

Department of Defense

Annual Energy Management Report



Fiscal Year 2009

Office of the Deputy Under Secretary of Defense
(Installations and Environment)

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1 EXECUTIVE SUMMARY

1.1 Background

The Department of Defense (DoD) continues to make significant progress toward achieving the facility energy goals required by Public Law 109-58, “Energy Policy Act of 2005,” August 8, 2005, Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management,” January 24, 2007, Public Law 109-264, “John Warner National Defense Authorization Act for Fiscal Year 2007,” Public Law 110-140, “Energy Independence and Security Act of 2007,” December 19, 2007, and Executive Order 13514, “Federal Leadership in Environmental, Energy, and Economic Performance,” October 5, 2009.

Under the Federal Energy Management Program (FEMP), Federal agencies are required to submit annual fiscal year reports to the Department of Energy (DOE). The reports summarize the agencies’ facilities energy management programs and measure progress towards meeting energy performance goals. DOE uses the information and data from the agencies’ reports to develop the DOE Annual Report to Congress on Federal Government Energy Management.

The Department of Defense Annual Energy Management Report fulfills DoD’s FEMP reporting requirement and describes for Fiscal Year (FY) 2009 DoD’s facilities energy management activities, operations and progress in implementing the requirements of the above Executive Orders and Acts of Congress. The report also:

- Complies with DoD energy reporting requirement of 10 U.S.C. section 2925 “Annual Department of Defense energy management reports.”
- Complies with DoD energy reporting requirement 10 U.S.C. section 2911(e) “Goal regarding use of renewable energy to meet facility energy needs.”
- Verifies that DoD will continue to submit annual installation energy management reports to Congress pursuant to 10 U.S.C. section 2925.

The “Energy Policy Act of 2005” (EPA 2005) and EO 13423 established FY 2003 as the energy management baseline year and set several important energy goals for federal agencies:

- An annual energy intensity reduction requirement of three percent per year from 2005 to 2015 (30 percent less than the baseline by the end of FY 2015).
- A phased increase in electricity use from renewable energy (three percent by FY 2009, five percent by FY 2010 and 7.5 percent by FY 2013).
- Increasing the energy efficiency of all new construction buildings to 30 percent better than the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standard 90.1-2004.
- Metering electricity consumption of all appropriate buildings and facilities by 2012.

EO 13423 also established a goal of reducing water consumption intensity by two percent annually compared to the FY 2007 baseline (16 percent by FY 2015).

The “Energy Independence and Security Act of 2007” (EISA 2007) codified the EO 13423 annual energy reduction requirement and also established other energy management program requirements:

- Designate an energy manager must be designated for “appropriate” Federal facilities covering at least 75 percent of an agency’s energy use (DoD established “installations” as the “appropriate” federal facility designation to meet this requirement).
- Conduct energy and water audits for 25 percent of facilities annually and all appropriate facilities on a four year cycle.
- Reduce the use of fossil fuels in new and renovated building by 55 percent in 2010 increasing to 100 percent in 2030.
- Adds Natural Gas and Steam metering requirements by October 2016.

The DoD Energy Management Program initiatives include energy awareness efforts, energy manager training, building audit programs, procurement of energy efficient products, and the use of sustainable design in new construction. Other contributing factors include integrated energy planning, enhanced use of renewable energy, and demonstration of innovative technologies and the use of non-DoD third party financed shared energy contracts such as Energy Savings Performance Contracts (ESPC) and Utility Energy Service Contracts (UESC).

The DoD Facility Energy Management Program consists of a number of initiatives that include energy awareness efforts, energy manager training, building audit programs, procurement of energy efficient products, and the use of sustainable designs in new construction. The program also includes integrated energy planning, enhanced use of renewable energy, and demonstration of innovative technologies and the use of non-DoD third party financed shared energy contracts such as Energy Savings Performance Contracts (ESPC) and Utility Energy Service Contracts (UESC).

The program includes the activities of the three military departments and ten DoD component agencies:

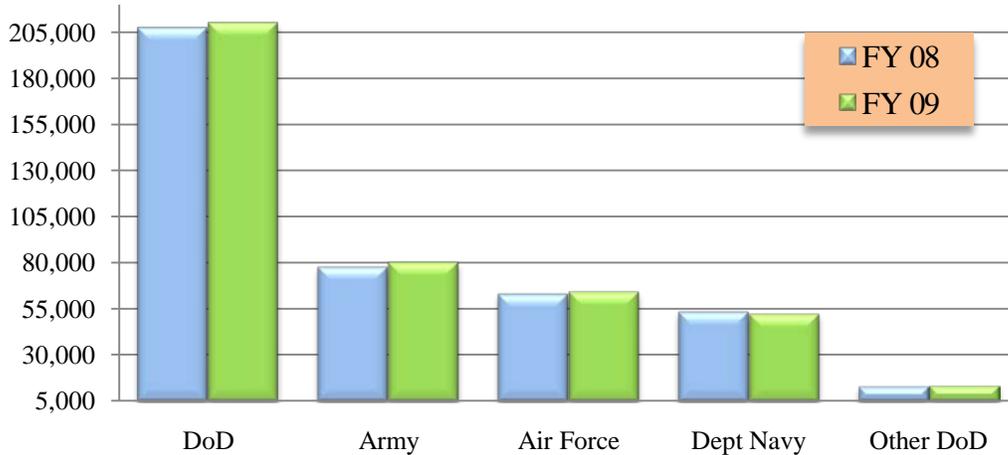
- Department of the Army (DoA)
- Department of the Air Force (DoAF)
- Department of the Navy (includes Marine Corps) (DoN)
- Defense Contract Management Agency (DCMA)
- Defense Commissary Agency (DeCA)
- Defense Finance and Accounting Service (DFAS)
- Defense Intelligence Agency (DIA)
- Defense Logistics Agency (DLA)
- Missile Defense Agency (MDA)
- National Geospatial-Intelligence Agency (NGA)
- National Security Agency (NSA)
- TRICARE Management Agency (TMA)
- Washington Headquarters Services (WHS)

1.2 DoD Facilities Energy Use

At the end of FY 2009, DoD was managing 1.93 billion square feet of facility space (EO 13423 defined goal-subject facilities) and had spent \$3.6 billion on facility energy. In addition, DoD spent \$9.6 billion on fuel for vehicles (non-fleet and fleet) and other equipment. This included jet fuel, aviation gasoline, Navy-special fuel, automobile gasoline, diesel-distillate and liquefied petroleum gas (LPG)/propane.

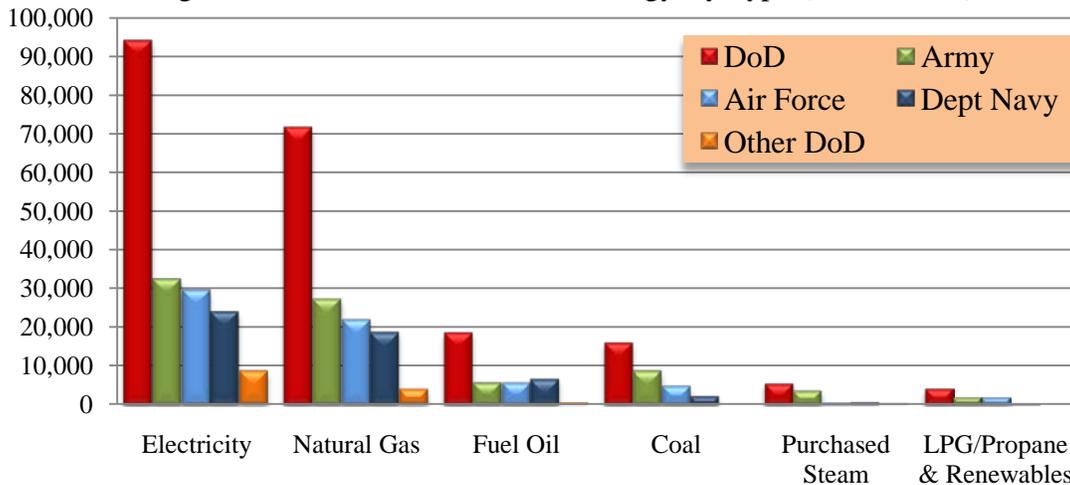
DoD delivered more than 209,000 billion British thermal units (BBTUs) of energy to its EO 13423 goal-subject facilities during FY 2009. This was a 1.3 percent increase over the FY 2008 amount (Figure 1). About ninety-four percent of the energy was to the military departments.

Figure 1: FY 08-09 Facilities Total Delivered Energy (Billions BTU)



As shown in Figure 2, about 79 percent of the delivered energy to DoD facilities in FY 2009 was from electricity and natural gas. In addition to using fuel oil, coal and purchased steam, DoD facilities also used a small percentage of LPG (Liquefied Petroleum Gas)/propane and renewable energy sources. In FY 2009 DoD used renewable energy for 3.6 percent of its delivered electricity.

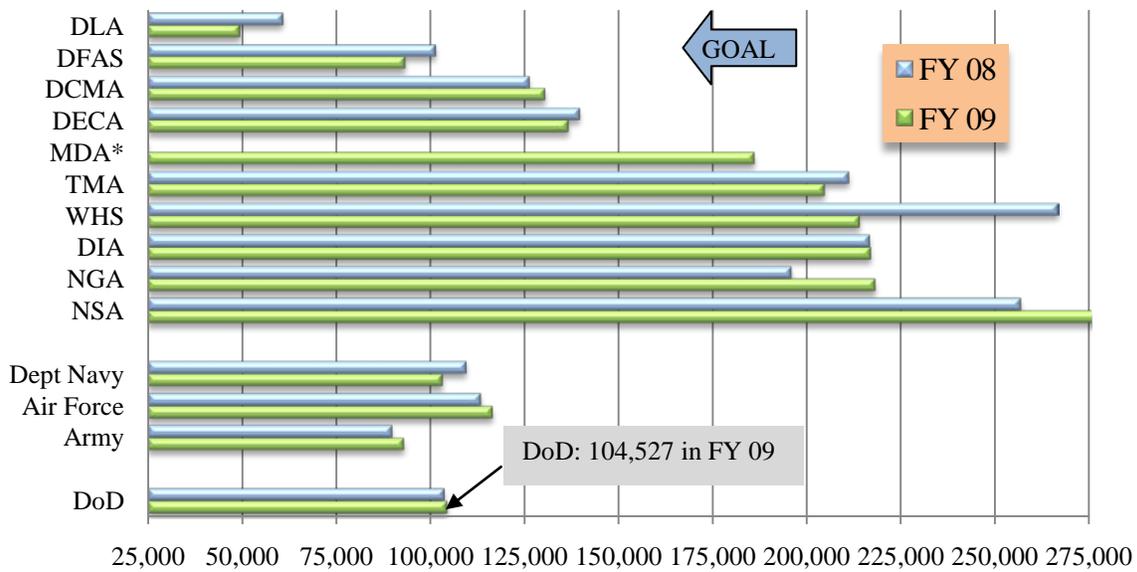
Figure 2: FY 2009 Site Delivered Energy By Type (Billions Btu)



1.3 DoD Energy Intensity Level

Facilities energy intensity is measured as the energy consumption (in BTUs) per facility area (in gross square feet). In FY 2009 all DoD facilities had an overall energy intensity level of 104,527 BTUs per gross square foot (GSF), which was a 1.1 percent increase over the 103,692 BTUs/GSF level for FY 2008 (Figure 3).

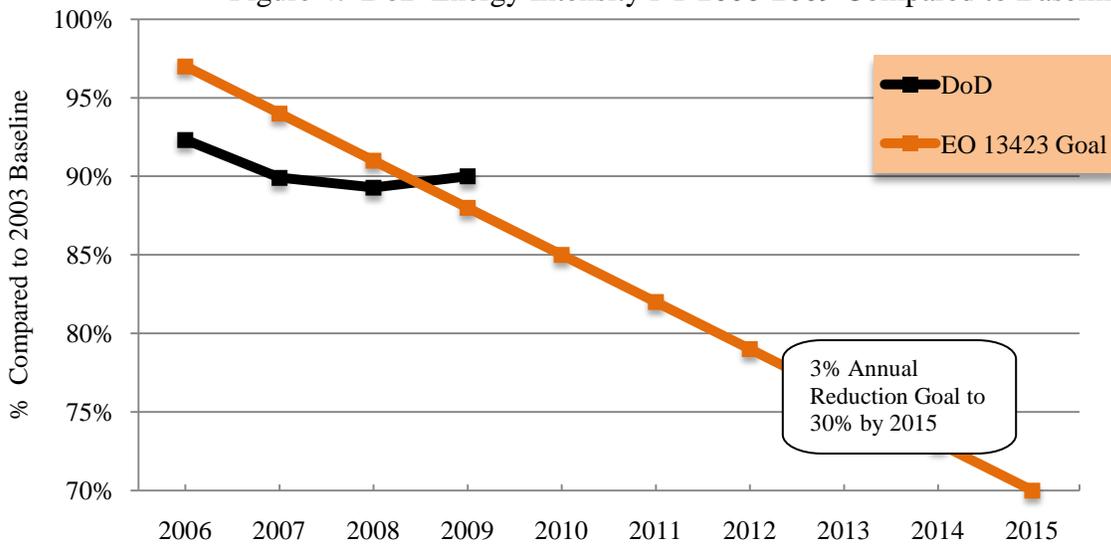
Figure 3: DoD FY 2008-2009 Energy Intensity (BTUs/GSF)



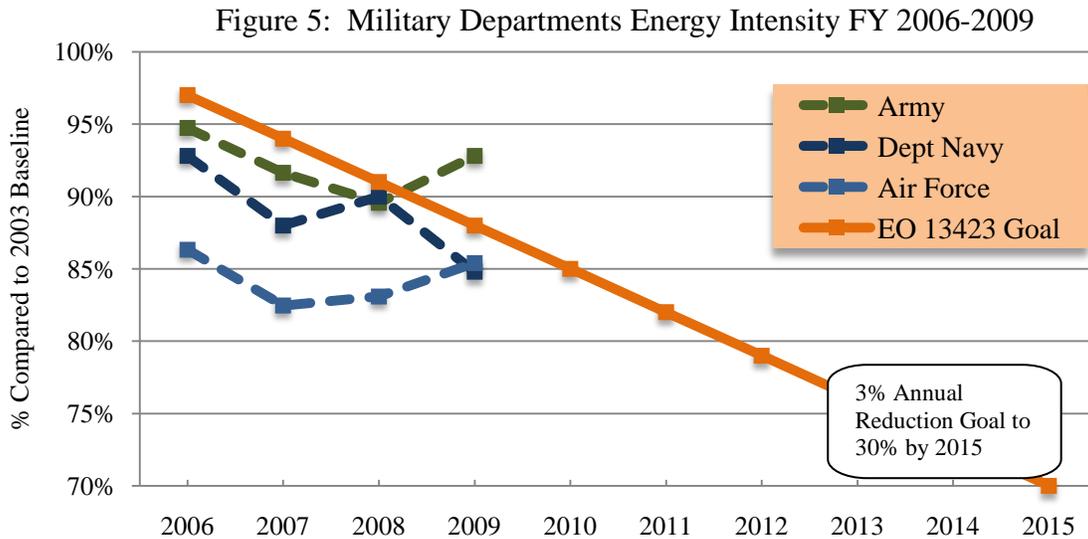
* MDA did not report in FY 2008

DoD achieved a 10 percent decrease in total facility energy intensity in FY 2009 compared to the FY 2003 baseline (Figure 4). However, this decrease did not meet the 12 percent FY 2009 goal.

Figure 4: DoD Energy Intensity FY 2006-2009 Compared to Baseline



Because the military departments account for 94 percent of the facility energy use by DoD, they are the biggest drivers for DoD to meet annual goals to continually decrease energy intensity levels. Figure 5 indicates that the overall DoD energy intensity trend in FY 2009 was mostly driven by increases in Army and Air Force energy intensity levels and only partly offset by the decreases achieved by the Navy.



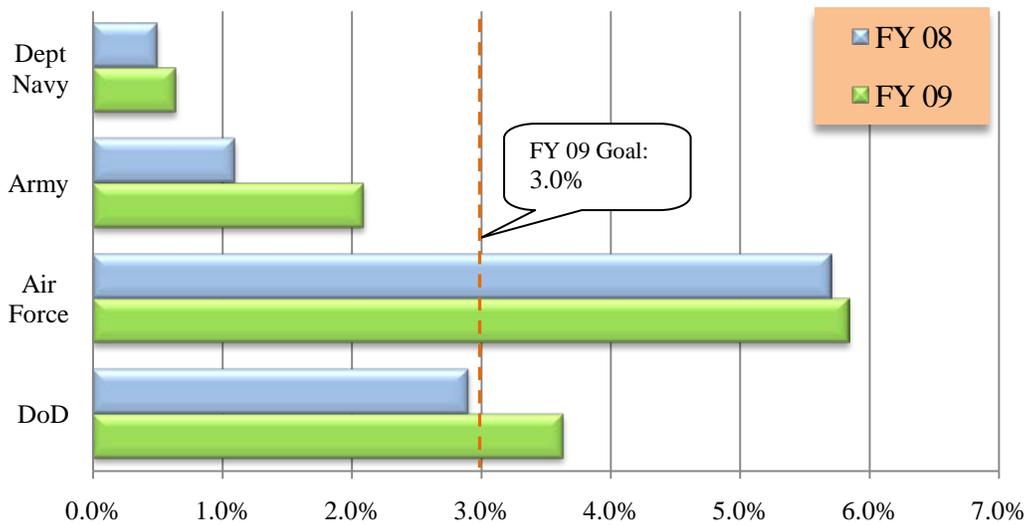
The Army’s increase in energy intensity level was a result of increased military activities due to training, mobilization, deployment, and global defense posture realignment, in addition to an increase in troop strength. These factors required the use of a number of energy inefficient temporary facilities and dual-use buildings to accommodate personnel in transition. This, and the increased facility energy use from military operations, more than offset energy intensity improvements in the Army’s overall facility energy program. This resulted in an increase of 3.6 percent in energy intensity compared to the FY 2008 level.

Although the Air Force’s energy intensity increased from FY 2008, it met its FY 2009 energy intensity goal. The Air Force’s reported increase in energy intensity reflects correction of two errors from the FY 2008 report.

1.4 DoD Renewable Energy Use

DoD continues to make progress installing cost effective renewable energy technologies and purchasing electricity generated from renewable sources (solar, wind, geothermal, and biomass). In FY 2009, 3.6 percent of DoD’s electrical consumption came from renewable electricity sources, exceeding the EPA’s 2005 goal of three percent and improving on the 2.9 percent achieved in FY 2008 (Figure 6).

Figure 6: FY 2008-2009 Renewable Energy Use Compared to EPAct 2005 Goal



When renewable energy is measured per 10 USC section 2911(e), DoD procured or produced 6.8 percent of its electric consumption from electric renewable sources in FY 2009.

The Army had 67 active renewable energy projects operating in FY 2009. Of the total, 42 were generating electricity qualifying for credit toward the renewable energy goal and nearly all the energy produced was used on-site in Federal Army facilities. The Army consumed 2.1 percent of its electricity from renewable sources in FY 2009.

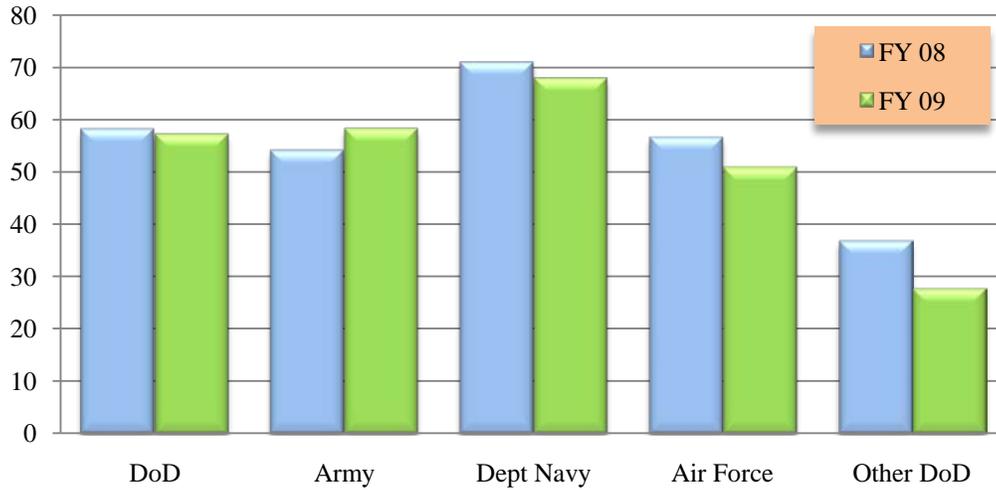
The Air Force purchases Renewable Energy Certificates (RECs) to help achieve its renewable energy goals and continues to pursue the development and installation of renewable energy, with 5.8 percent of total electric consumption from renewable sources in FY 2009.

The Navy consumed 0.6 percent of its electricity from renewable sources in FY 2009. These sources include wind and solar electric generation, but do not include the Navy’s Naval Air Weapons Station (NAWS) China Lake geothermal site, whose 270 megawatts (MW) production capacity is not directly consumed by the Navy.

1.5 DoD Water Intensity Level

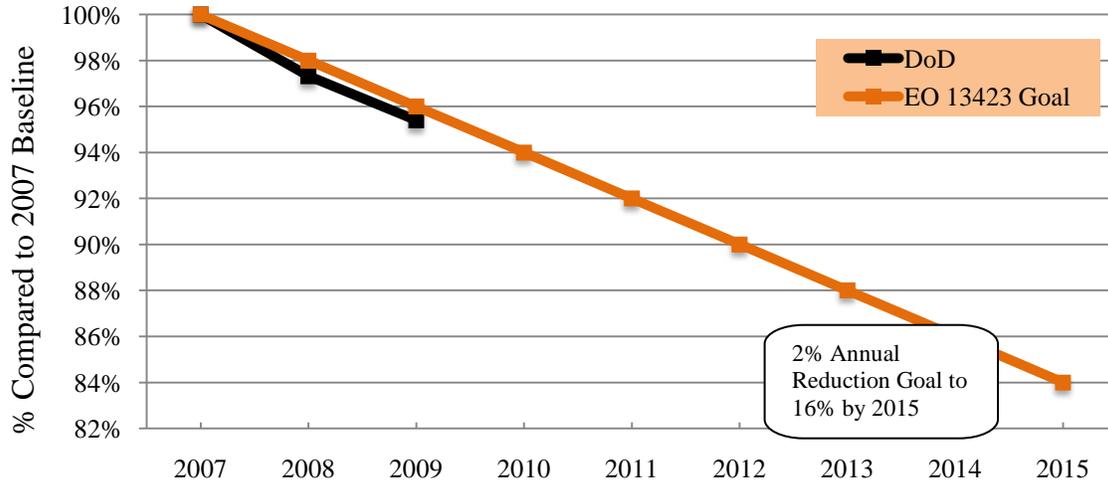
Facilities water intensity is measured as the water consumption (in gallons) per facility area (in gross square feet). As shown in Figure 7, in FY 2009 DoD facilities had an overall water intensity level of 57.1 gallons per gross square foot (GSF), a 1.1 percent decrease over the FY 2008 level of 58.1 GSF. Although the Army experienced an increase in water intensity compared to FY 2008 (58.2 GSF compared to 54.0 GSF), the other military departments and DoD components (particularly the Defense Commissary Agency) had lower water intensity levels. All of the military departments continued programs to install water-conserving toilets and urinals, low-flow faucets and showerheads. Some installations have instituted aggressive leak detection surveys and followed up with repair programs to significantly reduce water consumption.

Figure 7: FY 2008-2009 Water Intensity (Gals/GSF)



DoD achieved an overall 4.6 percent decrease in total facility water intensity in FY 2009 compared to the FY 2007 baseline (Figure 8). This decrease exceeded the four percent goal for FY 2009.

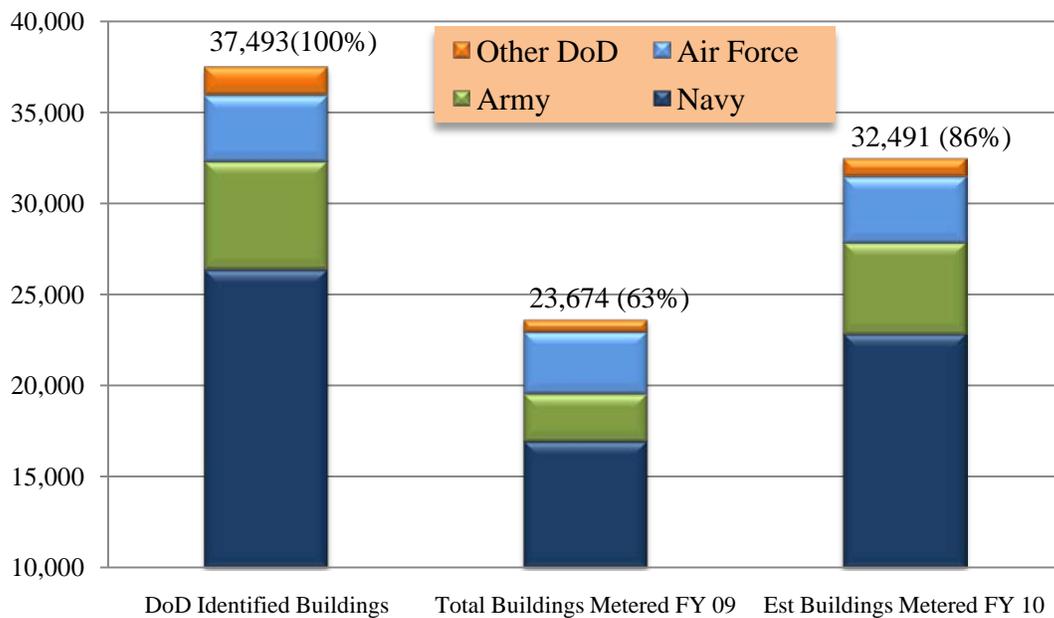
Figure 8: DoD Water Intensity FY2007-2009 Compared to Baseline



1.6 Metering of Electricity Use

DoD has identified 37,493 buildings that require either standard or advanced metering. The Navy completed metering of 64 percent of its buildings in FY 2009 (Figure 9). This effort, combined with that of the Air Force (93 percent complete), Army (44 percent complete) and the other ten DoD components (44 percent complete), brought the total number of metered buildings in DoD to 23,674, or 63 percent of all identified buildings in FY 2009.

Figure 9: DoD Facilities Metering of Electricity Use
(# of Buildings Metered)



1.7 Continuing Initiatives to Maintain Energy Program Improvement

In the immediate future DOD expects to see progress towards meeting water, renewable energy, and energy intensity reduction goals as a direct result of the investments that the DoD components made in energy efficiency using funds from the 2009 American Recovery and Reinvestment Act (ARRA). These funds included an additional \$120 million in Energy Conservation Investment Program (ECIP) projects, complementing the \$90 million provided in the baseline budget for FY 2009.

DoD is preparing renewable energy projects for FY 2010 and FY 2011. DoD’s plans include implementing solar photovoltaic, solar thermal, wind, geothermal and ground-source heat pump projects. For example, in 2009 the Army signed a contract with two world-leading solar construction companies to build 500 megawatts (MW) of solar capacity at Fort Irwin, California.

2 DOD ENERGY MANAGEMENT AND ADMINISTRATION

2.1 Facility Energy Management Infrastructure

The Department of Defense manages both operational and facility energy management programs. The former includes energy infrastructure and fuels in direct support of war fighting missions. The latter, known as the Defense Facility Energy Management program, includes energy infrastructure and fuels required to support permanent DoD installations. This report covers only the facility program and follows the reporting format directed by DOE.

The Department of Defense Facility Energy Management Program addresses energy awareness, energy manager training, audit programs, procurement of energy efficient products, and the use of sustainable design in new construction. The program also includes integrated energy planning, enhanced use of renewable energy, and demonstration of innovative technologies and the use of Energy Savings Performance Contracts (ESPC) and Utility Energy Service Contracts (UESC).

The DoD Facility Energy Management Program covers the three military departments and ten other DoD components (agencies):

- Department of the Army (DoA)
- Department of the Air Force (DoAF)
- Department of the Navy (includes Marine Corps) (DoN)
- 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 Security Agency (NSA)
- TRICARE Management Agency (TMA)
- Washington Headquarters Services (WHS)

Program details for the three military departments and other DoD components are provided in the appendices to this report.

2.2 DoD Senior Agency Energy Officials

The Deputy Under Secretary of Defense for Installations and Environment (DUSD (I&E)) is the DoD Senior Agency Official responsible for implementing the goals of EAct 2005, EO 13423 and EISA 2007. Table 1 lists the corresponding senior level energy program officials for the military departments and other DoD components:

Table 1 - DoD Senior Level Energy Program Officials

Department of the Army (DoA)	Deputy Assistant Secretary of the Army for Energy and Partnerships (DASA(E&P))
Department of the Air Force (DoAF)	Under Secretary of the Air Force (SAF/US)
Department of Navy (DoN)	Assistant Secretary of the Navy for Energy, Installations and Environment (ASN (EI&E))
Defense Contract Management Agency (DCMA)	Executive Director, Corporate Support
Defense Commissary Agency (DeCA)	Deputy Director
Defense Finance and Accounting Service (DFAS)	Director, Support Services
Defense Intelligence Agency (DIA)	Deputy Director, Mission Services
Defense Logistics Agency (DLA)	DLA Enterprise Support Director
Missile Defense Agency (MDA)	MDA Environmental Executive
National Geospatial-Intelligence Agency (NGA)	Director, Installation Operations
National Security Agency (NSA)	Deputy Associate Director for Installations and Logistics (D/ADIL),
TRICARE Management Agency (TMA)	Portfolio Planning and Management Division (PPMD) Energy Program Manager
Washington Headquarters Service (WHS)	Defense Facilities Directorate (DFD) Pentagon Energy Manager

2.3 Military Department and DoD Component Energy Teams

The DoD military departments and DoD components (agencies) maintain dedicated Energy Teams to execute their energy management programs. Table 2 lists the members of these teams.

Table 2 - DoD Energy Teams Structure

Department of the Army (DoA)	<ul style="list-style-type: none"> • Senior Energy Council • Deputy Assistant Secretary for Energy and Partnerships • Assistant Chief of Staff for Installation Management • Assistant Secretary for Acquisition, Logistics, and Technology
Department of the Air Force (DoAF)	<ul style="list-style-type: none"> • Energy Senior Focus Group (SFG) • Energy SFG Working Groups • Energy SFG Management Steering Groups
Department of Navy (DoN)	<ul style="list-style-type: none"> • Naval Energy Office • Shore Energy Policy Board • Deputy Director for Renewable Energy, Naval Energy Office • Director, Marine Corps Facilities Energy/Water Management • Marine Corps Facilities Energy Manager • Navy Installations Commander and Director, Shore Readiness Division • Commander, Navy Installations Command • Chief, Navy Energy Coordination Office • Director of Energy Development, Naval Facilities Engineering Command

Defense Contract Management Agency (DCMA)	<ul style="list-style-type: none"> • Administrator for HQ DCMA Energy Management Program • Energy Manager DCMAA-ACTF, Bratenahl, OH • Energy Manager DCMAW-CS, Carson, CA • Energy Manager DCMA-DSEF, Prince George, VA
Defense Commissary Agency (DeCA)	<ul style="list-style-type: none"> • Director and Chief Executive Officer • Deputy Director • Chief of Staff • Director, Performance and Policy • Energy and Environmental Manager
Defense Finance and Accounting Service (DFAS)	<ul style="list-style-type: none"> • DFAS Facilities Program Manager • DFAS Facilities Specialist
Defense Intelligence Agency (DIA)	<ul style="list-style-type: none"> • Deputy Director, Mission Services • Chief, Engineering and Logistics • Chief, Facility Engineering Division
Defense Logistics Agency (DLA)	<ul style="list-style-type: none"> • Director, Energy Resource Management
Missile Defense Agency (MDA)	<ul style="list-style-type: none"> • Sustainability Work Group Energy Team • Operations and Installations Management Leads
National Geospatial-Intelligence Agency (NGA)	<ul style="list-style-type: none"> • NGA Energy Manager • Site Manager and Action Officer, Bethesda • Site Manager and Action Officer, St. Louis • Site Manager and Action Officer, Washington Navy Yard • Site Manager and Action Officer, Reston
National Security Agency (NSA)	<ul style="list-style-type: none"> • NSA Energy Program Manager • NSA Program Managers • NSA Energy Managers • NSA Project Manager • Chief of Facilities Engineering • Chief of Infrastructure Maintenance • Chief of Operations, Maintenance and Utilities
TRICARE Management Agency (TMA)	<ul style="list-style-type: none"> • HFSC Energy Sub-Committee • Navy Bureau of Medicine • Army Medical Command • Air Force Medical Support Agency • Army Corps of Engineers • Naval Facilities Command (NAVFAC)
Washington Headquarters Service (WHS)	<ul style="list-style-type: none"> • Defense Facilities Directorate Energy Advisory Committee • Director, Engineering and Technical Services Division • Building Operations Command Center Representative • Pentagon Building Management Office Representative • Federal Office Building 2 Representative • Pentagon Heating and Refrigeration Plant Representative

2.4 Management Tools

DoD continued to expand its use of energy program management tools (awards and incentives, performance evaluations, and targeted training) in FY 2009 to obtain increased participation and “buy-in” from its employees to continuously improve energy performance. Detailed descriptions of the use of these tools by the military departments and DoD components are included in the Appendices; a summary is provided in the following sections.

