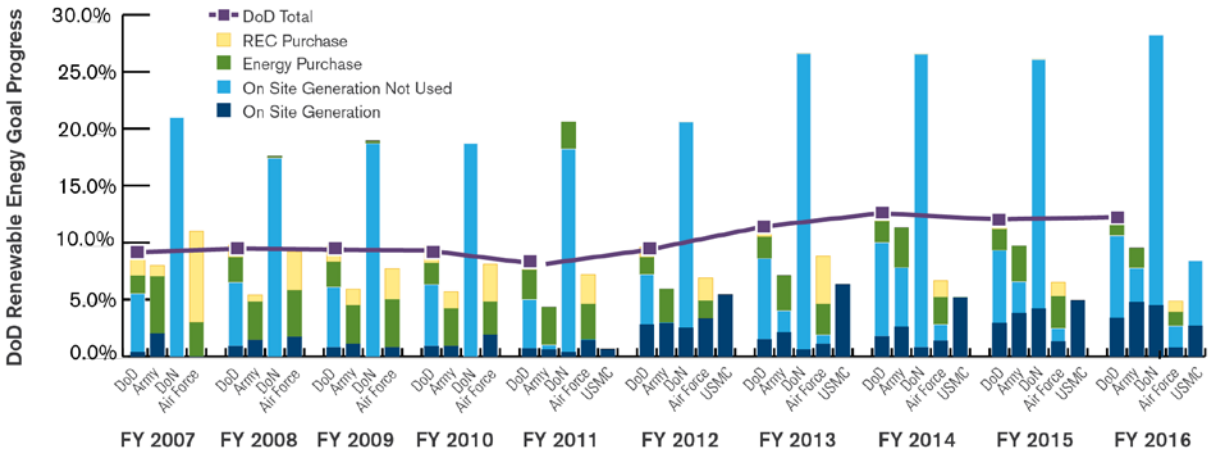
Figure 4-1: EPAct 2005 and E.O. 13693 Renewable Energy Goal Attainment



DoD continued to make progress in achieving the 10 U.S.C. §2911(e) FY 2018 interim and FY 2025 renewable energy goals (Figure 4-2).

[12] Each Service has an independent target year for its 1 GW goal attainment. EO 13693 extended the EPAct goal to 25 percent by 2025 with the intermediate goal for FY 2016 set at 10 percent.

Figure 4-2: 10 U.S.C. §2911(e) Renewable Energy Goal



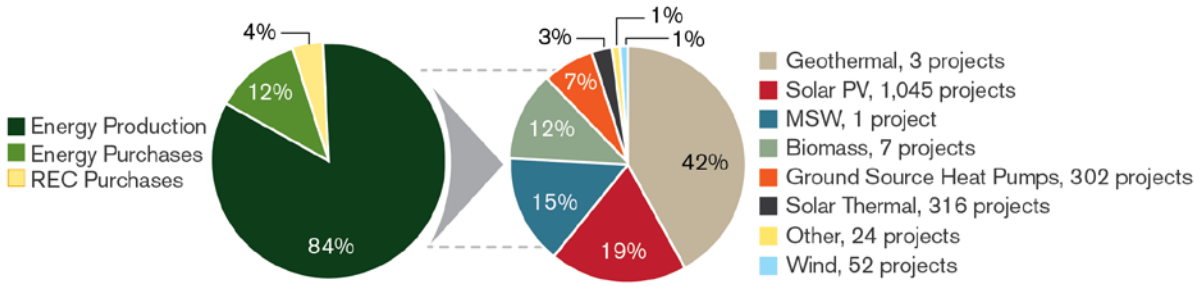
The Department uses various authorities to increase the supply of distributed (on-site) and renewable energy sources on its installations. DoD uses both appropriated funds and non-Governmental (often referred to as 'third-party') financing to pursue renewable energy projects. DoD partners with private entities to enable the development of large-scale renewable (or other distributed) energy projects and relies on congressional appropriations to fund cost-effective, small-scale distributed generation projects. The main authorities utilized to pursue third-party financing of renewable energy projects are Utility Service Contracts (USCs), Power Purchase Agreements (PPAs), and outgrants (Table 4-2). Title 10, U.S.C., §2922(a) and 2667 are not limited to renewable energy sources and can also be used for non-renewable energy sources such as natural gas and other fuel types. Title 10, U.S.C., §2410(q) is limited to renewable energy sources.

Table 4-2: Funding Mechanisms

Funding Mechanism	Authority	Definition
Utility Service Contracts (USCs)	10 U.S.C. § 2410q	A contract enabling the DoD to enter into agreements for the provision and operation of energy production facilities and the purchase of energy from such facilities.
Power Purchase Agreement (PPA)	10 U.S.C. § 2922(a)	An agreement enabling the DoD to enter into a contract for the purchase of electricity from sources of renewable energy.
Energy Enhanced Use Leases (EULs)	10 U.S.C. § 2667	An EUL for the production of energy allows an installation to lease land to a lessee in return for cash or in-kind contributions. For renewable energy projects that use the authority found under 10 U.S.C. § 2667, DoD requires that the Military Department demonstrate more than a mere passive activity. For production or procurement of facility energy to qualify as being consistent with the DoD energy performance goals and master plan (and consequently qualify for an energy certification), DoD must do one of the following– • Consumption by the DoD Component of some or all of the facility energy from the project; • Structure the project to provide energy security for the installation by, e.g., retaining the right to divert to the installation the energy produced by the project in times of emergency; • Reinvestment in renewable facility energy or program conservation measures of a minimum of 50 percent of proceeds (including both in-kind and cash) from any lease.

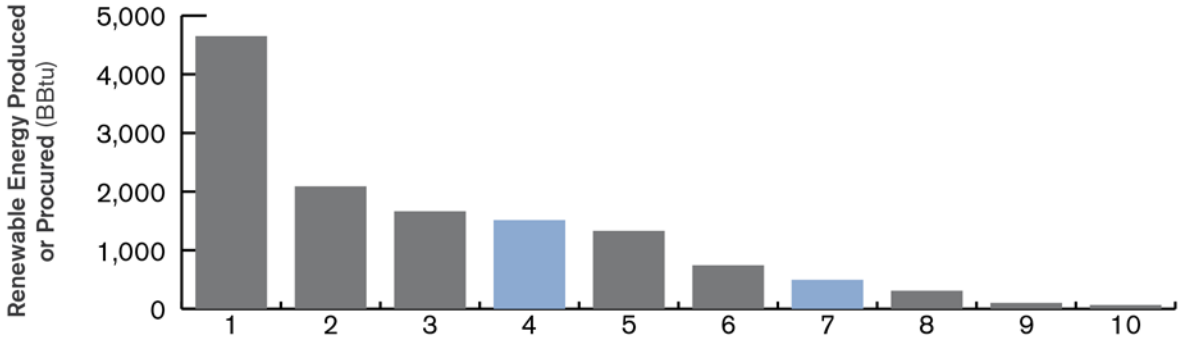
In FY 2016, DoD had over 1,631 active renewable energy projects, compared to approximately 1,390 reported in FY 2015. The 1,631 projects generated over 10,961 BBtus in FY 2016, which represents 84 percent of the total amount of renewable energy produced or procured. From these projects and with purchases of renewable energy and RECs, which represent 12 percent and 4 percent of the total supply mix, respectively. DoD produced or procured approximately 12,900 BBtus of renewable energy in FY 2016. Geothermal electric power is by far the most significant renewable energy source in DoD, accounting for over 43 percent of the Department's renewable energy generation portfolio. Biomass makes up about 13 percent of DoD's renewable supply mix. Municipal solid waste (MSW) is used for both electricity and steam production, and accounts for 16 percent of the Department's renewable energy production. There are 992 solar photovoltaic (PV) systems throughout DoD that contribute approximately 20 percent of the total renewable energy produced, followed by 302 ground source heat pump (GSHP) projects contributing approximately 7 percent to the supply mix. Figure 4-3 illustrates DoD's renewable energy supply mix by technology type.

Figure 4-3: DoD Renewable Energy Supply Mix by Technology Type in FY 2016



The largest renewable energy project in DoD is the Navy's China Lake geothermal power plant in California. The second largest renewable energy project in DoD is a waste-to-energy project at the Norfolk Naval Shipyard (NNSY) in Virginia that produces both electricity and steam. The largest project to come online in FY 2016 was the Army's 30 MW solar PV facility at Fort Benning. DoD Components also continue to implement numerous smaller renewable energy projects. Figure 4-4 shows the breakout of renewable energy projects by source of energy.

Figure 4-4: DoD Renewable Energy Projects in FY 2016



	Renewable Energy Projects	BBtu
1	Geothermal, 3 projects	4,651
2	Solar PV, 1,045 projects	2,091
3	MSW, 1 project	1,664
4	Renewable Energy Purchases	1,514
5	Biomass, 7 projects	1,332
6	Ground Source Heat Pumps, 302 projects	743
7	REC Purchases	496
8	Solar Thermal, 316 projects	310
9	Other, 24 projects	102
10	Wind, 52 projects	67

Army

In FY 2016, the Army did not achieve the EO 13693 renewable energy goal, consuming 5.8 percent of electricity from renewable energy sources. Performance toward the 2911(e) goal decreased, producing or procuring 9.5 percent of its electricity from renewable energy sources. This reduction is primarily due to reporting errors in FY 2015.

The Army added 93.6 MW of renewable energy capacity in FY 2016 through 32 new projects for a total of 252.5 MW, a 58.9 percent increase from FY 2015. This is the highest one-year addition in the history of the Army. The total percentage of renewable electric energy eligible toward the EO 13693 goal increased from 1.8 percent in FY 2016 to 5.8 percent. In FY 2016, GSHP were categorized as renewable electricity, which resulted 118 GSHPs systems attributing toward this goal.

The reduced progress toward the Title 10 renewable energy goal is also a result of the Army's continued emphasis to discontinue contracts for the purchase of green power, since those contracts do not strategically benefit the Army. To improve reporting accuracy, the Army is revising the Army Energy Manager training program and is developing reporting tools (such as an RE production calculator) to assist energy managers and improve reporting in FY 2017. Finally, despite the large increase in generation capacity, most of these projects only produced power for a few months during the reporting period. These projects, coupled with over 100 MW of additional projects expected to come online in FY 2017, will deliver continued success for the Army's renewable energy programs.

As the Army employs the ES2 Strategy to assure access to mission critical operations and build resiliency in the Army's energy supplies, deployment of renewable energy on Army land is essential. Renewable energy provides a means to diversify supply at installations. Securing reliable energy supplies to support the Army's mission at a predictable cost over the long term is a primary goal of the Army's renewable energy strategy. In FY 2016, the Army added 45 MW of renewable energy capacity through a variety of programs that leverage private financing, such as PPAs, Enhanced Use Leases (EULs), or General Services Administration (GSA) area-wide utility contracts. The Army also installed 9.8 MW of renewable energy through its Residential Communities Initiative. Finally, 3.5 MW of renewable electric generation was brought online through ECIP projects. The Army's investment in all programs will result in a surge in large-scale renewable energy projects in FY 2017. The Army is on track to meet the 1 GW commitment by the end of FY 2025. One key feature of these projects is that all are designed with an on-site power production capacity to enhance energy assurance and resilience to our installations. The Army has no plans to procure substantial off-site green energy without some form of energy security enhancement.

DON

In FY 2016, Navy did not achieve the EO 13693 renewable electricity annual target of 10 percent, consuming only 0.9 percent of electricity from renewable energy sources for the year. The Marine Corps progress toward meeting the EO 13693 target was 11.8 percent. The Navy's

performance regarding the renewable electricity goal is a function of the strategic decision to allow other parties to monetize the value of RECs associated with its financed energy projects. Because REC ownership is a requirement to claim credit towards the EO 13693 renewable electricity goal, the Navy is unlikely to show significant progress towards this particular goal despite intensive efforts to facilitate renewable energy production and consumption on, and for, its installations.

Finally, the DON continued to make exceptional progress against the DoD renewable goal established in Title 10, U.S.C. § 2911(e). In FY 2016, the Navy produced or procured 28 percent of renewable energy relative to electricity consumed. This contributed to DON's overall progress of 24 percent. This marks the fourth consecutive year the Navy has achieved the 25 percent target of 2911(e). The Marine Corps produced or procured 8.6 percent of renewable energy relative to electricity consumed.

Air Force

In FY 2016, the Air Force produced or procured 6.8 percent of its total electrical consumption from RE sources in accordance to the EO 13693 renewable energy goal. This is a 35,374 megawatt hours (MWh) increase from FY 2015 consumption levels of 581,550 MWh. The Air Force performance against the 10 U.S.C. § 2911(e) goal was 7.9 percent. At the end of FY 2016, the Air Force had 333 renewable energy projects on 116 sites, either in operation or under construction, using a variety of project delivery methods including PPA, EUL, ECIP, and Military Construction (MILCON).

The Air Force continues to actively pursue renewable energy where applicable to enhance mission assurance as an alternate distributed energy generation source.

Opportunities to incorporate renewable energy on Air Force installations to meet mission needs continue to be a major focus. A prime example is the development and construction of the Air Force's largest solar project, a 19.0 MW array at Nellis AFB, Nevada. Combined with the existing 14.2 MW solar photovoltaic (PV) array, RE accounts for 38 percent of energy usage at Nellis. A 16.4 MW solar PV array was also constructed at Davis Monthan AFB, Arizona using a third-party Power Purchase Agreement (PPA) contract mechanism. In addition, a 3.4 MW wind project was constructed at Cape Cod AFS, Massachussetts using ECIP funds. A 20 MW solar PV array at the Air Force Plant 42, Palmdale, California was installed by a third party on Air Force leased property. All power generated by the developer from AF Plant 42 array is sold into the California market. A 10 MW solar PV EUL project is operating at Luke AFB, Arizona.

Defense Agencies

The Defense Agencies continue to implement renewable energy projects on their facilities. In many cases, Defense Agencies operate in individual buildings rather than campuses or installations, limiting their ability to implement renewable energy projects. However, Defense Agencies continue to consider cost-effective, small-scale, and distributed renewable energy generation. For example, DIA's primary renewable energy initiative in FY 2016 was to

complete the 500 KW roof-mounted solar PV array as part of the ESPC that was executed at the DIA campus in Washington, DC. Under the terms of the contract, DIA will purchase power generated by the solar panels from the ESPC contractor at a price competitive with grid electricity.

5. Enhancing Energy Resilience

> *Per DoDI 4170.11,* **energy resilience** *is the ability to prepare for and recover from energy disruptions that impact mission assurance on military installations.*

The Department must be prepared for and have the ability to recover from utility disruptions that impact mission assurance on its installations. DoD relies on commercial power to conduct missions from its installations and these commercial power supplies can be threatened by natural hazards and other events. DoD recognizes that such events could result in power outages affecting critical DoD missions involving power projection, defense of the homeland, or operations conducted at installations in the United States directly supporting warfighting missions overseas. Therefore, it is critical for installation commanders to understand the vulnerabilities and risk of power disruptions that can impact mission assurance. DoD publishes the status of its energy resilience program at the following: http://www.acq.osd.mil/eie/IE/FEP_Energy_Resilience.html.

Energy resilience can be achieved in a variety of ways, including redundant power supplies (generators); integrated or distributed fossil, alternative, or renewable energy technologies; microgrid applications including storage; diversified or alternate fuel supplies; upgrading, replacing, operating, maintaining, or testing current energy generation systems, infrastructure, and equipment; as well as mission alternative such as reconstitution or mission-to-mission redundancy.

As part of its energy resilience strategy, DoD pursued a change to Department of Defense Instruction (DoDI) 4170.11, "Installation Energy Management." This change revised and enhanced energy resilience requirements and guidance for DoD installations. The intent of these revisions were to reinforce and standardize installations' approach to establishing energy resilience for critical mission operations. The update includes the requirement for DoD Components to define their critical energy requirements, and align appropriate practices and resources to ensure that these requirements are met. Practices include routine testing of emergency and stand-by generators and planning for future energy resilience enhancements.

Reporting Requirements

Title 10, U.S.C. §2925(a)(2), requires the reporting of utility outages at military installations. The following discussion addresses 10 U.S.C. §2925(a)(2).

In FY 2016, DoD conducted a survey of utility outages on military installations resulting from external and internal commercial utility interruption of its electric, gas, and water utilities. DoD Components reported approximately 701 utility outages that lasted eight hours or longer in FY 2016, an increase from the 127 events reported in FY 2015. A majority of these utility outages were a result of electric disruptions, and included United States and overseas locations.

The increase in outage data was expanded from FY 2015 to include outages that were mitigated by backup power, and also included on-base utility outages on DoD-owned infrastructure. For this reason, as well as a higher incidence of reporting, the number and costs of reported events also increased significantly from FY 2015 to FY 2016. In addition, the length and expense associated with certain isolated but unusually large events also increased. The collective financial impact of these utility outages was approximately $500,000 per day[13], largely impacted by single isolated events.

Table 5-1 shows the average cost of utility outages per day for data collected from FY 2013 to FY 2016.

Table 5-1: FY 2013 – FY 2016 Cost Per Day of DoD Utility Outages[14]

Cost of Utility Outages ($000/day)			
FY 2013	FY 2014	FY 2015	FY 2016
$225	$246	$179	$500

These utility outage costs could be incorporated into business case and cost-benefit decisions when pursuing energy resilience projects. However, business case and cost-benefit decisions should not be limited to the cost avoidance of remediation actions associated with utility outages. DoD continues to identify other benefits associated with enhancing energy resilience. These benefits will consider a life-cycle cost analysis approach to reviewing various energy resilience solutions. For example, DoD is quantifying costs associated with traditional standby generators, maintenance, fuel, infrastructure, and equipment, and reliability savings associated with pursuing more cost effective resilience solutions. Further, DoD continues to review financial benefits associated with peak shaving, demand response, and ancillary services markets.