2.4.1 Awards and Employee Incentive Programs

DoD has committed to meeting the water conservation requirements of EO 12902 (1994), EO 13423 (2007), and EO 13514 (2009). For years, DoD has dominated the DOE Federal Energy Management Program (FEMP) Federal Energy and Water Management Awards for Water Conservation. Award winners include the Marine Corps Air Station Miramar, California; Tooele Army Depot, Utah; Naval Base Ventura County, California; Picatinny Arsenal, New Jersey; Marine Corps Base Hawaii; Kirtland Air Force Base (AFB), New Mexico; Randolph AFB, Texas; and Fairchild AFB, Washington. These and other installations have been saving water and money—as well as the energy associated with pumping water—through a broad range of approaches that include: proactive leak management, the use of reclaimed water, efficient irrigation systems, metering, automated water distribution controls, water efficient fixtures in buildings (such as low-flow toilets), and replacing turf grass with high water requirements with plants requiring little or no irrigation.

The Army conducted the 31st Annual Secretary of the Army Energy and Water Management Awards Ceremony at the annual Federal Energy Exposition and Workshop, GovEnergy 2009, with the Deputy Assistant Chief of Staff of the Army for Installation Management presenting the awards. Through the combined efforts of the award winners the Army avoided more than \$10 million in utilities expenses, conserved more than 500 billion BTUs and reduced water consumption by 64 million gallons. One Army winner, Tooele Army Depot, Utah, received the 2009 Federal Energy Management Program (FEMP) Award for Water Conservation in the Small Group Category.

The Air Force rewards major installations for efforts to reduce energy consumption. Two Continental United States (CONUS) and one Outside Continental United States (OCONUS) installations are selected each year.

The Air Force also participated in the FEMP 2009 Federal Energy and Water Management Awards program, earning the following awards:

- Barksdale AFB, Louisiana, Civil Engineer Squadron focused on sustainable energy efficiency initiatives for water and sewer, natural gas, and electricity, to achieve a total energy cost savings of \$582.9K for 2008.
- Kadena AB, Japan, aggressively implemented multiple energy initiatives, and realized a reduction in total utility consumption of \$590K, or 3.2 percent, for the year.
- FEMP 2009 Federal Energy Management Fall Poster Award for “You Have the Power” poster. .

The Navy annually holds a Secretary of the Navy (SECNAV) energy awards ceremony to recognize outstanding achievements in the efficient use of energy. Five SECNAV awards were issued to the top installations in the categories of facilities and industrial installations. Navy installations and individuals also received two Presidential Energy and Water Management awards and eight Federal Energy and Water Management awards including:

- Naval Air Weapons Station, China Lake, California, received a Renewable Energy Award for its photovoltaic (PV) system, which saves 785 million BTUs of energy and \$56,000 annually.
- Marine Corps Air Station, Miramar, California, received the Water Conservation Award for its reclaimed water project, which saved 21.5 million gallons of water and \$371,000 annually.

All DoD components include energy-related awards in their employee recognition programs, including participation in the Federal Energy and Water Management Award Program. For example:

- The Missile Defense Agency is developing an Environmental Stewardship Awards Program (ESAP) to recognize significant efforts to achieve the targets of EOs 13423 and 13514, including measurable energy and water reduction initiatives.
- The TRICARE Management Agency's Bureau of Medicine and Surgery (BUMED) developed a comprehensive National Naval Medical Center (NNMC) Environmental Awards Program that includes categories for energy and water conservation.
- The Washington Headquarters Service's Pentagon Heating and Refrigeration Plant included an award fee in its contract as a Most Efficient Organization (MEO), a portion of which is directly related to energy efficient operations. The plant earned 67 percent of the award fee through the first three quarters of FY 2009.

2.4.2 Performance Evaluations

DoD charged its Commanders, Officers and Principals with managing energy programs effectively and continually improving energy efficiency and conservation. By including these objectives within its performance evaluation programs for the Services and Components, the Department has embedded them in its management culture.

For example, the Vice Chief of Staff for the Army (VCSA) directed the Army's headquarters and subordinate organizations to include energy and water conservation responsibilities in the position descriptions and performance plans of all applicable leadership and personnel.

During 2009, the Air Force Civil Engineer Support Agency updated its position descriptions to include responsibility for energy conservation, energy planning, and utility management.

The Navy created an agency-wide standard description of the roles and responsibilities of its energy managers. This description defined all the elements of the energy management function at the installation level and the regional level. These roles and responsibilities are used in existing job series to set performance expectations.

The DoD components include appropriate energy related goals within their energy program employee performance evaluation processes. For example:

- The Missile Defense Agency is integrating energy executive orders conformance measures into annual employee performance reviews for military and civilian personnel. Examples of weighted performance evaluation factors include Environmental Awareness and Green Procurement coursework as well as participation in work groups or teams that support implementation, execution, and reporting for energy executive order targets.
- The Defense Intelligence Agency Facility Engineer position descriptions include a knowledge requirement for best practices for operating refrigeration/heating ventilating and air conditioning (HVAC) for energy conservation.

2.4.3 Training and Education

DoD trained more than 11,500 staff in FY 2009 in energy related programs. The energy program training and education highlights for FY 2009 are summarized below:

- The Army conducted a two-day Army Energy Managers Training Workshop attended by nearly 200 people.
- The Army National Guard hosted a two-week Construction and Facilities Management Officer University to train facilities personnel in effective energy management and water conservation practices, facility design and funding programs.
- The US Army Corps of Engineers Construction Engineering Research Laboratory, Engineer Support Center Huntsville and Corps District Offices conducted several energy training courses.
- The Air Force trained more than 9,598 individuals through various training and education courses.
- The Air Force created four educational videos: “*Energy Awareness*,” “*Renewable Energy Goals*,” “*Adding Renewable Energy to Your Base*,” and “*Utilities Privatization*.” More than 350 “*Energy Awareness*” videos were distributed to Air Force Energy Managers in preparation for Energy Awareness Month in October 2009.
- The Air Force Institute of Technology (AFIT) Energy Manager class provided detailed instruction to new Energy Managers on energy conservation concepts and systems, policy and guidance, programs, and project programming.
- The Navy trained more than 200 personnel in areas specified in EAct 2005. The training included operations and maintenance, controls, design, lighting, electric codes, renewable energy, Leadership in Energy and Environmental Design (LEED), and certified energy manager (CEM) courses.
- The Defense Commissary Agency Center for Learning hosted six Facility Energy Supervisor/Quality Surveillance Representative (FES/QSR) courses during FY 2009. The FES/QSR training course is a two-day, commissary-specific course. Instruction includes formal classroom training for energy awareness and conservation practices, quality assurance, reporting, energy monitoring, and the basic operation of Refrigeration Monitoring and Control Systems (RMCS).

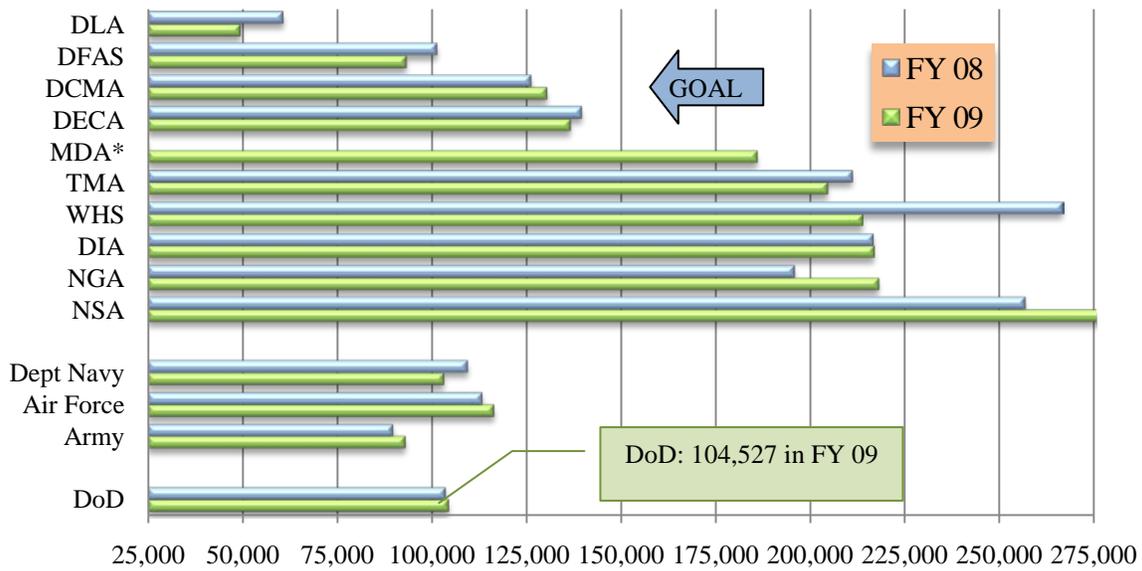
- The Missile Defense Agency developed an Environmental Awareness Training course in 2006 that introduces employees to applicable environmental laws, regulations, executive orders, green procurement, and statutory obligations.
- Nine employees of the National Security Agency attended LEED-New Construction (NC) training and passed the LEED-NC Exam and became LEED Accredited Professionals.
- DoD components participated in GovEnergy 2009, DOE Energy Manger Certification training and other training courses.

3 DOD ENERGY REDUCTION PERFORMANCE

3.1 Energy Goal Subject Buildings

As shown in Figure 10, in FY 2009 DoD facilities had an overall energy intensity level of 104,527 BTUs per GSF, which was a 1.1 percent increase over FY 2008. Most of the DoD components had a higher energy intensity level than the military departments.

Figure 10: DoD FY 2008-2009 Energy Intensity (BTUs/GSF)



* MDA did not report in FY 08

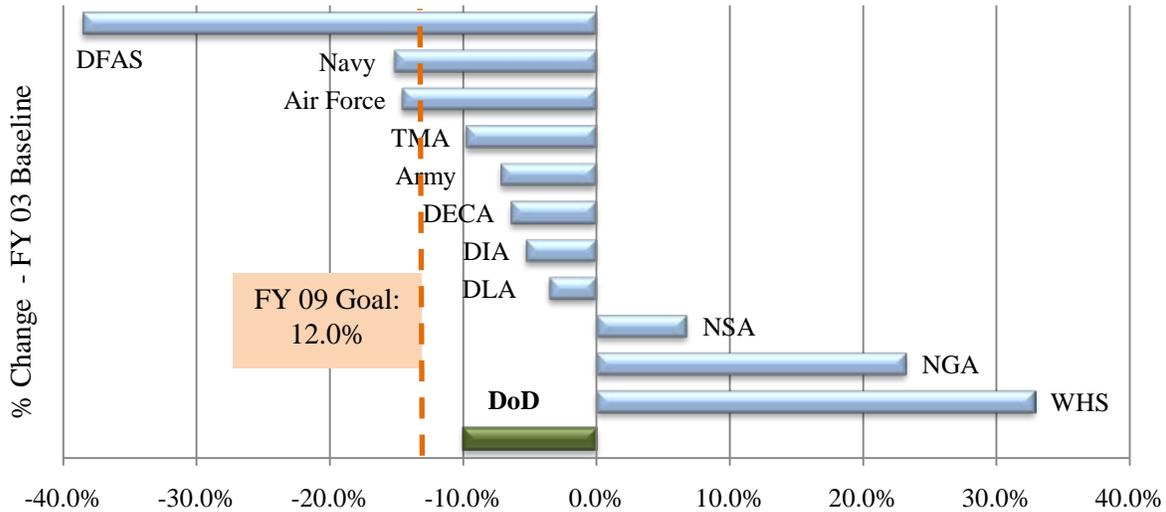
The National Geospatial-Intelligence Agency’s (NGA) large data center in St. Louis has gone through an expansion where 31,400 square feet (SF) of previously low intensity, high ceiling warehouse space was converted into a 16,700 SF data center and a 14,700 SF administrative office space. This greatly increased the energy usage resulting in a 50 percent increase in electricity demand for that facility.

Washington Headquarters Services had an increase in its gross square footage in FY 2009 due to the additional requirement of heating and cooling Henderson Hall, a 262,000 GSF installation that does not receive electricity from the Pentagon.

The National Security Agency’s high energy intensity level is the result of their mission continuing to increase in FY 2009. Their mission requires a very high computer server electrical demand and increases overall energy consumption and intensity in most of their facilities.

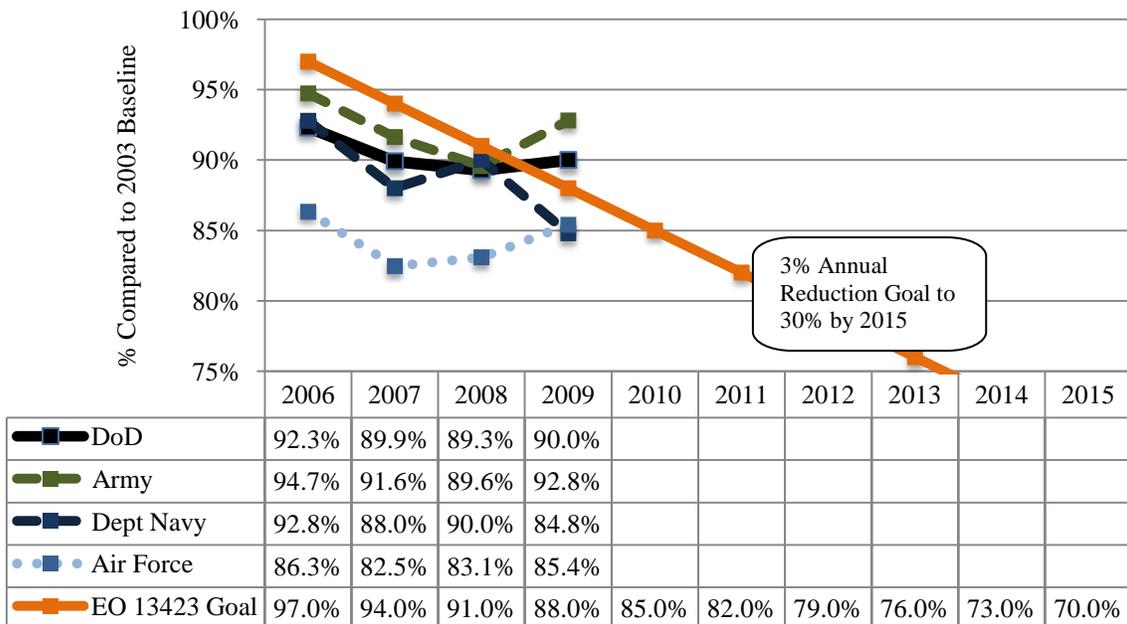
DoD overall achieved a 10 percent decrease in total facility energy intensity in FY 2009 compared to the baseline (Figure 11). Because the military departments account for 94 percent of the facility energy used by DoD, they are the biggest energy intensity drivers for DoD.

Figure 11: FY 2009 DoD Energy Intensity Change Compared to Baseline



DoD’s overall 10 percent decrease in total facility energy intensity in FY 2009 (compared to the baseline) did not meet the 12 percent FY 2009 goal (Figure 12). The overall DoD energy intensity trend was mostly driven by increases in Army and Air Force energy intensity levels that were only partly offset by the decreases achieved by the Navy (including the Marine Corps) as shown in Figure 12.

Figure 12: DoD and Military Departments Energy Intensity Trend FY 2006-2009



The Army’s increase in energy intensity level was a result of increased military activities due to training, mobilization, deployment, global defense posture realignment, and an increase in troop strength. These factors required the use of a number of energy inefficient temporary facilities and dual-use buildings to accommodate personnel in transition. The increased facility energy use from military operations more than offset energy intensity improvements in the Army’s

overall facility energy program, resulting in an increase of 3.6 percent in energy intensity compared to the FY 2008 level.

Although the Air Force's energy intensity increased from FY 2008, it met its FY 2009 energy intensity goal. The Air Force's reported increase in energy intensity reflects correction of two errors from the FY 2008 report.

The Navy uses thermal energy from the waste heat of six cogeneration systems to further meet energy intensity reduction goals. Cogeneration credits account for six percent of the energy intensity reduction, the largest single technology contribution. The most recent addition, a 39 MW cogeneration plant in Yokosuka Japan, came on line in November 2008 to contribute 2.5 percent of the reduction to the Navy's overall energy intensity.

3.2 Excluded Facilities

DoD military departments and components follow the DOE facilities exclusion criterion that includes "National Security Function." For DoD standardization purposes, the National Security Function is defined as those functions that are tied directly to war fighting, training, or operations function. These functions will generally have high energy consumption with minimal square footage and a limited ability to reduce energy consumption. Examples include, but are not limited to simulators, cold iron ships, facilities providing 24/7 logistics or maintenance support directly for enduring operations. Specific examples of excluded facilities are:

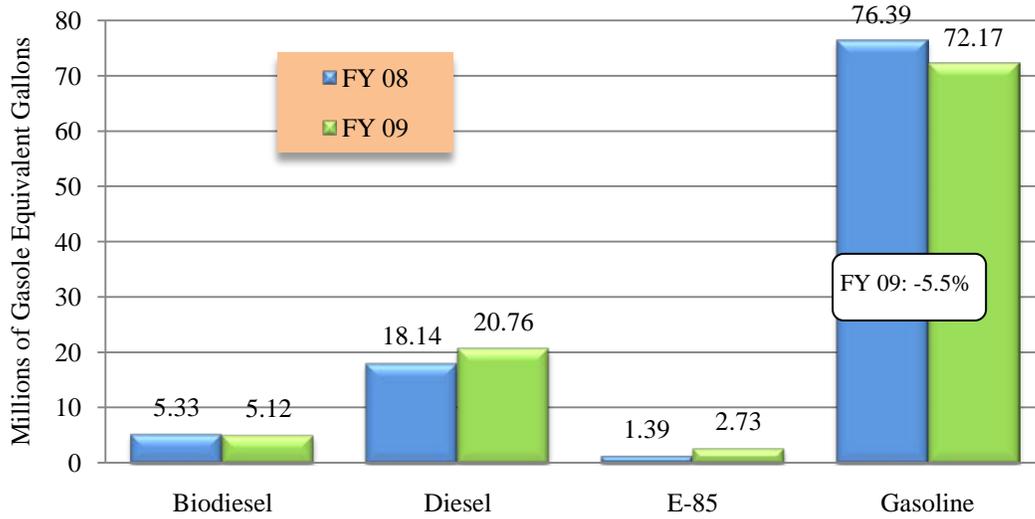
- The Air Force excluded several special-purpose and testing laboratory facilities because their energy-intensive loads are driven by unique mission and operational requirements and not influenced by conventional building energy conservation measures.
- The Navy excludes mission critical, concentrated energy use transmitters, simulators, and cold iron support to ships.
- The Missile Defense Agency is largely excluded from reporting energy usage because of its tenant status and lack of facility ownership. They are continuing to seek metered energy data for their Dahlgren, Virginia, facility.
- The TRICARE Management Agency's Bureau of Medicine and Surgery (BUMED) excludes several structures at Naval Hospital Bremerton, Washington.

3.3 Fleet Vehicle and Equipment Fuel Use

DoD continued efforts in FY 2009 to acquire alternative fuel capable vehicles and provide the necessary supporting infrastructure. DoD acquired 105 neighborhood electric vehicles; received 863 low-speed or mini-utility vehicles, 150 hybrid electric vehicles, and 1,485 E-85 alternative fuel capable vehicles; and ordered 800 low-speed electric vehicles (LSEVs). DoD also completed the infrastructure for 16 E-85 and/or B-20 alternative fueling stations.

EISA 2007, section 246, requires that fuel sites dispensing 100,000 gallons per year be modified to provide alternative fuel. DoD identified 137 sites meeting this requirement. Of these, 86 sites (63 percent) have completed the new fuel infrastructure modifications. Of the remaining 51 sites, 34 are in the planning phase to install new fuel infrastructure in the near future. Figure 13 illustrates DoD's use of alternative fuels for its fleet vehicles between 2008 and 2009.

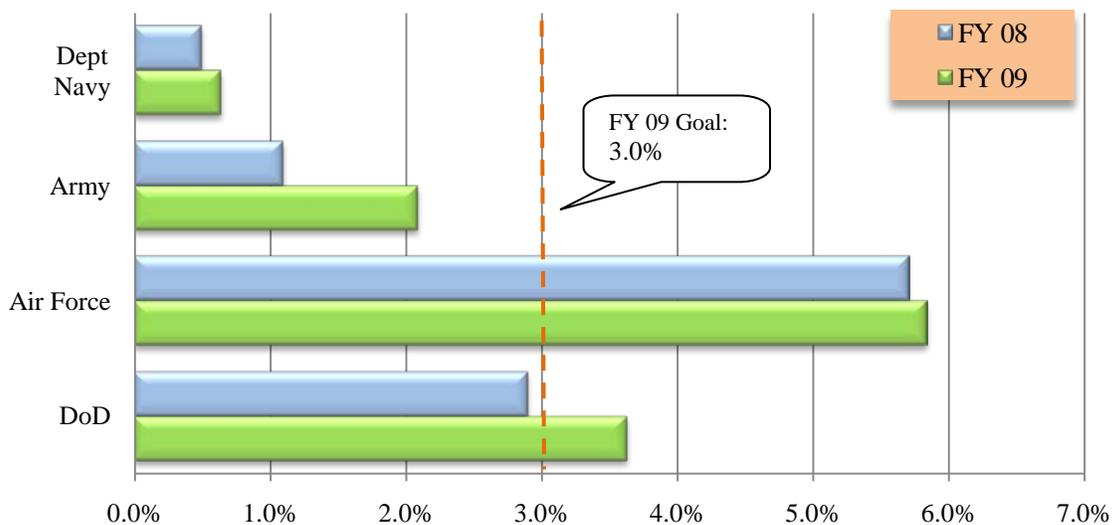
Figure 13: FY 2008-2009 DoD Fleet Vehicle Fuel Consumption (GEG)



3.4 Renewable Energy

DoD continues to make progress installing cost effective renewable energy technologies and purchasing electricity generated from renewable sources (solar, wind, geothermal, and biomass). In FY 2009, 3.6 percent of DoD’s electrical consumption came from renewable electricity, exceeding the EAct 2005 goal of 3 percent and improving on the 2.9 percent achieved in FY 2008 (Figure 14).

Figure 14: FY 2008-2009 Renewable Energy Use Compared to EAct 2005 Goal



DoD also reports a separate renewable achievement metric to comply with 10 U.S.C. section 2911(e). This metric compares all renewable electric energy produced or procured (as opposed to consumed per the EAct 2005 goals) to all electric energy consumed. The 10 U.S.C. section

2911(e) goal for DoD is to reach 25 percent by FY 2025. During the FY 2009 reporting period, renewable energy was statutorily defined as renewable electricity.

For this metric, in FY 2009 DoD produced or procured 6.8 percent of all electricity from renewable sources. This is three percent less than the 9.8 percent reported by DoD for FY 2008 because of a change in the calculation method. In FY 2008 and earlier, the calculation compared all renewable energy (electric and non-electric) produced or procured to total electricity consumed. Had FY 2008 been reported limiting renewable energy to only renewable electricity sources, the FY 2008 achievement would have also been reported as 6.8 percent.

The change in calculation makes comparisons to prior years difficult. It is worth noting that the metric in 2010 will change again based on section 2842, National Defense Authorization Act for Fiscal Year 2010, which will redefine achievement by comparing renewable energy procured or produced against total energy consumption. The new calculation will again significantly reduce DoD's apparent achievement by greatly increasing the denominator of this calculation.

The Air Force is the largest DoD user of renewable electric energy, meeting its goals primarily through the purchase of renewable energy and renewable energy certificates (RECs).

3.4.1 Self-Generated Renewable Energy

The Army did not meet the renewable requirement of three percent of total electricity use derived from renewable sources, obtaining 2.1 percent of total electric use from renewable sources. This increase from 1.1 percent in FY 2008 was achieved by adding several new but relatively small photovoltaic systems and purchasing renewable energy certificates. The Army had 67 active renewable energy projects operating in FY 2009. Of the total projects, 42 generated electricity that qualifies for credit toward the renewable energy goal. Nearly all the energy produced was used on-site in Army facilities.

The Air Force is pursuing the development and installation of renewable energy, with 5.8 percent of total electric use from renewable sources in FY 2009. Some examples of Air Force renewable energy projects in FY 2009 include the Air National Guard Base Toledo, Ohio, installing a stand-alone Solar Photovoltaic (PV) array which generated 695 MWH of electricity (21.3 percent of the total electricity consumed by the base), a PV array at Hickam Air Force Base, Hawaii and the installation of two solar photovoltaic systems at McGuire Air Force Base, New Jersey, producing 105 MWH annually.

The Navy consumed renewable electricity equivalent to 0.6 percent of its annual electricity consumption in FY 2009. These sources include wind and solar electric generation. Including all renewable energy sources (electric and thermal), the Navy consumed the equivalent of 3.2 percent of its total electricity from renewable sources in FY 2009. The Navy is making progress toward the 10 U.S.C. section 2911(e) goal of 25% of all energy produced or consumed from renewable energy. This includes generation of electricity on Navy land, electricity sold back to into the grid, and thermal renewable energy (solar hot water and ground source heat pumps). The Navy also established renewable energy program offices to award Power Purchase Agreements (PPAs), Energy Joint Ventures (public/private) and Enhanced Use Lease (EUL) contracts.

The Navy is by-far the largest producer of DoD geothermal energy. The electricity generated by the Naval Air Weapons Station (NAWS) China Lake geothermal site delivers up to 270 megawatts to the electric grid. The output from this station represents approximately 4.5 percent of DoD's total electric consumption for 2009. Due to DOE's accounting guidance, this station only contributes to DoD's totals for the 10 USC section 2911(e) goals and not the EAct 2005 goals.

The Navy is increasing generation of renewable energy by adding approximately 20 MW of solar electricity generation and installing a 1.5 MW wind turbine at the Marine Corps Logistics Base in Barstow, California. Additionally, the Navy operates the world's largest wind/diesel hybrid plant at Naval Station, Guantanamo Bay, and two of the largest federal photovoltaic systems in the United States at Navy Base, San Diego, and Marine Corps Air Ground Combat Center, Twenty-nine Palms, California.

An example of renewable energy use by other DoD components includes the National Security Agency's Visitor Center rooftop photovoltaic power array, which saves approximately 75,000 kilowatt-hour (KWH) per year in electrical use.

3.4.2 Purchased Renewable Energy

The Army purchased 148,000 MWH of electricity qualifying toward the renewable energy goal. A large portion of the electricity was a direct purchase from a two megawatt photovoltaic array at Fort Carson, Colorado. Other sources included Renewable Energy Certificates (RECs) purchased by Fort Lewis, Washington; Fort Carson, Colorado; and the Pennsylvania Army National Guard. The Army also purchased a substantial amount of energy from renewable municipal solid waste plants at Redstone Arsenal, Alabama, and Aberdeen Proving Ground, Maryland.

The Air Force acquires the most economical renewable energy available on the market, either by acquiring bundled renewable electricity, or through RECs. Bundled renewable electricity purchases represent 39 percent of the renewable purchases; RECs represent the remaining 61 percent. Air Force Major Commands work with the Air Force Civil Engineer Support Agency to budget and purchase the number of RECs to balance renewable energy requirements. Increased production of on-base renewable energy, however, has reduced the requirement for Air Force REC purchases. In FY 2009, the REC purchase price decreased by 70 percent versus FY 2008. The Air Force's renewable electricity purchases represent about 4.8 percent of its total electric usage.

Navy installations in Washington State purchased 20,830 MWH of renewable wind energy in FY 2009 from the Bonneville Power Administration.

3.4.3 Net Zero Energy Installation Initiative

The DoD Net Zero Energy Installation Initiative is an effort to increase the energy independence of installations by offsetting total annual energy use through on-site energy production.

The Army goals for this initiative are for five Army installations to be net zero by 2020, 25 installations by 2030, and all Army installations by 2058. Army Current renewable energy efforts underway in support of this initiative are to develop a large concentrated solar system at Fort Irwin, California; develop geothermal steam resources at Hawthorne Army Depot, Nevada;

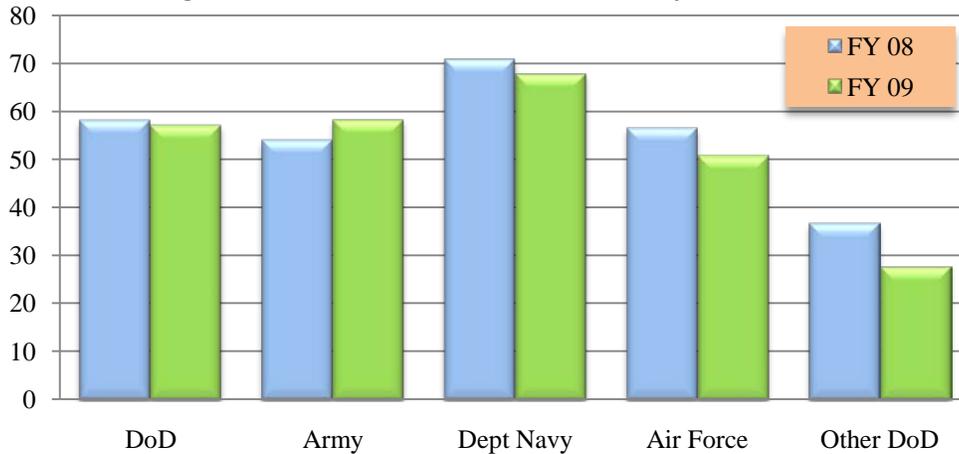
replace 800 petroleum-fueled non-tactical on-post vehicles with neighborhood electric vehicles in FY 2009 with 4,000 over three years; and develop consolidated waste to fuel projects at several locations.

McGuire Air Force Base, New Jersey, is implementing four measures (including day lighting) to render a 30,774-square-foot facility the first energy-neutral facility in Air Mobility Command.

3.5 Water Conservation

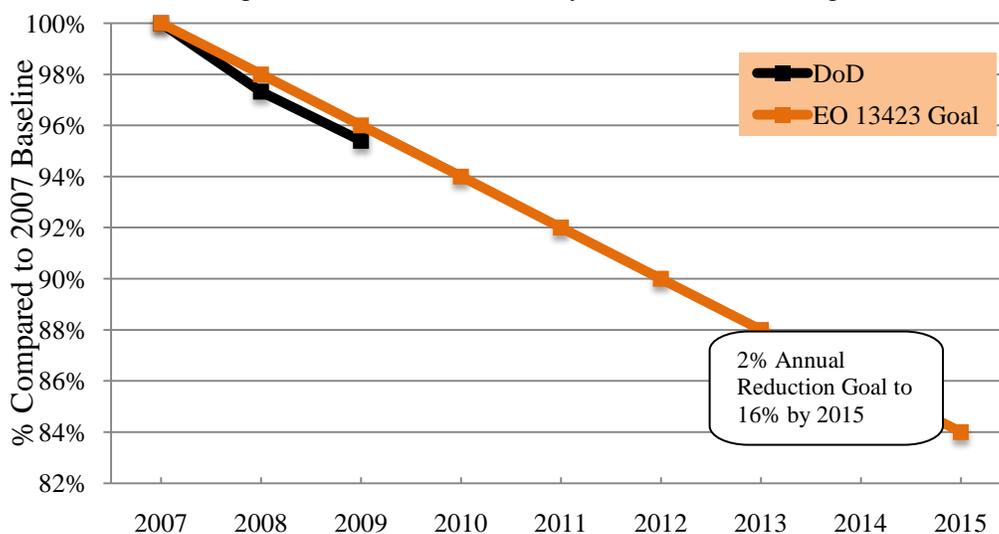
As shown in Figure 15, in FY 2009 DoD facilities had an overall water intensity (consumption) level of 57.1 Gallons per gross square foot (GSF), which was a 1.1 percent decrease over the FY 2008 level of 58.1 GSF. Although the Army had an increase in water intensity compared to FY 2008 (58.2 compared to 54.0), the other military departments and DoD components (particularly the Defense Commissary Agency) had lower water intensity levels, which resulted in DoD meeting its water intensity reduction goal of 4.0 percent for FY 2009.

Figure 15: FY 2008-2009 Water Intensity (Gals/GSF)



DoD achieved a 4.6 percent decrease in total facility water intensity in FY 2009 compared to the FY 2007 baseline (Figure 16). This decrease exceeded the 2009 goal of four percent.

Figure 16: DoD Water Intensity FY 2007 - 2009 Compared to Baseline

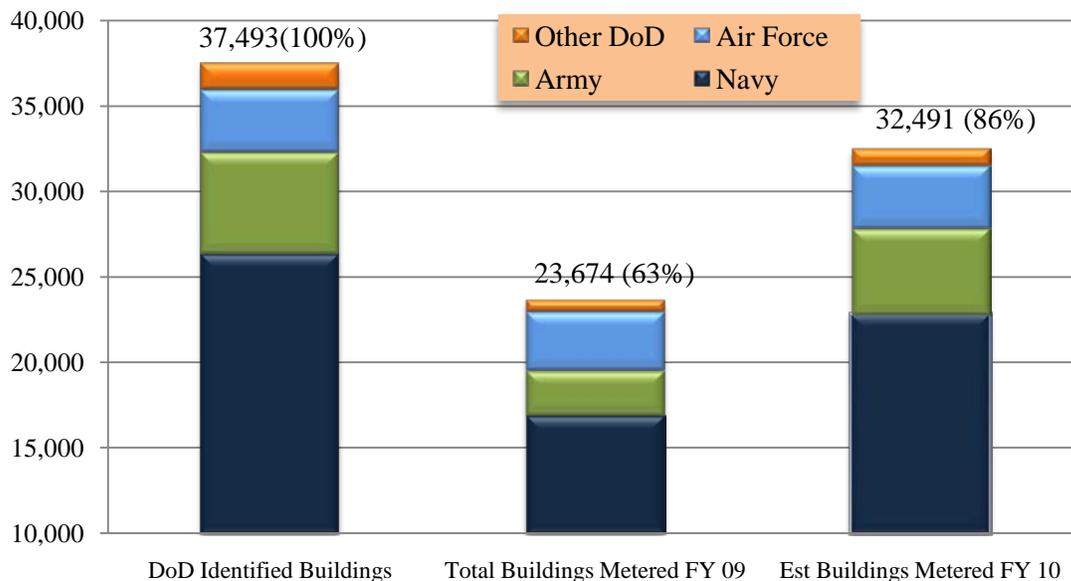


All of the military departments continue to install water conserving toilets and urinals, low flow faucets and showerheads. Some installations have instituted aggressive leak detection surveys and followed up with repair programs for leaky valves and damaged pipelines, which have significantly reduced water consumption (as much as 20 percent at one location). All facility projects executed by the Army Corps of Engineers follow the International Plumbing Code, which prescribes water conserving fixtures. The Air Force is implementing stronger conservation measures to reduce landscape irrigation, encourage low-water plantings, and repair leaking water and steam lines. The Defense Commissary Agency requires low-flow toilets and urinals with electronic flush sensors for new and renovated commissaries. Proposed landscaping for new DeCA facilities is closely reviewed during all phases of the design for low maintenance and watering requirements and includes requirement for xeriscaping and drip versus sprinkler irrigation systems.

3.6 Metering of Electricity Use

DoD has identified 37,493 buildings requiring either standard or advanced metering. The Navy accounts for 70 percent of this total (26,311), with meters installed in 64 percent (16,929) of its buildings in FY 2009 (Figure 17). This effort, combined with that of the Air Force (93 percent complete), Army (44 percent complete) and the other ten DoD components (44 percent complete), brought the total number of metered buildings in DoD to 23,674, or 63 percent of all identified buildings in FY 2009. Based on current contract commitments, the forecast for FY 2010 is to have 86 percent of all identified DoD buildings metered, which is well toward meeting the EAct 2005 goal of 100 percent by FY 2012.

Figure 17: DoD Facilities Metering of Electricity Use (# of Buildings Metered)



3.7 Federal Building Energy Efficiency Standards

In FY 2009, 99 percent of DoD’s new building designs include provisions to make them 30 percent more energy efficient than the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) 90.1-2004 standard.

The Army Corps of Engineers continues work with the DOE and the Office of the Army Assistant Chief of Staff for Installation Management to develop design guides for implementing building efficiency standards mandated by the EAct 2005. The Corps has completed prescriptive design guides for battalion headquarters buildings, permanent party barracks, training barracks, and tactical equipment maintenance facilities, four of the most prevalent types of buildings being constructed in conjunction with Army troop stationing actions. Use of these design guides will help new building designs be 30 percent more energy efficient than ASHRAE standards without having to model each individual project.

The Air Force initiated 98 new building designs in FY 2009. 100 percent will be life-cycle cost-effective and meet the goal to exceed the ASHRAE efficiency standards by at least 30 percent.

The Navy is expecting 99 percent of the FY 2010/2011 military construction facility designs to meet or exceed Federal standards and achieve life cycle cost effective sustainable designs.

The Defense Logistics Agency is redesigning a Child Development Center project in Columbus, Ohio, to ensure that it will be at least 30 percent more efficient than ASHRA standards and that it will be eligible for LEED Silver status.

The Missile Defense Agency is presently planning three military construction building projects (Redstone Arsenal, Alabama and Fort Belvoir and Dahlgren, Virginia). These buildings are designed in accordance with EAct 2005, EO 13423 and the Whole Building Design Guide, and each building will be LEED certified.

The TRICARE Management Agency's Bureau of Medicine and Surgery (BUMED) is working with Naval Facilities Engineering Command (NAVFAC) to ensure that all new design work will exceed the ASHRAE efficiency standard by at least 30 percent where achievable. Ninety-three percent of new BUMED building designs started since the beginning of FY 2007 are expected to exceed the ASHRAE standard by 30 percent.

4 DOD IMPLEMENTATION HIGHLIGHTS

4.1 Life Cycle Cost Analysis (LCCA)

Life Cycle Cost Analysis (LCCA) is an integral part of the design process. LCCA is routinely used by installation energy managers to evaluate project economics for proposed energy savings performance contract (ESPC) projects, candidate Energy Conservation Investment Program (ECIP) projects, and general energy saving facility improvement projects. Installations report options for the best equipment or systems which are then evaluated using the LCAA tool. Funding limitations, however, still force some programming decisions to be made based on initial cost considerations.

4.2 Retrofits and Capital Improvement Projects

During FY 2009, the Army obtained \$365 million in American Recovery and Reinvestment Act (ARRA) funding specifically for energy efficiency projects. The Army also received \$30 million in ARRA funding for Army ECIP military construction program projects.

The Air Force completed several energy capital improvement projects as well. Buckley Air National Guard Base, Colorado, repaired and upgraded its energy management and control systems base-wide. This included replacing pneumatic controls, upgrading digital control managing system firmware, and expanding existing controls into all HVAC systems throughout the identified facilities. Cannon Air Force Base, New Mexico, replaced nine Seasonal Energy Efficiency Ratio (SEER)-8 direct exchange (DX) units of 196 total tons with new and more efficient SEER-13 DX units, realizing energy savings of approximately 27MWH annually and demand savings of 113kW per month.

The Navy will rely on significant ARRA investments to stay on target for energy reductions in FY 2010. The Navy will need to continue to increase investments in energy efficiency and renewable energy projects to “catch up” to meet prior year targets. The Navy awarded \$143M in financed energy projects, \$43M more than the prior year, but \$100M short of the amount necessary to keep on track with energy reductions. By FY 2012, all Marine Corps new construction and major building renovation projects will incorporate roof-top solar thermal, PV, and/or energy reducing coatings technologies into the project planning process.

The Defense Intelligence Agency emphasizes use of life-cycle cost requirements in new facility construction. Life-cycle costs are evaluated as part of the HVAC system design strategy, such as distributed water-source heat pumps versus central station air handling systems. During major design efforts, consideration is given not only to energy-efficient building envelope design, but also to high efficiency chillers, premium efficiency fan and pump motors, heat recovery chillers, condensing boiler and low-temperature heating hot water systems, water-side economizers, variable water flow chiller evaporators, lighting controls and energy efficient lamps and ballasts.

In FY 2009, the Defense Logistics Agency replaced 29 air-cooled condensing units with two central glycol chillers. The new chillers generate “free cooling” by using outside air when it is less than 60 degrees Fahrenheit outdoors.

The Washington Headquarters Services is performing an extensive renovation of the Pentagon. This renovation includes the replacement of all building systems to take advantage of energy efficient technologies.

4.3 Use of Performance Contracts

DoD uses two primary contracting methods to partner with the private sector on energy savings projects that transfer technology and reduce capital and operating costs. A Utility Energy Services Contract (UESC) engages a utility company to provide services or products designed to make facilities more energy efficient. An Energy Savings Performance Contract (ESPC) is a partnership with an energy service company (ESCO) that designs and constructs a project to save facility energy costs at its own expense and shares the cost savings with DoD.

The Army awarded a total of \$113.4 million (or 9.1 percent of utility energy costs) through ESPCs and UESCs in FY 2009 (the DoD goal is 10 percent):

- Aberdeen Proving Ground, Maryland, awarded an ESPC delivery order for a \$10.3 million project. Energy conserving measures implemented include rehabilitation of HVAC equipment and improving building insulation.

- Fort Bliss, Texas, awarded a task order for a \$9.5 million project. Energy conserving measures implemented include energy controls, lighting and electrical system improvements, general facility and weatherization improvements, heating and air conditioning system improvements, and installation of renewable energy systems.
- Fort Knox, Kentucky, awarded four UESC task orders for \$6.4 million to install advanced utility meters and improve heating, air conditioning and ventilation systems.

The Navy awarded \$144 million of financed energy projects that will provide about 812,000 million BTUs of annual energy savings once constructed. For example, a 250 kilowatt solar array was awarded at Naval Base, Guam. This \$16 million ESPC project will reduce the overall electricity purchase from the local utility by more than 6,350 megawatt hours annually.

In FY 2009 the Defense Intelligence Agency received an initial proposal from Washington Gas to perform seven different energy conservation measure projects for potential award as UESC contracts in FY 2010.

The National Security Agency implemented one UESC contract in FY 2009. To accomplish this, NSA developed a business case and received a proposal for a UESC contract (under evaluation) for a large lighting retrofit project expected to reduce more than 1 megawatt of connected load annually.

The TRICARE Management Agency's BUMED submitted two ECIP projects for FY 2011 (as a result of FY 2009 performed energy audits) to include installing low-flow water devices at Naval Medical Center, Portsmouth, Virginia, and high-efficiency boilers at Naval Hospital Jacksonville, Florida.

Washington Headquarters Services used an ESPC partnership with the Department of Energy to award contracts which installed water-side economizers and upgraded boilers.

4.4 Use of ENERGYSTAR and Other Energy Efficient Products

DoD Services and Components are required to procure EnergyStar® and Federal Energy Management Program-designated and other energy efficient products. They also participate in the EnergyStar® building program, to promote energy efficiency in buildings and the use of measured building data for comparisons.

Since 2006, the Army has incorporated EnergyStar® equipment requirements into its model request for proposal for contracted building design and construction services processed through the Army Corps of Engineers.

The Air Force continues to pursue a policy that all purchases of computers, printers, and copiers be EnergyStar® compliant. For example, the Air Force Information Technology Commodity Council (ITCC) Quarterly Enterprise Buy (QEB) program, which is the source for more than 75 percent of the desktop, laptop, and computer monitor purchases across the Air Force, requires Energy Star certification on all products purchased since 2003.

The Navy conducted a survey of energy efficient products and found that thousands of energy efficient products are being installed throughout the Navy. Energy efficient operations are included in some Base Operating Support contracts and Energy star performance criteria are

included in acquisition requirements for systems and appliances installed in privatized family housing.

The Defense Intelligence Agency continues to review and pursue conservation opportunities for its electronic communication and data transfer resources. For example, the Agency began operating an industrial shredding operation for disposal and recycling of its classified waste. This project allows for briquettes, the end product of the shredding process, to be resold for their heating value to prospective agriculture-based customers.

The TRICARE Management Agency's BUMED Naval Medical Center, San Diego, was the first of three DoD hospitals to be recognized with an Energy Star designation. BUMED will rate the energy performance of its remaining medical centers and hospitals using the Energy Star performance rating tool, which will help BUMED identify areas for energy improvement.

4.5 Sustainable Building Design and High Performance Buildings

DoD requires an integrated life cycle design approach in the master planning process of the Services and Defense Components.

Starting with the FY 2008 military construction program, the Army established policy to meet green building design and construction, as certified by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver, for all vertical construction projects with climate-controlled facilities. Similarly, the Army Family Housing (AFH) program is moving to adopt a consensus rating tool which is currently being tested on a voluntary basis at select installations. In FY 2009, the Army established a new policy to register all military construction projects with the Green Building Certification Institute to document project information for the achievement of LEED Silver as the standard.

The Air Force Sustainable Design and Development (SDD) goal starting in FY 2009, is that 100 percent of each Major Command's military construction is designed to be capable of achieving LEED Silver certification. In addition, each Major Command shall select five percent of the total military construction for formal LEED registration/certification, increasing to ten percent in FY 2010. Currently, there are approximately 250 Air Force military construction projects registered with the U.S. Green Building Council LEED program. To date, six buildings and 612 residential units have achieved formal LEED certification.

The Assistant Secretary of Navy (Energy, Installations and Environment) directed Navy and Marine Corps Commands in 2006 to take steps to plan, program and budget to meet the requirements in the EPAct 2005 and achieve at least LEED Silver level rating performance in new and replacement facilities. The Naval Facilities Engineering Command currently has 80 LEED Accredited Personnel. The Navy has ten U.S. Green Building Council certified buildings and 30 registered with the U.S. Green Building Council for certification.

4.6 Energy Efficiency / Sustainable Design in Lease Provisions

The Army emphasizes energy and water conservation in all facility leases and requires that these leased facilities meet energy and water goals. The intent is to have the landlord make appropriate investments in energy efficiency, which can be amortized in the lease, provided the new total cost (energy costs plus lease cost) does not exceed total costs without improvements.

4.7 Distributed Generation

Using distributed generation, the Army's Fort Gordon, Georgia, employs diesel generators to manage the peak load at the installation by leasing 13.5 MW of diesel generator assets from the Army Prime Power Program.

In FY 2009 the Air Force's Vandenberg Air Force Base, California, engaged Pacific Gas and Electric for a DoD/Edison Electric Institute (EEI) initiative to perform a total energy portfolio assessment. This initiative will address not only energy reduction strategies and projects, but also demand-side management programs and additional generation, be it renewable or conventional. Vandenberg has a unique opportunity because of the nearby South Vandenberg power plant.

The Navy makes significant use of distributed generation cogeneration systems. Cogeneration credits provide six percent of the Navy's current energy intensity reduction progress. The Navy added 39 MW of cogeneration capacity in Yokosuka, Japan, in FY 2009. The Yokosuka plant is the largest ESPC implemented by the Navy. The \$105 million project brought natural gas to the installation, installed two reciprocating engines and two gas turbines with heat recovery providing both 50 Hz and 60 Hz power and will save eight million gallons of fuel oil annually.

Naval Medical Center, San Diego, is the TRICARE Management Agency's premier site for distributed generation. One of BUMED's largest medical facilities, it generates 4.5 MW of combined heat and power capacity.

4.8 Facility Energy Audits

DoD audited 31.4 percent of all covered facilities and submitted a consolidated EISA 2007, Section 432, and "Audits of Covered Facilities Report," to DOE in June 2009. These facility energy audits resulted in more than 1,400 recommendations with a proposed annual energy savings of more than \$200M. Many of these recommendations will be used for submission of ECIP projects in FY 2011.

4.9 Continuing Initiatives to Maintain Energy Program Improvement

In the immediate future, the Defense Department expects to see recognizable progress toward meeting water, renewable energy and energy intensity reduction goals as a direct result of investments funded by the 2009 American Recovery and Reinvestment Act (ARRA). DoD focused almost half of its ARRA funding in Sustainment, Restoration and Modernization (SRM) support towards "energy related" projects. These projects include repairs to roofing, windows, doors and exterior insulation, as well as replacing inefficient lighting, pumps, motors, boilers, furnaces and control systems. ARRA also funded an additional \$120 million in the Energy Conservation Investment Program over and above the \$90 million funded in the 2009 baseline budget. Although many of these investments will complete construction and equipment installation during 2010, the bulk of the energy savings will not be realized until FY 2011.

The Defense Department is demonstrating Federal and national leadership by constructing efficient new facilities, improving the efficiency of existing facilities, increasing production and procurement of renewable energy, and investing in new energy technologies. The Department's energy investments significantly improve mission effectiveness, increase security, and enhance the environment.

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APPENDIX A: LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
A7C	Air Force Civil Engineer
A7CAE	HQ United States Air Force, Office of the Civil Engineer, Asset Management and Operations Division, Energy Management Branch
ACC	Air Combat Command
AEE	Association of Energy Engineers
AEGIS	State-of-the-art radar and missile system
AETC	Air Education and Training Command
AFB	Air Force Base
AFCEE	Air Force Center for Engineering and the Environment
AFCESA	Air Force Civil Engineer Support Agency
AFFEC	Air Force Facility Energy Center
AFIT	Air Force Institute of Technology
AFMC	Air Force Material Command
AFSO 21	Air Force Smart Operations for the 21 st Century
AFSPC	Air Force Space Command
AFV	Alternative Fuel Vehicle
ANGB	Air National Guard Base
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASN(I&E)	Assistant Secretary for Installations and Environment
BMDS	Ballistic Missile Defense System
BRAC	Base Realignment and Closure
BBTU	Billion British thermal units
BTU	British thermal unit
BUMED	Bureau of Medicine and Surgery
CDC	Central Distribution Center
CEM	Certified Energy Manager
CEMT	DFAS Corporate Energy Management Team
CEU	Continuing Education Unit
CES	Civil Engineering Squadron
CFC	Chlorofluorocarbons
CMA	Court of Military Appeals
CNIC	Commander, Navy Installations Command
CONUS	Contiguous United States
COR	Contracting Officer Representative
DASA(E&P)	Deputy Assistant Secretary of the Army for Energy and Partnerships
DASA(I&H)	Deputy Assistant Secretary of the Army for Installations and Housing
DASN(I&F)	Deputy Assistant Secretary Navy for Installations and Facilities
DCMA	Defense Contract Management Agency

<u>Acronym</u>	<u>Definition</u>
DDC	Direct Digital Controls
DeCA	Defense Commissary Agency
DeCAH	DeCA Design Criteria Handbook
DFAS	Defense Finance and Accounting Service
DFD	Defense Facilities Directorate (WHS)
DIA	Defense Intelligence Agency
DIAC	Defense Intelligence Analysis Center
DLA	Defense Logistics Agency
DoA	Department of the Army
DoAF	Department of the Air Force
DoD	Department of Defense
DoE	Department of Energy
DoN	Department of Navy
DUSD(I&E)	The Deputy Under Secretary of Defense (Installations and Environment)
E85	85 percent ethanol fuel
ECD	Estimated Completion Date
ECIP	Energy Conservation Investment Program
EISA	Energy Independence and Security Act
EMCS	Energy Management Control Systems
EMSG	Energy Management Steering Group
EO	Executive Order
EPA	Environmental Protection Agency
EPAct	Energy Policy Act
EPEAT	Electronic Products Environmental Assessment Tool
ESC	Engineering Service Center
ESCO	Energy Service Company
ESPC	Energy Savings Performance Contract
ESPP	Energy Savings Performance Program
ETSD	Engineering and Technical Services Division
FEMP	Federal Energy Management Program
FES	Facility Energy Supervisor
FOB2	Federal Office Building #2 (Navy Annex)
FY	Fiscal Year
GPC	Government Purchase Card
GSA	General Services Administration
GSF	Gross Square Feet
GSHP	Ground Source Heat Pump
HCFC	Hydro chlorofluorocarbons
HQ	Headquarters
HQCC	Headquarters Command Complex (MDA)
HQDA	Headquarters Department of the Army
HVAC	Heating, Ventilating, and Air Conditioning
HYBLA	Hybla Valley Office Building (WHS)
IESP	Infrastructure Energy Strategic Plan
IMCOM	Army Installation Management Command

<u>Acronym</u>	<u>Definition</u>
ISSA	Inter-Service Support Agreement
KW	kiloWatt
KWH	kiloWatt-hour
LCCA	Life-Cycle Cost Analysis
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
LFD	Lease Facilities Division (WHS)
LFF-1	USMC, Facilities and Services Division Facilities Branch
LSS	Lean Six Sigma
M&V	Measurement & Verification
MAJCOM	Major Command
MMBTU	Million British Thermal Units
MCLB	Marine Corps Logistics Base
MDA	Missile Defense Agency
MDA/DOH	MDA Office of Human Resources
MDMS	Meter Data Management System
MEDCOM	Medical Command (DoA)
MEO	Most Efficient Organization
MILCON	Military Construction
MW	MegaWatt, 1 million Watts
MWH	MegaWatt-Hour, 1 million Watt-hours
NAVFAC	Naval Facilities Engineering Command
NAVSTA	Naval Station
NAWS	Naval Air Weapons Station – China Lake
NDAA	National Defense Authorization Act
NGA	National Geospatial-Intelligence Agency
NH	Naval Hospital
NIST	National Institute of Standards and Technology
NMC	Naval Medical Center
NSA	National Security Agency
O&M	Operations and Maintenance
OMB	Office of Management and Budget
PACAF	Pacific Air Forces
PBMO	Pentagon Building Management Office
PENREN	Pentagon Renovation Office
PH&RP	Pentagon Heating & Refrigeration Plant
PM	Program Management
PV	Photovoltaic
QSR	Quality Surveillance Representative
RAF	Royal Air Force
RDF	Remote Delivery Facility (WHS)
REAP	Reduced Energy Appreciation Program
REC	Renewable Energy Certificate
REM	Resource Efficiency Manager
RFP	Request for Proposal
RMCS	Refrigeration Monitoring and Control Systems

<u>Acronym</u>	<u>Definition</u>
SAF/IE	Secretary of the Air Force for Installations, Environment and Logistics
SDD	Sustainable Design and Development
SECNAV	Secretary of the Navy
SE ITP	Sustainability and Environment Integrated Product Team
SFG	Senior Focus Group
SIOQ	Quality Assurance Division (NGA)
TMA	TRICARE Management Agency
UESC	Utility Energy Services Contract
USACE	US Army Corp of Engineers
USAF	United States Air Force
USAMRIID	United States Army Medical Research Institute for Infectious Diseases
USGBC	United States Green Building Council
VAV	Variable Air Volume
WRAMC	Walter Reed Army Medical Center
WHS	Washington Headquarters Service

APPENDIX B: DoD OMB CIRCULAR A-11 FY 2009

ENERGY AND TRANSPORTATION EFFICIENCY MANAGEMENT

FY 2010 FUNDING REQUEST FOR ENERGY AND TRANSPORTATION EFFICIENCY MANAGEMENT (OMB CIRCULAR A-11)

Agency: Department of Defense
 Date: 26-Jan-10
 Prepared by: CDR Andrew Crigler
 Phone: 703-571-9074

1.1 IDENTIFICATION OF FUNDS FOR ENERGY EFFICIENCY MANAGEMENT AS REQUIRED BY E.O. 13423

Activity Classification/ Organization	DoD	2009		2010		2011		Comments
		Amount (thou. \$)	Account(s)	Amount (thou. \$)	Account(s)	Amount (thou. \$)	Account(s)	
ESPC and/or UESC negotiation/administration								
Army		346.7	O&M	0.0		0.0		
Air Force		4,017.0	O&M	5,050.0	O&M	6,590.0	O&M	
Dept of Navy						3,800.0	O&M	
DECA		5.0	DWCF	5.0	DWCF	5.0	DWCF	ESPC Training and visit with DESC
DIA				15.0				
DLA		2,300.0		3,100.0		5,200.0		
TMA		737.0	DHP	737.0	DHP	737.0	DHP	on-going
WHS		2,438.8	PX13	572.1	PX13	572.1	PX13	
ESPC and/or UESC negotiation/administration-Total		9,844.5		9,479.1		16,904.1		
Direct spending on energy efficiency								
Army		105,841.0	RDTE	94,900.8	RDTE	0.0		
Army		25,520.0	O&M	0.0		0.0		
Army		365,200.0	ARRA	0.0		0.0		
Army		59,382.0	ECIP					
Air Force		183,184.5	O&M	182,509.0	O&M	199,194.0	O&M	
Dept of Navy (Energy Efficiency)		24,644.0	O&M	10,000.0	O&M	61,500.0	O&M	
Dept of Navy (Energy Efficiency)		800.0	MCON	0.0	MCON	0.0	MCON	
Dept of Navy (Metering)		10,226.3	O&M	7,000.0	O&M	40,000.0	O&M	
Dept of Navy (Energy Efficiency)		36,890.0	ARRA, O&M					
Dept of Navy (Energy Efficiency)		53,190.0	ARRA, MCON					
Dept of Navy (Metering)		95,500.0	ARRA, O&M					
DECA		1,145.6	DWCF	1,000.0	DWCF	1,000.0	DWCF	Re-Commissioning & Assessments
DECA		822.1	Surcharge	1,000.0	DWCF	1,000.0	DWCF	Audits & Analysis
DECA - Energy Conservation Investment Prog		1,203.0	ECIP	500.0	ECIP	500.0	ECIP	DoD ECIP Program
DECA - USAF Academy		1,100.0	ARRA					Stimulus Money (ARRA)
DECA				300.0	Surcharge	300.0	Surcharge	CFMT
DIA		8.0		10.0				
DLA		1,000.0	DWCF	10,000.0	DWCF	15,000.0	DWCF	
NGA		2,009.0	O&M	2,000.0	O&M	2,551.0	O&M	
NSA				150.0	O&M			
TMA		200.0	Army	3,631.0	DHP	330.0	DHP	
WHS		719.6	PX13	544.0	PX13	544.0	PX13	Energy/Dashboard and Other Projects
Direct spending on energy efficiency-Total		967,595.1		313,544.8		321,919.0		

1.2 IDENTIFICATION OF FUNDS FOR TRANSPORTATION EFFICIENCY MANAGEMENT AS REQUIRED BY E.O. 13423

Activity Classification/DoD Organization	2009		2010		2011	
	Amount (thou. \$)	Account(s)	Amount (thou. \$)	Account(s)	Amount (thou. \$)	Account(s)
Acquisition of alternative fuel vehicles						
Army						
Air Force	6,700.0	3400/3800	7,330.0	3400/3800	7,595.0	3400/3800
Dept of Navy (GSA)	338.0	O&M	450.0	O&M	550.0	O&M
Dept of Navy - Marine Corps owned, PMC funds	1,424.0	O&M	4,850.0	O&M	5,720.0	O&M
GSA Incremental Cost, Navy	1,214.0	O&M	1,300.0	O&M	1,400.0	O&M
Dept of Navy - Navy Purchases	720.0	O&M	800.0	O&M	850.0	O&M
Dept of Navy - Navy Purchases (ARRA)	14,827.4	ARRA				
DCMA	20.7		11.2		30.5	
DIA	60.0					
DLA	0.0		30.0		60.0	
MDA	0.0		25.0		0.0	
NGA	31.3	O&M	75.5	O&M	80.5	O&M
NSA	715.0	Procurement	300.0	Procurement	350.0	Procurement
TMA	210.0	DHP	500.0	DHP		
Acquisition of alternative fuel vehicles - Total	26,260.4		15,671.7		16,636.0	
Infrastructure development and use of alternative fuels						
Dept of Navy - B20/ES/EV Infrastructure	740.0	O&M	900.0	O&M	4,500.0	O&M
Air Force	4,072.2		628.0		70.9	
DLA	0.0		5.0		45.0	
Infrastructure development and use of alternative fuels - Total	4,812.2		1,533.0		4,615.9	
Implementation of compliance strategy, including any modifications						
Dept of Navy - AFV Planning Documents	650.0	O&M	950.0	O&M	800.0	O&M
DLA	0.0		60.0		100.0	
Implementation of compliance strategy, including any modifications - Total	650.0		1,010.0		900.0	
Direct spending on training						
DCMA	4.0		5.0		4.0	
DLA	-		6.0		26.0	
MDA	4.0		4.4		4.8	
Direct spending on training - Total	8.0		5.0		4.0	
Procurement of environmentally preferable motor vehicle products						
Air Force	3,590.1	3400/3800	3,733.7	3400/3800	3,883.1	3400/3800
Dept of Navy	1,500.0	O&M	150.0	O&M	150.0	O&M
MDA	13.0		16.4		17.5	
NGA	25.0	O&M	25.0	O&M	25.0	O&M
TMA	27.7		35.0			
Procurement of environmentally preferable motor vehicle products-Total	3,805.8		3,960.1		4,075.6	
Other (please specify)						
Dept of Navy - Neighborhood Electric Vehicles	1,500.0	O&M	500.0	O&M	550.0	O&M
Other (please specify) - Total	1,500.0		500.0		550.0	
Total - Section 1-2	37,036.4		22,679.9		26,781.5	