In FY 2016, the mitigation efforts associated with DoD utility outages included upgrading infrastructure, increasing servicing efforts with the local utility, and pursuit of emergency or redundant power supplies such as backup generators. These utility outages were caused by acts of nature, equipment failure, or planned maintenance. In FY 2016, equipment failure (e.g., reliability or mechanical issues) accounted for 45 percent of the reported utility outages, 42 percent were caused by planned maintenance, and the remaining outages were caused by acts of nature (e.g., weather, storms). The remaining 2 percent were considered "other" since they did not fall under these categories. For example, one incident was the power outage which occurred in Turkey, and three others were categorized as vehicle accidents causing power outages (Figure 5-1). In FY 2014 and FY 2015, the majority of outages resulted from reliability concerns (equipment failure) since there were no major storms or other events that year. The June 2012

[13] This figure is developed from utility outages that had reported financial impacts in FY 2016.

[14] These figures are developed from utility outages that were reported with financial impacts in FY 2012 – FY 2016.

derecho storms in the Mid-Atlantic States and Hurricane Sandy (in FY 2013) contributed to a larger proportion of outages resulting from natural events in those years.

Figure 5-1: FY 2016 Utility Outages by Cause

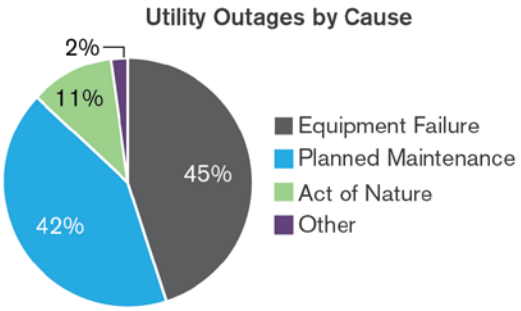
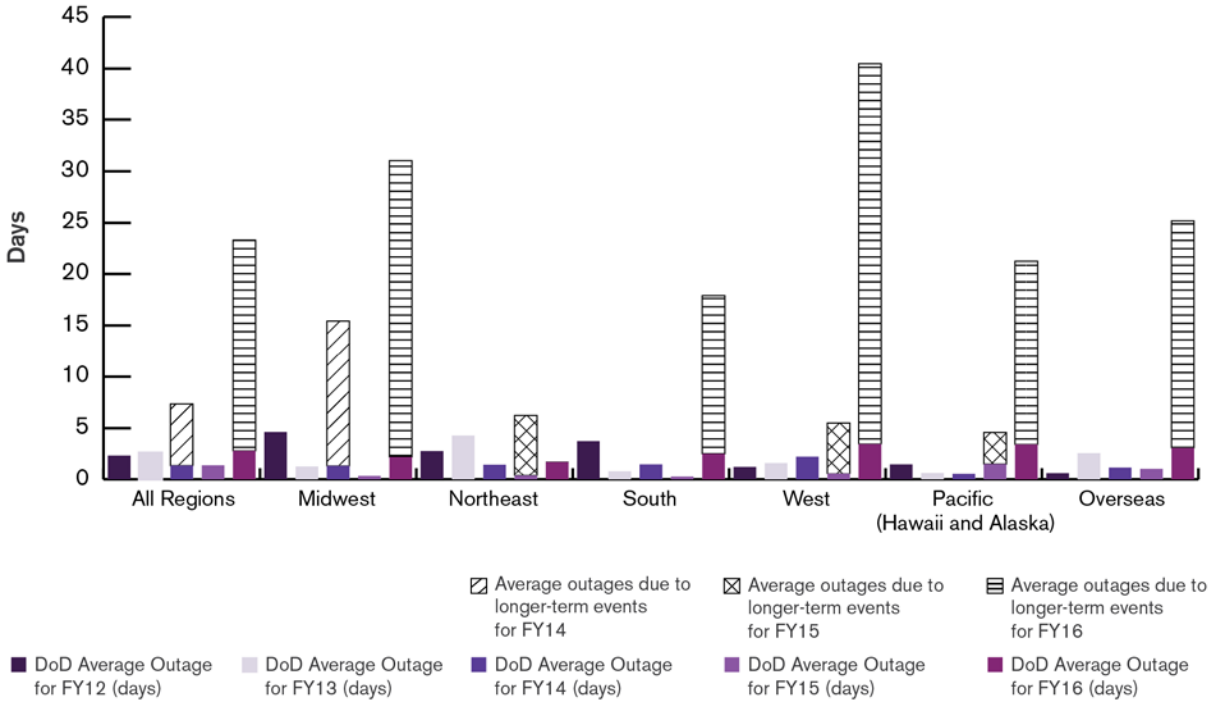


Figure 5-2 captures the average disruption time across the reported utility outages (planned and unplanned) by region (in days) from FY 2012 – 2016. In FY 2016, the average disruption time for all utility outages was 1.5 days. Although average outage duration decreased from FY 2015, the overall number of outages increased. As in FY 2014 and FY 2015, there were several outliers, including an 80-day natural gas outage in one location resulting from an accidental pipeline breach, which skewed average outage duration significantly upward. These outages were primarily the consequence of equipment failures.

Figure 5-2: Average Time for Utility Outages by Region—FY 2012 to FY 2016[15]



The 10 U.S.C. §2925 analysis results help support on-going energy resilience initiatives that address near-term concerns associated with acts of nature, equipment failure, and planned maintenance, which support a comprehensive understanding of addressing risks to mission requirements. Further, these results provide some clarity that the majority of utility disruptions since DoD began collecting outage data are of shorter duration (e.g., 1 to 3 days), but that there are specific instances where natural or reliability issues have caused isolated outages of significantly longer duration.

[15]Regions used herein align to those established by the U.S. Census Bureau. The Pacific division was separated out of the West region for analysis purposes. Census regions and divisions of the U.S are available from https://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf.

Additional Reporting Requirements

Energy Resilience Metrics. The Senate Armed Services Committee (SASC) Report, page 110 of the NDAA for FY 2017 required the Secretary of Defense to report to the congressional defense committees no later than March 30, 2017 with established metrics to evaluate the costs, risks, and benefits associated with energy resiliency and mission assurance against energy supply disruptions on military facilities and installations. The OASD(EI&E) commissioned a study to investigate business case analysis approaches for energy resilience with the Massachusetts Institute of Technology – Lincoln Laboratory (MIT-LL). An important objective of the study was to identify energy projects that improve energy resilience and are cost effective on military installations. The study considered broad, cost-effective energy resilience solutions to improve mission assurance on military installations. This study can be found at the following: https://www.ll.mit.edu/mission/engineering/Publications/TR-1216.pdf.

Guidance on the Modernization of Emergency Power Generation. The SASC Report, on page 118 of the NDAA for FY 2017 required the Secretary of Defense to report to the congressional defense committees no later than March 1, 2017, with a comprehensive strategy, including a development and implementation plan, that replaces or improves emergency power generation readiness, reduces system maintenance, and improves fuel flexibility to ensure the sustainability of all Department emergency power generation systems in operation. On March 17, 2017, the Deputy Assistant Secretary of Defense for Installation Energy (DASD(IE)) released an Energy Resilience: Operations, Maintenance, and Testing (OM&T) Strategy and Implementation Guidance to comply with this reporting requirement. These documents will be delivered to the defense committees in a separate annex. The memorandum authorizing the release of the Energy Resilience: OM&T Strategy and Implementation Guidance is included at Appendix E.

Industrial Control Systems. The SASC, on page 104 of the NDAA for FY 2017 directed the Secretary of Defense to report to the congressional defense committees no later than March 30, 2017, on established cybersecurity guidelines for micro-grids and installation energy and utility systems. The guideline recognizes that installation energy managers may not currently have the expertise to identify and mitigate cybersecurity threats and that cybersecurity managers tasked with maintaining the functionality of the electricity grid may not have the expertise to be able to provide solutions required to maintain the functionality of a micro-grid or installation. With the adoption of the NIST Risk Management Framework and new DoD issuances to include the Unified Facilities Criteria (UFC) 4-010-06, *Cybersecurity of Facility-Related Control Systems*, guidance now accounts for protections and defense of PIT and FRCS, standard IT systems and networks, and micro-grids and installation energy and utility systems. The DoD continues to work with the control system community to develop directives and instructions for PIT and control system security measures. Working with appropriate DoD entities, such as U.S. Cyber Command and Service Cyber Commands, DoD is proactively moving ahead by fielding and deploying secure PIT and FRCS solutions at DoD installations and is sharing those solutions with other appropriate PIT and FRCS stakeholders in the field of logistics, security, medical,

transportation, and the defense industrial base. This will ensure minimizing vulnerabilities, and exposure of the DoD Information Network (DoDIN).

Small Modular Reactors. The House Armed Services Committee (HASC) Report, on page 117 of the NDAA for FY 2017 directed the Secretary of Defense to conduct an evaluation of and provide a report to the HASC by September 30, 2017, on the life-cycle cost effectiveness of using SMRs to power military installations through a commercial power supply arrangement. The HASC requested the Secretary of Defense to evaluate and report on the life-cycle cost effectiveness of using SMRs to power military installations through a commercial power supply arrangement or PPA, and focus on those SMRs that are likely to become commercially available before 2025. In 2009, the Deputy Undersecretary of Defense for Installations and Environmental requested the Center for Naval Analysis (CNA) to conduct a study on the feasibility of SMRs on military installations. The study included a review of the role that SMRs could potentially play in supplying all DoD installations with electricity, and the technical and regulatory challenges that need to be overcome to do so. The study concluded in 2011 with the report, *Feasibility of Nuclear Power on U.S. Military Installations*.

Based on CNA's conclusions and the current status of SMR technologies, DoD does not believe that SMRs are sufficiently advanced, safety-proven, or cost-competitive with existing commercial power technologies to provide installations energy resilience. SMRs are not economically feasible at this time, and, therefore, the DoD does not believe any alternative financing arrangement can sufficiently support their development. Further development and demonstration of the technology is needed to reduce capital and operating costs, and commercialize these technologies to attract private investors. There are also other challenges in the deployment of SMRs and their support to DoD's energy resilience efforts.

In the smallest design being considered for license, SMRs are sized to supply approximately 50 MWe of power. Therefore, the SMR industry has a pressing challenge to supply power and build a business case to multiple stakeholders within a region well beyond the scope of a single military installation. These utility scale designs should be more appropriately considered by utility providers who will be impacted by their adoption, and have already established processes for business case decisions across multiple stakeholders.

Since the publication of the CNA report in 2011, the DoD has not changed its position on SMR technologies. There are a small number of companies that have submitted an application for a design license from the Nuclear Regulatory Commission (NRC), and some companies have also abandoned their pursuits. The current market, financial, and technical challenges raise concerns over the commercialization of a SMR that can support DoD energy resilience efforts, and that will be operational before 2025. However, DoD has many other options to consider that are cost-effective and commercially available to meet its energy resilience objectives.

While DoD is interested in promising new power generation technologies, it does not believe SMRs are a feasible option at this time. DoD will continue to monitor SMR development as it

moves through the certification and technology demonstration process with the Department of Energy and NRC.

The CNA report can be accessed at: https://www.cna.org/CNA_files/PDF/D0023932.A5.pdf.

Power Storage Capacity. The SASC Report, page 126 of the NDAA for FY 2017 directed the Secretary of Defense to report to the congressional defense committees no later than March 30, 2017, on the costs and benefits associated with requiring 25 percent of National Guard and Reserve facilities to have at least a 21-day onsite power storage capacity to assist with providing support to civil authorities in case of manmade or natural disasters. DoD reviewed a 21-day on-site power storage requirement for Reserve Component facilities and concluded they would encounter technical challenges and would not be cost-effective. Reserve Component facility energy loads generally cover a very small footprint, and, due to the size of the demand and the infrastructure, there are limited energy options that can effectively and efficiently meet the suggested emergency requirement. Such a requirement would need to be met with numerous generators and large quantities of fuel stored on-site. Given the very large number of Reserve Component facilities, even 25 percent would constitute a very substantial number of locations to retrofit to meet this requirement. The cost would be a significant charge against the readiness accounts. The Reserve Component facilities also do not have the physical storage capacity for the fuel. DoD's conclusion is that the costs associated with purchasing generators and storing fuel at these facilities substantially outweighs the likely benefits. The costs would likely become a sunk cost, since the likelihood of using the additional backup power and fuel to meet a 21-day requirement is extremely low while the effect of reduced readiness elsewhere is quite high.

Overview of Installation Energy Test Bed Efforts

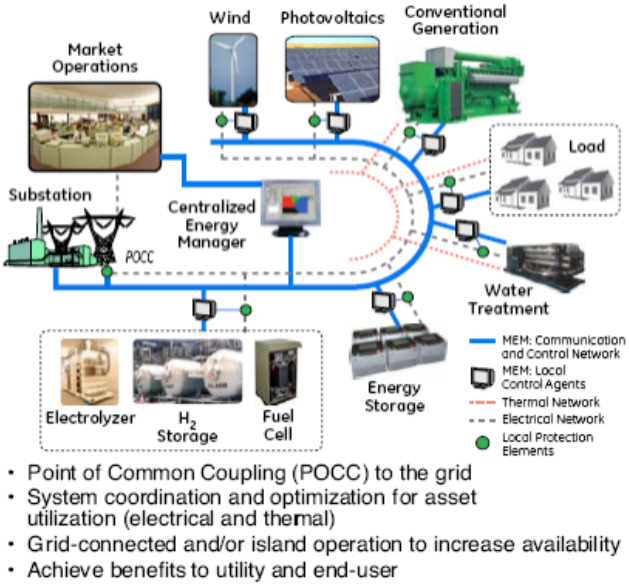
The Environmental Security Technology Certification Program (ESTCP) Installation Energy Test Bed is a cost-effective way to demonstrate new energy technologies in a real-world, integrated building environment to reduce risk, overcome barriers to deployment, and facilitate wide-scale commercialization. Emerging technologies offer a cost-effective way for DoD to improve resiliency of our military installations by enhancing energy security, increasing operational flexibility, and lowering energy demand.

Projects include rigorous operational testing and assessment of life-cycle costs of new technology while addressing DoD-unique issues. DoD can be a sophisticated first user of successful cutting-edge, transformational energy technologies. The Installation Energy Test Bed funds microgrid and advanced installation energy management technology demonstrations to evaluate the benefits and risks of various approaches and configurations. Through a competitive selection process, the Installation Energy Test Bed has undertaken projects with multiple vendors to ensure that the Department can capture the benefits of diverse approaches. More information on the ESTCP is available at http://www.serdp-estcp.org/.

Resilient and Secure Microgrids

Smart microgrids and energy storage offer a more robust and cost-effective approach to ensuring installation energy resilience than the traditional approach of backup generators tied to single critical loads and (limited) supplies of on-site fuel. Although microgrid systems are in use today, they are relatively unsophisticated, with limited ability to integrate renewable and other distributed energy sources, little or no energy storage capability, uncontrolled load demands, and "dumb" distribution that is not optimized.

Figure 5-3: Microgrid System Example



Advanced microgrids have the ability to reduce installation energy costs by allowing for load balancing and demand response, as well as offering DoD a pathway to participate in ancillary service markets, all of which can make holistic energy management more cost-effective. They also facilitate the incorporation of renewable and other on-site energy generation. More importantly, they offer energy resilience: the combination of on-site energy generation and storage, together with the microgrid's ability to manage local energy supply and demand, allow

installations to operate in "islanded" mode, shedding non-essential loads and maintaining mission-critical loads if the electrical grid is disrupted (Figure 5-3[16]).

Joint Base Cape Cod, Massachusetts

An integrated system of energy assets under central microgrid control can provide power that is cost-effective, cleaner, and more secure than traditional operations. The project at Otis Air National Guard Base (ANGB) at Joint Base Cape Cod in Sandwich, Massachusetts, is demonstrating the benefits of such an intelligent microgrid tied to existing energy assets. This system will test operation of a microgrid with a high penetration of renewable energy while islanded from the grid for an extended period (minimum of 5 days). Building upon developments from previous demonstrations this project integrates a 1.5MW wind turbine, existing building-designated backup generators, a 1.6MW/1.2MWh battery energy storage system, and an intelligent microgrid controller to provide secure, high-quality power to mission-critical loads. Additionally, equipment and controls will obtain cybersecurity approvals to allow for integration with the regional power market operator, ISO New England (ISO-NE). The integration with ISO-NE will provide opportunity for DoD to generate revenue, through participation in the regulation services market and demand management programs as a way to finance projects like this. The demonstration paves the way for implementation of this technology at a wider range of DoD facilities.

Cybersecurity of Facilities and Energy Systems

Microgrids and buildings increasingly incorporate network-connected, "smart", technology that incorporate sensors and control systems interacting with everything from lighting and HVAC systems in buildings to energy generation and storage systems on the electrical distribution system. While smart buildings and smart microgrids show great promise to improve the operational efficiency and resiliency of our installations, the proliferation of connected devices on DoD networks creates more avenues for potential cyber-attack. Three projects are currently demonstrating new technologies and approaches to protecting against and recovering from cyber-attacks to our installation energy systems. One project combines established and emerging technologies in an innovative way that protects supervisory control and data acquisition (SCADA) infrastructure from insider and online cyber-attacks. The project will conduct Red Team testing in a lab setting before deployment to an operational electric power grid. This solution allows for SCADA systems to "fight through" cyber-attack and maintain services without disruption. Another project is demonstrating the effectiveness of newly developed tools for testing the integrity of software on devices (firmware), which form critical components of the electric grid and facility energy infrastructure. This project will apply these tools and define a process to mitigate security vulnerabilities in the common maintenance steps that currently

[16] GE Global Research, Bringing the Smart Grid to Military Bases [online source] (accessed July 1, 2012), available on the internet at http://ge.geglobalresearch.com/blog/bringing-the-smart-grid-to-military-bases/

update firmware within critical device infrastructure. A third project is demonstrating a technology that allows facility energy control systems to operate on a military network by maintaining an intelligent information boundary. This approach eliminates the need to install, operate, and maintain a dedicated stand-alone network for facility energy control systems while preserving the cybersecurity of military networks. These demonstrations are addressing key barriers to the deployment of high impact smart technologies on military installations.