1.3 IDENTIFICATION OF FUNDS FOR STRENGTHENING OTHER MANAGEMENT DIRECTIVES AS REQUIRED BY E.O. 13423

	2009		2010		2011	
	Amount (thou. \$)	Account(s)	Amount (thou. \$)	Account(s)	Amount (thou. \$)	Account(s)
Implementation of EMS						Page(s) in Budget Submission to OMB
Army	5,110.0	RDTE	5,191.0	RDTE	0.0	
Air Force	3,002.0	O&M	4,513.1	O&M	3,448.0	O&M
DECA	476.8	Surcharge	346.0	DWCF	440.0	DWCF EMS
TMA			3,325.0	DHP		
Implementation of EMS - Total	8,588.8		13,375.1		3,888.0	
Water efficiency						
Air Force	28,921.0	O&M	27,040.0	O&M	24,746.0	O&M
Dept of Navy	0.0	MCON, ECIIP	2,600.0	MCON, ECIIP	2,000.0	MCON, ECIIP
Dept of Navy	5,916.7	O&M	0.0	O&M	0.0	O&M
Dept of Navy	20,054.0	ARRA, MCON	30.0	DWCF	30.0	DWCF Part of the facility Assessment
DECA	130.7	DWCF				Incidental checks during Audits
DECA	93.2	Surcharge				
TMA	120.0	DHP	129.0	DHP		
Water efficiency - Total	55,235.6		29,799.0		26,776.0	
Waste prevention (hazardous and non-hazardous) and recycling programs						
Army (waste prevention)	48,875.6	RDTE	33,111.9	RDTE	0.0	
Army (waste prevention)	3,655.5	O&M	3,687.4	O&M	3,735.5	O&M
Army (recycling)	54,332.0	O&M	0.0	O&M	0.0	
Air Force	18,172.0	O&M	16,088.0	O&M	14,884.0	O&M
DECA	388.1	DWCF	322.0	DWCF	322.0	DWCF EWMIP
DECA	17.0	Surcharge				Incidental checks during Audits
DIA Installed Water Efficient fixtures	462.0					
Waste prevention (hazardous and non-hazardous) and recycling programs-Total	125,902.2		53,209.3		18,941.5	
Electronics Stewardship						
Air Force	1,300.0	O&M	620.0	O&M	632.0	O&M
DECA	14.0	DWCF	14.0	DWCF	14.0	DWCF
NSA	0.0		650.0	NAF		
TMA	1.6	DHP	3.2	DHP		
Electronics Stewardship-Total	1,315.6		1,287.2		646.0	
Direct spending on training						
Air Force	1,726.3	O&M	2,695.4	O&M	2,990.0	O&M
Dept of Navy - Local Activity Training	525.0	O&M	600.0	O&M	650.0	O&M
DECA - EMS	14.0	Surcharge	14.0	DWCF	14.0	DWCF
DECA - Energy (Instructors)	130.8	Surcharge	200.0	DWCF	200.0	DWCF FES/QSR Training
DECA - Energy (In-house)	56.8	DWCF	60.0	DWCF	60.0	DWCF
DIA	9.5		12.0			
NGA	25.0		25.0		25.0	
MDA	3.0					
NGA	25.0		25.0		25.0	
NSA	50.0	O&M	50.0	O&M	55.0	O&M
Direct spending on training - Total	2,565.4		3,681.4		4,019.0	

Acquisition of green products and services												
Air Force	1,634.2	O&M	989.0	O&M	940.0	O&M						
NSA - LEED and Conferences	50.0	O&M	50.0	O&M	55.0	O&M						
Acquisition of green products and services- Total	1,684.2		1,039.0		995.0							
Other (please specify)												
Air Force (diesel gen conv)	15.0		2.0		50.0							
DECA	11.2	DWCF	11.0	DWCF	1.0	DWCF						
Other (please specify) - Total	26.2		13.0		61.0							
Total - Section 1-3	195,318.0		102,404.0		55,326.5							

1.4 SAVINGS IDENTIFIED IAW USC Title 10, §2912(d)

Activity Classification/DoD Organization	2009 Amount (thou. \$)
Amount of FY 08 energy cost savings realized, including financial benefits resulting from shared energy savings contracts	
Air Force	57916.3
Army	19,865
Navy	10,410.0
DeCA	0.0
NSA	
TMA	102
Amount of FY 09 energy cost savings realized, including financial benefits resulting from shared energy savings contracts - Total	88,293.2

APPENDIX C: DOD DATA TABLES FY 2009

Department of Defense FY 2009 Energy Management Performance Summary

Goal Performance

Energy Management Requirement	FY 2003 Btu/GSF	FY 2009 Btu/GSF	Percent Change 2003 - 2009	FY 2009 Goal Target
Reduction in energy intensity in facilities subject to the NECPA/E.O. 13423 goals	116,134	104,527	-10.0%	-12.0%

Renewable Energy Requirement	Renewable Electricity Use (MWH)	Total Electricity Use (MWH)	Percentage	FY 2009 Goal Target
Eligible renewable electricity use as a percentage of total electricity use	1,084,595.3	29,861,334.1	3.6%	3.0%

Water Intensity Reduction Goal	FY 2007 Gallon/GSF	FY 2009 Gallon/GSF	Percent Change 2007 - 2009	FY 2009 Goal Target
Reduction in potable water consumption intensity	59.8	57.1	-4.6%	-4.0%

Metering of Electricity Use	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative % of Appropriate Buildings Metered	FY 2012 Goal Target
Standard Electricity Meters in FY 2009	16,806	27.5%	44.8%	100%
Advanced Electricity Meters in FY 2009	6,868	33.1%	18.3%	Maximum Extent Practicable
Total Electricity Meters in FY 2009	23,674	60.5%	63.1%	

Federal Building Energy Efficiency Standards	Percent of New Building Designs	FY 2007 forward Goal 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:	99%	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	\$466,001.6	2,320,064.5
Investment value of ESPC Task/Delivery Orders awarded in fiscal year	\$127,472.7	361,185.0
Investment value of UESC Task/Delivery Orders awarded in fiscal year	\$130,345.6	839,358.0
Total	\$723,819.9	3,520,607.5

	Percentage
Total investment as a percentage of total facility energy costs	19.1%
Financed (ESPC/UESC) investment as a percentage of total facility energy costs	6.8%

FY 2009 ENERGY MANAGEMENT DATA REPORT

Agency: Department of Defense Prepared by: CDR Andrew Cigler
 Date: 26-Jan-10 Phone: (703) 571-9074

PART 1: ENERGY/WATER CONSUMPTION AND COST DATA

1-1. NEPAE.O. 13423 Goal Subject Buildings

Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Unit Cost (\$)	Site-Delivered Btu (Billion)	Est. Source Btu (Billion)	Est. GHG Emissions (MTCO ₂ e)
Electricity		27,542,578.3	\$2,366,916.9	\$0.09 /kWh	93,975.28	326,379.6	17,464,483
Fuel Oil	Thou. Gal.	135,812.5	\$298,039.0	\$2.19 /gallon	18,837.2	18,837.2	1,381,708
Natural Gas	Thou. Cubic Ft.	89,433,014.1	\$590,047.3	\$6.35 /Thou Cu Ft	71,585.4	71,585.4	3,804,766
LPG/Propane	Thou. Gal.	14,799.9	\$25,975.0	\$1.76 /gallon	1,413.4	1,413.4	88,097
Coal	S. Ton	856,755.5	\$70,231.4	\$106.94 /S. Ton	16,143.0	16,143.0	1,548,764
Purch. Steam	MMBtu	5,563.0	\$151,602.2	\$27.25 /MMBtu	5,563.0	7,732.5	741,823
Other	BBtu	14.0	\$210.2	\$15.02 /MMBtu	14.0	14.0	1,867
Purch. Renew. Electric.	MWh	222,877.2	\$41,062.2	\$0.18 /kWh	760.5		
Purch. Renew. Other	BBtu	1,497.7	\$19,316.7	\$12.8972268 /MMBtu	1,497.7		
Total Costs:			\$3,553,400.8		209,789.5	442,105.2	25,031,507
FY 2009 Goal Subject Buildings					108,560	228,777	
Gross Square Feet (Thousands)		1,932,473.2					
Goal Subject Buildings					106,632		
FY 2003 Baseline (Btu/GSF)		116,134.4					

1-2. NEPAE.O. 13423 Goal Excluded Facilities

Energy Type	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Unit Cost (\$)	Site-Delivered Btu (Billion)	Est. Source Btu (Billion)	Est. GHG Emissions (MTCO ₂ e)
Electricity		2,095,876.6	\$203,465.4	\$0.10 /kWh	7,151.1	24,836.2	1,350,063
Fuel Oil	Thou. Gal.	1,809.8	\$4,811.2	\$2.55 /gallon	251.0	251.0	18,412
Natural Gas	Thou. Cubic Ft.	2,514,135.1	\$19,662.0	\$7.82 /Thou Cu Ft	2,592.1	2,592.1	137,769
LPG/Propane	Thou. Gal.	41.8	\$102.9	\$2.46 /gallon	4.0	4.0	249
Coal	S. Ton	3,779.8	\$409.0	\$108.21 /S. Ton	92.9	92.9	8,913
Purch. Steam	MMBtu	705.1	\$2,066.7	\$2.93 /MMBtu	705.1	980.1	94,023
Other	BBtu	13.8	\$92.6	\$6.71 /MMBtu	13.8	13.8	
Purch. Renew. Electric.	MWh	0.0	\$0.0	#DIV/0! /kWh	0.0		
Purch. Renew. Other	BBtu	0.0	\$0.0	#DIV/0! /MMBtu	0.0		
Total Costs:			\$230,429.9		10,810.0	28,770.0	1,609,430
FY 2009 Excluded Facilities					464,659	1,236,655	
Gross Square Feet (Thousands)		23,264.4					
Goal Excluded Facilities					464,659		
FY 2003 Baseline (Btu/GSF)		0					

1-3. Non-Fleet Vehicles and Other Equipment (Does not include Fleet Vehicle Data Captured by FAST System)

	Consumption Units	Annual Consumption	Annual Cost (Thou. \$)	Unit Cost (\$)	Btu (Billion)	Est. GHG Emissions (MTCO ₂)
Auto Gasoline	Thou. Gal.	83,242.8	\$159,457.1	\$2.07 /gallon	10,405.4	737,531
Diesel-Distillate	Thou. Gal.	282,124.2	\$694,787.3	\$2.24 /gallon	39,130.6	2,862,406
LPG/Propane	Thou. Gal.	4,308.3	\$1,133.6	\$1.63 /gallon	411.4	25,645
Aviation Gasoline	Thou. Gal.	1,137.5	\$5,107.4	\$4.49 /gallon	142.2	9,838
Jet Fuel	Thou. Gal.	3,850,647.9	\$7,316,231.0	\$1.90 /gallon	500,584.2	35,481,410
Navy Special	Thou. Gal.	631,020.3	\$1,135,836.5	\$1.80 /gallon	87,522.5	6,402,272
Other	BBtu	60,133.3	\$123,272.0	\$2.05 /MMBtu	60,133.3	
Total Costs:			\$9,335,824.9		698,329.7	45,519,102

Optional 1-3a. Fleet Vehicle Consumption and Costs Captured by the FAST System

(Input reflects format of Section IV, Part C, Annual Fuel Consumption Report, by Fuel Type of FAST SF 82 - Aggregate Combined Report)

Description	Consumption Units	Annual Consumption (Actual \$)	Btu (Billion)
Biodiesel	GE	5,121,752.0	\$12,553,604.0
Diesel	GE	20,757,501.0	\$42,869,175.0
Electric	GE	735.0	\$2,205.0
E-85	GE	2,732,329.0	\$8,158,971.0
Gasoline	GE	72,172,717.0	\$160,768,490.0
Hydrogen	GE	357.0	\$14,064.0
M-85	GE	0.0	\$0.0
LPG	GE	6,535.0	\$15,147.0
NG	GE	227,982.0	\$636,690.0
Other	GE	0.0	\$0.0
TOTAL	GE	101,019,906.0	\$225,018,395.0

1-4. RENEWABLE ENERGY GENERATED ON FEDERAL OR INDIAN LAND WHERE RECS ARE RETAINED BY THE GOVERNMENT
(New renewable energy is from projects placed in service after January 1, 1999. Include projects that did not retain RECs if they qualify under the grandfather clause.)

Renewable energy project types in service during FY 2009, by age and source	Number of Projects	Annual Energy Produced	Energy Produced on Federal or Indian Land and Used at a Federal Facility
Electricity from New Solar projects (MWH)	223	14,816.9	14,750.5
Electricity from New Wind projects (MWH)	17	13,426.7	13,426.7
Electricity from New Biomass projects (MWH)	0	0.0	0.0
Electricity from New Landfill Gas projects (MWH)	2	9,951.0	9,951.0
Electricity from New Geothermal projects (MWH)	0	0.0	0.0
Electricity from New Hydro/Ocean projects (MWH)	1	20,887.0	20,887.0
Electricity from Old Solar projects (MWH)	8	2,265.7	2,265.7
Electricity from Old Wind projects (MWH)	1	821.7	821.7
Electricity from Old Biomass projects (MWH)	0	0.0	0.0
Electricity from Old Landfill Gas projects (MWH)	0	0.0	0.0
Electricity from Old Geothermal projects (MWH)	0	0.0	0.0
Electricity from Old Hydro/Ocean projects (MWH)	0	0.0	0.0
Natural Gas from New Landfill/Biomass projects (Million Btu)	1	92,343.0	92,343.0
Renewable Thermal Energy from New projects (Million Btu)	147	1,080,912.4	1,036,459.6
Other New Renewable Energy (Specify Type) (Million Btu)	65	27,320.2	27,320.2
Natural Gas from Old Landfill/Biomass projects (Million Btu)	0	0.0	0.0
Renewable Thermal Energy from Old projects (Million Btu)	23	197,906.6	197,906.6
Other Old Renewable Energy (Specify Type) (Million Btu)	1	51,410.0	51,410.0
Total New Renewable Electricity (MWH)	243	59,081.6	59,015.2
Total Old Renewable Electricity (MWH)	9	3,087.4	3,087.4
Total New Non-Electric Renewable Energy (Million Btu)	213	1,200,575.6	1,152,139.2
Total Old Non-Electric Renewable Energy (Million Btu)	24	249,316.6	249,316.6
Total Renewable Energy Generation (Million Btu)	489	1,662,073.0	1,662,073.0

1-5. ON-SITE RENEWABLE ENERGY GENERATION WHERE RECS ARE NOT RETAINED BY THE GOVERNMENT
(This energy is only counted toward the renewable energy goal if the agency has enough new RECs to qualify for the on-site bonus.)

Renewable energy reported here comes from projects: 1) placed in service after 1/1/1999 (New); 2) where RECs have not been retained by the government; 3) where the amount has not been reported elsewhere on this data report; and 4) where the energy or RECs have not been sold to another agency that is counting it toward their renewable energy goal. (MWH)	Amount Produced or Used	Amount Qualified for Goal
Renewable energy reported here must come from projects: 1) placed in service before 1/1/1999 (Old); 2) where RECs have not been retained by the government; 3) where the amount has not been reported elsewhere on this data report; and 4) where the energy or RECs have not been sold to another agency that is counting it toward their renewable energy goal. (MWH)	51.2	51.2
	1,314,588.0	275,306.4

1-6. RENEWABLE ENERGY/RENEWABLE ENERGY CERTIFICATE PURCHASES IN FY 2009

Type of Renewable Energy Purchase (Two rows are provided for each type. Insert additional rows as necessary for purchases of same type for different end-use categories (Goal or Excluded) or purchase terms (Short or Long). Insert rows between each color-coded category).	Total Amount Purchased (MWH)	Total Amount Purchased (Btu)	Annual Cost (Thou. \$)	Portion of Total Purchased from Federal or Indian Lands	FY 2009 Goal Application Renewable Energy Goal (EE) Credit	Purchase Term (Enter: Short or Long)	End Use Category (Enter: Goal or Excluded)	Total Amount Purchased for Goal Buildings (Billion Btu)	Total Amount Purchased for Excluded Fac. (Billion Btu)
Electricity from New Renewable Source	210,236.5		\$33,985.6	31,752.4	RE: 100% EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Short	Goal	717.3	0.0
Electricity from New Renewable Source	3,206.4		\$502.4	3,200.0	RE: 100% EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Long	Goal	11.2	0.0
Electricity from Old Renewable Source	1,385.6		\$679.4	0.0	RE: Up to 15% of total electricity use. EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Short	Goal	4.7	0.0
Electricity from Old Renewable Source	7,966.7		\$214.8	7,966.7	RE: Up to 15% of total electricity use. EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Long	Goal	27.2	0.0
RECs from New Renewable Source	275,357.6		\$2,484.2	0.0	RE: 100% EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Short	Goal	939.5	0.0
RECs from New Renewable Source	0.0		\$0.0	0.0	RE: 100% EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Long	Excluded	0.0	0.0
RECs from Old Renewable Source	154,836.2		\$82.0	0.0	RE: Up to 15% of total electricity use. EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Short	Goal	528.3	0.0
RECs from Old Renewable Source	0.0		\$0.0	0.0	RE: Up to 15% of total electricity use. EE-Credit: Up to 48% reduction for short-term and 72% reduction for long-term.	Long	Excluded	0.0	0.0
Non-Electric Energy from New Renewable Source	444,476.0		\$2,670.3	0.0	RE: no contribution to goal (see comment) and 72% reduction for long-term.	Short	Goal	444.5	0.0
Non-Electric Energy from New Renewable Source	503,310.0		\$3,468.2	0.0	RE: no contribution to goal (see comment) and 72% reduction for long-term.	Long	Goal	503.3	0.0
Non-Electric Energy from Old Renewable Source	0.0		\$0.0	0.0	RE: no contribution to goal (see comment) and 72% reduction for long-term.	Short	Goal	0.0	0.0
Non-Electric Energy from Old Renewable Source	549,897.0		\$12,978.2	0.0	RE: no contribution to goal (see comment) and 72% reduction for long-term.	Long	Goal	0.0	0.0
Total Purchases of New Renewables Electricity	213,543.9		\$40,165.0	34,952.4					
Total Purchases of New RECs on Federal or Indian Land Bonus for Purchases from New Projects	275,357.6		\$2,484.2	0.0					
Total Purchases of Old Renewable Electricity	34,982.4		\$894.2	7,966.7					
Total Purchases of Old RECs	154,836.2		\$82.0	0.0					
Total Purchases of New Non-Electric Renewable Energy	947,786.0		\$6,336.5	0.0					
Total Purchases of Old Non-Electric Renewable Energy	549,897.0		\$12,978.2	0.0					
Total Purchases for Goal Buildings	653,071.0		\$62,945.1	0.0					
Total Purchases for Excluded Facilities	0.0		\$0.0	0.0					
Total All Purchases	653,071.0	1,497,683.0	\$62,945.1	0.0					

1-7. GOAL-ELIGIBLE RENEWABLE ELECTRICITY USE AS A PERCENTAGE OF FACILITY ELECTRICITY USE

Components of Eligible RE Use	Total Facility Renewable Electricity Use (MWH)	RE as a Percentage of Electricity Use
Eligible Renewable Electricity Total	29,861,334.1	3.6%
New Renewable Electricity (without Bonus)	548,015.3	
Bonus, Federal or Indian Land	93,997.6	
Eligible Old Renewable Electricity	442,582.3	

1-8. ALL RENEWABLE ENERGY USE (INCLUDING NON-ELECTRIC) AS A PERCENTAGE OF FACILITY ELECTRICITY USE (WITHOUT BONUS)

All Renewable Energy Use (Billion Btu)	Total Facility Electricity Use (Billion Btu)	RE as a Percentage of Energy Use
5,343.7	101,886.9	5.2%
101,886.9	101,886.9	6.8%

1-9. WATER USE INTENSITY AND COST

Potable Water	Annual Consumption (Million Gallons)	Annual Cost (Thou. \$)	Facility Gross Square Feet (Thou.)	Gallons per Gross Square Foot
Buildings & Facilities Subject to Water Goal	111,576.6	\$259,088.1	1,954,905.2	57.1
Approx. percentage of reported water consumption that is estimated: is the FY 2007 agency water intensity baseline preliminary or final?				9%
				Final

PART 2: ENERGY EFFICIENCY IMPROVEMENTS

2-1. DIRECT AGENCY OBLIGATIONS

	FY 2009 (Million Btu)	(Thou. \$)	Projected FY 2010 (Million Btu)	(Thou. \$)
Direct obligations for facility energy efficiency improvements, including facility surveys/audits		\$466,001.6		\$254,466.0
Estimated annual savings anticipated from obligations	2,320,064.5	\$163,013.2	1,911,908.2	\$63,567.3

2-2. ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPC)

	Annual savings (Million Btu)	(number/Thou. \$)
Number of ESPC Task/Delivery Orders awarded in fiscal year & annual energy (MMBTU) savings.	361,185.0	10
Investment value of ESPC Task/Delivery Orders awarded in fiscal year.		\$127,472.7
Amount privately financed under ESPC Task/Delivery Orders awarded in fiscal year.		\$102,715.9
Cumulative guaranteed cost savings of ESPCs awarded in fiscal year relative to the baseline spending.		\$254,530.1
Total contract award value of ESPCs awarded in fiscal year (sum of contractor payments for debt repayment, M&V, and other negotiated performance period services).		\$196,965.4
Total payments made to all ESPC contractors in fiscal year.		\$208,553.6

2-3. UTILITY ENERGY SERVICES CONTRACTS (UESC)

	Annual savings (Million Btu)	(number/Thou. \$)
Number of UESC Task/Delivery Orders awarded in fiscal year & annual energy (MMBTU) savings.	839,366.0	32
Investment value of UESC Task/Delivery Orders awarded in fiscal year.		\$130,345.6
Amount privately financed under UESC Task/Delivery Orders awarded in fiscal year.		\$92,695.0
Cumulative cost savings of UESCs awarded in fiscal year relative to the baseline spending.		\$168,062.9
Total contract award value of UESCs awarded in fiscal year (sum of payments for debt repayment and other negotiated performance period services).		\$107,059.5
Total payments made to all UESC contractors in fiscal year.		\$163,982.7

2-4. METERING OF ELECTRICITY USE

FY	Standard Meters		Advanced Meters		Appropriate Buildings	
	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	Cumulative # of Buildings Metered	Cumulative % of Electricity Metered	# of Appropriate Buildings for Metering	Cumulative % of Buildings Metered
2009	16506	27.5%	6866	33.1%	37493	63.1%
2010 planned	15425	24.3%	17066	54.0%	37648	86.3%

2-5. FEDERAL BUILDING ENERGY EFFICIENCY STANDARDS

	Number of New Building Designs
Total new building designs started since beginning of FY 2007:	708
Total new building designs started since beginning of FY 2007 that are expected to be 30 percent more energy efficient than relevant code, where life-cycle cost effective:	703
Percent of new building designs started since beginning of FY 2007 that are expected to be 30 percent more energy efficient than relevant code, where life-cycle cost effective:	Percent
	99%

2-6. TRAINING

	(number)	(Thou. \$)
Number of personnel trained in FY 2009/Expenditure	11,586	\$2,994.2

**AGENCY COMPILATION WORKSHEET FOR CREDIT FOR PROJECTS THAT INCREASE
SITE ENERGY USE BUT SAVE SOURCE ENERGY**

(See http://www.eere.energy.gov/femp/pdfs/sec502e_%20guidance.pdf)

EPACT Goal Subject Buildings FY 2009			
Name of Project Saving Source Energy in Current Fiscal Year	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(Million Btu)	(Million Btu)	(Million Btu)
Air Force			
Project No. 1	33,952.8	117,323.9	83,966.5
Project No. 2	16,739.3	58,135.5	41,396.8
Air Force Totals	50,692.1	175,459.4	125,363.4
Army			
Project No. 1	1,318.0	1,418.0	1,005.0
Project No. 2	228,835.0	75,020.0	185,526.0
Army Totals	230,153.0	76,438.0	186,531.0
Navy			
NSB New London	389,476.0	181,772.0	269,561.0
NSWC Indian Head	69,938.0	245,879.0	308,987.0
NSA Portsmouth	389,187.0	109,145.0	520,547.0
NAVFAC Midwest	175,311.0	272,670.0	488,681.0
CFA Yokosuka, Japan	0.0	0.0	1,410,471.0
MCAGCC Twentynine Palms	80,220.0	602,752.0	454,126.0
Navy Totals	1,104,132.0	1,412,218.0	3,452,373.0
TMA			
Ft. Detrick	51,410.0	51,410.0	51,410.0
San Diego Cogeneration Plant	0.0	0.0	252,575.0
TMA Totals	51,410.0	51,410.0	303,985.0
EPACT Goal Subject Buildings DoD Totals	1,436,387.1	1,715,525.4	4,068,252.4

EPACT Excluded Facilities - No Submissions

Name of Project Saving Source Energy in Current Fiscal Year (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(Million Btu)	(Million Btu)	(Million Btu)
CFA Yokosuka, Japan (cold iron)	0.0	0.0	531,087.7
Totals	0.0	0.0	531,087.7

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Project ID	New Construction Project Information			Design Started (FY)	Completed New Construction			In terms of energy use, percentage below ANSI/ASHRAE/IESN A Standard 90.1--2004 achieved
	Building Name	Location (City, State)	Design Started (FY)		Percentage below ANSI/ASHRAE/IESN A Standard 90.1--2004 in terms of energy use	If not at least 30% below ANSI/ASHRAE/IESN A Standard 90.1--2004, will design achieve maximum level of energy efficiency that is life cycle cost-effective?	Date Construction Completed (FY)	
Air Force								
AIXF015003	TEMPORARY LODGING FACILITY (TLF)	ANDREWS, Camp Spring, MD	2004	30%		2012	TBD	
NVZR063713B	CENTCOM Joint INTE Center, Ph III	MACDILL, Tampa, FL	2005	22%	Yes	2009	TBD	
FXSB083009	Replace Alaska Regional PME Center	ELMENDORF, Anchorage, AK	2006	30%		2011	TBD	
GLEN063002P2	Space Test and Evaluation Facility, PHASE 2	SCHRIEVER, Colorado Springs, CO	2006	35%		2012	TBD	
SCBP023003	Construct HQ AF Weather Agency Facility	OFFUTT, Bellevue, NB	2006	50%		2008	TBD	
PDRG020204	Maintenance Hangar	March AFB, CA	2007	30%		2009	30%	
RVK0009013P2	Visiting Quarters	Niagara ARS, NY	2007	30%		2009	30%	
AJXF059145	BRAC - HQ & Readiness Center	ANDREWS, MD	2007	30%		2010	TBD	
ATQZ039181	(a) Pavements and Grounds Fac	FORT WAYNE, IN	2007	30%		2009	TBD	
AXQD009011	Adal Fire Crash/Rescue Stat	BARNES, MA	2007	30%		2010	TBD	
AXQD059345	BRAC - EOD Facility	BARNES, MA	2007	30%		2011	TBD	
AXQD059359	BRAC - ASA Complex	BARNES, MA	2007	30%		2010	TBD	
BRK059015	Mobility Processing Center	BIRMINGHAM, AL	2007	41%		2010	TBD	
CURZ069220	Security Fries/Comm Fac	BURLINGTON, VT	2007	30%		TBD	TBD	
CUZR079497	Addn to Bldg 120 for sim	BURLINGTON, VT	2007	30%		2009	TBD	
FWJH059032	Replace Crash Fire Station	ELLINGTON, TX	2007	30%		2010	TBD	
FWJH069090	Predator Operations Complex	ELLINGTON, TX	2007	30%		2008	TBD	
FWJH069154	TFI - ASOS Beddown	ELLINGTON, TX	2007	30%		2010	TBD	
FXSB069007	BRAC-C-17 Engine Facility	ELMENDORF, AK	2007	30%		2010	TBD	
FXSB069016	BRAC-Aircraft Maintenance Chppl	ELMENDORF, AK	2007	30%		2010	TBD	
HKRZ059318	BRAC - A-10 Mun Load Crew Fac	FORT SMITH, AR	2007	30%		2009	TBD	
HKRZ069001	BRAC - A-10 Fuel Cell/Corr Cl	FORT SMITH, AR	2007	30%		2009	TBD	
JLW5019053	Replace Maintenance Hangar	NEW CASTLE, DE	2007	30%		2010	TBD	
JLW5019057	Replace Acft Maintenance Shops	NEW CASTLE, DE	2007	30%		2010	TBD	
JLW5069047	TFI-Info Operations Sqdm	NEW CASTLE, DE	2007	30%		2010	TBD	
KKGA069089	Predator Operations Complex	HECTOR, ND	2007	30%		2009	TBD	
KNMD059350	BRAC-Flight Simulator Facility	HICKAM, HI	2007	34%		2011	TBD	
LUX001590	Replace BCE Complex	JOE FOSS, SD	2007	30%		2010	TBD	
NKAK049051	Security Forces Fac Comm Bldg	LITTLE ROCK, AR	2007	30%		2010	TBD	
NLZG029199	C-5 Fuel Cell Hangar	RICKENBAKER, OH	2007	30%		2010	TBD	
PVY009074	262 IWAS Facility	MARTINSBURG, WV	2007	30%	Yes	2010	TBD	
PQWY059045	McCHORD, WA	MCCHORD, WA	2007	25%		2011	TBD	
PRQE059126	BRAC - STAMP Relocation	MCCONNEL, KS	2007	30%		2010	TBD	
PRQE059348	BRAC - STRAPP Relocation	MCCONNEL, KS	2007	30%		2010	TBD	
PSXE069161	TFI-MILSTAR Beddown	KNOXVILLE, TN	2007	30%		2009	TBD	
PSXE999134	Replace Squadron Operations	KNOXVILLE, TN	2007	42%		2009	TBD	
RQLH069035	BRAC - Relocate 214 EIS Ops	NEW ORLEANS, LA	2007	30%		2010	TBD	
SCZ0989023	Replace Ops and Training	PEASE, NH	2007	40%		2010	TBD	
TDV0029066	Replace Troop Quarters	ALPENA, MI	2007	51%		2010	TBD	

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	Building Name	Location (City, State)	Design					
UCTL19637	Replace Fire Station	RENO, NV	2007	30%		2010	TBD	
USEB889585	Repl Fire Station	SALT LAKE, UT	2007	32%		2011	TBD	
VUBV059124	Range Support Facility Complex	SMOKY HILL, KS	2007	30%		2010	TBD	
VUBV069101	TFL-ASOS Beddown	SMOKY HILL, KS	2007	30%		2010	TBD	
XDOU069146	Troop Training Quarter	SAVANNAH, GA	2007	30%		2010	TBD	
YZEU069106	TFL-ASOS Beddown	WILL ROGERS, OK	2007	30%		2010	TBD	
ACC093030	UAS Field Training Unit Operations Complex	LANGLEY, Hampton, VA	2007	30%		2012	TBD	
ACC093035	UAS Field Training Unit Operations Complex	LANGLEY, Hampton, VA	2007	30%		2012	TBD	
AGGN063002	C-17 Sheet Metal/Composite Shop	ALTUS, Altus City, OK	2007	30%		2012	TBD	
AIXF103002	NCR Relocation - Administration Facility	ANDREWS, Camp Spring, MD	2007	30%		2011	TBD	
AIXF103003	BRAC - Administration Facility	ANDREWS, Camp Spring, MD	2007	30%		2011	TBD	
CRWU048002	Pharmacy	BUCKLEY, Denver, CO	2007	30%		2010	TBD	
CRWU073006	YOUTH CENTER	BUCKLEY, Denver, CO	2007	30%		2012	TBD	
CYRB093570	BRAC - BULLIS Medical Field Training Complex	CAMP BULLIS, San Antonio, TX	2007	30%		2010	TBD	
CZQZ073006	Add/Alter C-130 Hangar	CANNON, Clovis, NM	2007	30%		2010	TBD	
CZQZ093002	ADAL Child Development Center	CANNON, Clovis, NM	2007	30%		2011	TBD	
EEFZ053002	Child Development Center	COLUMBUS, Columbus, MS	2007	30%		2012	TBD	
EEFZ073002A	Addition to Mission Support Complex, PH II	COLUMBUS, Columbus, MS	2007	30%		2010	TBD	
FBNV053002	CSAR EC-130 Maintenance Hangar/AMU	DAVIS-MONTHAN, Tucson, AZ	2007	30%		2009	TBD	
FBNV079004	BRAC - Construct TSSC Storage Facility (3546)	DAVIS-MONTHAN, Tucson, AZ	2007	30%		2009	TBD	
FIXT993002	Fitness Center	DOVER, Dover, DE	2007	30%		2011	TBD	
FTFA053021	F-35 Add/Alter 53RD Joint Reprogramming Facility	EGLIN, Valpariso, FL	2007	30%		2012	TBD	
FTFA083950	BRAC - F-35 Integrated TRNG Center Academics B1G	EGLIN, Valpariso, FL	2007	30%		2012	TBD	
FTFA083952	F-35 Squadron Operations/AMU/Hangar	EGLIN, Valpariso, FL	2007	30%		2012	TBD	
FXSB073008B	F-22 Corrosion Control / LO MX / Composite RPR F	ELMENDORF, Anchorage, AK	2007	30%		2012	TBD	
FXSB073010	F-22 Flight Simulator	ELMENDORF, Anchorage, AK	2007	30%		2010	TBD	
FXSB073014	F-22 Jet Engine Inspection and Maintenance Facility	ELMENDORF, Anchorage, AK	2007	30%		2012	TBD	
FXSB073015	F-22 Field Training Detachment	ELMENDORF, Anchorage, AK	2007	30%		2012	TBD	
FXSB073016	F 22A 7 BAY AIRCRAFT SHELTER	ELMENDORF, Anchorage, AK	2007	30%		2010	TBD	
FXSB073018	F-22 8-Bay Aircraft Shelter	ELMENDORF, Anchorage, AK	2007	30%		2010	TBD	
FXSB073020	F-22 Squad Operations / AMU / 6-Bay Hangar	ELMENDORF, Anchorage, AK	2007	30%		2012	TBD	
FXSB073027	F-22 7-Bay Aircraft Shelter	ELMENDORF, Anchorage, AK	2007	30%		2011	TBD	