Service Initiatives

Army

Secure and reliable access to energy and water resources when, where, and in the quantities needed is essential to both Army operational and installation missions. Vulnerabilities in the interdependent electric power grids, natural gas pipelines, and water resources supporting Army installations jeopardize mission capabilities and installation security, as well as the Army's ability to project power and support global operations. Guided by its ES^2 Strategy, the Army made significant strides in identifying and addressing energy and water security gaps, developing policy requirements, deploying metrics to assess energy and water security at Army installations, and aligning energy and water security with ASRA reporting to the highest leadership levels.

In FY 2016, the SESC's focus on energy and water security led to a broader understanding across the Army of the threats and potential impacts to Army readiness and instigated a more holistic approach to assessing risk and mitigation strategies. An SESC Integrated Process Team completed an energy security gap analysis in FY 2016 to establish a baseline posture for Army installation energy security and resilience. This analysis identified 32 gaps across contiguous United State (CONUS) installations that include energy policy, infrastructure / equipment, personnel / training, communication, administration / contracting, and operational needs to improve energy and water security. The Army has begun conducting near-term actions to close selected gaps and is planning future actions to close all gaps over the mid- and long-term.

The Army's efforts on energy security and resilience are in accordance with the DoDI 4170.11, Installation Energy Management, amended in March 2016. In July of FY 2016, the ASA(IE&E) issued a memorandum calling attention to these new requirements. The memo directed all Army landholding Commands and Headquarters organizations to begin planning to reduce energy security risk to critical Army missions and to ensure that any actions taken will help strengthen overall installation energy security posture. The Army will continue as an active participant in the Office of the Secretary of Defense Energy Resilience Working Group and the follow-on near-term implementation guidance for Operations, Maintenance, and Testing (OM&T) of existing systems.

DON

As with all of DoD, the DON must conduct critical missions during disruptions to the nation's electrical grid. DON is dependent on the commercial grid, which is vulnerable to natural or man-made disruptions that have the potential to create short- or long-term power outages impacting military installations and the ability to sustain its mission. In FY 2016, Navy had

more than 500 utility outages greater than eight hours that were caused by either off- or on-base issues for the commercial utility or installation's delivery of commodities. More than 80 percent of the outages were reported at CONUS or Hawaii installations, affecting more than half of all Navy installations. Planned maintenance activities and equipment failures were equally likely to be the cause of an outage during FY 2016. In most cases, the financial impact of an outage could not be estimated.

The Marine Corps had only eight reportable outages greater than eight hours during FY 2016. All were the result of planned maintenance or equipment failure. With regard to other aspects of energy resilience, USMC completed Energy Security Assessments across all Marine Corps installations to identify risks posed to installation missions and operations by relying on commercially provided electricity which may be subject to extended power outages. The scope of the assessments included:

- Document and assess susceptibility of on and off-installation mission-critical assets to potential disruptions in supply of electricity
- Identify and document dependencies of other infrastructure services (natural gas, water, wastewater, communications, etc.) on commercial electric power
- Assess current resilience of installation electrical infrastructure to support missions and operations absent the provision of commercial electric power
- Identify and valuate missions executed at facilities and document energy security profiles to those facilities. High mission value facilities will be identified and prioritized, and injected in planning for secure and resilient energy.

In FY 2016, MCAS Miramar, California awarded and completed concept design to install a micro grid that will power the flight line and support 100+ facilities. It will also incorporate existing onsite landfill power and PV generation into micro grid islanding as much as feasible. This project is estimated to be completed in late 2018.

The DON is committed to increasing energy resilience for its installations by continuing to build upon and integrate key energy initiatives. This includes leveraging large-scale renewable energy projects that will provide access to on-site renewable assets; executing smart grid plans; and implementing micro grid capabilities. In FY 2017, the Renewable Energy Program Office will transition to the Resilient Energy Program Office at NAVFAC HQ in order to tackle energy resilience challenges strategically moving forward.

Air Force

Energy resilience continues to be a focal point for the Air Force. New DoD and Air Force guidance provides a codified energy resilience definition as "the ability to prepare for and recover from energy disruptions that impact mission assurance on military installation." Furthermore, the Air Force contextualizes resilience under the term "energy assurance." According to the SAF/IE Letter of Intent for Air Force Installation Energy Projects, the guiding

tenet for strategic agility in installation energy program and project will be mission assurance through energy assurance.

Energy assurance means having power where and when it is needed. Inherent in energy assurance is reliability and resilience, a fundamental principle found in SAF/IE's Letter of Intent. Air Force installations are encouraged to be innovative in their individual approach to energy assurance. This includes leveraging technical resources, such as Air Force Research Laboratory and DOE National Laboratories to plan, model, and validate resilience projects, when possible, pursue appropriated and alternative financing mechanisms. In FY 2016, 23 Air Force installations investigated, analyzed and implemented various innovative resilience initiatives or projects across the enterprise.

Energy projects which sought to improve resilience on Air Force installations required meticulous planning, programming, coordination and project oversight to ensure resilience objectives were met. Many installations had an overarching objective to identify and eliminate single points of failure within their energy infrastructure. The following are examples of resilience projects that were executed or completed in FY 2016:

- Barksdale AFB, Florida has executed a project to upgrade the East Reservation to Main Base electrical distribution system (Bodcau Feeder Tie). Currently, this electrical feeder comes from a different substation from that which supplies the main base area, but only has the capacity to power 70 percent of the total base demand. With the upcoming upgrades, the East Reservation distribution system will be capable of providing 100 percent electrical demand to the installation in the event the main base sub-station is lost, ensuring a redundant electrical power source to continue the mission of Barksdale AFB.
- Fairchild AFB, Florida is undertaking a comprehensive, multi-year program to upgrade the electrical infrastructure on the base to enhance resilience. The base recently received FY 2016 funds for the last phase of an electrical distribution feeder upgrade, which will construct fully segregated redundant circuits.
- F.E. Warren AFB, Wyoming is working with the Western Area Power Administration (WAPA) to replace the control relays for the 115KV side of the main base substation and High West Energy (UP contractor) is replacing the lower side (13.8 KV) control relays. These upgrades will increase reliability and maintain a redundant feed set-up for the base.

Appendix A - List of Energy Acronyms

Acronym	Definition
AEMR	Annual Energy Management Report
AFB	Air Force Base
AFCEC	Air Force Civil Engineer Center
AFIMSC	Air Force Installation and Mission Support Center
AFPD	Air Force Policy Directive
AFV	Alternative Fuel Vehicle
ALC	Air Logistics Complex
AMC	Army Materiel Command
AMRS	Advanced Meter Reading Systems
AMS	Advanced Metering System
ANGB	Air National Guard Base
ARNG	Army National Guard
ASN(EI&E)	Assistant Secretary of the Navy for Energy, Installations and Environment
ASRA	Army Strategic Readiness Assessment
BBtu	Billion British Thermal Unit
Btu	British Thermal Unit
CEQ	Council on Environmental Quality
CIRCUITS	Comprehensive Utilities Information Tracking System
CNG	Compressed Natural Gas
CNIC	Commander, Navy Installations Command
CNO	Office of the Chief of Naval Operations
CONUS	Contiguous United States
DASA(E&S)	Deputy Assistant Secretary of the Army for Energy and Sustainability
DASN(Energy)	Deputy Assistant Secretary of the Navy for Energy
DCI	Defense Critical Infrastructure
DC I&L	Deputy Commandant for Installations and Logistics
DCMA	Defense Contract Management Agency
DeCA	Defense Commissary Agency
DFAS	Defense Finance and Accounting Service
DIA	Defense Intelligence Agency
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDI	Department of Defense Instruction
DOE	Department of Energy
DON	Department of the Navy
DSC	Distributed Control Systems
DUSD (I&E)	Deputy Under Secretary of Defense (Installations and Environment)
E85	85 percent ethanol fuel

Acronym	Definition
ECIP	Energy Conservation Investment Program
EIA	Energy Information Administration
EISA	Energy Independence and Security Act
EO	Executive Order
EPAct	Energy Policy Act
ES^2	Energy Security and Sustainability
ESPC	Energy Savings Performance Contract
ESTCP	Environmental Security Technology Certification Program
EUI	Energy Use Intensity
EUL	Enhanced Use Lease
EV	Electric Vehicle
EVSE	Electric Vehicle Support Equipment
FRCS	Facility-Related Control Systems
FY	Fiscal Year
GGE	Gallons of Gasoline Equivalent
GHG	Greenhouse Gas
GSA	Electric Vehicle Charging Equipment
GSF	Gross Square Foot
GSHP	Ground Source Heat Pump
GW	Gigawatt, 1 billion Watts
HQ	Headquarters
HVAC	Heating, Ventilation, and Air Conditioning
IC	Intelligence Community
ILA	Industrial, Landscaping, and Agriculture
IMCOM	Installation Management Command
JBMDL	Joint Base McGuire-Dix-Lakehurst
KW	Kilowatt, 1 thousand Watts
LAAFB	Los Angeles AFB
LED	Light Emitting Diode
LPG	Liquefied Petroleum Gas
MAJCOM	Major Command
MCAGCC	Marine Corps Air Ground Combat Center
MCICOM	Marine Corps Installations Command
MCICOM GF	Marine Corps Installations Command, Director Facilities
MCICOM GF-1	Marine Corps Installations Command, Energy and Facilities Operations Section
MDA	Missile Defense Agency
MDMP	Meter Data Management Plan
MDMS	Meter Data Management System
MILCON	Military Construction
MIT-LL	Massachusetts Institute of Technology – Lincoln Laboratory
MSW	Municipal Solid Waste

Acronym	Definition
MW	Megawatt, 1 million Watts
MWh	Megawatt-Hour, 1 million Watt-hours
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
NAWS	Naval Air Weapons Station
NDAA	National Defense Authorization Act
NECPA	National Energy Conservation Policy Act
NGA	National Geospatial Intelligence Agency
NIST	National Institute of Standards and Technology
NNSY	Norfolk Navy Shipyard
NOITA	Notice of Intent to Award
NRC	Nuclear Regulatory Commission
NRO	National Reconnaissance Office
NSA	National Security Agency
NSA	Naval Supply Activity
NTV	Non-Tactical Vehicle
O&M	Operations and Maintenance
OACSIM	Office of the Assistant Chief of Staff for Installation Management
OASA(ALT)	Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology
OASA(IE&E)	Office of the Assistant Secretary of the Army for Installations, Energy and Environment
OASD(EI&E)	Office of the Assistant Secretary of Defense for Energy, Installations, and Environment
ODASD(IE)	Office of the Deputy Assistant Secretary of Defense for Installation Energy
OPNAV-N46	CNO Shore Installation Management Division
OT	Operational Technology
PEV	Plug-in Electric Vehicle
PIT	Platform Information Technology
PLC	Programmable Logic Controllers
PPA	Power Purchase Agreement
PV	Photovoltaic
REC	Renewable Energy Credit
REM	Resource Efficiency Manager
REPO	Renewable Energy Program Office
SAF/IE	Deputy Assistant Secretary of the Air Force for Energy
SCADA	Supervisory Control and Data Acquisition
SESC	Senior Energy and Sustainability Council
SMR	Small Modular Reactor
SRM	Sustainment, Restoration, and Modernization
SSPP	Strategic Sustainability Performance Plan
UESC	Utility Energy Services Contract
UFC	Unified Facilities Criteria
UP	Utilities Privatization

Acronym	Definition
U.S.	United States
USACE	US Army Corps of Engineers
USAR	US Army Reserve
U.S.C	United States Code
USC	Utility Service Contract
V2G	Vehicle to Grid
VAM	Vehicle Allocation Methodology
WAPA	Western Area Power Authority
WHS	Washington Headquarters Service

Appendix B - Compliance Matrix

	Subsection / Paragraph	Description	FY 2016 AEMR Chapter / Appendix	Page Number
10 USC § 2925	**(a)**	**Annual Report Related to Installations Energy Management.** Not later than 120 days after the end of each fiscal year, the Secretary of Defense shall submit to the congressional defense committees an installation energy report detailing the fulfillment during that fiscal year of the energy performance goals for the Department of Defense under section 2911 of this title. Each report shall contain the following:		
	(a)(1)	A description of the progress made to achieve the goals of the Energy Policy Act of 2005 (Public Law 109–58), section 2911(e) of this title, section 553 of the National Energy Conservation Policy Act (42 U.S.C. 8259b), the Energy Independence and Security Act of 2007 (Public Law 110–140), and the energy performance goals for the Department of Defense during the preceding fiscal year.	**3, 4, 5**	15, 31, 39
	(a)(2)	Details of all commercial utility outages caused by threats and those caused by hazards at military installations that last eight hours or longer, whether or not the outage was mitigated by backup power, including non-commercial utility outages and Department of Defense-owned infrastructure, including the total number and location of outages, the financial impact of the outages, and measure taken to mitigate outages in the future at the affected locations and across the Department of Defense.	**5**	39
10 USC § 2911	(a)(1)	Energy Performance Goals. The DoD shall submit to the congressional defense committees the energy performance goals for the Department of Defense regarding transportation systems, support systems, utilities, and infrastructure and facilities.	**Appendix C**	C-1
	(b)(1)	Energy Performance Master Plan. The DoD shall develop a comprehensive master plan for the achievement of the energy performance goals of the Department of Defense, as set forth in laws, executive orders, and Department of Defense policies.	**Appendix C**	C-1
	(e)(2)	Interim Renewable Energy Goal. Requires the DoD to establish an interim FY 2018 goal for the production or procurement of facility energy from renewable sources.	**4, Appendix C**	31, C-1

	Subsection / Paragraph	Description	FY 2016 AEMR Chapter / Appendix	Page Number
NDAA FY 2017 (Senate Report 114-255)	p.104	The Senate Armed Services Committee directed the Secretary of Defense to report to the congressional defense committees no later than March 30, 2017 on established cybersecurity guidelines for micro-grids and installation energy and utility systems. The guidelines should recognize that installation energy managers may not currently have the expertise to identify and mitigate cybersecurity threats and that cybersecurity managers tasked with maintaining the functionality of the electricity grid may not have the expertise to be able to provide solutions required to maintain the functionality of a micro-grid or installation. The report should be unclassified, but may contain a classified annex as deemed appropriate.	**5**	43
	p. 110	The Senate Armed Services Committee directed the Secretary of Defense to report to the congressional defense committees no later than March 30, 2017 with established metrics to evaluate the costs, risks, and benefits associated with energy resiliency and mission assurance against energy supply disruptions on military facilities and installations. The metrics should take into account financial and operational costs and risks associated with sustained losses of power resulting from natural or man-made disasters or attacks that impact military installations.	**5**	43
	p. 118	The Senate Armed Services Committee Report required the Secretary of Defense to report to the congressional defense committees no later than March 1, 2017 with a comprehensive strategy, including a development and implementation plan, that replaces or improves emergency power generation readiness, reduces system maintenance, and improves fuel flexibility to ensure the sustainability of all Department emergency power generation systems in operation.	**5**	43
NDAA FY 2017 (House Report 114-537)	p. 117	The House Armed Services Committee Report directed the Secretary of Defense to conduct an evaluation of and provide a report to the House Committee on Armed Services by September 30, 2017, on the life-cycle cost effectiveness of using SMRs to power military installations through a commercial power supply arrangement. At minimum, the evaluation and report should address the economic feasibility of siting SMRs on the commercial electric grid and supplying power to military installations with peak power demands of 40 megawatts or greater and review the use of power purchase agreements needed to facilitate utility ownership of SMRs that supply power to those military installations.	**5**	44

	Subsection / Paragraph	Description	FY 2016 AEMR Chapter / Appendix	Page Number
NDAA FY 2017 (Senate Report 114-255)	p. 126	The Senate Armed Services Committee Report, page 126 of the NDAA of 2017 directed the Secretary of Defense to report to the congressional defense committees no later than March 30, 2017 on the costs and benefits associated with requiring 25 percent of National Guard and Reserve facilities to have at least a 21-day onsite power storage capacity to assist with providing support to civil authorities in case of manmade or natural disasters.	**5**	45

DoD Energy Performance Master Plan

Introduction

> Installation energy is the energy necessary to support the functions of over 500 fixed installations on nearly 29 million acres of land within the United States and internationally. This energy is distinct from operational energy which consists largely of mobility fuel that is used by operational aircraft, ships, and tanks, as well as generators at forward operating bases.

The Energy Performance Master Plan (hereafter referred to as Master Plan) aligns investments to energy objectives, enables consistent Department-wide decision-making, and establishes metrics to evaluate DoD's progress against installation energy performance goals. The Master Plan was established and reported in the FY 2011 AEMR. The goals outlined in the Master Plan align with the Department's facility energy strategy designed to reduce energy costs and improve the energy resilience of fixed installations. The key elements of the installation energy strategy are (Figure 1.0):

- Reduce Demand
- Expand Supply
- Enhance Energy Resilience

Figure 1.0: Installation Energy Approach

In FY 2011, the then Office of the Deputy Under Secretary of Defense for Installations and Environment (ODUSD(I&E))–now the Office of the Assistant Secretary of Defense for Energy Installations and Environment (OASD(EI&E))–developed its energy performance goals and its first Master Plan with input from DoD Components. The energy performance goals will be reviewed and reported annually, while the Master Plan will be updated periodically in the AEMR. However, DoD Components are required to submit their facility energy investment projections for the Future Years Defense Program (FYDP) as part of their Master Plan submittal. The DoD Components' submissions to the President Budget, investment profile, energy benefit analyses, and narratives will be the basis for any periodic updates of the Master Plan within the AEMR.

Energy Performance Goals

The ODASD(IE) currently oversees the Department's facility energy program. ODASD(IE) collaborated with the Military Departments and Defense Agencies to develop its energy performance goals. These energy performance goals of DoD have not changed from its previous submittal, and Table 1.0 summarizes the three DoD facility energy performance goals. The table defines these goals and describes the associated measures, methods of measurement, and metrics. Table 1.1 summarizes DoD's targets for each goal, including the interim FY 2018 renewable goal (also part of last year's submittal).

Table 1.0: DoD Energy Performance Goals

Goal	Description	Uniform Measure	Method of Measurement	Metric
Improve Energy Efficiency	Decrease installation energy consumption and improve energy intensity.	Energy consumption[1] per gross square foot (energy intensity).	Energy intensity reduction.	British thermal units per thousand gross square feet (Btu/ Thousand GSF)
Increase Renewable Energy	Increase the production and procurement of on-base renewable energy.	Electric and non-electric renewable energy production and procurement.	Electric and non-electric renewable energy produced or procured compared to electricity consumption.	Billion Btu (BBtu)
Decrease Petroleum Consumption	Decrease petroleum consumption in fleet vehicles.	Fleet vehicle petroleum consumption.[2]	Fleet vehicle petroleum consumption reduction.	Gallons of gasoline Equivalent (GGE)

[1]Energy consumption includes electricity, natural gas, fuel oil, propane, purchased steam and hot water, and coal.
[2]Petroleum includes gasoline, diesel, and the diesel portion of biodiesel (B20).

Table 1.1: Energy Performance Goals Annual Targets

Target	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY25
Energy Efficiency	-18%	-21%	-24%	-27%	-30%	-31.5%	-33%	-34.5%	-36%	-37.5%	-
Renewable Energy	-	-	-	-	-	-	-	+15%	-	-	+25%
Petroleum Consumption	-12%	-14%	-16%	-18%	-20%	-22%	-24%	-26%	-28%	-30%	-

DoD will update this Master Plan periodically to address new information, changes in energy performance goals, and to identify the investments necessary to achieve those goals. DoD's commitment to meeting the energy performance goals also supports compliance with energy statutes, regulations, and EOs. Accordingly, the energy performance goals continue to advance the DoD facility energy mission, vision, and strategy.

Appendix D - DoD Energy Performance Summary

Energy Management Requirement	Baseline in Btu/GSF	FY 2016 Btu/GSF	Percent Change Baseline - FY 2016	FY 2016 Goal Target vs. Baseline
Reduction in energy intensity in facilities subject to E.O. 13693 goal based on FY15 baseline	98,021	93,010	**-5.1%**	-2.5%

Renewable Electric Energy Requirement	Renewable Electricity Use (MWH)	Total Electricity Use (MWH)	Percentage of Facility Electric Use	FY 2016 Goal Target
Eligible renewable electricity use as a percentage of total electricity use	1,457,277.1	30,127,817.1	**4.8%**	10.0%

Clean Energy Requirement	Clean Energy Use (MMBTUs)	Total Facility Energy Use (MMBTUs)	Percentage of Facility Energy Use	FY 2016 Goal Target
Eligible renewable electricity plus alternative energy as a percentage of total facility energy use	27,078,444.9	198,031,485.4	**13.7%**	10.0%

Scope 1&2 Greenhouse Gas Reduction Goal	FY 2008 (MTCO2e)	FY 2016 (MTCO2e)	Percent Change FY 2008 - FY 2016
Scope 1&2 Target-Subject GHG Emissions	26,855,109	21,928,826	**-18.3%**

Scope 3 Greenhouse Gas Reduction Goal	FY 2008 (MTCO2e)	FY 2016 (MTCO2e)	Percent Change FY 2008 - FY 2016	Adj. Scope 3 Percent Change FY 2008 - FY 2016
Scope 3 Target-Subject GHG Emissions	7,634,147	7,019,060	**-8.1%**	**-22.2%**

Water Reduction Goals	Baseline	FY 2016	Baseline to FY 2016	FY 2016 Goal Target
Reduction in potable water consumption intensity (2007 gal per gsf Baseline)	59.6	**45.6**	**-23.5%**	18.0%
ILA/Non-Potable Freshwater (2010 thou. gal Baseline)	11,810,300.0	**6,773,061.0**	**-42.7%**	12.0%

Metering Goals	Cumulative # of Buildings Metered for Electricity	Cumulative % of Appropriate Buildings Metered for Electricity	Cumulative # of Buildings Metered for Natural Gas	Cumulative % of Appropriate Buildings Metered for Natural Gas	Cumulative # of Buildings Metered for Steam	Cumulative % of Appropriate Buildings Metered for Steam
Standard Meters in FY 2016	17,492	28.7%	8,682	36.5%	847	28.3%
Advanced Meters in FY 2016	25,904	42.5%	4,565	19.2%	1,132	37.9%
Total Meters in FY 2016	43,396	71.3%	13,247	55.7%	1,979	66.2%

Federal Building Energy Efficiency Standards	Percent of New Building Designs	Compliance Target
Percent of new building designs started since beginning of FY 2007 that are 30 percent more energy efficient than relevant code, where life-cycle cost effective (including 8/2012 standards):	**66%**	100%

Investments in Energy and Water Management

Sources of Investment	Investment Value (Thou. $)	Anticipated Annual Savings (Million Btu)
Direct obligations for facility energy efficiency improvements	$329,889.7	1,638,767.5
Investment value of ESPC Task/Delivery Orders awarded in fiscal year	$348,341.8	1,285,941.8
Investment value of UESC Task/Delivery Orders awarded in fiscal year	$104,969.5	435,037.0
Total	$783,201.0	3,359,746.3

	Percentage
Total investment as a percentage of total facility energy costs	22.3%
Financed (ESPC/UESC) investment as a percentage of total facility energy costs	12.9%

i. NECPA/EISA Energy Goal Subject Building Excluded Buildings

Energy Type	BBtu	Cost (thous.)
Electricity	93,224	$ 2,439,600
Fuel Oil	13,791	$ 276,682
Natural Gas	60,967	$ 347,640
LPG	950	$ 12,887
Coal	10,226	$ 47,422
Steam	4,483	$ 112,587
Other	556	$ 3,901
Total	184,196	$ 3,240,719

Goal Excluded Buildings GSF	13,760
Btu/GSF	699,127
Source Energy Savings Credit	796.8
Btu/GSF w/RE Source Btu Credit	641,220

ii. NECPA/EISA Energy Goal

Energy Type	BBtu	Cost (thous.)
Electricity	8,057	$ 214,882
Fuel Oil	100	$ 2,236
Natural Gas	533	$ 1,966
LPG	0	$ -
Coal	0	$ -
Steam	131	$ 2,700
Other	0	$ -
Total	8,820	$ 221,784

Goal Subject Buildings GSF	1,861,726
Btu/GSF	98,021
Source Energy Savings Credit	11,776
Btu/GSF w/RE Source Btu Credit	93,010

Appendix E - ODASD(IE) Memorandum on Energy Resilience Operations, Maintenance, and Testing Guidance.

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY, INSTALLATIONS AND ENVIRONMENT

MAR 17 2017

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS, ENERGY AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE NAVY (ENERGY, INSTALLATIONS AND ENVIRONMENT)
ASSISTANT SECRETARY OF THE AIR FORCE (INSTALLATIONS, ENVIRONMENT AND LOGISTICS)
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Energy Resilience Operations, Maintenance, and Testing Guidance

In recent years, man-made and natural events have caused power outages affecting mission assurance on our military installations. In the review of our military installations' ability to prepare for and recover from energy disruptions, the Department of Defense (DoD) has found unacceptable risk in the operations, maintenance, and testing (OM&T) of our energy generation systems, infrastructure, and equipment. These risks continue to stress our emergency backup systems and infrastructure, and the critical missions which they support.

The DoD must ensure energy resilience that supports mission assurance on our military installations. On March 16, 2016, DoD issued energy resilience policy to address the risk of energy disruptions on military installations, and to require remedial actions to remove unacceptable energy resilience risks. The policy requires installation commanders and mission operators to plan and have the capability to ensure available, reliable, and quality power to continuously accomplish DoD missions from military installations and facilities.

To ascertain compliance with policy, our office is issuing supporting guidance to assist DoD Components implement energy resilience. The attached guidance was developed in collaboration with Components to remediate OM&T risks. DoD Components should use the attached to develop OM&T strategies, plans, and processes for energy resilience. If you have questions, please contact Dr. Ariel Castillo at 571-372-6858 or ariel.s.castillo.civ@mail.mil.

Lisa A. Jung
Deputy Assistant Secretary of Defense
(Installation Energy)

Attachments:
As stated

cc:
Assistant Secretary of Defense (Homeland Defense and Global Security)
Joint Staff (J-3), Director for Operations
Joint Staff (J-4), Logistics

Appendix F - Energy Intensity by Installation

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
ARMY	63RD REGIONAL SUPPORT COMMAND	MOFFETT FIELD	CALIFORNIA	231	5,862	39,359
ARMY	81ST REGIONAL SUPPORT COMMAND	FORT JACKSON	SOUTH CAROLINA	255	4,774	53,348
ARMY	88TH REGIONAL SUPPORT COMMAND	FORT MCCOY	WISCONSIN	523	9,670	54,100
ARMY	99TH REGIONAL SUPPORT COMMAND	JOINT BASE MDL	NEW JERSEY	331	7,525	44,022
ARMY	9TH MISSION SUPPORT COMMAND	HONOLULU	HAWAII	7	174	41,690
ARMY	ABERDEEN PG	ABERDEEN	MARYLAND	2,734	14,521	188,273
ARMY	ADELPHI LABORATORY CTR	HYATTSVILLE	MARYLAND	184	1,156	159,304
ARMY	ALABAMA ARNG	MONTGOMERY	ALABAMA	166	3,518	47,217
ARMY	ALASKA ARNG	FORT RICHARDSON	ALASKA	67	301	222,738
ARMY	ANNISTON ARMY DEPOT	ANNISTON	ALABAMA	707	9,619	73,512
ARMY	ARIZONA ARNG	PHOENIX	ARIZONA	68	1,593	42,628
ARMY	ARKANSAS ARNG	CAMP ROBINSON	ARKANSAS	221	4,227	52,196
ARMY	BLUE GRASS ARMY DEPOT	RICHMOND	KENTUCKY	107	4,160	25,608
ARMY	CALIFORNIA ARNG	SACRAMENTO	CALIFORNIA	195	5,355	36,488
ARMY	CAMP ZAMA JAPAN	FPO	JAPAN	656	10,469	62,616
ARMY	CARLISLE BARRACKS	CARLISLE	PENNSYLVANIA	124	1,003	123,611
ARMY	COLORADO ARNG	ENGLEWOOD	COLORADO	75	589	127,200
ARMY	CONNECTICUT ARNG	HARTFORD	CONNECTICUT	82	1,261	65,366
ARMY	CORPUS CHRISTI AD	CORPUS CHRISTI	TEXAS	343	2,302	149,064

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
ARMY	DC ARNG (MOB)	WASHINGTON	DISTRICT OF COLUMBIA	45	596	76,240
ARMY	DELAWARE ARNG	WILMINGTON	DELAWARE	31	650	47,200
ARMY	DEVENS RFTA	DEVENS	MASSACHUSETTS	91	1,274	71,284
ARMY	DUGWAY PROVING GROUND	DUGWAY	UTAH	262	2,413	108,738
ARMY	FLORIDA ARNG	SAINT AUGUSTINE	FLORIDA	77	2,757	27,804
ARMY	FORT A P HILL	BOWLING GREEN	VIRGINIA	72	1,509	47,742
ARMY	FORT BELVOIR	FORT BELVOIR	VIRGINIA	1,153	14,320	80,524
ARMY	FORT BENNING	FORT BENNING	GEORGIA	1,477	20,620	71,608
ARMY	FORT BLISS	EL PASO	TEXAS	1,409	22,737	61,956
ARMY	FORT BRAGG	FORT BRAGG	NORTH CAROLINA	3,504	33,897	103,380
ARMY	FORT BUCHANAN	FORT BUCHANAN	PUERTO RICO	113	1,821	62,031
ARMY	FORT CAMPBELL	FORT CAMPBELL	KENTUCKY	1,518	16,987	89,342
ARMY	FORT CARSON	COLORADO SPGS	COLORADO	1,351	14,354	94,152
ARMY	FORT DETRICK	FORT DETRICK	MARYLAND	866	3,444	251,471
ARMY	FORT DRUM	FORT DRUM	NEW YORK	619	12,200	50,741
ARMY	FORT GEORGE MEADE	FORT MEADE	MARYLAND	620	5,761	107,588
ARMY	FORT GORDON	AUGUSTA	GEORGIA	850	10,160	83,684
ARMY	FORT GREELY	DELTA JUNCTION	ALASKA	248	1,024	242,432
ARMY	FORT HAMILTON	NEW YORK CITY	NEW YORK	65	819	79,678
ARMY	FORT HOOD	KILLEEN	TEXAS	1,875	23,345	80,314
ARMY	FORT HUACHUCA	FORT HUACHUCA	ARIZONA	447	5,388	82,896
ARMY	FORT HUNTER LIGGETT	FORT HUNTER LIGGETT	CALIFORNIA	46	1,381	33,001
ARMY	FORT IRWIN	FORT IRWIN	CALIFORNIA	379	4,147	91,414
ARMY	FORT JACKSON	COLUMBIA	SOUTH CAROLINA	879	10,969	80,158
ARMY	FORT KNOX	FORT KNOX	KENTUCKY	984	11,611	84,726

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
ARMY	FORT LEAVENWORTH	FORT LEAVENWORTH	KANSAS	375	4,463	84,080
ARMY	FORT LEE	FORT LEE	VIRGINIA	747	10,079	74,110
ARMY	FORT LEONARD WOOD	FORT LEONARD WOOD	MISSOURI	1,525	11,784	129,421
ARMY	FORT MCCOY	SPARTA	WISCONSIN	334	6,674	50,035
ARMY	FORT POLK	FORT POLK	LOUISIANA	736	8,212	89,605
ARMY	FORT RILEY	FORT RILEY	KANSAS	1,065	12,357	86,183
ARMY	FORT RUCKER	FORT RUCKER	ALABAMA	513	5,864	87,510
ARMY	FORT SILL	FORT SILL	OKLAHOMA	1,186	12,121	97,829
ARMY	FORT STEWART	FORT STEWART	GEORGIA	989	15,063	65,683
ARMY	FORT WAINWRIGHT	FORT WAINWRIGHT	ALASKA	1,724	7,048	244,605
ARMY	GEORGIA ARNG	ATLANTA	GEORGIA	115	1,751	65,887
ARMY	GUAM ARNG (MOB)	FPO	GUAM	10	206	47,553
ARMY	HAWAII ARNG	HONOLULU	HAWAII	24	1,001	23,779
ARMY	HAWTHORNE AAP (GOCO)	HAWTHORNE	NEVADA	158	9,686	16,316
ARMY	HOLSTON AAP (GOCO)	KINGSPORT	TENNESSEE	2,568	1,958	1,311,790
ARMY	IDAHO ARNG	BOISE	IDAHO	101	805	125,055
ARMY	ILLINOIS ARNG	CAMP LINCOLN	ILLINOIS	145	2,562	56,656
ARMY	INDIANA ARNG	INDIANOPOLIS	INDIANA	318	4,405	72,172
ARMY	IOWA AAP (GOCO)	MIDDLETOWN	IOWA	705	3,828	184,044
ARMY	IOWA ARNG	JOHNSTON	IOWA	149	3,023	49,263
ARMY	JOINT BASE LEWIS MCCHORD	TACOMA	WASHINGTON	2,078	26,484	78,472
ARMY	JOINT BASE MYER-HENDERSON	FORT MYER	VIRGINIA	326	3,725	87,601
ARMY	KANSAS ARNG	TOPEKA	KANSAS	108	1,498	72,180
ARMY	KENTUCKY ARNG	FRANKFORT	KENTUCKY	71	1,685	41,843
ARMY	KWAJALEIN ATOLL	FPO	MARSHALL ISLANDS	826	3,175	260,039
ARMY	LAKE CITY AAP (GOCO)	INDEPENDENCE	MISSOURI	955	2,898	329,473