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	Building Name	Location (City, State)	Design Started (FY)	Percentage below ANSI/ASHRAE/IESN Standard 90.1--2004 in terms of energy use	If not at least 30% below ANSI/ASHRAE/IESN Standard 90.1--2004, will design achieve maximum level of energy efficiency that is life cycle cost-effective?	Date Construction Completed (FY)			
FXSB103009	RED FLAG ALASKA ADD ALTER OPERATIONS CENTER	ELMENTORF, Anchorage, AK	2007	30%		2011	TBD		
GHLN053034	BRAC Construct Overwatch ESF/GOV/POV Ck, Canopy and GH	FRANCIS E WARREN, Cheyenne, WY	2007	30%		2009	TBD		
GHLN063010	Renovate Historic Dormitory	FRANCIS E WARREN, Cheyenne, WY	2007	43%		2011	TBD		
GJKZ880015	Physiological Training Facility	FAIRCHILD, Spokane, WA	2007	30%		2010	TBD		
JCGU043001	ADAL Fitness Center	GOODFELLOW, San Angelo, TX	2007	30%		2012	TBD		
JFSD200609	BRAC - Convert Hangar for UAV Control	GRAND FORKS, Grand Forks, ND	2007	30%		2009	TBD		
KRSM043029	F-22 Heavy Maintenance Facility and Composite Back Shop	HILL, Ogden, UT	2007	30%		2011	TBD		
KRSM070070	BRAC - Renovate LANTIRN CIRF, Building 584 & 578	HILL, Ogden, UT	2007	30%		2011	TBD		
KRSM083008	BRAC - Alter BLDG. 295 for BRAC Engine CIRF	HILL, Ogden, UT	2007	30%		2012	TBD		
KWRD083002	F-22 Alter Hangar Bay for LO/Composite Repair Facility	HOLLOMAN, Alamogordo, NM	2007	30%		2011	TBD		
KWRD093003	F-22 Add/Alter Jet Engine Maintenance Shop	HOLLOMAN, Alamogordo, NM	2007	30%		2011	TBD		
LKTC093101	UAS Operations Facility	CREECH, Indian Springs, NV	2007	30%		2012	TBD		
LKTC093103	UAS Dining Hall	CREECH, Indian Springs, NV	2007	30%		2012	TBD		
MAHG050806C	DIAGNOSTIC IMAGING CENTER	KEESLER AIR FORCE BASE, Biloxi, MS	2007	22%	Yes	2010	TBD		
MAHG073001	COMMUNITY HOSPITAL ADD'N	KEESLER AIR FORCE BASE, Biloxi, MS	2007	7%	Yes	2011	TBD		
MHMV053106	Construct PJ/CRO Logistics Bldg	KIRTLAND, Albuquerque, NM	2007	30%		2012	TBD		
MPLS073510A	BRAC - Headquarters Admin Center	LACKLAND, San Antonio, TX	2007	30%		2012	TBD		
MPLS081501	BRAC ADAL B5075 for Defense Courier Service	LACKLAND, San Antonio, TX	2007	30%		2012	TBD		
MPLS081502	BRAC Construct Equipment Warehouse	LACKLAND, San Antonio, TX	2007	30%		2012	TBD		
MPLS083561	BRAC - FSH METC Dining Facilities (2 @ 2400 PN), INCR 1	FORT SAM HOUSTON, San Antonio, TX	2007	30%		2010	TBD		
MPLS083562	BRAC - FSH METC Student Dorm 1 (1200PN)	FORT SAM HOUSTON, San Antonio, TX	2007	30%		2010	TBD		
MPLS083563	BRAC - FSH METC Student Dorm 2 (1200PN)	FORT SAM HOUSTON, San Antonio, TX	2007	30%		2010	TBD		
MPLS083737R1	BMT Recruit Dormitory	LACKLAND, San Antonio, TX	2007	30%		2012	TBD		
MPLS103567	BRAC - FSH METC Physical Fitness Center	FORT SAM HOUSTON, San Antonio, TX	2007	30%		2011	TBD		
MSE1023002	Large Vehicle Inspection Station	LAKENHEATH, Brandon, UK	2007	30%		2012	TBD		
MXDP073000	Consolidated Student Activity Center/Library	LA UGHLIN, Del Rio, TX	2007	41%		2012	TBD		

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	Building Name	Location (City, State)	Design					
NKAK083009	BRAC - C-130 Maintenance Facility	LITTLE ROCK, Jacksonville, AR	2007	30%		2012	TBD	
NKAK943002	Education Center Complex	LITTLE ROCK, Jacksonville, AR	2007	30%		2012	TBD	
NVZR053714B	Replace USCENTCOM Headquarters	MACDILL, Tampa, FL	2007	30%		2012	TBD	
PQWY103000	C-17 ADAL Flight Simulator	MCCHORD, Tacoma, WA	2007	30%		2010	TBD	
QJVF062006	Dormitory (144 RM)	MINOT, Minot, ND	2007	30%		2010	TBD	
QSEU083019R1	BRAC - Dormitory, 120-PN(A-10)	MOODY, Valdosta, GA	2007	30%		2010	TBD	
QSEU093016	BRAC - TF-34 Engine Shop (A 10 BD)	MOODY, Valdosta, GA	2007	30%		2012	TBD	
RKMF083001	JTAC Virtual Training Facility	NELLIS, Las Vegas, NV	2007	30%		2012	TBD	
RKMF093016	F-16 Aggressor Hangar/Aircraft Maintenance Unit	NELLIS, Las Vegas, NV	2007	30%		2012	TBD	
SAKW059099	NW Field Technical Training Facility	ANDERSEN AIR FORCE BASE, Yigo, Guam	2007	30%		2012	TBD	
SAKW335780	Combat Communications Maintenance Facility	ANDERSEN AIR FORCE BASE, Yigo, Guam	2007	30%		2012	TBD	
SGBP023004	ADAL Intelligence Squadron Facility	OFUTT, Bellview, NB	2007	30%		2012	TBD	
SXHT013006A	Child Development Center	PATRICK, Cocoa Beach, FL	2007	30%		2009	TBD	
TYFR043053	Joint Mobility Processing Center	RAMSTEIN, Ramstein, Germany	2007	30%		2011	TBD	
TYMX063002	BRAC Admin Center (CPO)	RANDOLPH, San Antonio, TX	2007	21%	Yes	2010	TBD	
TYMX063004	BRAC IFF BDDN Hangar 6 RENO	RANDOLPH, San Antonio, TX	2007	21%	Yes	2010	TBD	
TYMX073710	BRAC - Pensacola USAF Navigator Training Hangar	RANDOLPH, San Antonio, TX	2007	30%		2012	TBD	
TYMX073720	BRAC - Pensacola CSO Applied Instruction Facility	RANDOLPH, San Antonio, TX	2007	30%		2012	TBD	
TYMX073730	BRAC - CSO Bachelor Housing	RANDOLPH, San Antonio, TX	2007	30%		2012	TBD	
UHHZ023005	Aircraft Hangar	WARNER ROBINS, Warner Robins, GA	2007	30%		2011	TBD	
UHHZ053002	Command Post Facility	WARNER ROBINS, Warner Robins, GA	2007	30%		2010	TBD	
UHHZ983000	Aircraft Component Repair Facility	WARNER ROBINS, Warner Robins, GA	2007	30%		2010	TBD	
ULDF063001	BRAC - Add to and alter Information Directorate Lab	ROME LABORATORY, Rome, NY	2007	30%		2012	TBD	
VDDY063001	Security Forces Operations	SCOTT, Belleville, IL	2007	30%		2012	TBD	
VDDY953021B	Child Development Center	SCOTT, Belleville, IL	2007	30%		2012	TBD	
VKAG063014	BRAC - Construct Flightline Kitchen	SEYMOUR JOHNSON, Goldsboro, NC	2007	30%		2010	TBD	
VLSB043001R3	Physical Fitness Center	SHAW, Sumter, SC	2007	30%		2011	TBD	
VLSB073007	BRAC Fitness Center	SHAW, Sumter, SC	2007	30%		2011	TBD	
VLSB073009	BRAC Child Development Center	SHAW, Sumter, SC	2007	30%		2010	TBD	
VLSB073010	BRAC Transient Lodging Facility	SHAW, Sumter, SC	2007	30%		2010	TBD	
VYHK988000	CONSTRUCT MEDICAL CLINIC	SPANGDAHLEM AIR BASE, Trier, Germany	2007	30%		2012	TBD	

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	Building Name	Location (City, State)	Design					
WVYK043008	Consolidated Fuel Overhaul, Repair and Test Facility	TINKER, Midwest City, OK	2007	30%		2010	TBD	
WVYK063012	Aircraft Hangar	TINKER, Midwest City, OK	2007	30%		2011	TBD	
WVYK083004	Medical Facility	TINKER, Midwest City, OK	2007	30%		2012	TBD	
XLW1023001	FITNESS CENTER	TYNDALL, Panama City, FL	2007	42%		2011	TBD	
XTLF063301	Fuel System Maintenance Hangar	VANCE, Enid, OK	2007	30%		2012	TBD	
YWHG031001	Consolidated Communications Facility	WHITEMAN, Knob Noster, MO	2007	14%	Yes	2010	TBD	
ZHTV083102	BRAC - Alter Materials Laboratory (HSG/YA Labs)	WRIGHT PATTERSON, Fairborn, OH	2007	30%		2012	TBD	
ZHTV083104	BRAC - Radiation Calibration Facility	WRIGHT PATTERSON, Fairborn, OH	2007	30%		2012	TBD	
ZHTV083108	BRAC - AFRL/HE (Brooks)	WRIGHT PATTERSON, Fairborn, OH	2007	30%		2012	TBD	
ZHTV083111	BRAC - USAFSAM (INC 2)	WRIGHT PATTERSON, Fairborn, OH	2007	30%		2012	TBD	
ZHTV083113	BRAC - Add to and Alter Sensors Laboratory (AFRL/SN)	WRIGHT PATTERSON, Fairborn, OH	2007	30%		2012	TBD	
ZHTV083114	BRAC - Pipeline Dormitory	WRIGHT PATTERSON, Fairborn, OH	2007	30%		2012	TBD	
AQR039059	Ops and Training Facility	ATLANTIC CITY, NJ	2008	77%		2011	TBD	
AQR039017	Munitions Admin Fac	ATLANTIC CITY, NJ	2008	47%		2011	TBD	
AQR069153	TFL-ASOS Beddown	ATLANTIC CITY, NJ	2008	30%		2010	TBD	
ATQZ049049	Acft Shelters/fuel stands	FORT WAYNE, IN	2008	30%		2011	TBD	
CEKT069119	TFL - Upgrade Engine Shop	BRADLEY, CT	2008	58%		2011	TBD	
DPEZ019148	TFL - C130 Squad Ops	CHEYENNE, WY	2008	68%		2011	TBD	
FBNV069124	TFL-Predator Beddown- FOC	DAVIS, AZ	2008	31%		2011	TBD	
FEAN079065	Relocate Avionics ECM shop	DES MOINES, IA	2008	30%		2010	TBD	
FMKM079051	Replace Storage Facilities	DULUTH, MN	2008	30%		2010	TBD	
FXSB069017	BRAC-Pararescue Operations Cmp	ELMENDORF, AK	2008	30%		2010	TBD	
FXSB069018	BRAC-Ops and Training Fac	ELMENDORF, AK	2008	44%		2010	TBD	
FXSB069100	BRAC-Medical Training Facility	ELMENDORF, AK	2008	50%		2010	TBD	
FXSB069105	BRAC-Add to Aerial Port	ELMENDORF, AK	2008	30%		2010	TBD	
FXSB093016	BRAC-Acft Support Eq Shop	ELMENDORF, AK	2008	40%		2010	TBD	
FXSB093017	BRAC-Training Fire Station	ELMENDORF, AK	2008	46%		2010	TBD	
FXSB093022	BRAC-Fuel Cell/Corrosion Ctl	ELMENDORF, AK	2008	32%		2011	TBD	
FXSB093029	BRAC- ADAL for Sq Ops and AMU	ELMENDORF, AK	2008	35%		2011	TBD	
FXSB093034	BRAC-Vehicle Maintenance Cmplx	ELMENDORF, AK	2008	30%		2010	TBD	
HAAW069167	TFL-Reaper IOC/FOC	HANCOCK, NY	2008	29%	Yes	2009	TBD	
HAYW069174	Construct ECM Pod Shop	FRESNO, CA	2008	20%	Yes	2011	TBD	
HFTUV059003	Sec Forces CATM/CATS	MILWAUKEE, WI	2008	47%		2010	TBD	
KNMD069208	TFL-F-22 LO/Composite Rep Fac	HICKAM, HI	2008	60%		2010	TBD	
LKLW959714	Replace Troop Training Qtrs	FORT IND, PA	2008	52%		2010	TBD	
LYBH009131	Replace Maint Hangar/Shops	YEAGER, WV	2008	50%		2010	TBD	

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NTEA969576	Communications Electronics	LOVELL, TN	44%	2008		2011	TBD	
PBXP069219	TFLRED HORSE Squadron Beddown	MANSFIELD, OH	44.85%	2008		2011	TBD	
PMS959554	Replace Fire Station	MARTIN STATE, MD	38%	2008		2011	TBD	
TWLR069142	Special Operations Training	QUONSET, RI	30%	2008		2010	TBD	
WAAR09098	Combat Comm. Tng Complex	SPRINGFIELD, OH	70%	2008		2011	TBD	
WEFM069122	Construct ATCS Facility	STANLY, NC	30%	2008		2010	TBD	
WKVB029123	Replace Pararescue Facility	GABRESKI, NY	30%	2008		2010	TBD	
WKVB079038	Replace Pararescue Operations	GABRESKI, NY	30%	2008		2010	TBD	
XGFG059041	Comm Audiovisual Facility	TRUAX FIELD, WI	37%	2008		2010	TBD	
ACC083001	Air Support Operations Squadron Complex	LANGLEY, Hampton, VA	31%	2008		2010	TBD	
ACC083006	Air Support Operations Squadron Complex	LANGLEY, Hampton, VA	30%	2008		2010	TBD	
ACC093010	Joint Air Ground Center	LANGLEY, Hampton, VA	30%	2008		2012	TBD	
AEDY094002	IMPROVE MILITARY FAMILY HOUSING	RAF ALCONBURY, UK	30%	2008		2011	TBD	
AUXF103004	Administration Facility Addition	ANDREWS, Camp Springs, MD	30%	2008		2011	TBD	
CNBC083002	BRAC - TRI-Service Research Facility	FORT SAM HOUSTON, San Antonio, TX	30%	2008		2012	TBD	
CZQZ063002	CONSOLIDATED COMMUNICATIONS FACILITY	CANNON, Clovis, NM	30%	2008		2011	TBD	
DKFX093008	C-17 Flight Simulator Addition	CHARLESTON, Charleston, SC	30%	2008		2010	TBD	
DKFX963008	Child Development Center	CHARLESTON, Charleston, SC	30%	2008		2010	TBD	
FIXT033003	CONSOLIDATED COMMUNICATIONS FACILITY	DOVER, Dover, DE	30%	2008		2011	TBD	
FIXT088000	BIO-ENVIRONMENTAL ENGINEERING FACILITY	DOVER, Dover, DE	30%	2008		2010	TBD	
FIXT103003	C-5 CARGO AIRCRAFT MAINTENANCE TRAINING FACILITY, PH I	DOVER, Dover, DE	30%	2008		2011	TBD	
FNWZ053007	C-130 MULTIPURPOSE MAINTENANCE HANGAR	DYESS AIR FORCE BASE, Abilene, TX	30%	2008		2011	TBD	
FTFA073901	BRAC - MC CNST JSF Munitions MX Phase I	EGLIN, Valpariso, FL	30%	2008		2012	TBD	
FTFA073914	BRAC - F-35 (JSF) Renovate Warehouse B1404 (3798)	EGLIN, Valpariso, FL	30%	2008		2012	TBD	
FTFA073915	BRAC - F-35 (JSF) Renovate Maintenance Dock B1318	EGLIN, Valpariso, FL	30%	2008		2012	TBD	
FTFA073916	BRAC - F-35 (JSF) Renovate Maintenance Dock B1344(3797)	EGLIN, Valpariso, FL	30%	2008		2012	TBD	
FTFA083901	BRAC JSF RENO BLDG 1312 SQ OPS	EGLIN, Valpariso, FL	30%	2008		2012	TBD	
FTFA083941	BRAC - Dental Clinic Replacement	EGLIN, Valpariso, FL	30%	2008		2011	TBD	
FTFA083951	F-35 Student Dormitory	EGLIN, Valpariso, FL	30%	2008		2012	TBD	

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FTFA083953	BRAC - JSF Marine Corps/Navy Hangar (3548)	EGLIN, Valpariso, FL	2008	30%		2012	TBD	
FTFA093953	BRAC - JSF F-35 Tech Training Dining Facility	EGLIN, Valpariso, FL	2008	30%		2012	TBD	
FTFA913008	Child Development Center	EGLIN, Valpariso, FL	2008	30%		2010	TBD	
FXBM003007	Base Engineer Admin Facility	ELLSWORTH, Box Elder, SD	2008	31%		2010	TBD	
FXSB073013	F-22 Aerospace Ground Equipment Shop	ELMENDORF, Anchorage, AK	2008	30%		2010	TBD	
FXSB073022	F-22 WEAPONS LOAD TRAINING FACILITY	ELMENDORF, Anchorage, AK	2008	30%		2012	TBD	
GHLN053039	Renovate Historic Dormitories	FRANCIS E WARREN, Cheyenne, WY	2008	38%		2010	TBD	
JGCU083001	STUDENT DORMITORY (100 RM)	GOODFELLOW, San Angelo, TX	2008	30%		2010	TBD	
JFSD200502	Control Tower/Rapcon	GRAND FORKS, Grand Forks, ND	2008	30%		2010	TBD	
KNMD093000	DGS INTEL Squadron Operations Facility	HICKAM, Honolulu, HI	2008	30%		2012	TBD	
KRSM073004	DMTR Aircraft Power Systems Repair Facility	HILL, Ogden, UT	2008	30%		2010	TBD	
KRSM073011	Hydraulic Flight Control Facility	HILL, Ogden, UT	2008	30%		2010	TBD	
KWRD093005	F-22 Add/Alter Flight Simulator Facility	HOLLOMAN, Alamogordo, NM	2008	30%		2012	TBD	
KWRD093003	F-22 Aerospace Ground Equipment (AGE) Facility	HOLLOMAN, Alamogordo, NM	2008	30%		2011	TBD	
LKTC093106	UAS Flight Simulator and Academics Facility	CREECH, Indian Springs, NV	2008	30%		2012	TBD	
LKTC093107	UAS 432 Wing HQ Mission Support Facility	CREECH, Indian Springs, NV	2008	30%		2012	TBD	
MHMV043103	Construct PJ/CRO Rescue & Recovery Training Center	KIRTLAND, Albuquerque, NM	2008	30%		2012	TBD	
MHMV053096	BRAC - Kirtland Battlespace Environment Lab	KIRTLAND, Albuquerque, NM	2008	30%		2012	TBD	
MPLS083115	BRAC ADAL Lak Tech Training AS IAafa Airfield training	LACKLAND, San Antonio, TX	2008	30%		2012	TBD	
MPLS083560A	BRAC - FSH METC Medical Instruction Facilities (INCR 1)	FORT SAM HOUSTON, San Antonio, TX	2008	30%		2011	TBD	
MPLS083560B	BRAC - FSH METC Medical Instruction Facilities (INCR 2)	FORT SAM HOUSTON, San Antonio, TX	2008	30%		2011	TBD	
MPLS083560C	BRAC - FSH METC MEDICAL INSTRUCTION FACILITIES (INCR 3)	FORT SAM HOUSTON, San Antonio, TX	2008	30%		2011	TBD	
MPLS083737R2	BMT RECRUIT DORMITORY 2, PHASE 2	LACKLAND, San Antonio, TX	2008	30%		2012	TBD	
MPLS083737S1	BMT SATELLITE CLASSROOMS/DINING FACILITY, No. 1	LACKLAND, San Antonio, TX	2008	30%		2012	TBD	
MPLS093564	BRAC - FSH METC Student Dorm 3 (L200FN)	FORT SAM HOUSTON, San Antonio, TX	2008	30%		2011	TBD	
MQNA093001	IMPROVE FAMILY HOUSING	LAJES FIELD, Azores, Portugal	2008	30%		2010	TBD	

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MSET083003	Small Diameter Bomb - Storage Igloo	LAKENHEATH, Brandon, UK	2008	30%		2012	TBD	
MSET084028	REPLACE MILITARY FAMILY HOUSING (182 UNITS)	LAKENHEATH, Brandon, UK	2008	30%		2011	TBD	
MSET963014	F-15C Squad OPS/AMU (493 FS)	LAKENHEATH, Brandon, UK	2008	30%		2012	TBD	
MWHL080003	Add/Alter Operations & Technical Facility	MENWITH HILL, Harrogate, UK	2008	30%		2012	TBD	
MXRD013000	Construct Acquisition Mgt Facility, Phase I	HANSCOM, Bedford, MA	2008	30%		2010	TBD	
NKAK103003	CI30 FLIGHT SIMULATOR ADDITION	LITTLE ROCK, Jacksonville, AR	2008	30%		2011	TBD	
NVZR063715A	Explosive Ordnance Disposal Facility	MACDILL, Tampa, FL	2008	30%		2010	TBD	
NVZR923703	SOC-CENT Headquarters & Commandant Facilities	MACDILL, Tampa, FL	2008	34%		2011	TBD	
NZAS013003A	Community Activity Center	MALMSTROM, Great Falls, MT	2008	30%		2012	TBD	
PNQS099362	ASBC CATM Training Facility	MAXWELL, Montgomery, AL	2008	30%		2012	TBD	
PRQE075110P1	MXG Consolidation and Forward Logistics Ph1	MCCONNELL, Wichita, KS	2008	30%		2010	TBD	
PTFL073003P1	SECURITY FORCES OPERATIONS FACILITY PH 1	MCGUIRE, Cookstown, NJ	2008	30%		2011	TBD	
PTFL083004	USAF EC JIEDDO Training Facility	MCGUIRE, Cookstown, NJ	2008	30%		2011	TBD	
TDKA074036B	National Security Space Institute	PETERSON AFB, Colorado Springs, CO	2008	30%		2012	TBD	
TYFR043059	Dormitory - 128 RM	RAMSTEIN, Ramstein, Germany	2008	30%		2012	TBD	
UHHZ033013	AVIONICS FACILITY	WARNER ROBINS, Warner Robins, GA	2008	30%		2011	TBD	
VLSB073011	BRAC Visiting Officers Quarters	SHAW, Sumter, SC	2008	30%		2010	TBD	
VLSB093003	BRAC Renovate HQ Third Army Dormitory 401	SHAW, Sumter, SC	2008	30%		2011	TBD	
XLWU063009	1 AF AFFOR Center, PH 3	TYNDALL, Panama City, FL	2008	30%		2010	TBD	
XQPZ060111	Upgrade Academic Facility, Phase V	USAF ACADEMY, Colorado Springs, CO	2008	30%		2011	TBD	
XQPZ950311	Upgrade Academic Facility, Ph 4B	USAF ACADEMY, Colorado Springs, CO	2008	30%		2009	TBD	
XUMU003000	CONSTRUCT CHILD DEVELOPMENT CENTER	VANDENBERG AFB, Lompoc, CA	2008	30%		2011	TBD	
ZHTV063202	SECURITY FORCES OPERATIONS FACILITY	WRIGHT PATTERSON, Fairborn, OH	2008	30%		2011	TBD	
ZHTV083101	BRAC - Alter Acquisition Mgt Fac (HQ HSG/YA & Fixed Wing)	WRIGHT PATTERSON, Fairborn, OH	2008	30%		2012	TBD	
ZHTV083105	BRAC - AFIOH Facility	WRIGHT PATTERSON, Fairborn, OH	2008	30%		2012	TBD	
ZHTV083106	BRAC - AFRL/HE (Mesa)	WRIGHT PATTERSON, Fairborn, OH	2008	30%		2012	TBD	

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ZHTV083110	BRAC - USAFSAM Consult Service	WRIGHT PATTERSON, Fairborn, OH	2008	30%		2012	TBD	
ZHTV083118	BRAC - Dining Facility	WRIGHT PATTERSON, Fairborn, OH	2008	30%		2012	TBD	
AIXF049104	Replace Munitions Complex	ANDREWS, MD	2009	30%		2011	TBD	
CURZ029000	ADAL Fire Crash/Rescue Station	BURLINGTON, VT	2009	30%		2011	TBD	
DDPM009116	Security Forces Facility	FORT WORTH, TX	2009	37%		2011	TBD	
EKNN089019	Replace Hangar/Shops	BANGOR, ME	2009	16%	Yes	2011	TBD	
FMKM059001	Replace Fuel Cell Hangar	DULUTH, MN	2009	34%		2010	TBD	
FWJH059084	BRAC-Relocate 272 EIS SQ	ELLINGTON, TX	2009	20%	Yes	2011	TBD	
JTVE039116	Relocate Munitions Complex	GULFPORT, MS	2009	30%		2011	TBD	
KNMD069209	TFI -F-22 Hangar/Sq Ops /AMU	HICKAM, HI	2009	30%		2011	TBD	
KNMD109501	TFI - F-22 Apron/Taxiway	HICKAM, HI	2009	30%		2011	TBD	
LKLW069103	TFE-ASOS Beddown	FORT IND, PA	2009	30%		2009	TBD	
LUXC079089	Aircraft Shelters/AMU	JOE FOSS, SD	2009	30%		2011	TBD	
LUXC079133	Conventional Munitions Storage	JOE FOSS, SD	2009	30%		2010	TBD	
LYBH009134	Fuel System Hangar/shops	YEAGER, WV	2009	50%		2011	TBD	
NGCB079069	Joint Forces Ops - ANG Share	LINCOLN, NE	2009	30%		2011	TBD	
PYKL009136	BCE Facilities	MEMPHIS, TN	2009	35%		2011	TBD	
SCLA069165	TFE-Predator LRE Beddown	SOUTHERN CALIFORNIA, CA	2009	30%	Yes	2011	TBD	
SPBN079049	TFI Digital Ground Station	OTIS, MA	2009	10%	Yes	2011	TBD	
TWLR029186	Construct ATC Control Tower	QUONSET, RI	2009	46%		2010	TBD	
ULYB039126	Replace Fire Station	ROSECRANS, MO	2009	42%		2010	TBD	
USEB889585B	Fire Station, Phase 2	SALT LAKE, UT	2009	32%		2011	TBD	
AGGN033005	CONSOL DIGITAL AIRPORT SURVEILL RADAR/RAPCON FAC	ALTUS, Altus City, OK	2009	30%		2012	TBD	
AIXF063009	CONSTRUCT NEW MUNITIONS STORAGE AREA (MSA) (TFI)	ANDREWS, Camp Spring, MD	2009	30%		2012	TBD	
AIXF071502	BRAC - CONSTRUCT POV LANE, PEARL HARBOR GATE	ANDREWS, Camp Spring, MD	2009	30%		2010	TBD	
AWUB086000	SECURITY FORCES MILITARY WORKING DOG KENNEL	BARKSDALE AFB, Shreveport, LA	2009	30%		2011	TBD	
AWUB985501	SECURITY FORCES COMPLEX	BARKSDALE AFB, Shreveport, LA	2009	30%		2011	TBD	
BAEY041006R1	Child Development Center	BEALE, Marysville, CA	2009	30%		2011	TBD	
CZQZ103001	Child Development Center	CANNON, Clovis, NM	2009	30%		2011	TBD	
DBEH923101A	SATELLITE OPERATIONS SUPPORT FACILITY	CAPE CANAVERAL AS, Cape Canaveral, FL	2009	30%		2011	TBD	
DXEB043001	POWER PLANT FACILITY	CLEAR AIR STATION, Denali Borough, AK	2009	30%		2012	TBD	
FBNV073004	Dormitory (144 RM)	DAVIS-MONTHAN, Tucson, AZ	2009	30%		2011	TBD	
FBNV103001	HC-130J Simulator Facility	DAVIS-MONTHAN, Tucson, AZ	2009	30%		2011	TBD	
FBNV103002	HC-130J Squadron Operations Facility	DAVIS-MONTHAN, Tucson, AZ	2009	30%		2011	TBD	

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FBNV103003	CSAR HC-130J Infrastructure	DAVIS-MONTHAN, Tucson, AZ	2009	30%		2011	TBD	
FBNV963007	FIRE/CRASH RESCUE STATION	DAVIS-MONTHAN, Tucson, AZ	2009	30%		2011	TBD	
FNWZ100006	C-130J ALTER HANGAR	DYESS AIR FORCE BASE, Abilene, TX	2009	30%		2011	TBD	
FTEV043000	REFUELING VEHICLE MAINTENANCE FACILITY	HURLBURT FIELD, Fort Walton Beach, FL	2009	30%		2011	TBD	
FTEV083017	CHILD DEVELOPMENT CENTER, WEST SIDE	HURLBURT FIELD, Fort Walton Beach, FL	2009	30%		2011	TBD	
FTEV993036	CHILD DEVELOPMENT CENTER	HURLBURT FIELD, Fort Walton Beach, FL	2009	30%		2011	TBD	
FTEA053019	F-35 DUKE CONTROL TOWER	EGLIN, Valparaiso, FL	2009	30%		2012	TBD	
FTEA061726	F-35 POL OPS FACILITY	EGLIN, Valparaiso, FL	2009	30%		2012	TBD	
FTEA093916	BRAC - Eglin MCP Child Development Center	EGLIN, Valparaiso, FL	2009	30%		2012	TBD	
FTQW094001	REPLACE MILITARY FAMILY HOUSING - PHASE 4 (CURRENT MISSION)	EIELSON AIR FORCE BASE, Fairbanks, AK	2009	30%		2013	TBD	
FXBM073004	BASE ENTRY AND PERIMETER GATES	ELLSWORTH, Box Elder, SD	2009	30%		2011	TBD	
GHLN053010	ADAL, Missile Service Complex	FRANCIS E WARREN, Cheyenne, WY	2009	30%		2011	TBD	
GJKZ030005	FITNESS CENTER	FAIRCHILD, Spokane, WA	2009	30%		2012	TBD	
JCGU053000	JOINT INTEL TECHNICAL TRAINING FACILITY PHASE 1 (TF)	GOODFELLOW, San Angelo, TX	2009	30%		2012	TBD	
JCGU093002	STUDENT DORMITORY (200 RM)	GOODFELLOW, San Angelo, TX	2009	30%		2012	TBD	
JFSD200501	FIRE STATION	GRAND FORKS, Grand Forks, ND	2009	30%		2011	TBD	
KRSM043013	Munition Maintenance Facility	HILL, Ogden, UT	2009	30%		2011	TBD	
KRSM083003	Child Development Center	HILL, Ogden, UT	2009	30%		2011	TBD	
KRSM093002	THREE-BAY FIRE STATION	HILL, Ogden, UT	2009	30%		2011	TBD	
KWRD083003	F-22A CONSOLIDATED MUNITIONS MAINTENANCE - TF1	HOLLOMAN, Alamogordo, NM	2009	30%		2011	TBD	
LIYC003006	CONSOLIDATED COMMUNITY CENTER (In concept design phase)	INCIRLIK AIR BASE, Adana, Turkey	2009	30%		2011	TBD	
LXEZ094217	IMPROVE FAMILY HOUSING, PH9	KADENA AIR BASE, Okinawa, Japan	2009	30%		2014	TBD	
MAHG033002	INDOOR FIRING RANGE	KEESLER AIR FORCE BASE, Biloxi, MS	2009	30%		2011	TBD	
MAHG043000*	DORMITORY (144 PN)	KEESLER AIR FORCE BASE, Biloxi, MS	2009	30%		2011	TBD	
MHMV073110	MC-130 Simulator Facility	KIRTLAND, Albuquerque, NM	2009	30%		2011	TBD	
MHMV083112	HC-130 Simulator Facility	KIRTLAND, Albuquerque, NM	2009	30%		2011	TBD	
MPLS043859	CONSOLIDATED DENTAL CLINIC	LACKLAND, San Antonio, TX	2009	30%		2012	TBD	
MPLS073859	AMBULATORY HEALTH CLINIC PHASE	LACKLAND, San Antonio, TX	2009	13%	Yes	2015	TBD	