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
ARMY	LETTERKENNY ARMY DEPOT	CHAMBERSBURG	PENNSYLVANIA	401	4,746	84,571
ARMY	LIMA JSMC	LIMA	OHIO	429	1,617	265,034
ARMY	LOUISIANA ARNG	JOHNSON BARRACKS	LOUISIANA	152	2,972	51,177
ARMY	MAINE ARNG	CAMP KEYES	MAINE	50	1,063	46,692
ARMY	MARYLAND ARNG	BALTIMORE	MARYLAND	83	1,228	67,665
ARMY	MASSACHUSETTS ARNG	MILFORD	MASSACHUSETTS	152	1,924	78,993
ARMY	MCALESTER AAP	MCALESTER	OKLAHOMA	451	10,307	43,746
ARMY	MICHIGAN ARNG	LANSING	MICHIGAN	360	3,817	94,347
ARMY	MILAN AAP (GOCO)	MILAN	TENNESSEE	20	3,263	6,021
ARMY	MILITARY OCEAN TML	CONCORD	CALIFORNIA	11	265	42,336
ARMY	MINNESOTA ARNG	CAMP RIPLEY	MINNESOTA	245	4,224	58,115
ARMY	MISSISSIPPI ARNG	JACKSON	MISSISSIPPI	230	5,898	38,981
ARMY	MISSOURI ARNG	JEFFERSON CITY	MISSOURI	133	1,846	71,840
ARMY	MONTANA ARNG	HELENA	MONTANA	76	1,363	55,456
ARMY	MOT SUNNY POINT	SOUTHPORT	NORTH CAROLINA	16	345	45,626
ARMY	NEBRASKA ARNG	LINCOLN	NEBRASKA	76	1,516	50,425
ARMY	NEVADA ARNG	CARSON CITY	NEVADA	31	580	53,138
ARMY	NEW HAMPSHIRE ARNG	CONCORD	NEW HAMPSHIRE	30	786	38,463
ARMY	NEW JERSEY ARNG	LAWRENCEVILLE	NEW JERSEY	116	1,193	96,922
ARMY	NEW MEXICO ARNG	SANTA FE	NEW MEXICO	60	793	76,280
ARMY	NEW YORK ARNG	LATHAM	NEW YORK	93	2,478	37,582
ARMY	NORTH CAROLINA ARNG	RALEIGH	NORTH CAROLINA	133	1,455	91,658
ARMY	NORTH DAKOTA ARNG	BISMARK	NORTH DAKOTA	126	1,775	70,829
ARMY	OHIO ARNG	COLUMBUS	OHIO	151	3,291	45,873
ARMY	OKLAHOMA ARNG	OKLAHOMA CITY	OKLAHOMA	107	1,911	56,068
ARMY	OREGON ARNG	SALEM	OREGON	97	2,132	45,652

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
ARMY	PARKS CSTC	DUBLIN	CALIFORNIA	44	1,218	36,038
ARMY	PENNSYLVANIA ARNG	ANNVILLE	PENNSYLVANIA	306	5,035	60,825
ARMY	PICATINNY ARSENAL	DOVER	NEW JERSEY	492	3,325	148,064
ARMY	PINE BLUFF ARSENAL	WHITE HALL	ARKANSAS	266	3,564	74,553
ARMY	PRESIDIO OF MONTEREY	MONTEREY	CALIFORNIA	180	2,729	65,944
ARMY	PUEBLO CHEMICAL DEPOT	PUEBLO	COLORADO	33	4,155	7,961
ARMY	PUERTO RICO ARNG (MOB)	SAN JUAN	PUERTO RICO	38	1,543	24,784
ARMY	RADFORD AAP (GOCO)	RADFORD	VIRGINIA	2,949	2,971	992,560
ARMY	RED RIVER DEPOT	TEXARKANA	TEXAS	744	7,365	100,966
ARMY	REDSTONE ARSENAL	HUNTSVILLE	ALABAMA	1,557	13,058	119,205
ARMY	RHODE ISLAND ARNG	CRANSTON	RHODE ISLAND	57	1,219	47,125
ARMY	ROCK ISLAND ARSENAL	ROCK ISLAND	ILLINOIS	545	5,592	97,420
ARMY	SCRANTON AAP	SCRANTON	PENNSYLVANIA	275	387	710,052
ARMY	SIERRA ARMY DEPOT	HERLONG	CALIFORNIA	147	5,412	27,146
ARMY	SOLDIER SYSTEMS CTR,	NATICK	MASSACHUSETTS	103	997	103,526
ARMY	SOUTH CAROLINA ARNG	COLUMBIA	SOUTH CAROLINA	117	1,405	82,984
ARMY	SOUTH DAKOTA ARNG	RAPID CITY	SOUTH DAKOTA	56	1,219	45,715
ARMY	TENNESSEE ARNG	NASHVILLE	TENNESSEE	125	2,342	53,329
ARMY	TEXAS ARNG	CAMP MABRY	TEXAS	151	3,415	44,318
ARMY	TOBYHANNA ARMY DEPOT	TOBYHANNA	PENNSYLVANIA	409	4,562	89,700
ARMY	TOOELE ARMY DEPOT	TOOELE	UTAH	105	3,823	27,474
ARMY	USAG ANSBACH	FPO	GERMANY	273	6,995	39,009
ARMY	USAG BAVARIA	FPO	GERMANY	1,475	23,806	61,948
ARMY	USAG BENELUX	FPO	BELGIUM	126	2,913	43,097
ARMY	USAG DAEGU	FPO	KOREA, REPUBLIC OF	445	6,406	69,532
ARMY	USAG DETROIT ARSENAL	HARRISON TOWNSHIP	MICHIGAN	264	1,926	136,837

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
ARMY	USAG HAWAII	WAHIAWA	HAWAII	830	14,737	56,309
ARMY	USAG HUMPHREYS	FPO	KOREA, REPUBLIC OF	786	10,585	74,244
ARMY	USAG MIAMI	MIAMI	FLORIDA	80	761	104,821
ARMY	USAG RED CLOUD	FPO	KOREA, REPUBLIC OF	916	9,884	92,670
ARMY	USAG RHEINLAND-PFALZ	FPO	GERMANY	1,227	24,440	50,189
ARMY	USAG STUTTGART	FPO	GERMANY	632	8,664	72,899
ARMY	USAG VICENZA	FPO	ITALY	629	8,165	77,082
ARMY	USAG WIESBADEN	FPO	GERMANY	650	11,198	58,013
ARMY	USAG YONGSAN	FPO	SOUTH KOREA	901	8,309	108,495
ARMY	UTAH ARNG	DRAPER	UTAH	89	1,949	45,725
ARMY	VERMONT ARNG	COLCHESTER	VERMONT	51	1,135	44,843
ARMY	VIRGIN ISLANDS ARNG (MOB)	FPO	VIRGIN ISLANDS	12	299	38,946
ARMY	VIRGINIA ARNG	FORT PICKETT	VIRGINIA	171	3,405	50,138
ARMY	WASHINGTON ARNG	CAMP MURRAY	WASHINGTON	34	830	41,133
ARMY	WATERVLIET ARSENAL	WATERVLIET	NEW YORK	292	2,155	135,612
ARMY	WEST POINT MIL RESERVATION	WEST POINT	NEW YORK	854	7,526	113,527
ARMY	WEST VIRGINIA ARNG	CHARLESTON	WEST VIRGINIA	197	2,008	98,282
ARMY	WHITE SANDS MISSILE RANGE	WHITE SANDS	NEW MEXICO	293	4,736	61,926
ARMY	WISCONSIN ARNG	MADISON	WISCONSIN	179	2,086	85,659
ARMY	WYOMING ARNG	CHYENNE	WYOMING	81	815	99,456
ARMY	YUMA PROVING GROUND	YUMA	ARIZONA	143	1,814	78,636
NAVY	CAMP LEMONNIER DJBOUTI	FPO	DJBOUTI	871	1,386	628,494
NAVY	CBC GULFPORT MS	GULFPORT	MISSISSIPPI	130	4,630	28,022
NAVY	CFA CHINHAE KOR	FPO	KOREA, REPUBLIC OF	27	419	65,575
NAVY	CFA OKINAWA JA	FPO	JAPAN	54	817	65,842
NAVY	CFA SASEBO JA	FPO	JAPAN	280	4,487	62,414

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NAVY	CFA YOKOSUKA JA	FPO	JAPAN	2,729	13,129	207,853
NAVY	FRC EAST CHERRY POINT NC	CHERRY POINT	NORTH CAROLINA	746	2,036	366,540
NAVY	JB PEARL HARBOR-HICKAM HI	PEARL HARBOR	HAWAII	1,121	19,604	57,185
NAVY	JBAB WASHINGTON DC	JOINT BASE ANACOSTIA BOLLING	DISTRICT OF COLUMBIA	414	3,490	118,595
NAVY	JEB LITTLE CREEK-FORT STORY VA	VIRGINIA BEACH	VIRGINIA	632	5,647	111,898
NAVY	NAF ATSUGI JA	FPO	JAPAN	501	4,204	119,208
NAVY	NAF EL CENTRO CA	EL CENTRO	CALIFORNIA	74	1,194	62,210
NAVY	NAF MISAWA JA	FPO	JAPAN	59	907	64,512
NAVY	NAS CORPUS CHRISTI TX	CORPUS CHRISTI	TEXAS	224	2,912	76,782
NAVY	NAS FALLON NV	FALLON	NEVADA	207	2,188	94,814
NAVY	NAS JACKSONVILLE FL	JACKSONVILLE	FLORIDA	921	8,238	111,767
NAVY	NAS JRB FORT WORTH TX	FORT WORTH	TEXAS	253	3,325	76,086
NAVY	NAS JRB NEW ORLEANS LA	NEW ORLEANS	LOUISIANA	170	2,283	74,513
NAVY	NAS KEY WEST FL	KEY WEST	FLORIDA	317	2,939	107,891
NAVY	NAS KINGSVILLE TX	KINGSVILLE	TEXAS	106	1,126	93,875
NAVY	NAS LEMOORE CA	LEMOORE	CALIFORNIA	247	3,575	69,208
NAVY	NAS MERIDIAN MS	MERIDIAN	MISSISSIPPI	158	1,602	98,856
NAVY	NAS OCEANA VA	VIRGINIA BEACH	VIRGINIA	681	7,646	89,070
NAVY	NAS PATUXENT RIVER MD	PATUXENT RIVER	MARYLAND	936	8,300	112,760
NAVY	NAS PENSACOLA FL	PENSACOLA	FLORIDA	1,056	11,407	92,583
NAVY	NAS SIGONELLA IT	FPO	ITALY	213	3,017	70,538
NAVY	NAS WHIDBEY ISLAND WA	OAK HARBOR	WASHINGTON	401	3,636	110,342
NAVY	NAS WHITING FIELD MILTON FL	MILTON	FLORIDA	97	1,231	78,598
NAVY	NAVBASE CORONADO SAN DIEGO CA	SAN DIEGO	CALIFORNIA	1,250	13,917	89,802

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NAVY	NAVBASE GUAM	FPO	GUAM	534	8,811	60,652
NAVY	NAVBASE KITSAP BREMERTON WA	BREMERTON	WASHINGTON	2,120	15,223	139,256
NAVY	NAVBASE POINT LOMA CA	SAN DIEGO	CALIFORNIA	415	6,317	65,719
NAVY	NAVBASE SAN DIEGO CA	SAN DIEGO	CALIFORNIA	1,065	9,203	115,762
NAVY	NAVBASE VENTURA CTY PT MUGU CA	POINT MUGU	CALIFORNIA	362	9,223	39,208
NAVY	NAVMAG INDIAN ISLAND WA	PORT HADLOCK	SOUTH CAROLINA	16	376	41,566
NAVY	NAVSTA EVERETT WA	EVERETT	WASHINGTON	133	1,839	72,134
NAVY	NAVSTA GREAT LAKES IL	GREAT LAKES	CALIFORNIA	1,004	9,528	105,355
NAVY	NAVSTA GUANTANAMO BAY CU	FPO	CUBA	1,108	7,204	153,744
NAVY	NAVSTA MAYPORT FL	JACKSONVILLE	JAPAN	212	2,901	73,162
NAVY	NAVSTA NEWPORT RI	NEWPORT	RHODE ISLAND	613	6,002	102,085
NAVY	NAVSTA NORFOLK VA	NORFOLK	VIRGINIA	1,827	15,232	119,939
NAVY	NAVSTA ROTA SP	FPO	SPAIN	204	4,339	47,112
NAVY	NAWS CHINA LAKE CA	CHINA LAKE	CALIFORNIA	613	4,651	131,879
NAVY	NSA ANDERSEN GUAM	FPO	GUAM	376	6,977	53,871
NAVY	NSA ANNAPOLIS MD	ANNAPOLIS	MARYLAND	739	6,078	121,609
NAVY	NSA BAHRAIN	FPO	BAHRAIN	253	2,650	95,407
NAVY	NSA BETHESDA MD	BETHESDA	MARYLAND	580	5,603	103,567
NAVY	NSA CRANE IN	CRANE	INDIANA	1,008	4,233	238,215
NAVY	NSA HAMPTON ROADS VA	NORFOLK	VIRGINIA	957	6,104	156,860
NAVY	NSA MECHANICSBURG PA	MECHANICSBURG	PENNSYLVANIA	732	11,617	63,033
NAVY	NSA MID SOUTH MILLINGTON TN	MILLINGTON	TENNESSEE	217	2,750	78,735
NAVY	NSA MONTEREY CA	MONTEREY	CALIFORNIA	144	1,825	78,634
NAVY	NSA NAPLES IT	FPO	ITALY	386	5,628	68,645
NAVY	NSA ORLANDO FL	ORLANDO	FLORIDA	23	306	75,833

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NAVY	NSA PANAMA CITY FL	PANAMA CITY BEACH	FLORIDA	136	1,483	91,534
NAVY	NSA SARATOGA SPRINGS NY	SARATOGA SPRINGS	NEW YORK	3	40	74,575
NAVY	NSA SOUDA BAY GR	FPO	GREECE	35	508	69,280
NAVY	NSA SOUTH POTOMAC DAHLGREN VA	DAHLGREN	VIR	1,676	6,297	266,202
NAVY	NSA WASHINGTON DC	WASHINGTON NAVY YARD	DISTRICT OF COLUMBIA	1,710	9,776	174,916
NAVY	NSF BEAUFORT SC	BEAUFORT	SOUTH CAROLINA	78	496	157,956
NAVY	NSF DIEGO GARCIA	FPO	INDIAN OCEAN	950	2,478	383,539
NAVY	NSS NORFOLK NAVAL SHIPYARD VA	NORFOLK	VIRGINIA	422	7,474	56,510
NAVY	NSY BOS PORTSMOUTH NH	PORTSMOUTH	NEW HAMPSHIRE	1,068	3,853	277,235
NAVY	PMRF BARKING SANDS HI	KEKAHA	HAWAII	71	595	119,684
NAVY	SINGAPORE AREA COORDINATOR	FPO	SINGAPORE	31	632	49,663
NAVY	SUBASE KINGS BAY GA	KINGS BAY	GEORGIA	685	5,334	128,444
NAVY	SUBASE NEW LONDON CT	GROTON	CONNECTICUT	674	3,251	207,458
NAVY	WPNSTA EARLE COLTS NECK NJ	COLTS NECK	NEW JERSEY	139	1,240	111,869
NAVY	WPNSTA SEAL BEACH CA	SEAL BEACH	CALIFORNIA	93	2,033	45,587
NAVY	WPNSTA YORKTOWN VA	YORKTOWN	VIRGINIA	194	6,072	32,001
USMC	CATC CAMP FUJI JA	FPO	JAPAN	63	621	101,923
USMC	CG MCAGCC TWENTYNINE PALMS CA	TWENTYNINE PALMS	CALIFORNIA	1,018	6,585	154,535
USMC	CG MCB CAMP BUTLER JA	FPO	JAPAN	1,000	15,974	62,621
USMC	CG MCB CAMP LEJEUNE NC	CAMP LEJEUNE	NORTH CAROLINA	3,161	27,018	116,990
USMC	CG MCB CAMP PENDLETON CA	CAMP PENDLETON	CALIFORNIA	1,004	20,198	49,692
USMC	CG MCCDC QUANTICO VA	QUANTICO	VIRGINIA	902	7,695	117,241

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USMC	CG MCLB ALBANY GA	ALBANY	GEORGIA	269	6,995	38,505
USMC	FIRST MCD GARDEN CITY LI NY	LONG ISLAND	NEW YORK	113	174	648,466
USMC	MARBKS WASHINGTON DC	WASHINGTON	DISTRICT OF COLUMBIA	48	526	90,382
USMC	MARCORCRUITDEP PARRIS ISLAND SC	PARRIS ISLAND	SOUTH CAROLINA	479	4,036	118,775
USMC	MARCORCRUITDEP SAN DIEGO CA	SAN DIEGO	CALIFORNIA	269	2,703	99,402
USMC	MARFORRES NEW ORLEANS LA	NEW ORLEANS	LOUISIANA	131	1,891	69,505
USMC	MCAS BEAUFORT SC	BEAUFORT	SOUTH CAROLINA	192	2,862	66,994
USMC	MCAS CAMP PENDLETON CA	CAMP PENDLETON	CALIFORNIA	43	821	52,665
USMC	MCAS CHERRY PT NC	CHERRY POINT	NORTH CAROLINA	688	6,571	104,678
USMC	MCAS FUTENMA JA	FPO	JAPAN	126	1,947	64,911
USMC	MCAS IWAKUNI JA	FPO	JAPAN	670	6,624	101,220
USMC	MCAS MIRAMAR CA	SAN DIEGO	CALIFORNIA	263	6,154	42,690
USMC	MCAS YUMA AZ	YUMA	ARIZONA	210	3,104	67,644
USMC	MCB CAMP MUJUK	FPO	SOUTH KOREA	29	292	100,318
USMC	MCB HAWAII KANEOHE BAY HI	KANEOHE BAY	HAWAII	315	6,492	48,465
USMC	MCLB BARSTOW CA	BARSTOW	CALIFORNIA	257	4,648	55,324
USMC	MCMWTC BRIDGEPORT CA	BRIDGEPORT	CALIFORNIA	46	318	145,176
USMC	MCSF BLOUNT ISLAND FL	JACKSONVILLE	FLORIDA	33	978	33,800
USMC	NAVAL HOSPITAL 29 PALMS CA	TWENTYNINE PALMS	CALIFORNIA	43	209	206,206
USMC	NAVAL HOSPITAL CAMP LEJEUNE NC	CAMP LEJEUNE	NORTH CAROLINA	137	796	172,592
USMC	NAVAL HOSPITAL CAMP PENDLETON CA	CAMP PENDLETON	CALIFORNIA	115	926	123,945
USMC	NAVAL HOSPITAL OKINAWA JA	FPO	JAPAN	155	716	216,091

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AIR FORCE	ABRAHAM LINCOLN CAPITAL AIRPORT	SPRINGFIELD	ILLINOIS	21	332	63,157
AIR FORCE	AIR NATIONAL GUARD READINESS CENTER (ANGrc)	ANDREWS AFB	MARYLAND	24	348	70,144
AIR FORCE	ALPENA COUNTY REGIONAL AIRPORT	ALPENA	MICHIGAN	57	563	100,687
AIR FORCE	ALTUS AIR FORCE BASE	ALTUS	OKLAHOMA	255	2591	98,411
AIR FORCE	ANDERSEN AIR FORCE BASE	FPO	GUAM	3	61	50,548
AIR FORCE	ARNOLD AIR STATION	ARNOLD A F STATION	TENNESSEE	1,695	2798	605,743
AIR FORCE	ATLANTIC CITY INTERNATIONAL AIRPORT	EGG HARBOR TOWNSHIP	NEW JERSEY	41	495	83,574
AIR FORCE	AVIANO AIR BASE	FPO	ITALY	286	4182	68,309
AIR FORCE	BANGOR INTERNATIONAL AIRPORT (ANG)	BANGOR	MAINE	43	511	84,511
AIR FORCE	BARKSDALE AIR FORCE BASE	BARKSDALE AF BASE	LOUISIANA	469	5197	90,322
AIR FORCE	BARNES MUNICIPAL AIRPORT ANG	WESTFIELD	MASSACHUSETTS	33	480	69,596
AIR FORCE	BEALE AIR FORCE BASE	BEALE AFB	CALIFORNIA	318	3156	100,693
AIR FORCE	BIRMINGHAM INTERNATIONAL AIRPORT	BIRMINGHAM	ALABAMA	28	365	76,681
AIR FORCE	BOISE AIR TERMINAL (ANG)	BOISE	IDAHO	28	566	48,915
AIR FORCE	BRADLEY INTERNATIONAL AIRPORT (ANG)	WINDSOR LOCKS	CONNECTICUT	24	401	59,139
AIR FORCE	BUCKLEY AIR FORCE BASE (AFSPC)	AURORA	COLORADO	171	1661	103,210
AIR FORCE	BUCKLEY AIR FORCE BASE (ANG)	AURORA	COLORADO	120	588	203,769
AIR FORCE	BURLINGTON INTERNATIONAL AIRPORT (ANG)	SOUTH BURLINGTON	VERMONT	20	479	41,853

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
AIR FORCE	CAMP BLANDING MILITARY RESERVATION (ANG)	STARKE	FLORIDA	6	124	47,104
AIR FORCE	CAMP MURRAY ANG STATION	TACOMA	WASHINGTON	11	230	47,824
AIR FORCE	CAMP PENDLETON MILITARY RESERVATION(ANG)	VIRGINIA BEACH	VIRGINIA	4	124	35,097
AIR FORCE	CAMP PERRY ANG STATION	PORT CLINTON	OHIO	4	119	36,595
AIR FORCE	CANNON AIR FORCE BASE	CANNON AFB	NEW MEXICO	363	3295	110,195
AIR FORCE	CARSWELL AIR RESERVE STATION	FORT WORTH	TEXAS	14	360	40,136
AIR FORCE	CHANNEL ISLANDS ANG STATION	PORT HUENEME	CALIFORNIA	16	345	45,451
AIR FORCE	CHARLESTON AIR FORCE BASE	CHARLESTON	SOUTH CAROLINA	748	8679	86,152
AIR FORCE	CHARLOTTE/DOUGLAS INT AIRPORT (ANG)	CHARLOTTE	NORTH CAROLINA	30	592	50,130
AIR FORCE	CHEYENNE REGIONAL AIRPORT	CHEYENNE	WYOMING	42	432	96,167
AIR FORCE	COLUMBUS AIR FORCE BASE	COLUMBUS	MISSISSIPPI	135	1539	87,393
AIR FORCE	DANE COUNTY REGIONAL AIRPORT-TRUAX FIELD	MADISON	WISCONSIN	31	475	65,815
AIR FORCE	DAVIS-MONTHAN AIR FORCE BASE	TUCSON	ARIZONA	342	4562	75,044
AIR FORCE	DES MOINES INTERNATIONAL AIRPORT ANG	DES MOINES	IOWA	34	417	82,389
AIR FORCE	DOBBINS AIR RESERVE BASE	MARIETTA	GEORGIA	88	1055	83,287
AIR FORCE	DOVER AIR FORCE BASE	DOVER	DELAWARE	405	3855	105,049
AIR FORCE	DULUTH INTERNATIONAL AIRPORT (ANG)	DULUTH	MINNESOTA	52	479	109,017
AIR FORCE	DYESS AIR FORCE BASE	ABILENE	TEXAS	300	3439	87,186
AIR FORCE	EARECKSON AIR STATION	ADAK STATION	ALASKA	696	2916	238,723
AIR FORCE	EDWARDS AIR FORCE BASE	LANCASTER	CALIFORNIA	782	7136	109,648
AIR FORCE	EGLIN AIR FORCE BASE	EGLIN AFB	FLORIDA	1,203	10822	111,146

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AIR FORCE	EIELSON AIR FORCE BASE	MOOSE CREEK	ALASKA	2,004	4024	498,044
AIR FORCE	EIELSON AIR FORCE BASE	MOOSE CREEK	ALASKA	26	299	87,650
AIR FORCE	ELLINGTON FIELD	HOUSTON	TEXAS	43	523	81,885
AIR FORCE	ELLSWORTH AIR FORCE BASE	ELLSWORTH AFB	SOUTH DAKOTA	417	4044	103,172
AIR FORCE	EWVRA SHEPHERD FIELD ANG	MARTINSBURG	WEST VIRGINIA	68	652	103,903
AIR FORCE	FAIRCHILD AIR FORCE BASE (AMC)	AIRWAY HEIGHTS	WASHINGTON	394	4011	98,287
AIR FORCE	FAIRCHILD AIR FORCE BASE (ANG)	AIRWAY HEIGHTS	WASHINGTON	16	362	45,285
AIR FORCE	FORBES FIELD ANG	TOPEKA	KANSAS	37	482	76,630
AIR FORCE	FORT SMITH MUNICIPAL AIRPORT ANG	FORT SMITH	ARKANSAS	21	418	49,894
AIR FORCE	FORT WAYNE INTERNATIONAL AIRPORT	FORT WAYNE	INDIANA	36	425	84,513
AIR FORCE	FRANCIS E WARREN AIR FORCE BASE	CHEYENNE	WYOMING	324	3234	100,306
AIR FORCE	FRANCIS S GABRESKI AIRPORT (ANG)	WESTHAMPTON BEACH	NEW YORK	33	360	92,692
AIR FORCE	FRESNO YOSEMITE INTERNATIONAL	FRESNO	CALIFORNIA	16	454	35,177
AIR FORCE	FT INDIANTOWN GAP ANG STATION	ANNVILLE	PENNSYLVANIA	12	348	34,175
AIR FORCE	GENERAL MITCHELL INTERNATIONAL APT (ANG)	MILWAUKEE	WISCONSIN	28	384	73,362
AIR FORCE	GENERAL WAYNE A. DOWNING PEORIA INTERNATIONAL AIRPORT (ANG)	PEORIA	ILLINOIS	32	448	71,947
AIR FORCE	GOODFELLOW AIR FORCE BASE	SAN ANGELO	TEXAS	221	2574	85,709
AIR FORCE	GRAND FORKS AIR FORCE BASE	GRAND FORKS AFB	NORTH DAKOTA	232	2729	84,946

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AIR FORCE	GREAT FALLS IAP ANG	GREAT FALLS	MONTANA	31	428	73,477
AIR FORCE	GRISSOM AIR RESERVE BASE	KOKOMO	INDIANA	86	1049	81,738
AIR FORCE	GULFPORT-BILOXI REGIONAL AIRPORT (ANG)	GULFPORT	MISSISSIPPI	32	634	50,189
AIR FORCE	HANSCOM AIR FORCE BASE	BEDFORD	MASSACHUSETTS	484	3565	135,758
AIR FORCE	HARRISBURG IAP	MIDDLETOWN	PENNSYLVANIA	22	330	66,155
AIR FORCE	HECTOR INTERNATIONAL AIRPORT (ANG)	FARGO	NORTH DAKOTA	35	492	71,046
AIR FORCE	HICKAM AIR FORCE BASE	HICKAM AF BASE	HAWAII	35	852	41,589
AIR FORCE	HILL AIR FORCE BASE	OGDEN	UTAH	2,256	13492	167,204
AIR FORCE	HOLLOMAN AIR FORCE BASE	ALAMOGORDO	NEW MEXICO	545	5431	100,266
AIR FORCE	HOMESTEAD AIR RESERVE BASE	HOMESTEAD	FLORIDA	63	1112	56,752
AIR FORCE	HULMAN REGIONAL AIRPORT	TERRE HAUTE	INDIANA	47	393	118,634
AIR FORCE	HURLBURT FIELD	EGLIN AFB	FLORIDA	509	4831	105,331
AIR FORCE	INCIRLIK AIR BASE ADANA	FPO	TURKEY	305	4883	62,471
AIR FORCE	JACKSON INTERNATIONAL AIRPORT	FLOWOOD	MISSISSIPPI	52	547	95,375
AIR FORCE	JACKSONVILLE IAP ANG	JACKSONVILLE	FLORIDA	26	442	59,713
AIR FORCE	JEFFERSON BARRACKS ANG STATION	LEMAY	MISSOURI	12	220	55,094
AIR FORCE	JOE FOSS FIELD ANG	SIOUX FALLS	SOUTH DAKOTA	39	425	92,757
AIR FORCE	JOINT BASE ANDREWS-NAVAL AIR FACILITY WASHINGTON	ANDREWS AFB	MARYLAND	580	5711	101,550
AIR FORCE	JOINT BASE ANDREWS-NAVAL AIR FACILITY WASHINGTON	ANDREWS AFB	MARYLAND	48	490	97,582
AIR FORCE	JOINT BASE ELMENDORF-FT RICHARDSON	ELMENDORF AFB	ALASKA	1,440	11789	122,143

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AIR FORCE	JOINT BASE ELMENDORF-FT RICHARDSON	ELMENDORF AFB	ALASKA	55	556	99,288
AIR FORCE	JOINT BASE SAN ANTONIO (JBSA)	SAN ANTONIO	TEXAS	3,726	35600	104,659
AIR FORCE	KADENA AIR BASE	KADENA AIR BASE OKINAWA	JAPAN	1,224	23581	51,890
AIR FORCE	KEESLER AIR FORCE BASE	BILOXI	MISSISSIPPI	638	6646	95,937
AIR FORCE	KELLY FIELD ANNEX (LACKLAND AFB)	LACKLAND AFB	TEXAS	30	388	77,466
AIR FORCE	KEY FIELD AIR NATIONAL GUARD	MERIDIAN	MISSISSIPPI	27	409	65,935
AIR FORCE	KIRTLAND AIR FORCE BASE	ALBUQUERQUE	NEW MEXICO	827	7244	114,200
AIR FORCE	KIRTLAND AIR FORCE BASE	ALBUQUERQUE	NEW MEXICO	18	314	57,951
AIR FORCE	KLAMATH FALLS AIRPORT-KINGSLEY FIELD	KLAMATH FALLS	OREGON	38	493	76,432
AIR FORCE	KUNSAN AIR BASE	FPO	KOREA, REPUBLIC OF	329	3917	83,937
AIR FORCE	LAJES FIELD	FPO	PORTUGAL	56	2258	24,840
AIR FORCE	LAMBERT ST LOUIS IAP ANG	ST. LOUIS	MISSOURI	10	294	33,613
AIR FORCE	LANGLEY AIR FORCE BASE	LANGLEY AFB	VIRGINIA	1,168	12093	96,563
AIR FORCE	LAUGHLIN AIR FORCE BASE	DEL RIO	TEXAS	122	1872	64,941
AIR FORCE	LINCOLN MUNICIPAL AIRPORT (ANG)	LINCOLN	NEBRASKA	31	356	87,896
AIR FORCE	LITTLE ROCK AIR FORCE BASE	LITTLE ROCK	ARKANSAS	393	3506	112,085
AIR FORCE	LITTLE ROCK AIR FORCE BASE	LITTLE ROCK	ARKANSAS	19	311	62,386
AIR FORCE	LOS ANGELES AIR FORCE BASE	EL SEGUNDO	CALIFORNIA	94	1109	84,949
AIR FORCE	LOUISVILLE INTERNATIONAL AIRPORT - STANDIFORD FIELD	LOUISVILLE	KENTUCKY	24	417	57,459
AIR FORCE	LUIS MUNOZ MARIN INTERNATIONAL AIRPORT	CAROLINA	PUERTO RICO	27	475	56,063

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AIR FORCE	LUKE AIR FORCE BASE	GLENDALE	ARIZONA	281	3742	74,992
AIR FORCE	MACDILL AIR FORCE BASE	TAMPA	FLORIDA	537	5131	104,660
AIR FORCE	MALMSTROM AIR FORCE BASE	MALMSTROM AFB	MONTANA	395	2995	131,980
AIR FORCE	MANSFIELD LAHM AIRPORT ANG	MANSFIELD	OHIO	37	353	105,258
AIR FORCE	MARCH AIR RESERVE BASE (AFR)	RIVERSIDE	CALIFORNIA	120	1944	61,646
AIR FORCE	MARCH AIR RESERVE BASE (ANG)	RIVERSIDE	CALIFORNIA	51	309	163,691
AIR FORCE	MARTIN STATE AIRPORT ANG	MIDDLE RIVER	MARYLAND	25	442	57,410
AIR FORCE	MAXWELL AIR FORCE BASE	MONTGOMERY	ALABAMA	643	6188	103,894
AIR FORCE	MCCONNELL AIR FORCE BASE (AMC)	WICHITA	KANSAS	250	2401	104,127
AIR FORCE	MCCONNELL AIR FORCE BASE (ANG)	WICHITA	KANSAS	65	529	123,339
AIR FORCE	MCENTIRE JOINT NATIONAL GUARD BASE	EASTOVER	SOUTH CAROLINA	36	454	79,200
AIR FORCE	MCGHEE TYSON AIRPORT	LOUISVILLE	TENNESSEE	75	834	90,134
AIR FORCE	MCGUIRE AIR FORCE BASE (AMC)	MCGUIRE AFB	NEW JERSEY	1,142	12645	90,299
AIR FORCE	MCGUIRE AIR FORCE BASE (ANG)	MCGUIRE AFB	NEW JERSEY	50	436	114,139
AIR FORCE	MEMPHIS INTERNATIONAL AIRPORT	MEMPHIS	TENNESSEE	65	626	103,652
AIR FORCE	MINNEAPOLIS-ST PAUL IAP-AIR RESERVE STN (AFR)	MINNEAPOLIS	MINNESOTA	66	710	92,623
AIR FORCE	MINNEAPOLIS-ST PAUL IAP-AIR RESERVE STN (ANG)	MINNEAPOLIS	MINNESOTA	36	467	77,099
AIR FORCE	MINOT AIR FORCE BASE	MINOT AFB	NORTH DAKOTA	578	4106	140,828
AIR FORCE	MISAWA AIR BASE	FPO	JAPAN	1,225	7926	154,605
AIR FORCE	MOFFETT FLD ANG	MOUNTAIN VIEW	CALIFORNIA	11	441	25,943

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
AIR FORCE	MONTGOMERY REGIONAL AIRPORT (ANG) BASE	MONTGOMERY	ALABAMA	32	505	64,209
AIR FORCE	MOODY AIR FORCE BASE	MOODY AF BASE	GEORGIA	211	2978	70,993
AIR FORCE	MORON AIR BASE	FPO	SPAIN	30	737	40,345
AIR FORCE	MOUNTAIN HOME AIR FORCE BASE	ELMORE	IDAHO	305	3354	90,841
AIR FORCE	NASHVILLE INTERNATIONAL AIRPORT	NASHVILLE	TENNESSEE	20	262	75,296
AIR FORCE	NELLIS AIR FORCE BASE	LAS VEGAS	NEVADA	895	9714	92,088
AIR FORCE	NEW CASTLE COUNTY AIRPORT	WILMINGTON	DELAWARE	24	339	69,460
AIR FORCE	NEW ORLEANS NAS ANG	BELLE CHASSE	LOUISIANA	33	507	64,771
AIR FORCE	NIAGARA FALLS IAP-AIR RESERVE STATION (AFR)	NIAGARA FALLS	NEW YORK	78	700	111,129
AIR FORCE	NIAGARA FALLS IAP-AIR RESERVE STATION (ANG)	NIAGARA FALLS	NEW YORK	13	181	70,880
AIR FORCE	NORTH HIGHLANDS ANG STATION	NORTH HIGHLANDS	CALIFORNIA	5	133	38,150
AIR FORCE	OFFUTT AIR FORCE BASE	OFFUTT A.F.B.	NEBRASKA	745	6447	115,549
AIR FORCE	OSAN AIR BASE	OSAN AFB	KOREA, REPUBLIC OF	646	7677	84,196
AIR FORCE	OTIS AIR NATIONAL GUARD BASE	OTIS ANGB, MASHPEE	MASSACHUSETTS	57	726	77,936
AIR FORCE	PATRICK AIR FORCE BASE	PATRICK AFB	FLORIDA	782	7062	110,749
AIR FORCE	PEASE INTERNATIONAL TRADEPORT	PORTSMOUTH	NEW HAMPSHIRE	96	548	176,034
AIR FORCE	PETERSON AIR FORCE BASE	COLORADO SPRINGS	COLORADO	1,811	7062	256,425
AIR FORCE	PITTSBURGH IAP-AIR RESERVE STN	MOON	PENNSYLVANIA	44	569	76,673
AIR FORCE	PITTSBURGH INTERNATIONAL AIRPORT (ANG)	CORAOPOLIS	PENNSYLVANIA	56	450	124,655