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MPLS093002	Cns Addition to Child Development Center (CDC) B8210	LACKLAND, San Antonio, TX	2009	30%		2012	TBD
MPLS093540	BRAC-CONVERT/RENOVATE OPEN DINING FACILITY (B1395), TO COMMUN	FORT SAM HOUSTON, San Antonio, TX	2009	30%		2011	TBD
MPLS107520	BRAC-JOINT BASE SAN ANTONIO HEADQUARTERS FACILITY	FORT SAM HOUSTON, San Antonio, TX	2009	30%		2011	TBD
MPLS107520A	BRAC-502 ABW BOS ADMINISTRATION FACILITY	FORT SAM HOUSTON, San Antonio, TX	2009	30%		2011	TBD
MUHL053008	WEST AND LASALLE GATE FORCE PROTECTION/ACCESS	LANGLEY AIR FORCE BASE, Hampton, VA	2009	30%		2012	TBD
MXRD093000	MENTAL HEALTH CLINIC ADDITION SECURITY FORCES OPERATIONS FACILITY	HANSCOM, Bedford, MA	2009	30%		2012	TBD
NKAK113000	LITTLE ROCK, Jacksonville, AR DORMITORY (120 RM)	LITTLE ROCK, Jacksonville, AR	2009	30%		2012	TBD
NVZR063708	MACDILL, Tampa, FL COMBAT TRAINING FACILITY	MACDILL, Tampa, FL	2009	47%		2011	TBD
NVZR063714	MACDILL, Tampa, FL CHILD DEVELOPMENT CENTER	MACDILL, Tampa, FL	2009	30%		2011	TBD
NVZR073723	MACDILL, Tampa, FL CHILD DEVELOPMENT CENTER	MACDILL, Tampa, FL	2009	30%		2011	TBD
NVZR083711	MACDILL, Tampa, FL SOC'CENT COMMANDANT & CULTURAL ENGAGEMENT GROUP FACILITY	MACDILL, Tampa, FL	2009	30%		2011	TBD
NVZR103704R1	MACDILL, Tampa, FL MXG CONSOLIDATION AND FORWARD	MACDILL, Tampa, FL	2009	30%		2011	TBD
PROE075110P2	LOGISTICS CENTER PH 2 DORMITORY (168 RM)	MCCONNELL, Wichita, KS	2009	30%		2011	TBD
QJVF072003	MINOT, Minot, ND MHU-196 Munitions Trailer Storage Facility	MINOT, Minot, ND	2009	30%		2011	TBD
QJVF102002	Missile Procedures Training Operations Facility	MINOT, Minot, ND	2009	30%		2010	TBD
QJVF962007R2	CHILD DEVELOPMENT CENTER	MOODY, Valdosta, GA	2009	30%		2011	TBD
QSEU953004	Logistics Readiness Center F-16 AGGRESSOR SQUADRON OPS/INFRASTRUCTURE	MOUNTAIN HOME AFB, Mountain Home, ID	2009	30%		2011	TBD
QYZH013005R3	CHILD DEVELOPMENT CENTER	NELLIS, Las Vegas, NV	2009	30%		2012	TBD
RKMF083011	CHILD DEVELOPMENT CENTER	NELLIS, Las Vegas, NV	2009	30%		2012	TBD
RKMF093002	AIRFIELD FIRE RESCUE STATION	NELLIS, Las Vegas, NV	2009	30%		2012	TBD
RKMF093003	ACTIVE ASSOCIATE SQUAD OPS/AMU (TF)	PETERSON AFB, Colorado Springs, CO	2009	30%		2011	TBD
TDKA109005	CONSTRUCT CHILD DEVELOPMENT CENTER	PETERSON AFB, Colorado Springs, CO	2009	30%		2011	TBD
TDKA113007	CONSTRUCT AEROSPACE GROUND EQUIPMENT MAINTENANCE COMPLEX	RAMSTEIN, Ramstein, Germany	2009	30%		2012	TBD
TYFR053037							

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TYFR0530402	CONTINGENCY RESPONSE GROUP COMPOUND - CLOSE SEMBACH	RAMSTEIN, Ramstein, Germany	2009	30%		2012	TBD
USAFE073006	Global Hawk Aircraft Maintenance and Operations Complex	NAVAL AIR STATION SIGONELLA, Sicily, Italy	2009	30%		2012	TBD
VKAG0963011A	CONSOLIDATED SUPPORT CENTER	SEYMOUR JOHNSON, Goldsboro, NC	2009	30%		2011	TBD
VLSB093010	DORMITORY (144 RM)	SHAW, Sumter, SC	2009	30%		2011	TBD
VYHK043100	CONSTRUCT FITNESS CENTER	SPANGDAHLEM AIR BASE, Trier, Germany	2009	30%		2012	TBD
VYHK093005	CONSTRUCT CHILD DEVELOPMENT CENTER	SPANGDAHLEM AIR BASE, Trier, Germany	2009	30%		2012	TBD
XDAT083002	CONSTRUCT KC-10 CARGO LOAD TRAINING (CLT) FACILITY	TRAVIS AIR FORCE BASE, Fairfield, CA	2009	30%		2012	TBD
XDA P993001	LARGE CRASH RESCUE STATION	TRAVIS AIR FORCE BASE, Fairfield, CA	2009	30%		2012	TBD
XLWU063004	325 ACS OPS TRAINING COMPLEX	TYNDALL, Panama City, FL	2009	30%		2011	TBD
XQFZ104004	Cadet Fitness Center Addition	USAF ACADEMY, Colorado Springs, CO	2009	30%		2011	TBD
YWHG041005	SECURITY FORCES ANIMAL COMPLEX	WHITEMAN, Knob Noster, MO	2009	30%		2010	TBD
ZHTV053204	Information Technology Complex, PH 1	WRIGHT PATTERSON, Fairborn, OH	2009	30%		2012	TBD
ZHTV063301	Conversion for Advanced Power and Thermal Research Lab	WRIGHT PATTERSON, Fairborn, OH	2009	30%		2012	TBD
ZNRE094306	IMPROVE MFH (PHASE 7)	YOKOTA AIR BASE, Fussa, Tokyo	2009	30%		2014	TBD
FTFA053025	DORMITORY (96 RM)	EGLIN, Valpariso, FL	2010	30%		2011	TBD
FTFA093910	BRAC - EGLIN MCP NEW FITNESS CENTER	EGLIN, Valpariso, FL	2010	30%		2011	TBD
FTFA093918	BRAC - EGLIN ADD/ALT SCHOOL AGE FACILITY	EGLIN, Valpariso, FL	2010	30%		2011	TBD
FTFA093926	BRAC - EGLIN ADD/ALT TMO CARGO PROCESSING	EGLIN, Valpariso, FL	2010	10%	Yes	2011	TBD
FTFA093929	BRAC - CONSTRUCT NEW CIVIL ENGINEER FACILITY	EGLIN, Valpariso, FL	2010	30%		2011	TBD
FTFA093933	BRAC - ADD/ALTER SECURITY FORCES FACILITY	EGLIN, Valpariso, FL	2010	30%		2011	TBD
KRSM043003	F-22 Radar Cross Section Testing Fac	HILL, Ogden, UT	2010	30%		2012	TBD
LXEZ104126	IMPROVE FAMILY HOUSING, PH 10	KADENA AIR BASE, Okinawa, Japan	2010	10%	Yes	2013	TBD
SAKW053006	NW FIELD COMMANDO WARRIOR OPERATIONS FACILITY	ANDERSEN AIR FORCE BASE, Yigo, Guam	2010	30%		2011	TBD

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SAKW059100	NW Field Combat Support Vehicle Maint Facility	ANDERSEN AIR FORCE BASE, Yigo, Guam	2010	30%		2012	TBD	
TYMX063006	BRAC - AF AUDIT AGENCY RELOCATION	RANDOLPH, San Antonio, TX	2010	30%		2011	TBD	
TYMX103004	BRAC Renovate Bldg 38 for IFF, Egress and Survival Shops	RANDOLPH, San Antonio, TX	2010	30%		2011	TBD	
YVEW083003	CONSTRUCT ASOC COMPLEX	WHEELER ADMIN ANNEX, Oahu, HI	2010	30%		2013	TBD	
Army								
46622	General Instruction Building	Presidio of Monterey, California	2007	3%	Yes			
67468	Range Control Facility	Fort Hunter Liggett, California	2007	30%				
62812	Indoor Range	Fort Carson, Colorado	2007	10%	Yes			
90045	Army National Guard Readiness Center	Niantic, Connecticut	2007	30%				
60241	Joint Personal Effects Depot	Dover Air Force Base, Delaware	2007	30%				
68264	Southern Command Headquarters Facility	Miami Doral, Florida	2007	30%				
120250	Army National Guard Aviation Support Facility	Jacksonville, Florida	2007	30%				
61920	Brigade Complex-Headquarters	Hunter Army Air Field, Georgia	2007	31%				
68863	Barracks Complex	Hunter Army Air Field, Georgia	2007	38%				
67648	Simulations Training Facility	Fort Benning, Georgia	2007	37%				
65041	Trainee Barracks Complex	Fort Benning, Georgia	2007	32%				
64462	Reception Station, Phase 1	Fort Benning, Georgia	2007	39%				
50950	Barracks Complex	Wheeler Army Air Field, Hawaii	2007	30%				
59557	Barracks Complex	Schofield Barracks, Hawaii	2007	30%				
61873	Barracks Complex	Schofield Barracks, Hawaii	2007	30%				
64316	Barracks Complex	Fort Leavenworth, Kansas	2007	30%				
55118	Digital Multipurpose Range Complex	Fort Riley, Kansas	2008	18%	Yes			
64903	Vehicle Maintenance Shop	Fort Campbell, Kentucky	2007	<30%	Yes			
67577	Army Reserve Center	Butte, Montana	2007	47%				
67433	Army Reserve Center	Fort Drum, New York	2007	33%				
65558	Student Barracks	Fort Bragg, North Carolina	2007	32%				
65437	Indoor Range	Fort Bragg, North Carolina	2007	12%	Yes			
410030	Army National Guard Readiness Center	Ontario, Oregon	2007	30%				
420913	Army National Guard Field Maintenance Shop Stryker Brigade Combat Team	Graterford, Pennsylvania	2008	30%				
420189	Army National Guard Field Maintenance Shop, Add/Alter Stryker Brigade Combat Team	Philadelphia, Pennsylvania	2008	30%				
420191	Army National Guard Readiness Center, Add/Alter Stryker Brigade Combat Team	Lebanon, Pennsylvania	2008	30%				
420199	Army National Guard Readiness Center, Add/Alter Stryker Brigade Combat Team (SBCI)	Hanover, Pennsylvania	2008	30%				

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420190	Army National Guard Readiness Center, Add/Alter Stryker Brigade Combat Team (SBCCT)	Kutztown, Pennsylvania	2008	30%			
420359	Army National Guard Readiness Center Add/Alter Stryker Brigade Combat Team (SBCCT)	Hazleton, Pennsylvania	2008	30%			
420180	Army National Guard Readiness Center Stryker Brigade Combat Team (SBCCT)	Gettysburg, Pennsylvania	2008	30%			
420220	Army National Guard Readiness Center Stryker Brigade Combat Team (SBCCT)	Carlisle, Pennsylvania	2008	30%			
420183	Army National Guard Readiness Center Stryker Brigade Combat Team (SBCCT)	East Fallowfield Township, Pennsylvania	2008	30%			
420223	Alteration Stryker Brigade Combat Team (SBCCT)	Philadelphia, Pennsylvania	2008	30%			
420198	Army National Guard Readiness Center Stryker Brigade Combat Team (SBCCT)	Holidaysburg, Pennsylvania	2009	30%			
68793	Barracks Complex	Fort Hood, Texas	2008	30%			
66824	Battle Command Training Center, Phase 1	Fort Sam Houston, Texas	2007	32%			
66690	Maneuver Systems Sustainment Center, Phase 2	Red River Army Depot, Texas	2007	30%			
67576	Army Reserve Center	Naval Air Station, Joint Reserve Base, Fort Worth, Texas	2007	33%			
63327	Indoor Range	Fort Lewis, Washington	2007	30%			
65933	Brigade Complex, Increment 2	Fort Lewis, Washington	2007	33%			
67432	Regional Medical Training Facility	Fort McCoy, Wisconsin	2007	33%			
560992	Army National Guard Qualification Training Range	Camp Guernsey, Wyoming	2007	30%			
66011	Aviation Task Force Complex, Phase 2	Fort Wainwright, Alaska	2008	30%			
60555	Forensic Laboratory Expansion	Fort Gillem, Georgia	2008	46%			
57179	Information Systems Facility	Wiesbaden, Germany	2008	30%			
65504	Regional SATCOM Support Center	Wheeler AFB, Hawaii	2007	27%	Yes		
58625	Child Development Center	Fort Knox, Kentucky	2008	30%			
61470	SATCOM Facility	Fort Detrick, Maryland	2007	36%			
68815	Access Control Point	Detroit Arsenal, Michigan	2007	42%			
65202	Child Development Center	Fort Leonard Wood, Missouri	2008	30%			
53389	Company Headquarters Building	Fort Bragg, North Carolina	2007	30%			
58350	Jeppoo Storage, Installation	McAlester, Oklahoma	2008	30%			
64608	High Explosive Magazine, Installation	McAlester, Oklahoma	2008	30%			
68779	Fire Station/MP Station Biggs Training Aids Support Center	Fort Bliss, Texas	2008	30%			
420181	Army National Guard Readiness Center Stryker Brigade Combat Team (SBCCT)	Fort A.P. Hill, Virginia	2008	30%			
420181	Army National Guard Readiness Center Stryker Brigade Combat Team (SBCCT)	Army National Guard, Huntingdon	2007	30%			

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	Building Name	Location (City, State)	Design					
440016	Army National Guard Readiness Center	East Greenwich, Rhode Island	2008	30%				
440039	Army National Guard Aviation Support Facility	North Kingstown, Rhode Island	2008	30%				
560992	Army National Guard Qualification Training Range	Camp Guernsey, Wyoming	2008	30%				
310076	Armed Forces Reserve Center (JFHQ)	Lincoln, Nebraska	2007	30%				
180116	Readiness Center	Lawrence, IN	2008	30%				
230070	Regional Training Institute PH I	Bangor, ME	2008	30%				
240031	Readiness Center, Add/Alt	Salisbury, MD	2008	30%				
240189	Army Aviation Support Facility, Add/Alt	Edgewood, MD	2008	30%				
250106	Readiness Center, Add/Alt (ADRS)	Methuen, MA	2007	30%				
360193	Field Maintenance Shop	Queensbury, NY	2008	30%				
450218	Readiness Center	Anderson, SC	2007	30%				
90047	Regional Training Institute	Camp Rell, CT	2007	30%				
100046	Army Aviation Support Facility, Add/Alt	New Castle, DE	2008	30%				
130109	Armed Forces Reserve Center	Marietta, GA	2007	30%				
460077	Armed Forces Reserve Center	Rapid City, SD	2008	30%				
570402	ARNG Addition, PH II	Arlington, VA	2008	30%				
40014	Readiness Center	Camp Navajo, AZ	2008	30%				
40170	Readiness Center	Florence, AZ	2008	30%				
40226	Readiness Center	Papago Park, AZ	2008	30%				
80203	Readiness Center	Fort Lupton, CO	2008	30%				
80204	Readiness Center	Grand Junction, CO	2008	30%				
270260	Readiness Center	Arden Hills, MN	2008	30%				
450367	Readiness Center, Add/Alt	Beaufort, SC	2008	30%				
50167	Readiness Center	Cabot, AR	2009	30%				
120191	Regional Training Institute, PH 4	Camp Blanding, FL	2009	30%				
170614	Readiness Center	Urbana, IL	2009	30%				
180137	Combined Arms Collective Training Facility, PH I	Muscatauck, IN	2008	30%				
190136	Readiness Center, Add/Alt	Davenport, IA	2008	30%				
190146	Readiness Center, Add/Alt	Mount Pleasant, IA	2009	30%				
210290	Aviation Operations Facility PH3	London, KY	2009	30%				
260180	Barracks Replacement PH I	Camp Grayling, MI	2008	30%				
320069	Readiness Center, Add/Alt	Elko (Carlin), OH	2009	30%				
390257	Barracks	Camp Perry, OH	2009	30%				
390264	Barracks	Ravenna, OH	2009	30%				
420511	Readiness Center, Add/Alt	Honesdale, PA	2009	30%				
450185	Field Maintenance Shop, PH I	Florence, SC	2009	30%				
460132	Barracks/Dining/Admin & Parking Complex, PH I	Camp Rapid, SD	2009	30%				
470043	Readiness Center	Tullahoma, TN	2008	30%				

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500052	Readiness Center	Ethan Allen Firing Range, Jericho VT	2008	30%			
540206	Multi-Purpose Building, PH II	Camp Dawson, WV	2009	30%			
67561 (360401)	Armed Forces Reserve Center Field Maintenance Shop, Part 2	Farmingdale, NY	2007	30%			
64780	Armed Forces Reserve Center Field Maintenance Shop	Mansfield, OH	2007	30%			
(390126)		Raleigh, NC	2006	30%			
(390174)		Los Alamitos, California	2009	30%			
370044	Armed Forces Reserve Center (JFHQ)						
60115	Readiness Center, PH 1	Gowen Fields, Idaho	2009	30%			
160120	Combined Arms Collective Training Facility	Muscatauck, Indiana	2009	30%			
180145	PH 1b	Hanscom AFB, Massachusetts	2009	30%			
250087	Armed Forces Reserve Center (JFHQ)						
	Combined Arms Collective Training Facility, Add/Alt	Camp Shelby, Mississippi	2008	30%			
280352	Army Aviation Support Facility, Add/Alt	Eastover, South Carolina	2009	30%			
450252	Army Aviation Support Facility	Greenville, South Carolina	2009	30%			
450353	Regional Training Institute, PH 1	St. Croix, Virgin Islands	2009	30%			
520014	Readiness Center	Fort Benning	2009	30%			
130077		Arden Hills, Minnesota	2008	30%			
270261	Readiness Center, PH 2	Boonville, Missouri	2009	30%			
290213	Readiness Center, Add/Alt	North Las Vegas, Nevada	2009	30%			
320143	Readiness Center						
74549		Birmingham, Alabama	2007	30%			
(10276)	Armed Forces Reserve Center, PH 2	Camp Robinson, AR	2008	30%			
50043	Combined Support Maintenance Shop						
50163	Combined Arms Collective Training Facility	Fort Chaffee, AR	2009	30%			
60429	Combined Arms Collective Training Facility	Camp Roberts, CA	2009	30%			
80062	HAATS/AASF	Gypsum/Eagle, CO	2009	30%			
80067	Regional Training Institute	Fort Carson, CO	2007	30%			
140001	Combined Support Maintenance Shop, PH 1	Barrigada, Guam	2009	30%			
160093	Barracks (ORTC)	Gowen Field, ID	2009	30%			
179237	Combined Support Maintenance Shop, Add/Alt	Springfield, IL	2009	30%			
200063	Armed Forces Reserve Center	Wichita East, KS	2009	30%			
200090	Field Maintenance Shop	Wichita East, KS	2009	30%			
220114	Armed Forces Reserve Center	Minden, LA	2008	30%			
220208	Tactical Unmanned Aircraft System Facility	Fort Polk, LA	2009	30%			

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240186	Tactical Unmanned Aircraft System Facility	Webster Field, MD	2009	30%				
250115	Readiness Center, Add/Alt	Westfield, MA	2009	30%				
260207	Combined Arms Collective Training Facility	Camp Grayling, MI	2009	30%				
270267	Tactical Unmanned Aircraft System Facility	Camp Ripley, MN	2009	30%				
330034	Classroom Facility (Regional Training Institute)	Pembroke, NH	2009	30%				
330035	Barracks Facility (Regional Training Institute)	Pembroke, NH	2009	30%				
380014	Readiness Center, Add/Alt	Camp Grifton, ND	2009	30%				
440009	United States Property and Fiscal Office	East Greenwich, RI	2009	30%				
460085	Readiness Center	Watertown, SD	2009	30%				
520034	Readiness Center (JFHQ)	St. Croix, VI	2009	30%				
530022	Combined Support Maintenance Shop	Tacoma, WA	2009	30%				
540068	Readiness Center	Morgantown, WV	2009	30%				
540084	Readiness Center	Moorefield, WV	2009	30%				
560116	Field Maintenance Shop	Laramie, WY	2009	30%				
80201	Readiness Center	Colorado Springs, CO	2009	30%				
80202	Readiness Center	Windsor, CO	2009	30%				
130127	Readiness Center	Cumming, GA	2009	30%				
170801	Readiness Center	Cook County, IL	2009	30%				
310107	Readiness Center	Mead, NE	2009	30%				
310110	Readiness Center, Add/Alt	Lincoln, NE	2009	30%				
10263	Readiness Center, PH 2	Fort McChellan TC, AL	2009	30%				
90010	Readiness Center	Windsor Locks, CT	2008	30%				
240017	Readiness Center, Add/Alt	Dundal, MD	2007	30%				
340115	Army Aviation Support Facility	Lakehurst, NJ	2007	30%				
350115	Readiness Center, Add/Alt	Santa Fe, NM	2007	30%				
410026	Readiness Center	The Dalles, OR	2008	30%				
510307	Combined Arms Collective Training Facility	Fort Pickett, VA	2009	30%				
80126	Readiness Center	Alamogosa, GA	2009	30%				
450403	Readiness Center, Add/Alt	Allendale, SC	2009	30%				
Navy								
P702	Specialized SERE Training Area	SPOKANE, WASHINGTON	2009	TBD	YES	2011	TBD	
P129	Public Works Shops Consolidation	SAN DIEGO, CALIFORNIA	2007	TBD	YES	2011	TBD	
P049	Reserve Training Center, Alameda, CA	ALAMEDA, CALIFORNIA	2008	TBD	YES	2011	TBD	
P898	Reception Airfield Facilities	ROTA, SPAIN	2009	TBD	YES	2012	TBD	
P004	APCSS Conference & Technology Learning Center	PEARL HARBOR, HAWAII	2008	TBD	YES	2011	TBD	
P016	E-2D Training Facility	NORFOLK, VIRGINIA	2008	TBD	YES	2012	TBD	

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Project ID	New Construction Project Information			Design		Completed New Construction			In terms of energy use, percentage below ANSI/ASHRAE/IESNA Standard 90.1--2004 achieved
	Building Name	Location (City, State)	Design Started (FY)	Percentage below ANSI/ASHRAE/IESNA Standard 90.1--2004 in terms of energy use	If not at least 30% below ANSI/ASHRAE/IESNA Standard 90.1--2004, will design achieve maximum level of energy efficiency that is life cycle cost-effective?	Date Construction Completed (FY)			
P838	E-2D Facility Upgrades for E-2D Program	NORFOLK, VIRGINIA	2007	TBD	YES	2012	TBD	TBD	
P1003	Military Working Dog Relocation, Apra Harbor	AGANA, GUAM	2008	TBD	YES	2011	TBD	TBD	
P465	Consolidated SLC Training & CSS-15 HQ Fac.	APRA, GUAM	2008	TBD	YES	2012	TBD	TBD	
P528	Torpedo Exercise Support Building	AGANA, GUAM	2008	TBD	YES	2012	TBD	TBD	
P851	Naval Construction Div Operations Facility	NORFOLK, VIRGINIA	2009	TBD	YES	2011	TBD	TBD	
P273	T-6B JPATS Training Ops Paraloft Facility	MILTON, FLORIDA	2008	TBD	YES	2011	TBD	TBD	
P906F	F-35 POL Operations Facility	EGLIN A.F.B., FLORIDA	2008	TBD	YES	2011	TBD	TBD	
P425	BEQ, EOD School Phase 2	EGLIN A.F.B., FLORIDA	2009	TBD	YES	2012	TBD	TBD	
P837	C-40 Hangar	VIRGINIA BEACH, VIRGINIA	2008	TBD	YES	2012	TBD	TBD	
P600	Reserve Center move to Luke AFB, NOSC Phoenix	PHOENIX, ARIZONA	2009	TBD	YES	2011	TBD	TBD	
P237	Fire Station	DJIBOUTI, DJIBOUTI	2008	TBD	YES	2012	TBD	TBD	
P451	Officer Training Command (OTC) Quarters	NEWPORT, RHODE ISLAND	2008	TBD	YES	2013	TBD	TBD	
P105	Reserve Training Center	SAN ANTONIO, TEXAS	2009	TBD	YES	2011	TBD	TBD	
P437	Operational Facilities for T-6	CORPUS CHRISTI, TEXAS	2007	TBD	YES	2012	TBD	TBD	
P630	P-8A (MMA) Facilities Modification	JACKSONVILLE, FLORIDA	2008	TBD	YES	2012	TBD	TBD	
P724	Corry 'A' School BEQ	PENSACOLA, FLORIDA	2008	TBD	YES	2012	TBD	TBD	
P782	Simulator Addition for UMFO Program	PENSACOLA, FLORIDA	2008	TBD	YES	2011	TBD	TBD	
P048	Reserve Training Center, Joliet, IL	CHICAGO, ILLINOIS	2008	TBD	YES	2011	TBD	TBD	
P006	Port Operations Facility	JACKSONVILLE, FLORIDA	2008	TBD	YES	2011	TBD	TBD	
P107	Aviation Transmitter/Receiver Site	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2011	TBD	TBD	
P101	Maint. Shop - Wheeled	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	TBD	
P103	Maint. Sunshades - Wheeled	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	TBD	
P107	Comm./Elect. Maint./Storage	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	TBD	
P114	Dining Facility - North Mainside	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	TBD	
P116	Bachelor Enlisted Quarters	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	TBD	
P121	Maint. Shop - Tracked	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	TBD	
P126	Station Comm. Facility and Infrastructure	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	TBD	
P127	Sub-Station and Electrical Upgrades	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	TBD	

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P129	Elec. Power Plant/Co-Gen/Gas Turbine - N	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	
P130	Water Improvements and Storage Tank	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	
P131	Sewage System Improvements and Lift Station	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	
P132	HTHW/Chilled Water System	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	
P133	Natural Gas System Extension	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	
P143	Construct Roads - North Mainside	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	
P146	Industrial Waste Water Pretreatment System	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	
P170	Bachelor Enlisted Quarters	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	
P171	Laydown Site Work - North Mainside	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2011	TBD	
P173	Consolidated Armory, Tanks	TWENTYNINE PALMS, CALIFORNIA	2008	TBD	YES	2012	TBD	
P550	Fire Station - Renovation - MWTC	BRIDGEPORT, CALIFORNIA	2009	TBD	YES	2012	TBD	
P196	Reserve Vehicle Maintenance Facility	GOOSE CREEK, SOUTH CAROLINA	2008	TBD	YES	2011	TBD	
P1160	Physical Fitness Center	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1194	BEQ - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1195	BEQ - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TBD	YES	2012	TBD	
P1196	BEQ - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TBD	YES	2012	TBD	
P1197	BEQ - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1233	Maintenance/Ops Complex	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1247	BEQ - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1268	SOI-EAST Facilities - Camp Geiger	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1269	Field Training Fac. - Devil Dog - SOI	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1297	4th Infantry Bn Ops Complex	CAMP LEJEUNE, NORTH CAROLINA	2009	TBD	YES	2012	TBD	

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P1298	Road Network - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2011	TBD	
P1304	MP Working Dog Kennel -Relocation	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2011	TBD	
P1310	Pre-Trial Detainee Facility	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P1311	Consolidated Info Tech/Telecom Complex	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P652	VMMT-204 Maintenance Hangar - Phase 3	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2011	TBD	
P714	Gymnasium/Outdoor Pool	CAMP LEJEUNE, NORTH CAROLINA	2008	TBD	YES	2012	TBD	
P447	Aircraft Maintenance Hangar Phase 1	YUMA, ARIZONA	2008	TBD	YES	2012	TBD	
P1012	ANGELCO Operations Complex	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2011	TBD	
P1016	Reconnaissance Bn Operations Complex	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1019	Comm/Elect Maintenance Facility	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2011	TBD	
P1029	WFTBn Support Facilities	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2011	TBD	
P1033	Enlisted Dining Facility - Edson Range	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1041	Expansion of SRTPP to 7.5 MGD	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1043	North Regional Tertiary Treatment Plant	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1048	Gas/Electrical Upgrades	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1067	Bachelor Enlisted Quarters	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1069	Recruit Barracks, School of Infantry	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1084	Enlisted Dining Facility	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P1093	Communications Upgrades	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2012	TBD	
P610	Recruit Marksmanship Training Facility	CAMP PENDLETON, CALIFORNIA	2008	TBD	YES	2011	TBD	
P406	Aircraft Trainer	QUANTICO, VIRGINIA	2008	TBD	YES	2011	TBD	
P548	Dining Facility, TBS	QUANTICO, VIRGINIA	2009	TBD	YES	2011	TBD	
P565	Student Quarters, TBS, Phase 4	QUANTICO, VIRGINIA	2009	TBD	YES	2011	TBD	
P614	South Mainside Electrical Substation	QUANTICO, VIRGINIA	2008	TBD	YES	2011	TBD	