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
AIR FORCE	PORTLAND INTERNATIONAL AIRPORT	PORTLAND	OREGON	59	790	74,095
AIR FORCE	QUONSET STATE AIRPORT ANG	NORTH KINGSTOWN	RHODE ISLAND	34	399	84,674
AIR FORCE	RAF ALCONBURY	FPO	UNITED KINGDOM	149	1561	95,305
AIR FORCE	RAF CROUGHTON	FPO	UNITED KINGDOM	95	1097	86,212
AIR FORCE	RAF FAIRFORD	FPO	UNITED KINGDOM	35	1079	32,163
AIR FORCE	RAF LAKENHEATH	FPO	UNITED KINGDOM	582	7442	78,218
AIR FORCE	RAF MILDENHALL	FPO	UNITED KINGDOM	246	2986	82,489
AIR FORCE	RAMSTEIN AIR BASE	FPO	GERMANY	1,050	15837	66,313
AIR FORCE	RENO TAHOE INTERNATIONAL AIRPORT	RENO	NEVADA	20	404	49,640
AIR FORCE	RICKENBACKER INTERNATION AIRPORT (ANG)	COLUMBUS	OHIO	43	523	81,719
AIR FORCE	ROBINS AIR FORCE BASE (AFMC)	ROBINS AF BASE	GEORGIA	1,837	13225	138,936
AIR FORCE	ROBINS AIR FORCE BASE (ANG)	ROBINS AF BASE	GEORGIA	69	734	93,582
AIR FORCE	ROSECRANS MEMORIAL AIRPORT	ST. JOSEPH	MISSOURI	22	391	57,148
AIR FORCE	SALT LAKE CITY INTERNATIONAL AIRPORT ANG	SALT LAKE CITY	UTAH	44	501	87,713
AIR FORCE	SAVANNAH/HILTON HEAD INTERNATIONAL AP	GARDEN CITY	GEORGIA	45	905	49,872
AIR FORCE	SCHENECTADY COUNTY AIRPORT ANG	SCOTIA	NEW YORK	36	422	85,431
AIR FORCE	SCHRIEVER AIR FORCE BASE	COLORADO SPRINGS	COLORADO	447	2264	197,271
AIR FORCE	SCOTT AIR FORCE BASE (AMC)	BELLEVILLE	ILLINOIS	531	4956	107,093
AIR FORCE	SCOTT AIR FORCE BASE (ANG)	BELLEVILLE	ILLINOIS	35	348	99,480
AIR FORCE	SELFRIDGE ANG BASE	MOUNT CLEMENS	MICHIGAN	165	1627	101,509

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
AIR FORCE	SEYMOUR JOHNSON AIR FORCE BASE	SEYMOUR JOHNSON AFB	NORTH CAROLINA	297	3037	97,665
AIR FORCE	SHAW AIR FORCE BASE	SHAW AF BASE	SOUTH CAROLINA	291	3319	87,534
AIR FORCE	SHEPPARD AIR FORCE BASE	WICHITA FALLS	TEXAS	603	7301	82,622
AIR FORCE	SIOUX GATEWAY AP/COL. BUD DAY FIELD(ANG)	SIOUX CITY	IOWA	35	477	72,721
AIR FORCE	SKY HARBOR INTERNATIONAL AIRPORT	PHOENIX	ARIZONA	18	276	64,511
AIR FORCE	SPANGDAHLEM AIR BASE	FPO	GERMANY	382	7479	51,103
AIR FORCE	SPRINGFIELD BECKLEY MUNICIPAL AIRPORT	SPRINGFIELD	OHIO	32	504	63,207
AIR FORCE	STEWART INTERNATIONAL AIRPORT	NEWBURGH	NEW YORK	88	868	101,255
AIR FORCE	SYRACUSE HANCOCK FIELD ANG	SYRACUSE	NEW YORK	49	488	100,988
AIR FORCE	TINKER AIR FORCE BASE	OKLAHOMA CITY	OKLAHOMA	2,703	18812	143,693
AIR FORCE	TOLEDO EXPRESS AIRPORT ANG	SWANTON	OHIO	21	379	54,504
AIR FORCE	TRAVIS AIR FORCE BASE	FAIRFIELD	CALIFORNIA	477	6320	75,504
AIR FORCE	TUCSON INTERNATIONAL AIRPORT	TUCSON	ARIZONA	48	647	73,878
AIR FORCE	TULSA INTERNATIONAL AIRPORT	TULSA	OKLAHOMA	37	368	99,501
AIR FORCE	TYNDALL AIR FORCE BASE	PANAMA CITY BEACH	FLORIDA	360	4043	89,038
AIR FORCE	USAF ACADEMY	AIR FORCE ACADEMY	COLORADO	887	6645	133,439
AIR FORCE	VANCE AIR FORCE BASE	ENID	OKLAHOMA	123	1463	84,320
AIR FORCE	VANDENBERG AIR FORCE BASE	LOMPOC	CALIFORNIA	554	5092	108,862
AIR FORCE	VOLK FIELD	CAMP DOUGLAS	WISCONSIN	42	672	63,103
AIR FORCE	W K KELLOGG AIRPORT	BATTLE CREEK	MICHIGAN	37	406	92,064
AIR FORCE	WESTOVER AIR RESERVE BASE	CHICOPEE	MASSACHUSETTS	154	1645	93,447

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AIR FORCE	WHITEMAN AIR FORCE BASE	KNOB NOSTER	MISSOURI	487	3773	129,088
AIR FORCE	WILL ROGERS WORLD AIRPORT	OKLAHOMA CITY	OKLAHOMA	25	356	71,615
AIR FORCE	WILLOW GROVE AIR RESERVE STATION	HORSHAM	PENNSYLVANIA	39	505	76,446
AIR FORCE	WRIGHT PATTERSON AIR FORCE BASE	WRIGHT-PATTERSON AFB	OHIO	2,828	16482	171,594
AIR FORCE	YEAGER AIRPORT ANG	CHARLESTON	WEST VIRGINIA	40	420	95,389
AIR FORCE	YOKOTA AIR BASE	FPO	JAPAN	1,137	9410	120,831
AIR FORCE	YOUNGSTOWN-WARREN REGIONAL AIRPORT ARS	VIENNA	OHIO	71	742	95,262
DCMA	DCMA(1)	CARSON	CALIFORNIA	9.23	78	118,892
DCMA	DCMA(2)	BRATENAHL	OHIO	8.75	85	102,906
DECA	88th REGIONAL SUPPORT COMMAND	FORT MCCOY	WISCONSIN	7	54	129,619
DECA	99TH REGIONAL SUPPORT COMMAND	CORAOPOLIS	PENNSYLVANIA	7	43	155,228
DECA	ABERDEEN PROVING GROUND	ABERDEEN	MARYLAND	8	62	133,017
DECA	ALTUS AIR FORCE BASE	ALTUS	OKLAHOMA	8	58	147,068
DECA	ARNOLD AIR STATION	ARNOLD A F STATION	TENNESSEE	4	23	181,211
DECA	AVIANO AIR BASE	FPO	ITALY	8	64	118,880
DECA	BANGOR INTERNATIONAL AIRPORT (ANG)	BANGOR	MAINE	5	29	170,276
DECA	BARKSDALE AIR FORCE BASE	BARKSDALE AF BASE	LOUISIANA	12	104	112,869
DECA	BEALE AIR FORCE BASE	BEALE AFB	CALIFORNIA	6	37	162,892
DECA	BEALE AIR FORCE BASE	BEALE AFB	CALIFORNIA	13	88	142,795
DECA	BEALE AIR FORCE BASE	BEALE AFB	CALIFORNIA	6	75	81,971
DECA	BUCKLEY AIR FORCE BASE	AURORA	COLORADO	9	77	121,487

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DECA	CAMP CASEY	FPO	KOREA, REPUBLIC OF	3	17	157,983
DECA	CAMP HENRY	FPO	KOREA, REPUBLIC OF	1	8	168,950
DECA	CAMP HENRY	FPO	KOREA, REPUBLIC OF	6	38	158,803
DECA	CAMP HENRY	FPO	KOREA, REPUBLIC OF	2	16	128,167
DECA	CAMP HUMPHREYS	FPO	KOREA, REPUBLIC OF	4	19	231,186
DECA	CAMP RED CLOUD	FPO	KOREA, REPUBLIC OF	1	11	119,724
DECA	CAMP RED CLOUD	FPO	KOREA, REPUBLIC OF	1	10	88,829
DECA	CAMP ZAMA	FPO	JAPAN	1	2	299,837
DECA	CAMP ZAMA	FPO	JAPAN	2	13	130,030
DECA	CAMP ZAMA	FPO	JAPAN	6	67	87,707
DECA	CAMP ZAMA	FPO	JAPAN	8	186	44,075
DECA	CANNON AIR FORCE BASE	CANNON AFB	NEW MEXICO	7	58	122,971
DECA	CARLISLE BARRACKS	CARLISLE	PENNSYLVANIA	7	60	121,261
DECA	CBC GULFPORT MS	GULFPORT	MISSISSIPPI	8	31	259,306
DECA	CHARLESTON AIR FORCE BASE	CHARLESTON	SOUTH CAROLINA	11	64	171,321
DECA	CHARLESTON AIR FORCE BASE	CHARLESTON	SOUTH CAROLINA	12	86	133,405
DECA	COLUMBUS AIR FORCE BASE	COLUMBUS	MISSISSIPPI	4	49	84,309
DECA	COMBAT SUPPORT TRAINING CENTER AND CAMP PARKS	DUBLIN	CALIFORNIA	2	8	195,513
DECA	COMFLEACT SASEBO JA	FPO	JAPAN	4	24	186,417
DECA	COMFLEACT SASEBO JA	FPO	JAPAN	3	20	131,890
DECA	COMFLEACT YOKOSUKA JA	FPO	JAPAN	18	96	185,587
DECA	COMFLEACT YOKOSUKA JA	FPO	JAPAN	15	86	177,594
DECA	CSO NAS MOFFETT FIELD CA	MOFFETT FIELD	CALIFORNIA	3	52	65,619
DECA	DAVIS-MONTHAN AIR FORCE BASE	TUCSON	ARIZONA	15	115	126,950

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DECA	DOVER AIR FORCE BASE	DOVER	DELAWARE	5	78	60,784
DECA	DUGWAY PROVING GROUND	DUGWAY	UTAH	3	18	139,315
DECA	DYESS AIR FORCE BASE	ABILENE	TEXAS	7	80	90,417
DECA	EDWARDS AIR FORCE BASE	LANCASTER	CALIFORNIA	7	60	110,997
DECA	EGLIN AIR FORCE BASE	VALPARAISO	FLORIDA	15	63	231,198
DECA	EGLIN AIR FORCE BASE	VALPARAISO	FLORIDA	16	107	149,191
DECA	EIELSON AIR FORCE BASE	MOOSE CREEK	ALASKA	7	42	168,202
DECA	ELLSWORTH AIR FORCE BASE	SAN ANGELO	SOUTH DAKOTA	9	72	129,206
DECA	FAIRCHILD AIR FORCE BASE	AIRWAY HEIGHTS	WASHINGTON	11	85	130,550
DECA	FLEET ACTIVITIES CHINHAE KS	FPO	KOREA, REPUBLIC OF	2	11	166,106
DECA	FORT BELVOIR	FORT BELVOIR	VIRGINIA	20	129	153,390
DECA	FORT BENNING	COLUMBUS	GEORGIA	1	3	175,414
DECA	FORT BENNING	COLUMBUS	GEORGIA	15	118	128,088
DECA	FORT BLISS	EL PASO	TEXAS	13	123	109,902
DECA	FORT BRAGG	FORT BRAGG	NORTH CAROLINA	16	118	137,087
DECA	FORT BRAGG	FORT BRAGG	NORTH CAROLINA	12	95	130,520
DECA	FORT BUCHANAN	FPO	PUERTO RICO	13	95	137,443
DECA	FORT CAMPBELL	FORT CAMPBELL	KENTUCKY	15	122	123,199
DECA	FORT CARSON	COLORADO SPRINGS	COLORADO	16	122	127,767
DECA	FORT DETRICK	FREDERICK	MARYLAND	10	58	172,345
DECA	FORT DETRICK	FREDERICK	MARYLAND	7	39	165,916
DECA	FORT DRUM	EVANS MILLS	NEW YORK	12	83	143,370
DECA	FORT GEORGE G MEADE	FORT MEADE	MARYLAND	15	118	123,814
DECA	FORT GORDON	AUGUSTA	GEORGIA	12	92	126,193
DECA	FORT GREELY	DELTA JUNCTION	ALASKA	5	25	214,812
DECA	FORT HAMILTON	NEW YORK CITY	NEW YORK	8	50	165,415

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DECA	FORT HOOD	KILLEEN	TEXAS	23	128	179,697
DECA	FORT HOOD	KILLEEN	TEXAS	13	106	118,343
DECA	FORT HUACHUCA	SIERRA VISTA	ARIZONA	10	78	125,951
DECA	FORT JACKSON	COLUMBIA	SOUTH CAROLINA	12	130	94,169
DECA	FORT KNOX	MIDDLETOWN	KENTUCKY	12	122	101,591
DECA	FORT LEAVENWORTH	FORT LEAVENWORTH	KANSAS	11	74	151,201
DECA	FORT LEE	FORT LEE	VIRGINIA	11	81	131,786
DECA	FORT LEE	FORT LEE	VIRGINIA	22	242	91,014
DECA	FORT LEONARD WOOD	FORT LEONARD WOOD	MISSOURI	12	71	166,399
DECA	FORT MCCOY	SPARTA	WISCONSIN	3	16	179,969
DECA	FORT POLK	FORT POLK	LOUISIANA	8	82	98,567
DECA	FORT RILEY	FORT RILEY	KANSAS	17	113	154,996
DECA	FORT RUCKER	FORT RUCKER	ALABAMA	7	84	85,324
DECA	FORT SILL	FORT SILL	OKLAHOMA	9	102	88,205
DECA	FORT STEWART	HINESVILLE	GEORGIA	9	58	154,194
DECA	FORT STEWART	HINESVILLE	GEORGIA	12	95	131,463
DECA	FORT WAINWRIGHT	FORT WAINWRIGHT	ALASKA	22	104	208,090
DECA	FRANCIS E WARREN AIR FORCE BASE	CHEYENNE	WYOMING	7	77	91,429
DECA	GOODFELLOW AIR FORCE BASE	SAN ANGELO	TEXAS	8	57	132,099
DECA	GRAND FORKS AIR FORCE BASE	GRAND FORKS AFB	NORTH DAKOTA	4	41	99,328
DECA	HANSCOM AIR FORCE BASE	BEDFORD	MASSACHUSETTS	11	73	146,956
DECA	HILL AIR FORCE BASE	OGDEN	UTAH	13	87	148,961
DECA	HOLLOMAN AIR FORCE BASE	ALAMOGORDO	NEW MEXICO	4	69	62,596
DECA	INCIRLIK AIR BASE ADANA	FPO	TURKEY	7	67	104,423
DECA	INCIRLIK AIR BASE ADANA	FPO	TURKEY	1	15	100,886

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DECA	JBAB ANACOSTIA BOLLING	WASHINGTON	DISTRICT OF COLUMBIA	13	72	176,756
DECA	JBPHH PEARL HARBOR - HICKAM HAWAII	PEARL HARBOR	HAWAII	14	115	117,236
DECA	JBPHH PEARL HARBOR - HICKAM HAWAII	PEARL HARBOR	HAWAII	11	98	113,958
DECA	JBSA - FORT SAM HOUSTON	FORT SAM HOUSTON	TEXAS	17	104	160,807
DECA	JBSA - LACKLAND	SAN ANTONIO	TEXAS	14	117	121,381
DECA	JBSA - RANDOLPH	SAN ANTONIO	TEXAS	16	97	165,594
DECA	JNTEXPBASE LITTLE CREEK FS VA	NORFOLK	VIRGINIA	15	100	152,119
DECA	JOINT BASE ANDREWS-NAVAL AIR FACILITY WASHINGTON	ANDREWS AFB	MARYLAND	16	113	145,366
DECA	JOINT BASE ELMENDORF-FT RICHARDSON	ELMENDORF AFB	ALASKA	17	105	164,838
DECA	JOINT BASE LEWIS-MCCHORD	TACOMA	WASHINGTON	13	105	120,857
DECA	JOINT BASE LEWIS-MCCHORD	TACOMA	WASHINGTON	16	148	107,414
DECA	JOINT BASE MYER-HENDERSON HALL	ARLINGTON	VIRGINIA	7	74	95,055
DECA	KADENA AIR BASE	KADENA AIR BASE OKINAWA	JAPAN	16	87	182,459
DECA	KEESLER AIR FORCE BASE	BILOXI	MISSISSIPPI	16	98	162,185
DECA	KIRTLAND AIR FORCE BASE	ALBUQUERQUE	NEW MEXICO	12	108	111,173
DECA	KUNSAN AIR BASE	FPO	KOREA, REPUBLIC OF	4	16	258,192
DECA	LAJES FIELD	FPO	PORTUGAL	5	58	90,669
DECA	LANGLEY AIR FORCE BASE	LANGLEY AFB	VIRGINIA	15	103	148,956
DECA	LANGLEY AIR FORCE BASE	LANGLEY AFB	VIRGINIA	12	103	121,209
DECA	LAUGHLIN AIR FORCE BASE	DEL RIO	TEXAS	5	75	63,681