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P620	Battalion Training Facility - MSGBN	QUANTICO, VIRGINIA	2009	TBD	YES	2011	TBD	
P625	MC Information Operations Center - MCIOC	QUANTICO, VIRGINIA	2009	TBD	YES	2012	TBD	
P296	Messhall Expansion	SAN DIEGO, CALIFORNIA	2008	TBD	YES	2011	TBD	
P141	EMS/Fire Vehicle Facility	CHERRY POINT, NORTH CAROLINA	2008	TBD	YES	2011	TBD	
P743	Navy Ord Cargo Logistic Training Complex	WILLIAMSBURG, VIRGINIA	2008	TDB	YES	2012	TDB	
P913	EHW Security Force Facility	BREMERTON, WASHINGTON	2009	TDB	YES	2013	TDB	
P908	Operations and Support Facilities	BAHRAIN IS, SAUDI ARABIA	2009	TDB	YES	2013	TDB	
P954	Waterfront Development, Phase 3	BAHRAIN IS, SAUDI ARABIA	2007	TDB	YES	2013	TDB	
P005	Joint POW/MIA Accounting Command (Hickam AFB)	PEARL HARBOR, HAWAII	2008	TDB	YES	2013	TDB	
P110	Firestation	FINEGAYAN, GUAM	2009	TDB	YES	2013	TDB	
P202	North Ramp Utilities, Andersen AFB	ANDERSEN AB, GUAM	2009	TDB	YES	2013	TDB	
P203	North Ramp Parking, Andersen AFB	ANDERSEN AB, GUAM	2009	TDB	YES	2013	TDB	
P162	Agile Chemical Facility, Phase 2	INDIAN HEAD, MARYLAND	2008	TDB	YES	2012	TDB	
P203	Aviation Simulator Training Facility	ATSUGI, JAPAN	2009	TDB	YES	2012	TDB	
P207	Applied Instruction Facility, EOD Course	EGLIN AFB, FLORIDA	2008	TDB	YES	2013	TDB	
P601	Security Enclave & Vehicle Barriers	KINGS BAY, GEORGIA	2010	TDB	YES	2013	TDB	
P230	Hom of Africa Joint Operations Center	DJIBOUTI, DJIBOUTI	2009	TDB	YES	2013	TDB	
P232	Camp Lemonnier HQ Facility	DJIBOUTI, DJIBOUTI	2009	TDB	YES	2012	TDB	
P383	Controlled Industrial Facility	PORTSMOUTH, VIRGINIA	2008	TDB	YES	2013	TDB	
P860	NOSC Pittsburgh	PITTSBURGH, PENNSYLVANIA	2009	TDB	YES	2012	TDB	
P068	Electromagnetic Sensor Facility	NEWPORT, RHODE ISLAND	2007	TDB	YES	2012	TDB	
P263	Broad Area Maritime Surveillance T & E Fac	PATUXENT RIVER, MARYLAND	2008	TDB	YES	2013	TDB	
P750	Rotary Hangar	SAN DIEGO, CALIFORNIA	2009	TDB	YES	2013	TDB	
P327	Berthing Pier 12 Replacement	SAN DIEGO, CALIFORNIA	2009	TDB	YES	2013	TDB	
P405	Bachelor Enlisted Quarters, Homeport Ashore	SAN DIEGO, CALIFORNIA	2009	TDB	YES	2013	TDB	
P477	Construct Joint Air Traffic Control Facility	BELLE CHASSE, LOUISIANA	2009	TDB	YES	2012	TDB	
P060	Marine Corps Reserve Center	YAKIMA, WASHINGTON	2009	TDB	YES	2012	TDB	
P152	Parking Apron/ Taxiway Expansion	SAN DIEGO, CALIFORNIA	2009	TDB	YES	2013	TDB	
P185	Hangar 4	SAN DIEGO, CALIFORNIA	2009	TDB	YES	2014	TDB	
P192	Aircraft Maintenance Hangar	SAN DIEGO, CALIFORNIA	2009	TDB	YES	2013	TDB	
P005	Paint and Blast Facility	JACKSONVILLE, FLORIDA	2009	TDB	YES	2013	TDB	
P022	Consolidated Warehouse Facility	JACKSONVILLE, FLORIDA	2009	TDB	YES	2012	TDB	
P109	CNATT/FRS - Aviation Training and BEQ	CAMP PENDLETON, CALIFORNIA	2009	TDB	YES	2013	TDB	
P111	MAIS-39 Maintenance Hangar Expansion	CAMP PENDLETON, CALIFORNIA	2009	TDB	YES	2013	TDB	

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P092	Tank Vehicle Maintenance Facility	TWENTYNINE PALMS, CALIFORNIA	2009	TDB	YES	2012	TDB
P163	BEQ and Parking Structure	TWENTYNINE PALMS, CALIFORNIA	2009	TDB	YES	2013	TDB
P202	Commissary - MWTC	BRIDGEPORT, CALIFORNIA	2009	TDB	YES	2012	TDB
P004	Motor Transportation/Comm. Maint. Fac.	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2012	TDB
P1034	2nd Intel Bn Maintenance/Operations Complex	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1240	Maintenance/Ops Complex - 2nd ANGLICO	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1246	EOD Addn - 2nd Marine Logistics Group	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2012	TDB
P1249	BEQ - Wallace Creek North	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1251	BEQ - Courthouse Bay	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1254	BEQ - Courthouse Bay	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1256	Mess Hall Addition - Courthouse Bay	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2012	TDB
P1264	Utility Expansion - Hadnot Point	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1265	Utility Expansion - French Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1267	Mess Hall - French Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1286	BEQ - Rifle Range	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1317	BEQ - French Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1319	BEQ - Camp Johnson	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1322	BEQ - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P1323	Armory - II MEF - Wallace Creek	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2012	TDB
P683	Hangar	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P687	Maintenance Hangar (HMLA)	CAMP LEJEUNE, NORTH CAROLINA	2009	TDB	YES	2013	TDB
P447A	Aircraft Maintenance Hangar	YUMA, ARIZONA	2009	TDB	YES	2012	TDB
P460	Aircraft Maintenance Hangar	YUMA, ARIZONA	2009	TDB	YES	2012	TDB

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P533	Simulator Facility	YUMA, ARIZONA	TDB	2009	YES	2013	TDB	
P546	Utilities Infrastructure Upgrades	YUMA, ARIZONA	TDB	2009	YES	2012	TDB	
P573	Intermediate Maintenance Activity Facility	YUMA, ARIZONA	TDB	2009	YES	2013	TDB	
P578	Van Pad Complex Relocation	YUMA, ARIZONA	TDB	2009	YES	2012	TDB	
P583	Communication Infrastructure Upgrade	YUMA, ARIZONA	TDB	2009	YES	2012	TDB	
P420	Physical Fitness Center	BEAUFORT, SOUTH CAROLINA	TDB	2009	YES	2012	TDB	
P444	Training and Simulator Facility	BEAUFORT, SOUTH CAROLINA	TDB	2009	YES	2013	TDB	
P454	Aircraft Hangar - VMFAT-502	BEAUFORT, SOUTH CAROLINA	TDB	2009	YES	2013	TDB	
P1014	Truck Company Operations Complex	CAMP PENDLETON, CALIFORNIA	TDB	2009	YES	2013	TDB	
P1044	Conveyance/Water Treatment	CAMP PENDLETON, CALIFORNIA	TDB	2009	YES	2013	TDB	
P1109	BEQ - Las Flores	CAMP PENDLETON, CALIFORNIA	TDB	2009	YES	2013	TDB	
P1113	BEQ - 13 Area	CAMP PENDLETON, CALIFORNIA	TDB	2009	YES	2013	TDB	
P310	Small Arms Magazine - Edson Range	CAMP PENDLETON, CALIFORNIA	TDB	2009	YES	2012	TDB	
P406	Physical Fitness Center - Camp Smith	KANEHOE, HAWAII	TDB	2009	YES	2012	TDB	
P816	Waterfront Operations Facility	KANEHOE, HAWAII	TDB	2009	YES	2013	TDB	
P858	BEQ - Marine Corps Base Hawaii	KANEHOE, HAWAII	TDB	2009	YES	2013	TDB	
P566	Student Officer Quarters - The Basic School	QUANTICO, VIRGINIA	TDB	2009	YES	2013	TDB	
P599	BEQ	QUANTICO, VIRGINIA	TDB	2010	YES	2013	TDB	
PL36	BEQ	CHERRY POINT, NORTH CAROLINA	TDB	2009	YES	2013	TDB	
PL219	General Warehouse	DJIBOUTI, DJIBOUTI	NA	2009	NO	2012	NA	
DeCA								
	New Commissary	Saratoga Springs, NY	Unknown - 30% goal	2007	Yes	2009	TBD	
	New Commissary	Ausbach, GE	Unknown - 30% goal	2008	Yes	2011	TBD	
	New Commissary	Fort Bliss, TX	Unknown - 30% goal	2007	Yes	2011	TBD	
	New Commissary	Fort Campbell, KY	Unknown - 30% goal	2009	Yes	2012	TBD	
	New Commissary	Fort Carson, CO	Unknown - 30% goal	2009	Yes	2012	TBD	
	New Commissary	Portsmouth, VA	Unknown - 30% goal	2009	Yes	2012	TBD	
	New Commissary	Spangdahlem, GE	Unknown - 30% goal	2008	Yes	20??	TBD	
DIA								
MILCON - DIA 06 002	National Center for Medical Intelligence - ADDITION	Frederick, MD	33%	2008	N/A	2010	T.B.D.	
DIA								
CSC-07765	Child Development Center Expansion	Columbus OH	21%	2009	No			

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430	DLA Headquarters Building	DESSP	2009	35%			
MDA							
	Von Braun III	Huntsville, AL	2008	Research underway	Unknown	NA	NA
	MDA HQCC	Ft. Belvoir, VA	2008	Research underway	Unknown	NA	NA
	Dahlgren Expansion	Dahlgren, VA	2009	Research underway	Unknown	NA	NA
NGA							
	New Campus East	Ft. Belvoir - North Area (Springfield, VA)	2007	30%	N/A	20??	0%
TMA							
P005V	Walter Reed National Military Medical Center - Building A	Bethesda, Md	2008	30%	See Note 1 and 2		0%
P005V	Walter Reed National Military Medical Center - Building B	Bethesda, Md	2008	30%	See Note 1 and 2		
	National Inrepid Center of Excellence	Bethesda, Md	2008	30%	See Note 1 and 2		
	Patient Parking Garage	Bethesda, Md	2008	30%	See Note 1 and 2		
	Tranquility Hall - BRAC RFP 2	Bethesda, Md	2009	30%	See Note 1 and 2		
	Building 17 Complex - BRAC RFP 2	Bethesda, Md	2009	30%	See Note 1 and 2		
	NEX Expansion	Bethesda, Md	2009	30%	See Note 1 and 2		
	New Visitor's Center - Traffic Mitigation Project	Bethesda, Md	2009	30%	See Note 1 and 2		
	Drive-Thru Pharmacy	Bethesda, Md	2009	30%	See Note 1 and 2		
	Fisher Houses (3)	Bethesda, Md	2009	30%	See Note 1 and 2		
P933	Navy Enviro Preventative Med Unit 2	Norfolk, VA	2007	21%	Yes		
P008	NAVHOSP Central Utility Plant	NH Guam, Guam	2007	31%			
P008A	NAVHOSP Guam Replace	NH Guam, Guam	2009	30%	See Note 1 and 2		
P1857	NAVHOSP Outpatient Clinic Addition	MCB Camp Lejeune, NC	2009	30%	See Note 1 and 2		
P112	NAVHOSP Camp Pendleton Replace	MCB Camp Pendleton, CA	2009	30%	See Note 1 and 2		
151694	NCMI Addition	Fort Detrick, MD	2008	20%	Yes		0%
64931	Armed forces Reserve Center	Fort Detrick, MD	2007	30%	Yes		
64273	Naval Medical Bio-Defense Research Laboratory	Fort Detrick, MD	2008	30%			
66606	National Museum of Health and Medicine (AFIP, Forest Glen)	Fort Detrick, MD	2008	30%			
64275	Medical Administration Building (CBMS and Navy)	Fort Detrick, MD	2008	30%			
58625	SATCOM (WSOC)	Fort Detrick, MD	2008	30%			
58625	Satellite Earth Terminal Station (SETS)	Fort Detrick, MD	2008	30%			
61401	Nallin Boundary Gate	Fort Detrick, MD	2009	30%			
61536	Emergency Services Center	Fort Detrick, MD	2009	30%			
67948	NIBC Truck Inspection and Road	Fort Detrick, MD	2009	30%			
62886	Information Sys Fac (NEC) Expansion	Fort Detrick, MD	2009	30%			

Department of Defense

List of New Federal Building Designs and Construction FY 2009

(Note: Only new buildings which began the design phase after the beginning of FY 2007 need to be listed. Buildings for which construction was completed in FY 2007 and after do not need to be listed if they were designed prior to FY 2007.)

New Construction Project Information		Completed New Construction					
Project ID	Building Name	Location (City, State)	Design Started (FY)	Percentage below ANSI/ASHRAE/IESNA Standard 90.1-2004 in terms of energy use	If not at least 30% below ANSI/ASHRAE/IESNA Standard 90.1-2004, will design achieve maximum level of energy efficiency that is life cycle cost-effective?	Date Construction Completed (FY)	In terms of energy use, percentage below ANSI/ASHRAE/IESNA Standard 90.1-2004 achieved
Total new building designs started since beginning of FY 2007:		708					
Total new building designs started since beginning of FY 2007 expected to be 30% more energy efficient than relevant code, where life-cycle cost effective:		703					

APPENDIX D: DEPARTMENT OF THE ARMY

Executive Summary

The Department of the Army made progress toward increasing energy security during FY 2009 however increased overall energy consumption. The Army analyzed opportunities for energy improvements and organized for energy security management starting at the top levels of the Army. In FY 2009, the Secretary of the Army directed the establishment of the Senior Energy Council (SEC) and designated an Army Senior Energy Executive within the Army Secretariat, to increase focus on and align efforts toward energy security. The SEC led the development of an Energy Enterprise Strategic Plan comprised of an Army Energy Security Implementation Strategy and Army Energy Security Implementation Plan. The Army is committed to reducing energy waste in existing facilities, increasing energy efficiency in new construction and equipment, reducing dependence on fossil fuels, conserving water resources, and improving energy security. In FY 2009, the Army continued a broad range of energy programs through the use of utility privatization contracts, the Energy Conservation Investment Program (ECIP), Energy Savings Performance Contracting (ESPC), Utility Energy Services Contracts (UESC), and Army Energy Manager Training. In FY 2009, the Army also expanded military training, force deployment and sustainment, and facility construction programs in support of mobilization, overseas contingency operations and war-fighting efforts. Increased energy use from military operations more than offset energy program progress in FY 2009, resulting in a 2.6% increase in energy use per unit area from the previous year, and an overall decrease of 7.2% from energy reduction goal base year 2003.

I. Management and Administration

A. Energy Management Infrastructure

- 1. Senior Agency Official.** The Deputy Assistant Secretary of the Army for Energy and Partnerships (DASA (E&P)) is the Senior Agency Official for the Army.
- 2. Agency Energy Team.** The Army Energy Team is comprised of persons from the Office of the DASA (E&P), Office of the Assistant Chief of Staff for Installation Management and the Installation Management Command, Army National Guard, U.S. Army Reserves, Army Material Command, U.S. Army Medical Command in collaboration with the U.S. Army Corps of Engineers, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, the Army Staff, other Army Offices and Commands.
- 3. Senior Energy Council.** The Secretary of the Army established the Army Senior Energy Council (SEC) in FY 2009. The SEC is an intra-Army departmental committee comprised of Army senior leadership, responsible for the enterprise level energy security goals, objectives, performance metrics and priorities for energy security initiatives and programs throughout the Army. The SEC reports to the Secretary of the Army and is co-chaired by the Assistant Secretary of the Army for Installations and Environment and the Vice Chief of Staff of the Army.

The SEC charter required the collaborative development of an Army Enterprise Energy Plan for approval by the Secretary of the Army. This plan, the Army Energy Security Implementation Strategy (AESIS), articulates the Army's vision, mission, and goals for achieving greater energy security and ensuring energy is a key consideration in all Army activities to - reduce demand, increase efficiency, seek alternative sources, and create a culture of energy accountability - while sustaining or enhancing operational capabilities. The Plan encompasses all aspects of the Army energy consumption and utilization, including: installations and facilities (including non-tactical vehicles); weapon systems (including tactical, combat manned and unmanned ground and air platforms, and Soldier/ weapons/ logistics/ C4ISR systems); and sustainable contingency operations base camps.

The Deputy Assistant Secretary of the Army for Energy and Partnerships serves as the SEC's Executive Secretary and is designated as the Army's Senior Energy Executive. The SEC convenes, at a minimum, two times per year to review Army energy programs, progress towards meeting Army energy security goals at an enterprise level, investment strategies, and other energy security issues.

Thus far, the Army's SEC approved the AESIS and the Command Energy Security Implementation Plans (IPs) to execute the AESIS. The IPs define activities for installations, commands, tactical operations, training, and acquisition personnel to address strategic energy objectives and related metrics for regular monitoring and progress reporting toward achieving the AESIS goals.

Through SEC leadership, the Army is actively supporting advanced technologies at installations, in weapon systems, and in operations. The Army is pursuing projects such as large scale solar, wind, and geothermal power sources, electric and hybrid vehicles, and improved insulation of temporary base camp facilities. Through the SEC structure, the Army will continue to evaluate progress toward achieving the energy security goals, establish energy security priorities, policies and metrics, and provide guidance on future energy investments. In addition, the Army will address legislative requirements, executive orders, policy mandates, and conduct outreach campaigns to promote energy security programs, operations, and initiatives at Army installations worldwide, at forward operating bases, in acquisition programs, and throughout operational forces.

B. Management Tools

1. Awards (Employee Incentive Programs). The Army conducted the 31st Annual Secretary of the Army Energy and Water Management Awards Ceremony at the annual Federal energy exposition and workshop GovEnergy 2009, with the Deputy Assistant Chief of Staff for Installation Management presenting the awards. Among

the awardees were Fort Sill, Oklahoma for Installation Award; small groups representing Army installations of Fort Knox, Kentucky; New Jersey Army National Guard; Aberdeen Proving Ground, Maryland; and Tooele Army Depot, Utah; and the individuals from Picatinny Arsenal, New Jersey; Fort Eustis, Virginia; Detroit Arsenal, Michigan; and US Army Garrison Kaiserslautern, Germany. Through their combined efforts, the Army avoided over \$10 million in utilities expenses, conserved over 500 billion Btu and reduced water consumption by 64 million gallons.

Representatives from Tooele Army Depot, Utah received the 2009 Federal Energy Management Program (FEMP) for Water Conservation in Small Group Category. This year, FEMP has also recognized three individuals: two individuals in energy and water conservation efforts, and the Exceptional Service Award for leadership and expertise in reshaping the Army's Energy and Water program into a unified and highly coordinated campaign with significant and effective impact on the Army. DOE has also recognized Mr. Don Juhasz and Dr. Alexander Zhivov in Energy Leaders Awards. These individuals are leaders and experts in energy and dedicated to improve the quality of life for soldiers, civilians, and their families.

2. Performance Evaluation. The Vice Chief of Staff for the Army (VCSA) has directed Headquarters Department of the Army Principal Officials and Commanders to ensure energy consideration are included in the functional responsibilities of their subordinates and that they include energy and water conservation responsibilities in the position descriptions and performance plans of subordinate commanders and civilian supervisors when appropriate. The Army Installation Management Command (IMCOM) Human Resource Office is revising position descriptions of IMCOM energy team members to include consideration of energy management requirements.

3. Training and Education. Headquarters Department of the Army (HQDA) conducted training at the two-day Army Energy Managers Training Workshop attended by nearly 200 people and conducted in conjunction with the annual Federal energy exposition and workshop GovEnergy in Providence, Rhode Island. IMCOM sponsored a certified energy manager training course conducted by the Association of Energy Engineers.

The Army National Guard hosted a two-week Construction and Facilities Management Officer University to train facilities personnel in effective energy management and water conservation practices, facility design and funding programs. The training covered many subjects such as commissioning, sustainability, water conservation, utility energy cost and consumption tracking, life cycle cost analysis, utility invoice analysis and code compliance.

The Installation Management Command conducted an Energy Summit and Technology Workshop in collaboration with the U.S. Army Corps of Engineers in

order to increase visibility and focus of Army energy management programs throughout the command and to energize leadership at locations where mandated energy reduction goals were not being met.

The US Army Corps of Engineers Construction Engineering Research Laboratory, Engineer Support Center Huntsville and Corps District Offices conducted several energy training courses such as Energy Savings Performance Contracting training and energy efficient design practices to meet Energy Policy Act of 2005 efficient design requirements. The Corps also conducted training courses through the Proponent Sponsored Engineer Corps Training program such as in sustainable design, electrical design, emergency power generation and boiler operation, maintenance and safety.

Installation Management Command conducted an energy technology assessment and demonstration at Fort Lee, VA. The assessment and demonstration discussed techniques to reveal energy conservation opportunities related to central plants, distribution systems, building envelope, HVAC systems, electrical and lighting systems, compressed air systems, and industrial processes. The assessment involved classroom training as well as hands on experience on several buildings and systems on Fort Lee, VA. The Army attendees were from Fort Detrick, Maryland; Fort Lee, Virginia; Maryland, Kansas, Florida, and Nebraska, Army National Guard; U. S. Army Garrisons Humphreys and Yongsan, Korea; Headquarters, Army National Guard Bureau; and Office of the Assistant Chief of Staff for Installation Management.

II. Energy Efficiency Performance

A. Energy intensity Reduction Performance

1. Goal Subject Buildings. Army facilities collectively reduced energy use per unit area of gross square feet from 100,260 British thermal unit per gross square foot (Btu/GSF) in FY 2003 to 93,051 Btu/GSF in FY 2009, a reduction of 7.2%. This is in comparison to the energy reduction goal of 12%, mandated by the Energy Policy Act of 2005, Executive Order 13423 and the Energy Independence and Security Act of 2007. This represents a 3.6% increase in energy use per unit area from the previous year. The Army lost progress toward the reduction goal due to increased military activities of training, mobilization, deployment, and global defense posture realignment, in addition to an increase in troop strength. Total population, as tracked by the Army Stationing and Installation Plan, shows a 3.6% increase in total Army population comprised of military personnel, civilians, students, contractors and tenants on Army installations.

2. Excluded Facilities. The Army does not consider any buildings to be excluded from energy reduction goals.

3. Non-Fleet Vehicle and Equipment Fuel Use. Army installations and commands do not report any efforts toward reducing energy use of non-fleet vehicles and equipment consuming traditional mobility fuels as the quantity is minimal as compared to facility energy use. There has been substantial effort toward obtaining and substituting alternative fuel, hybrid, and low-speed electric vehicles for convention fuel vehicles and increasing use of alternative fuels however these are fleet vehicles and their progress toward meeting Energy Policy Act and Executive Order mandates for alternative fuel use are tracked in the Federal Automotive Statistical Tool reporting system through other Government Agencies.

B. Renewable Energy

The Army did not meet the renewable requirement of 3% of total electricity use derived from renewable sources as mandated by the Energy Policy Act of 2005, only obtaining 2.1% of total electric use from renewable sources. This increase from 1.1% in FY 2008 was achieved with a combination of several new but relatively small photovoltaic systems and due to increased purchase of renewable energy certificates. Nearly all of these renewable energy certificate purchases are for short term and will only be in effect through 2010. When considering renewable energy from all sources including those producing thermal energy, total renewable energy was 5.9% as compared to total purchased electrical energy in FY 2009.

The Army conducted renewable energy assessments in order to pursue viable projects at Fort Benning, Georgia; Fort Leonard Wood, Missouri; Fort Huachuca, Arizona; and Fort Leavenworth, Kansas.

1. Self-Generated Renewable Energy. The Army had 67 active renewable energy projects operating in FY 2009. Of the total, 42 were generating electricity qualifying for credit toward the renewable energy goal and nearly all the energy produced was used on-site in Federal Army facilities. The exceptions were an Army National Guard site at which some of the electricity generated was used on state-owned buildings and an installation where some of the energy generated was used by non-federal reimbursable tenants. Twelve new electricity generating projects were implemented in FY 2009:

Table D-1 – FY 2009 Renewable Energy Generation Projects

Location	Project Description	Capacity
Arizona Army Nat'l Guard	PV Panels on CSMS	30 KW
Arizona Army Nat'l Guard	PV Array on RTI	12 KW
Hawaii Army Nat'l Guard	Solar Streetlights	<1 KW
N. Jersey Army Nat'l Guard	PV Carport	250 KW
Fort Huachuca, Arizona	PV Truck Shelter	36 KW
Fort Huachuca, Arizona	PV Warehouse Roof	30 KW
Fort Huachuca, Arizona	PV MI Library	30 KW
Fort Knox, Kentucky	PV Building 1730	100 KW
Camp Humphreys, Korea	Solar Thermal Electric	300 KW

Yuma Proving Ground, Arizona (3)	PV Trackers	236 KW
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In addition to the projects implemented in FY 2009, the Army obtains a substantial amount of electricity generated from renewable sources from hydropower at Rock Island Arsenal, Illinois; a large photovoltaic array at Kwajalein Atoll; and multiple photovoltaic and wind power projects implemented at Army installations in Arizona by the Army National Guard, Fort Huachuca, and Yuma Proving Ground.

The majority of energy obtained from renewable sources by Army installations is thermal energy, which do not qualify toward the renewable requirement of the Energy Policy Act of 2005. Sources of this thermal energy are primarily from ground source heat pumps at Fort Knox and Fort Campbell, Kentucky and Fort Jackson, South Carolina; and scrap wood to produce fuel for the boiler plant at Red River Army Depot, Texas. There are also transpired solar walls and solar hot water and pool systems at multiple locations, such as Fort Drum, New York; Fort Carson, Colorado; Fort Lewis, Washington; and Fort Huachuca, Arizona.

2. Purchased Renewable Energy. The Army purchased 148 thousand megawatt-hours of electricity qualifying toward the renewable energy goal, a large portion of which came from a direct purchase of electricity from a 2.0 mega-watt photovoltaic array at Fort Carson, Colorado initiated in FY 2008. The majority came from renewable energy certificates purchased by Fort Lewis, Washington; Fort Carson, Colorado; and the Pennsylvania Army National Guard. The Army also purchased a substantial amount of energy from renewable municipal solid waste plants at Redstone Arsenal, Alabama and Aberdeen Proving Ground, Maryland. The thermal energy does not qualify toward the renewable energy goal but does help offset the amount of conventional energy counted toward the energy efficiency goal. These purchase decisions were as much based on economics as they were due to the source of the energy being renewable.

3. Net Zero Energy Installation Initiative. The Net Zero Energy Installation Initiative is to increase energy independence of Army installations by offsetting the equivalent of total annual energy use through on-site energy production. Goals for this initiative are for five Army installations be net zero by 2020, 25 installations by 2030, and all Army installations net zero by 2058. Current renewable energy efforts underway in support of this initiative are to develop a large concentrated solar system at Fort Irwin, California; develop geothermal steam resources at Hawthorne Army Depot, Nevada; replace 800 petroleum-fueled non-tactical on-post vehicles with neighborhood electric vehicles in FY 2009 with 4,000 over three years; and develop consolidated waste to fuel projects at several locations.

Based on previously completed energy and renewable energy assessments for Fort Carson, Colorado, a Net-Zero Energy Implementation plan was prepared for this pilot site. Included in the plan were detailed building and housing data for previously

performed and planned demolitions, modernizations, and new construction. This information was entered into a previously prepared Federal Energy Decision Screening (FEDS) model to provide a projection of the energy use, by building type. The FEDS model was used to identify cost effective energy efficient strategies at present energy costs, and energy efficiency strategies that would be considered with ranges of higher energy costs. These scenarios included analyses that considered both continuance and closure of the central plant. The energy use load profile for each of these scenarios was prepared in order to understand the energy generation base load requirements. In addition to the energy use analysis, renewable energy options were also evaluated. This analysis indicates a waste-to-energy plant would be the most cost effective approach for on-site energy generation for the base load. Fort Carson is investigating the potential regulatory considerations for such a plant.

C. Water Conservation

In FY 2009, the Army used 58.2 billion gallons of potable water at a cost of \$57.6M. The average consumption of water per unit area of building has increased 1.0% since FY 2007, however much of the increase is attributable to a concerted effort in FY 2009 to capture and report all water data. The base year 2007 data is still preliminary as a similar effort as with FY 2009 is underway with installation-by-installation analysis and validation of data ongoing.

The Army's total water use and disposal have declined for many years. Greater treatment and testing requirements imposed on water suppliers by the Safe Water Drinking Act of 1974 (and amendments) have increased the cost of providing potable drinking water. Similarly, the vulnerability assessments of installation water supplies, emergency response plans, and protective measures required by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188) have added to the cost.

Water conservation efforts are environmentally responsible and can help installations stretch dwindling operations and maintenance dollars. Also, any water conservation measures that reduce wastewater quantities provide additional cost avoidance.

Many installations have installed water conserving toilets and urinals, low flow faucets and showerheads. All facility projects executed by the Army Corps of Engineers projects reference the International Plumbing Code which prescribes water conserving fixtures. Some installations have instituted aggressive leak detection surveys and followed up with repair programs of leaky valves and damaged pipelines which have significantly reduced water consumption as much as 20% at one location.

Although no longer mandated by Executive Order, a number of installations continue to follow the Best Water Management Practices, espoused by DOE.

D. Metering of Electricity Use

In FY 2009, the Army installed 2,690 advanced electric meters bringing the total to within 40% of satisfying the total electric metering requirement for compliance with the EPA Act 2005. The Army awarded metering at 32 installations (in addition to the 28 in FY 2008), 91 Army Reserve facilities and 50 Army Medical Command facilities. Of those buildings receiving an advanced electric meter, 575 were also metered for natural gas. Water and steam meters at selected facilities are planned for FY 2010 in addition to the continuation of electric and natural gas metering. At current rates of progress and barring any reduction in annual funding budgets, all required electrical metering, including Army facilities overseas, is scheduled for completion by mid-year, FY 2012. Metering of all other utilities is on schedule for completion by 2016.

Meters are worthwhile only if the readings are analyzed. A contract for creation and operational support of the Army-wide meter data management system (MDMS) was awarded in December 2009. This system will collect, compile and analyze meter data at a central location accessible via internet to authorized users, such as installation energy, utility and operation and maintenance program managers. The MDMS was accepted into the Army computer network domain on 20 August 2009. The certification process under Defense Information Assurance Certification and Accreditation Program is underway with an anticipated interim authority to operate (IATO) by 2nd Q FY 2010. The IATO will demonstrate system net-worthiness involving three pilot sites, Fort Stewart, Georgia; Fort Carson, Colorado; and Fort Lee, Virginia. Other installations completed for metering will be connected to the MDMS once full authority to operate is granted by the Army Network Enterprise Technology Command forecasted by late FY 2010.

E. Federal Building Energy Efficiency Standards

The Army Corps of Engineers continues work with the Department of Energy and the Office of the Assistant Chief of Staff for Installation Management to develop design guides for implementing building efficiency standards mandated by the Energy Policy Act of 2005. The Corps has completed prescriptive design guides for battalion headquarters buildings, permanent party barracks, training barracks, and tactical equipment maintenance facilities, four of the most prevalent types of buildings being constructed in conjunction with Army troop stationing actions. Additional design guides have been developed for dining facilities, company operations facilities, Army reserve centers and child development centers. Use of these design guides will result in meeting the requirement for new building designs to be 30% more energy efficient than American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90.1-2004 without having to model each individual project. For most of these facility types, the new EISA07 requirement for a 55% reduction in fossil fuel-generated energy by FY10 will also be met by using these design guides.

The requirement to meet Energy Policy Act of 2005 design requirements has been in the model Request for Proposal (RFP) for contracted building design and construction services processed through the Army Corps of Engineers since May 2006. When using the model RFP for a project the designer of record is required to comply with designing buildings to use 30% less energy than ASHRAE 90.1-2004, meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver requirements, purchase energy star equipment, install metering and specify premium efficiency electric motors. This includes barracks buildings which typically would be designed to the International Energy Conservation Code standards for low-rise residential buildings. Although buildings for the Active and Reserve Components are designed to use 30% less energy than ASHRAE 90.1-2004 standards, the current standard for National Guard buildings is to meet the U.S. Green Building Council LEED silver standard, due to the mix of federal and state responsibilities and ownership of National Guard facilities.

A list of Army military construction projects for which the design was started since the beginning of FY 2007 is included in the Army's Energy Management Data Report.