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DECA	LITTLE ROCK AIR FORCE BASE	LITTLE ROCK	ARKANSAS	9	100	84,975
DECA	LOS ANGELES AIR FORCE BASE	EL SEGUNDO	CALIFORNIA	9	75	124,236
DECA	LUKE AIR FORCE BASE	GLENDALE	ARIZONA	12	102	113,789
DECA	MACDILL AIR FORCE BASE	TAMPA	FLORIDA	15	171	85,343
DECA	MALMSTROM AIR FORCE BASE	MALMSTROM AFB	MONTANA	8	68	116,979
DECA	MARCH AIR RESERVE BASE	RIVERSIDE	CALIFORNIA	11	117	92,749
DECA	MARINE CORPS BASE QUANTICO VA	QUANTICO	VIRGINIA	14	121	117,106
DECA	MAXWELL AIR FORCE BASE	MONTGOMERY	ALABAMA	13	87	146,034
DECA	MAXWELL AIR FORCE BASE	MONTGOMERY	ALABAMA	6	42	139,755
DECA	MCAGCC TWENTYNINE PALMS CA	TOPAZ	CALIFORNIA	2	13	149,180
DECA	MCAGCC TWENTYNINE PALMS CA	TOPAZ	CALIFORNIA	7	57	123,282
DECA	MCAS CHERRY POINT NC	CHERRY POINT	NORTH CAROLINA	7	59	119,030
DECA	MCAS IWAKUNI JA	FPO	JAPAN	6	32	181,312
DECA	MCAS MIRAMAR	SAN DIEGO	CALIFORNIA	13	91	145,703
DECA	MCAS YUMA AZ	YUMA	ARIZONA	5	34	142,692
DECA	MCB CAMP LEJEUNE NC	CAMP LEJEUNE	NORTH CAROLINA	7	46	151,586
DECA	MCB CAMP LEJEUNE NC	CAMP LEJEUNE	NORTH CAROLINA	10	76	125,746
DECA	MCB CAMP PENDLETON CA	CAMP PENDLETON	CALIFORNIA	3	20	140,718
DECA	MCB CAMP PENDLETON CA	CAMP PENDLETON	CALIFORNIA	14	113	127,583
DECA	MCB CAMP S D BUTLER OKINAWA JA	FPO	JAPAN	5	31	166,992
DECA	MCB CAMP S D BUTLER OKINAWA JA	FPO	JAPAN	5	31	163,189
DECA	MCB CAMP S D BUTLER OKINAWA JA	FPO	JAPAN	8	59	138,074

Component	Installation Name	City	State / Country	Total Site Delivered Energy (BBTU) Goal Subject	Gross Square Footage ('000 SF) Goal Subject	Intensity (BTU/SF) Goal Subject
DECA	MCB CAMP S D BUTLER OKINAWA JA	FPO	JAPAN	11	291	38,130
DECA	MCB HAWAII KANEOHE	KANEOHE	HAWAII	13	77	168,114
DECA	MCCONNELL AIR FORCE BASE	WICHITA	KANSAS	7	56	131,666
DECA	MCGUIRE AIR FORCE BASE	MCGUIRE AFB	NEW JERSEY	15	103	141,718
DECA	MCGUIRE AIR FORCE BASE	MCGUIRE AFB	NEW JERSEY	1	18	74,629
DECA	MCLB ALBANY GA	ALBANY	GEORGIA	5	37	146,722
DECA	MCLB BARSTOW CA	BARSTOW	CALIFORNIA	3	22	136,946
DECA	MCRD BEAUFORT PI SC	PARRIS ISLAND	SOUTH CAROLINA	5	44	124,220
DECA	MCSPTACT KANSAS CITY MO	BELTON	MISSOURI	3	24	132,631
DECA	MINOT AIR FORCE BASE	MINOT AFB	NORTH DAKOTA	8	56	142,731
DECA	MISAWA AIR BASE	FPO	JAPAN	10	82	122,191
DECA	MOODY AIR FORCE BASE	MOODY AF BASE	GEORGIA	9	64	135,321
DECA	MOUNTAIN HOME AIR FORCE BASE	ELMORE	IDAHO	7	54	123,961
DECA	NAF ATSUGI JA	FPO	JAPAN	5	32	147,710
DECA	NAF EL CENTRO CA	EL CENTRO	CALIFORNIA	2	13	181,424
DECA	NAS CORPUS CHRISTI TX	CORPUS CHRISTI	TEXAS	8	46	174,094
DECA	NAS FALLON NV	FALLON	NEVADA	4	40	86,980
DECA	NAS JACKSONVILLE FL	JACKSONVILLE	FLORIDA	18	88	203,016
DECA	NAS JRB FT WORTH TX	FORT WORTH	TEXAS	16	93	172,587
DECA	NAS JRB NEW ORLEANS LA	BELLE CHASSE	LOUISIANA	7	47	148,519
DECA	NAS KEY WEST FL	STOCK ISLAND	FLORIDA	4	21	175,305
DECA	NAS KINGSVILLE TX	KINGSVILLE	TEXAS	2	15	143,818
DECA	NAS LEMOORE CA	LEMOORE NAS	CALIFORNIA	7	44	151,881
DECA	NAS MERIDIAN MS	MERIDIAN	MISSISSIPPI	5	32	166,661

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DECA	NAS OCEANA VA	VIRGINIA BEACH	VIRGINIA	16	110	143,632
DECA	NAS PENSACOLA FL	PENSACOLA	FLORIDA	12	74	160,613
DECA	NAS SIGONELLA IT	FPO	ITALY	10	68	143,953
DECA	NAS WHIDBEY ISLAND WA	OAK HARBOR	WASHINGTON	10	66	154,202
DECA	NAS WHITING FLD MILTON FL	MILTON	FLORIDA	4	22	179,589
DECA	NATIONAL TRAINING CENTER AND FORT IRWIN	FORT IRWIN	CALIFORNIA	8	57	137,593
DECA	NAVAL AIR STATION PAX RIVER	PATUXENT RIVER	MARYLAND	8	56	151,432
DECA	NAVAL BASE KITSAP BREMERTON WA	BREMERTON	WASHINGTON	7	48	149,285
DECA	NAVAL BASE KITSAP BREMERTON WA	BREMERTON	WASHINGTON	9	61	141,487
DECA	NAVAL STATION GREAT LAKES IL	GREAT LAKES	ILLINOIS	7	60	119,115
DECA	NAVAL STATION NEWPORT RI	NEWPORT	RHODE ISLAND	8	46	182,321
DECA	NAVAL SUPPORT ACTIVITY CRANE	CRANE	INDIANA	1	8	126,215
DECA	NAVBASE CORONADO	SAN DIEGO	CALIFORNIA	8	46	165,762
DECA	NAVBASE CORONADO	SAN DIEGO	CALIFORNIA	13	78	163,307
DECA	NAVBASE GUAM	AGANA	GUAM	10	57	173,109
DECA	NAVBASE GUAM	AGANA	GUAM	16	187	85,318
DECA	NAVBASE SAN DIEGO CA	SAN DIEGO	CALIFORNIA	17	128	130,026
DECA	NAVBASE VENTURA CTY PT MUGU CA	POINT MUGU	CALIFORNIA	9	65	137,371
DECA	NAVSTA EVERETT WA	EVERETT	WASHINGTON	13	60	216,956
DECA	NAVSTA MAYPORT FL	JACKSONVILLE	FLORIDA	9	71	124,989
DECA	NAVSTA NORFOLK VA	NORFOLK	VIRGINIA	12	79	146,489
DECA	NAVSTA ROTA SP	ROTA	SPAIN	7	50	139,480
DECA	NAVSUBASE NEW LONDON CT	GROTON	CONNECTICUT	10	57	175,031

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DECA	NAVSUBASE NEW LONDON CT	GROTON	CONNECTICUT	5	28	161,435
DECA	NAVSUPPACT ANNAPOLIS	ANNAPOLIS	MARYLAND	6	48	127,204
DECA	NAVSUPPACT MIDSOUTH MEMPHIS TN	MILLINGTON	TENNESSEE	11	61	176,063
DECA	NAVSUPPACT NAPLES IT	FPO	ITALY	13	85	152,745
DECA	NAVSUPPACT NORFOLK NSY	PORTSMOUTH	VIRGINIA	9	62	149,544
DECA	NAWS CHINA LAKE	CHINA LAKE	CALIFORNIA	3	24	123,898
DECA	NELLIS AIR FORCE BASE	LAS VEGAS	NEVADA	10	130	75,627
DECA	NSA ANDERSEN	FPO	GUAM	11	122	86,904
DECA	NSA SARATOGA SPRINGS NY	SARATOGA SPGS	NEW YORK	3	22	152,131
DECA	NSA SOUTH POTOMAC	DAHLGREN	VIRGINIA	3	15	165,855
DECA	NSY PORTSMOUTH	KITTERY	MAINE	6	28	202,669
DECA	OFFUTT AIR FORCE BASE	OFFUTT AFB	NEBRASKA	18	120	150,993
DECA	OSAN AIR BASE	FPO	KOREA, REPUBLIC OF	5	49	96,969
DECA	OSAN AIR BASE	FPO	KOREA, REPUBLIC OF	5	60	74,963
DECA	PATRICK AIR FORCE BASE	PATRICK AFB	FLORIDA	9	103	83,955
DECA	PETERSON AIR FORCE BASE	COLORADO SPRINGS	COLORADO	12	102	121,533
DECA	PICATINNY ARSENAL	DOVER	NEW JERSEY	4	22	179,909
DECA	PRESIDIO OF MONTEREY	MONTEREY	CALIFORNIA	11	111	100,635
DECA	RAF ALCONBURY	FPO	UNITED KINGDOM	11	77	147,403
DECA	RAF CROUGHTON	FPO	UNITED KINGDOM	3	20	146,637
DECA	RAF LAKENHEATH	FPO	UNITED KINGDOM	19	112	167,996
DECA	RAF MENWITH HILL	FPO	UNITED KINGDOM	5	34	148,484
DECA	RAF MILDENHALL	FPO	UNITED KINGDOM	2	14	162,536
DECA	RAMSTEIN AIR BASE	FPO	GERMANY	7	41	182,595
DECA	RAMSTEIN AIR BASE	FPO	GERMANY	10	59	173,742

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DECA	RAMSTEIN AIR BASE	FPO	GERMANY	14	95	148,043
DECA	RAMSTEIN AIR BASE	FPO	GERMANY	25	178	138,069
DECA	RAMSTEIN AIR BASE	FPO	GERMANY	2	37	60,450
DECA	REDSTONE ARSENAL	HUNTSVILLE	ALABAMA	11	81	137,466
DECA	ROBINS AIR FORCE BASE	ROBINS AF BASE	GEORGIA	9	70	134,196
DECA	ROCK ISLAND ARSENAL	ROCK ISLAND	ILLINOIS	3	33	80,006
DECA	SCHOFIELD BARRACKS	WAHIAWA	HAWAII	14	92	150,840
DECA	SCOTT AIR FORCE BASE	BELLEVILLE	ILLINOIS	17	114	147,996
DECA	SELFRIDGE ANG BASE	MOUNT CLEMENS	MICHIGAN	8	76	105,092
DECA	SEYMOUR JOHNSON AIR FORCE BASE	SEYMOUR JOHNSON AFB	NORTH CAROLINA	10	66	145,261
DECA	SHAW AIR FORCE BASE	SHAW AF BASE	SOUTH CAROLINA	10	61	157,850
DECA	SHEPPARD AIR FORCE BASE	WICHITA FALLS	TEXAS	11	81	133,953
DECA	SPANGDAHLEM AIR BASE	FPO	GERMANY	9	44	194,632
DECA	SUBASE KINGS BAY GA	KINGS BAY	GEORGIA	8	53	154,882
DECA	TINKER AIR FORCE BASE	OKLAHOMA CITY	OKLAHOMA	18	87	203,201
DECA	TOBYHANNA ARMY DEPOT	TOBYHANNA	PENNSYLVANIA	4	22	182,441
DECA	TRAVIS AIR FORCE BASE	FAIRFIELD	CALIFORNIA	13	97	138,560
DECA	TYNDALL AIR FORCE BASE	PANAMA CITY BEACH	FLORIDA	8	76	108,255
DECA	US ARMY GARRISON ANSBACH	FPO	GERMANY	8	58	145,080
DECA	US ARMY GARRISON BAUMHOLDER	FPO	GERMANY	6	32	198,481
DECA	US ARMY GARRISON BENELUX	FPO	BELGIUM	8	46	170,999
DECA	US ARMY GARRISON GRAFENWOEHR	FPO	GERMANY	12	55	212,981
DECA	US ARMY GARRISON GRAFENWOEHR	FPO	GERMANY	7	52	130,000

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DECA	US ARMY GARRISON GRAFENWOEHR	FPO	GERMANY	1	14	80,756
DECA	US ARMY GARRISON HEIDELBERG	FPO	GERMANY	21	789	26,409
DECA	US ARMY GARRISON HOHENFELS	FPO	GERMANY	5	38	140,393
DECA	US ARMY GARRISON LIVORNO	FPO	ITALY	4	26	135,962
DECA	US ARMY GARRISON SCHINNEN	FPO	NETHERLANDS	5	24	198,625
DECA	US ARMY GARRISON STUTTGART	FPO	GERMANY	2	5	341,906
DECA	US ARMY GARRISON STUTTGART	FPO	GERMANY	6	64	92,191
DECA	US ARMY GARRISON STUTTGART	FPO	GERMANY	2	18	89,529
DECA	US ARMY GARRISON STUTTGART	FPO	GERMANY	2	41	45,280
DECA	US ARMY GARRISON VICENZA	FPO	ITALY	9	55	168,633
DECA	US ARMY GARRISON WIESBADEN	FPO	GERMANY	10	62	168,180
DECA	USAF ACADEMY	AIR FORCE ACADEMY	COLORADO	9	67	139,419
DECA	VANCE AIR FORCE BASE	ENID	OKLAHOMA	5	34	152,727
DECA	VANDENBERG AIR FORCE BASE	LOMPOC	CALIFORNIA	5	83	64,992
DECA	WEST POINT MILITARY RESERVATION	WEST POINT	NEW YORK	12	73	168,558
DECA	WHITE SANDS MISSILE RANGE	LAS CRUCES	NEW MEXICO	4	32	140,313
DECA	WHITEMAN AIR FORCE BASE	KNOB NOSTER	MISSOURI	8	61	133,768
DECA	WRIGHT PATTERSON AIR FORCE BASE	WRIGHT-PATTERSON AFB	OHIO	15	123	120,900
DECA	YOKOTA AIR BASE	FPO	JAPAN	18	81	225,448
DECA	YONGSAN GARRISON	FPO	KOREA, REPUBLIC OF	1	7	202,779
DECA	YONGSAN GARRISON	FPO	KOREA, REPUBLIC OF	14	94	148,284
DECA	YONGSAN GARRISON	FPO	KOREA, REPUBLIC OF	3	89	34,081
DECA	YUMA PROVING GROUND	YUMA	ARIZONA	3	23	129,850

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DFAS	DFAS LIMESTONE	LIMESTONE	MAINE	10	141	67,525
DFAS	DFAS ROME	ROME	NEW YORK	25	332	75,437
DIA	DLOC WAREHOUSE	LANDOVER	MARYLAND	17	267	63,670
DIA	JOINT BASE ANACOSTIA-BOLLING	WASHINGTON	DISTRICT OF COLUMBIA	2,036	1,325	1,536,513
DIA	ROWE BUILDING AND ULC 1/RIVANNA STATION	CHARLOTTESVILLE	VIRGINIA	34	184	183,750
DLA	DEFENSE DISTRIBUTION CENTER, SUSQUEHANNA	NEW CUMBERLAND	PENNSYLVANIA	323	7,472	43,228
DLA	DEFENSE DISTRIBUTION DEPOT SAN JOAQUIN	TRACY	CALIFORNIA	104	5,093	20,420
DLA	DEFENSE SUPPLY CENTER RICHMOND	RICHMOND	VIRGINIA	235	4,579	51,321
DLA	DLA LAND AND MARITIME	COLUMBUS	OHIO	277	3,841	72,117
NGA	NGA	SPRINGFIELD	VIRGINIA	717	6,653	107,699
NRO	ADF - EAST	FORT BELVIOR	VIRGINIA	391	1,454	268,865
NRO	ADF - SOUTHWEST	LAS CRUCES	NEW MEXICO	85	235	361,574
NRO	CAPE	PATRICK AFB	FLORIDA	72	760	94,632
NRO	GLEN	SCHRIEVER AFB	COLORADO	45	21	2,166,190
NRO	NROV	LOMPOC	CALIFORNIA	30	435	69,310
NRO	WESTFIELDS	CHANTILLY	VIRGINIA	182	1,520	119,645
NSA	FORT GEORGE G MEADE	FORT MEADE	MARYLAND	2,534	11,578	218,875
WHS	FORT BELVOIR	FORT BELVOIR	VIRGINIA	107	1,854	57,972
WHS	WASHINGTON HQS SERVICE	ARLINGTON	VIRGINIA	1,081	6,998	154,516

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