III. Implementation Highlights of FY 2009

The following identifies and describes the strategies in use to realize the reduction in energy consumption and improve efficiency throughout the Army in FY 2009.

A. Life-Cycle Cost Analysis (LCCA)

LCCA is an integral part of the design process and installations report options for the best equipment or systems are evaluated using this tool, however fund limitations still force some programming decisions to be made based on initial cost considerations. LCCA is routinely used by installation energy managers to evaluate project economics for proposed energy savings performance contract projects, candidate Energy Conservation Investment Program (ECIP) projects, and general energy saving facility improvement projects. During FY 2009, the Army established an ECIP module in the system used for tracking Army military construction projects. The system uses current National Institute for Standards and Technology discount factors to assist users complete life-cycle cost analyses (LCCA) with an automated LCCA form when completing ECIP project documentation in support of project funding requests.

B. Retrofits and Capital Improvement Projects

Retrofits and Capital Improvement Projects which incorporate energy conservation are routinely implemented in Army projects when the LCCA indicates a valid return on investment.

During FY 2009, the Army obtained \$365 million in American Recovery and Reinvestment Act (ARRA) funding specifically for energy efficiency sustainment projects. The Army also obtained \$30 million in ARRA funding for Army Energy Conservation Investment Program funding within the military construction program.

The Energy Conservation Investment Program (ECIP) is a key component of the Army's energy management strategy. ECIP projects focus on energy, water, and cost savings; implementing renewable energy; and converting systems to cleaner energy sources. During FY 2009, the Army dedicated two-thirds of funds received for ECIP projects toward renewable energy projects. A list of ECIP FY 2009 projects including those funded through ARRA is at the end of this report.

C. Use of Performance Contracts

Energy Savings Performance Contracting (ESPC) and Utility Energy Services Contracting (UESC) are valuable to the Army's energy efficiency strategy and are essential for achieving mandated energy reduction goals. The Army awarded a total of \$113.4 million of investment (or 9.1% of utility energy costs) through ESPC and UESC in FY 2009, falling just short of the Department of Defense goal equivalent to 10% of annual energy utility costs (\$124.5 million based on FY 2009 energy utility costs). This total investment is slightly less than the total awarded in FY 2008, partially because of six ESPC awards slipping from fourth quarter of FY 2009 to first quarter of FY 2010 due to delays related to contract ceiling issues on the old Department of Energy (DOE) "Super ESPC" contracts. The Army has 25 ESPCs with a total investment value over \$400 million in development for potential award over the next two years and an additional six UESCs in development.

1. Energy Savings Performance Contracting. Project delivery/task orders issued in FY 2009 include the following.

a) **Aberdeen Proving Ground**, Maryland awarded an ESPC delivery order for a \$10.3 million project in September 2009, using the Army Corps of Engineers, Huntsville ESPC contract. Energy conserving measures implemented include rehabilitation of heating, air conditioning and ventilation equipment and building insulation

b) **Fort Bliss**, Texas awarded a task order for \$9.5 million project in September 2009, using the Army Corps of Engineers, Huntsville ESPC contract. Energy conserving measures implemented include energy controls, lighting and electrical system improvements, general facility and weatherization improvements, heating and air conditioning system improvements, and installation of renewable energy systems.

- c) **Fort Dix**, New Jersey awarded a modification to an existing task order for \$5.4 million under the DOE Super ESPC contract. The project adds a second phase of photovoltaic equipment to the original task order, doubling the size of arrays.
- d) **Fort Eustis**, Virginia awarded two task orders in January and September 2009 through the Army Contracting Command for a total of \$15.7 million.
- e) **Picatiny Arsenal**, New Jersey awarded a \$3.5 million task order in August 2009 using their local contracting office. The project includes improvements to heating, air conditioning, ventilation and compressed air systems and energy controls.
- f) **Sierra Army Depot**, California awarded a \$10.5 million task order in September 2009 using the Department of Energy ESPC contract. The project includes improvements to heating, air conditioning and ventilation equipment, lighting improvements, energy controls, and renewable energy systems.
- g) **Wisconsin Army National Guard** awarded a task order in April 2009 through the Wisconsin State Contracting Office for \$1.1 million in investment. The project is for lighting improvements to Army National Guard armories throughout Wisconsin.

2. Utility Energy Services Contracting. UESC task orders issued in FY 2009 include the following.

- a) **Fort Gordon**, Georgia awarded two UESC task orders with Atlanta Gas Light with investment value of \$2 million in September 2009.
- b) **Fort Knox**, Washington awarded a UESC task order with Bonneville Power Administration worth \$41.8 million for facility energy improvements. The projects will receive \$23.8 million in incentives from the Washington state, with net financing costs of \$18 million.
- c) **Fort Lewis**, Washington awarded a UESC task order with Bonneville Power Administration worth \$41.8 million for facility energy improvements. The projects will receive \$23.8 million in incentives from the Washington state, with net financing costs of \$18 million.
- d) **Fort Belvoir**, Virginia awarded two UESC task orders with Washington Gas for work on the steam system. These projects have a total investment value of \$7.3 million and were awarded with FY 2009 ARRA funds.
- e)

D. Use of Energy Star ® and Other Energy-Efficient Products

Use of Energy Star ® and Other Energy-Efficient Products is an ever-increasing tool used by the Army as an energy savings strategy. Energy Star is a program developed by the U.S. Environmental Protection Agency to promote energy efficiency in buildings. Installations are required to use Energy Star products where cost-effective when purchasing new or replacement appliances and equipment. The use of Energy Star equipment has been incorporated into the model request for proposal for contracted building design and construction services processed through the Army Corps of Engineers since May 2006.

E. Sustainable Building Design and High Performance Buildings

In December 2008, the Army's senior military leadership set forth the critical challenge: institutionalizing sustainability in all Army operations. An Army Campaign Plan for Operational sustainability serves as the new paradigm for projects at the installation level and in all Army operations.

The institutionalization of operational sustainability in all Army planning, training, equipping and operations will better enable the Army to meet its missions and accomplish the Army's imperatives. Implementing the campaign plan to the Army's facilities means energy and sustainability is not only required by statute, but must become an enterprise practice common across the Army. The Army established the policy starting with the FY 2008 military construction programs, to meet green building design and construction as certifiable by the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver, for all vertical construction projects with climate-controlled facilities. Similarly, the Army Family Housing program is moving to adopt a consensus rating tool on a voluntary (test) basis. New to 2009 is the policy to register all military construction projects with the Green Building Certification Institute to document project information for the achievement of LEED Silver.

In addition, beginning with January 2009, the Army established the Sustainable Design and Development (SDD) Project Validation program to determine Army requirements governing high performance sustainable buildings are being met. This program selects projects for external certification by the Green Building Certification Institute, and conducts validation visits to selected projects for the achievement of high performance sustainable buildings. The program served as a force multiplier to improve planning, training, equipping, and operations of high performance sustainable buildings.

In Fiscal Year 2009, using Global Reporting Initiative guidelines, the Army made history by releasing the first-of-its-kind Annual sustainability Report. This vanguard report highlights the environmental achievements and milestones in support of the Army's sustainability concept and goals, the Army's current accomplishments in sustainability and

a baseline from which all future accomplishments can be measured. In the built-environment, the Army achieved the following using the consensus rating tools from the United States Green Building Institute (USGBC).

Table D-2 – Army LEED Rated Buildings

Building Name	Location	State	LEED Version	LEED Rating
Armed Forces Reserve Center	Johnston	IA	NC v2.1	Silver
Readiness Center	Concord	NH	NC v2.1	Certified
Buckley Army Aviation Spt Facility	Aurora	CO	NC v2.2	Silver
US Army Reserve Center	Gainesville	FL	NC v2.2	Silver
Whole Barracks Renewal	Fort Lewis	WA	NC v2.1	Silver
Ft. Carson Brigade & Battalion HQ	Fort. Carson	CO	NC v2.2	Gold
Company Operations Facilities	Fort Carson	CO	NC v2.2	Silver
Div. Headquarters Complex	Fort Carson	CO	NC v2.2	Silver
Fairfax Village Neighborhood Center	Fort Belvoir	VA	NC v2.2	Platinum
Joint Force Headquarters	Pineville	LA	NC v2.2	Certified
Schofield Barracks (x4)	Wahiawa	HI	Homes	Gold
Fort Hood Housing (x10)	Fort Hood	TX	Homes	Silver
Fort Hood Housing (x16)	Fort Hood	TX	Homes	Silver
Knoxville Housing (x7)	Knoxville	TN	Homes	Gold

Among the firsts are the Army’s achievements for Leadership in Energy and Environmental Design (LEED) platinum and gold rated buildings. The certified buildings are from a cross section of the Army representing the Reserve Components, the Active Component, partnerships for residential communities, to include Fort Hood Family Housing as the Largest LEED Silver Certified Community throughout the Army and in the State of Texas.

F. Energy Efficiency/Sustainable Design in Lease Provisions

The Army emphasizes that energy and water conservation be included in all facility leases and requires that these leased facilities meet energy and water goals. The intent is to have the landlord make appropriate investments in energy efficiency, which can be amortized in the lease, provided the new total cost (energy costs plus lease cost) does not exceed total costs without improvements. Leases should amortize the investments over the economic life of the improvements. Build-to-lease solicitations for Army facilities contain criteria encouraging sustainable design and development, energy efficiency, and verification of building performance.

G. Distributed Generation including On-site Renewable Energy resources and Combined Cooling, Heating and Power Systems

Using distributed generation, Fort Gordon, Georgia employs diesel generators to manage the peak load at the installation by leasing 13.5 megawatts of diesel generator assets from the Army Prime Power Program. Aberdeen Proving Ground has a 15 mega-watt distributed generation facility they use to help offset peak electrical demand cost and participation in the regional electric utility’s economic load response program.

H. Industrial Facility Efficiency Improvements

Army industrial and process installations are actively pursuing industrial energy saving projects in addition to general energy conservation measures such as insulation and lighting improvements. Measures implemented in FY 2009 high-pressure steam system improvements to reduce boiler operation at Milan Army Ammunition Plant, adding steam coils to boiler water drums to increase electrical generation output and reduce fuel oil use, and replacing compressors and improving the compressed air system at Letterkenny Army Depot has reduced electrical demand and cost.

Table D-3 - FY 2009 Energy Conservation Investment Program Projects

Location	Project Title
Fort Knox, Kentucky	Barracks Geothermal Phase 4*
Fort Drum, New York	Solar walls & rehab shops*
Pohakuloa Training Area, Hawaii	Solar Hot Water & Day lighting*
Fort Bragg, North Carolina	Chilled Water Storage System
Fort Buchanan, Puerto Rico	Solar Water Heaters & HVAC Replacement*
US Army Research Lab, Adelphi, Maryland	Install solar thermal roof tile heating system*
Aberdeen Proving Ground, Maryland	Install Solar Tubes and Controls*
Schofield Barracks, Hawaii	Solar Water Heaters & Lighting Retrofit*
Fort Bliss, Texas	Solar Day lighting*
US Army Garrison Benelux, Belgium	Install solar water heating*
Fort Dix, New Jersey	Photovoltaic Roof System 500kW*
Fort Knox, Kentucky	Geothermal Domestic Hot Water & Exit Lights*
Fort Sill, Oklahoma	Geothermal heating & cooling*
Yuma Proving Ground, Arizona	Install motion sensors in 200 buildings
Blue Grass Army Depot, Kentucky	Energy Efficiency Improvements, mult. locations
Fort Wainwright, Alaska	Wind Turbine & PV Panels*
Iowa Army Ammunition Plant, Iowa	GSHP & PV for Bldg 100-101*

Location	Project Title
Fort Campbell, Kentucky	Replace A/C with GSHP, Efficient Boilers*
Fort Knox, Kentucky	Barracks Ground Source Heat Pumps, Phase 5*
Fort Knox, Kentucky	Barracks Ground Source Heat Pumps, Phase 6*
Fort Bragg, North Carolina	EMCS
Fort Bragg, North Carolina	Solar Walls, & Solar Day lighting*
Presidio of Monterey, California	378 KW PV Solar System*
White Sands Missile, New Mexico	Install Direct Digital Controls
Hawthorne Army Depot, Nevada	Geothermal Test Wells, Ph 2*
Fort Drum, New York	Install Solar Walls, Energy Improvements*
Fort Sill, Oklahoma	Solar Water Preheater*
Fort Hood, Texas	Install 8,000 Motion Sensors
Tooele AD, Utah	Solar Walls on 14 Buildings*
Fort Lee, Virginia	EMCS Upgrade, Ph 2
Fort Lee, Virginia	ECIP - High Efficiency Lighting (Phase III)

* renewable energy project

APPENDIX E: DEPARTMENT OF THE AIR FORCE

I. Management and Administration

A. Energy Management Infrastructure

1. Senior Agency Official. The Under Secretary of the Air Force (SAF/US) serves as the Air Force's Senior Energy Official. In the absence of SAF/US, the Assistant Secretary of the Air Force for Installations, Environment, and Logistics (SAF/IE) performs as Agency Senior Energy Official on behalf of the SAF/US. The Senior Energy Official co-chairs the Headquarters Air Force (HQ USAF) Energy Senior Focus Group (SFG) with the Vice Chief of Staff of the Air Force (VCSAF), providing leadership and guidance to the United States Air Force. The Air Force has developed and published the Air Force Infrastructure Energy Strategic Plan and Infrastructure Energy Implementation Plan, and mandated Energy Management Steering Groups (EMSG) at the major command (MAJCOM) and wing levels.

2. Air Force Energy Governance. The Air Force Energy governance structure consists of the Energy SFG with five working subgroups and three advisory groups under the SFG. Each work group provides a forum for information exchange and coordinates interagency efforts to promote Service implementation of Air Force policies supporting Federal mandates. Each work group develops guidance, reporting metrics, and other documents and tools. It also includes Energy Management Steering Groups (EMSG) at the MAJCOM and installation levels.

a) Energy Senior Focus Group. The Energy SFG is the senior EMSG within HQ USAF. The Energy SFG's scope extends to energy use and conservation issues within the Air Force, including seeking alternative energy opportunities. This includes energy use on Air Force installations and property, ground transportation and support equipment/systems, aviation fuel, and associated science and technology. The SFG designates working groups to focus on specific energy issues within the Air Force. The Air Force Senior Energy Official and the VCSAF co-chair the Energy SFG, with membership organizations from the Secretariat and Air Staff.

b) Energy SFG Working Groups. The SFG has five working subgroups: Provide Infrastructure, Acquisition and Technology, Aviation Operations, Culture Change, and International. The SFG also has three advisory groups: Strategic Communication Integration, Critical Infrastructure Program, and Innovative Financing.

c) Energy Management Steering Groups. MAJCOMs and installations established EMSGs required by Air Force Instruction (AFI) 90-1701. These groups consist of representatives from civil engineering, public affairs, transportation operations, budget, aircraft maintenance and operations, logistics, and fuels

management. Each group tracks its own progress. MAJCOMs consolidate installation and MAJCOM EMSG actions and initiatives and submit them through the SFG working groups.

B. Management Tools

1. Awards (Employee Incentive Programs). The Air Force has a variety of award programs to provide incentives for energy conservation progress and ingenuity.

a) Federal Energy and Water Management Awards. The Air Force participated in the Federal Energy Management Program (FEMP) 2009 Federal Energy and Water Management Awards program. The Air Force earned the following awards.

(1) FEMP 2009 Federal Energy Management Award

- Barksdale AFB, Louisiana. The Barksdale Civil Engineer Squadron focused on sustainable energy efficiency initiatives for water and sewer, natural gas, and electricity, to achieve a total energy cost savings of \$582.9K for 2008.
- Kadena AB, Japan. By aggressively implementing multiple energy initiatives, Kadena realized a reduction in total utility consumption of \$590K, or 3.2%, for the year.

(2) FEMP 2009 Federal Energy Management Award (Small Group)

- Dyess AFB, Texas. The base implemented multiple energy savings technologies to achieve a 16.5% reduction in utilities cost and a reduction in energy intensity of 29.7%.

(3) FEMP 2009 Federal Energy Management Fall “You Have the Power” Poster Award

- Randolph AFB, Texas. An HQ AETC team was selected for the FEMP Fall poster used for the Energy Awareness Month campaign. The poster included three personnel from A7C (Bruce Nadler, Garland Scott, and John Kain) and Debbie Aguirre, Contracting Officer, who developed an innovative contract for buying electricity and renewable energy from the Texas electric grid.
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b) The Air Force Reduced Energy Appreciation Program (REAP). The Air Force rewards major installations for efforts to reduce energy consumption. Two Contiguous United States (CONUS) and one Outside Contiguous United States (OCONUS) installations are selected each year. Installations with the largest reduction in energy consumption for the fiscal year are recognized with the REAP award. Renewable energy credit purchases are not counted as part of this program.

The installations selected this year:

- Andrews AFB, Maryland, reduced its energy consumption 20.58 percent.
- Malmstrom AFB, Montana, reduced its energy consumption 16.85 percent.
- Lajes, Azores, reduced its energy consumption 12.63 percent.

c) **Various MAJCOM and Installation Energy Awards.**

- (1) **Hill AFB**, Utah, has a quarterly Energy Champion Recognition Program. Each quarter, the Energy Management Office reviews energy-related activities of organizations at Hill and recognizes individuals who have made a noteworthy contribution to the energy performance of their facilities.
- (2) **Air Education Training Command (AETC)** distributed \$3M as part of an Energy Incentive Award Program (most electrical energy reduction compared to a three-year average baseline) to three bases: Vance AFB, Oklahoma; Altus AFB, Oklahoma; and Luke AFB, Arizona.
- (3) **Ramstein AB**, Germany, received the USAFE Energy Award in recognition of its base energy efforts in FY 2009.
- (4) **Kadena AB**, Japan, is integrating Challenge coins and certificates of achievement into its facility manager energy awareness and training.
- (5) **HQ PACAF Hickam**, Hawaii, received the Commander in Chief's (CINC) Installation Excellence Award, which recognizes outstanding and innovative efforts to operate and maintain U.S. military installations. A major criterion for this award is energy reduction/savings.
- (6) **HQ ACC Langley AFB**, Virginia, annually distributes \$1M among their bases that meet or exceed the DoD energy reduction goal and improve their energy reduction over the previous fiscal year. This year, 11 bases received awards.
- (7) **HQ ACC, Langley AFB**, Virginia, has a Command Energy Conservation group and individual award programs that recognize a group/individual for an outstanding energy program or for individual energy manager efforts.
- (8) **Vandenberg AFB**, California, was recognized for its awareness program with the Flex Your Power Award 2008. The program was highlighted with Facility Manager training, the local Energy Management Web site, numerous newspaper articles, and the light-emitting diode

(LED) demonstration projects that highlighted “cutting edge” energy conservation techniques.

(9) **HQ AFSPC** uses the 11/12’s (monthly) utility funding as an incentive for installations to save utility funding that can be reprogrammed for energy saving projects or to pay the NAF-C utility bills. Currently, AFSPC has been able to reinvest \$4.4M towards energy projects in FY 2009.

- HQ AFSOC presented Cannon AFB, New Mexico, with a \$100K Quality of Life award for their efforts in energy conservation.
- HQ AMC, Scott AFB, Illinois, initiated a program to distribute \$225K to its top three organizations, and recognize the top three personnel who demonstrate promotion of energy conservation and cultural change to encourage including energy as a consideration in all we do.

2. Performance Evaluation.

a) **Energy Managers.** During 2009, the Air Force Civil Engineer continued with its total transformation and reorganization. The Headquarters Air Force, the MAJCOMs, and the installation-level groups and squadrons reorganized to better manage assets and focus on life-cycle cost management. Implementation began on new civilian position descriptions for energy managers at all levels of the organization. These new position descriptions include energy conservation, energy planning, and utility management. Within the new civil engineer installation-level organization, there now is a central point of responsibility and accountability for energy and utilities. There are 166 Air Force installations, which include Air National Guard and Air Reserve bases. There are 205 energy-related positions within the Air Force whose performance is measured by the success of their energy program and ability to meet Federal and Air Force goals.

b) Department of the Air Force Dedicated Facility Energy Organizations

(1) **HQ USAF, Energy Program Management Office (EPMO)** provides overarching Air Force energy management and is under the oversight of the Air Force’s Energy Program Manager, SAF/US, in coordination with the Vice Chief of Staff of the Air Force. The EPMO is the coordinating body to provide oversight of cross-cutting Air Force energy issues and supports all Air Force energy programs. SAF/US has delegated responsibility for the EPMO and the overarching Air Force Energy Program to SAF/IE, and day-to-day operations of the EPMO to the Deputy Assistant Secretary of the Air Force for Energy, Environment, Safety and Occupational Health (SAF/IEE).

(2) **HQ USAF, Office of The Civil Engineer (HQ USAF/A7C)** has responsibility for the Headquarters Air Force (HAF) energy program. The Asset Management and Operations Division, Energy Management Branch (HQ USAF/A7CAE) provides policy and guidance on facility energy issues, advocates for resources, and reports directly to the Air Force Civil Engineer (A7C).

(3) **Air Force Facility Energy Center (AFFEC)**, located at Headquarters Air Force Engineer Support Agency (HQ AFCESA), provides engineering, program management, and legal support to the Air Staff, MAJCOMs, and installations, on energy and potable water usage reduction, utility acquisition, and cost control to meet Energy Policy Act (EPAct) 2005, EO 13423, and Energy Independence and Security Act (EISA) 2007 goals. As the Civil Engineer Program Management Office for Energy Capital Investment Programs, AFFEC developed a five-year capital investment strategy for investing more than \$2 billion in programmed facility energy funds.

(4) **Air Force Center for Engineering and the Environment (AFCEE)**, located at Brooks City Base, Texas, provides sustainable design and development support internally to Air Force military construction project management and execution, and externally to Air Staff, MAJCOMs, and the installations. Support fields include architecture, engineering, planning, water quality, and environmental. The guidance, products, and training provided by AFCEE assist the Air Force in meeting the requirements of EPAct 05, EO 13423, and EISA 2007.

3. Training and Education. Training and education is integral to the Air Force Energy strategy and energy vision. The Air Force is emphasizing energy training for uniformed and civilian personnel and has made good progress towards training our personnel. This emphasis on training will continue as energy communication strategies are developed and rolled out. This year, we have trained over 9,598 individuals through various training and education courses. Following are highlights of energy training for FY 2009:

a) **AFFEC Energy Awareness Program provides these services:**

(1) The AFFEC Energy Express newsletter, distributed electronically every two months, provides up-to-date information to energy personnel across the Air Force.

(2) AFFEC created the publication *Air Force Facility Energy 2009* featuring energy articles from across the Air Force, and distributed 4,500 copies.

(3) AFFEC created four educational videos: “Energy Awareness,” “Renewable Energy Goals,” “Adding Renewable Energy to Your Base,” and “Utilities Privatization.” The videos are available on the AFCESA portal page and AFFEC’s community of practice. More than 350 “Energy Awareness” videos were distributed to Air Force Energy Managers in preparation for October 2009’s Energy Awareness Month.

(4) AFFEC led the campaign to encourage all major Air Force bases in the United States to sign up for ENERGY STAR’s Operation Change Out to replace incandescent bulbs with compact fluorescent bulbs. The Air Force replaced 228K bulbs, which will save an estimated \$7.5M over the lifetime of the bulbs.

(5) AFFEC press releases appeared on several national Web sites, including www.af.mil and defenseink.mil. AFFEC was also featured in *Scientific American 3.0*.

b) **AETC provided** bi-monthly energy cross-feed information to commanders MAJCOM-wide.

c) **The Air Force Institute of Technology (AFIT) Energy Manager class provided** detailed instruction to new Energy Managers on energy conservation concepts and systems, policy and guidance, programs, and project programming.

d) **HQ AMC develops** semiannual energy education and awareness training electronic publications and distributes them through command and installation leadership to installation personnel.

e) **In FY 2009, Air Force personnel attended or** participated in the following types of training:

Table E-1 Training

Air Force Energy Forum III
Air Force Institute of Technology Energy courses
Air Force Space Command AFSSO21 Workshop
Air Force Sustainable Design course
Air National Guard Energy Conference
American Ground Water Association Conference
American Water Engineering Water Workshop
Association of Energy Engineers Energy Conference
Certified Energy Manager (CEM) certification

Cradle-to-Cradle Sustainability
Defense Energy Support Center (DESC) Energy/Gas Conference
Earth Wise Systems Seminar
Energy Efficient Heating, Ventilation, and Air Conditioning (HVAC)
Energy Modeling class - Trane Trace
Energy Savings Performance Contract Technology Day
Executive Management Steering Group (EMSG) briefing
Federal Facilities Council EISA course
FEMP Energy Savings Performance Contracts (ESPC) course
FEMP Utility Energy Services Contracts (UESC) course
FEMP Renewable Energy Capabilities course
GlobalCon 2009 conference
GovEnergy 2009
Grainger Energy conference
Green Procurement Program course for warehouse buyers
Greening the Heartland conference
Ground Source Heat Pump conference
HVAC design course
Joint Services Environmental Management Conference
Leadership in Energy and Environmental Design (LEED) course
LEED v3 seminar
Lighting (General Electric) course and Lighting design course
Metering system administration course
Monthly Energy indoctrination/training
Public Service of New Mexico Energy Seminar on Hot Energy Management Ideas
Public Service of New Mexico Energy Seminar on HVAC, Boilers, and Hot Water Systems
Renewable Energy Quarterly Conference
Rutgers/McGuire Energy Conference
Solar Renewable Energy class
SQ-D Metering seminar
Wind Turbine technical briefing
Xeriscaping course

II. Energy Efficiency Performance

A. Energy intensity Reduction Performance

1. Goal Subject Buildings. Overall energy intensity reduction from the 2003 baseline for 2009 is 14.6% (FY 2003: 136,437 Btu/GSF; FY 2009: 116,529 Btu/GSF), which exceeds the 3%-per-year goal of 12% for FY 2009. This reduction was realized even though geographically-separated units were included in FY 2009 energy consumption, and privatized housing was removed from goal-excluded facilities. Both items were reported in error in FY 2008, accounting for the change from that year's

energy intensity reduction of 16.9%. This is partially due to recently revised data collection procedures implemented this year. The Air Force is in the process of determining if the 2003 baseline requires an adjustment based on these newly implemented procedures and, if warranted, will request an adjustment in FY 2010.

2. Excluded Facilities. The Air Force identified several exempt facilities. Numerous military family housing communities are privatized or in the process of privatization. These privatized housing community utility systems belong to the housing contractor who pays the cost of the utilities, thus allowing the Air Force to exclude these communities from the energy goals. Several special-purpose and testing laboratory facilities were addressed because their energy-intensive loads are driven by unique mission and operational requirements and not influenced by conventional building energy conservation measures. A list of excluded facilities is included in Section IV, Data Tables and Inventories.

3. Non-Fleet Vehicle and Equipment Fuel Use. The Air Force continues to move forward in reducing its dependence on petroleum-based products across the entire vehicle fleet. Specifically, the Air Force is reducing demand by right-/down-sizing its fleet through more aggressive acquisition of alternative-fueled, hybrid electric, and low-speed vehicles. The Air Force has been consistent over the past seven years in ensuring that 75 percent of new vehicle acquisitions are alternative-fuel-capable. The Air Force now has over 7000 E85 flex-fuel vehicles and over 1200 compressed natural gas (CNG) vehicles. Additionally, alternative fuel infrastructure continues to expand - 25 Air Force locations dispense E85, and 62 locations dispense B20. As alternative fuel consumption increases yearly, the Air Force is making significant progress meeting Executive Order 13423 mandates. Finally, to provide a data trail and improve fuel consumption, radio frequency identification (RFID) technology is being tested across the vehicle fleet at one Air Force base. Use of RFID will help to identify driver training required where vehicles are operated outside normal parameters.

B. Renewable Energy

1. Self-Generated Renewable Energy. The Air Force is proactively pursuing the development and installation of renewable energy. The following are examples of renewable energy projects implemented in 2009 at Air Force installations:

- a) **At Hickam AFB, Hawaii,** a solar photovoltaic (PV) array at the 15th LRS comprises 810 modules capable of producing 146 kW -- enough energy to power almost 30 standard homes. This system provides energy for hydrogen production and will save approximately \$43,000 per year.

- b) **Fresno ANGB**, California, structurally mounted PV cells and sunshades on the operations facility, generating 739MWh and saving over \$100,000 annually in utility charges.
- c) **Toledo ANGB**, Ohio, installed a stand-alone PV array which generated 695MWh of electricity in FY 2009. This represents 21.3 percent of the total electricity consumed by the base in FY 2009. Additional PV arrays will be operational by June 2010, bringing generation capability to 1.2 MW.
- d) **Camp Perry ANGB**, Ohio, installed a stand-alone PV array that produced 19.7MWh in its first two months of operation.
- e) **McGuire AFB**, New Jersey, had one project which installed two solar photovoltaic systems, both operational for only a portion of FY 2009. The 12.25 kW system on the base library produced 10.7MWh, and is projected to produce 15MWh during a full year of operation. The 75.5 kW solar PV array on the base medical clinic produced 54.9MWh during FY 2009, and is projected to produce 90.6MWh annually.
- f) **Eglin AFB**, Florida, installed a grid-connected solar PV system on building 102A. Operational in March 2009, the system comprises ten 200W solar panels and has produced 1.7MWh.

2. Purchased Renewable Energy. The Air Force aggressively searches for and acquires the most economical renewable energy available on the market, either by acquiring bundled renewable electricity, or through Renewable Energy Certificates (RECs). Bundled renewable electricity purchases represent 39 percent of the renewable purchases; RECs represent the remaining 61 percent. The MAJCOMs and AFCESA work together to budget for and purchase the number of RECs that balance renewable energy requirements. Increased production of on-base renewable energy has reduced the requirement for REC purchases. In FY 2009, the REC purchase price decreased by 70 percent versus FY 2008. The Air Force's renewable electricity purchases represent about 4.8 percent of the total electric usage. The following table lists the renewable electricity purchased in FY 2009.

Table E-2 Purchased Renewable Energy

Air Force Installation	Biomass (MWh)	Landfill Gas (MWh)	Geothermal (MWh)	Solar (MWh)	Wind (MWh)	Unknown (MWh)
Air National Guard (all bases)	19,034	0	0	0	0	46
Altus AFB OK	0	0	0	0	2,674	0
Arnold AFB TN	10,659	0	0	0	4,845	0
Barksdale AFB LA	2,978	0	0	0	0	0
Beale AFB CA	3,433	0	0	0	0	0
Cannon AFB NM	0	0	0	0	1,800	0
Charleston AFB SC	1,880	0	0	0	1,880	0
Columbus AFB MS	4,050	0	0	0	3,240	0
Creech AFB NV	522	0	0	0	0	0
Davis-Monthan AFB AZ	2,918	0	0	0	0	0
Dover AFB DE	1,569	0	0	0	1,569	0
Dyess AFB TX	2,353	0	0	0	0	0
Edwards AFB CA	0	0	0	0	110,112	0
Eglin AFB FL	7,047	0	0	0	3,000	0
Ellsworth AFB SD	2,572	0	0	0	0	0
F.E. Warren AFB WY	0	0	0	0	1,225	0
Fairchild AFB WA	1,569	0	0	0	1,569	0
Goodfellow AFB TX	1,500	0	0	0	0	0
Grand Forks AFB ND	5,970	0	0	0	5,970	0
Gunter Annex AL	2,250	0	0	0	0	0
Hanscom AFB MA	271	0	0	0	377	3,336
Hill AFB UT	0	0	0	0	9,000	0
Holloman AFB NM	2,922	0	0	0	0	0
Hurlburt Field FL	9,232	0	0	0	1,165	0
Keesler AFB MS	3,500	0	0	0	0	0
Kirtland AFB NM	1,750	0	0	0	1,750	0
Lackland AFB TX	8,550	0	0	0	0	0
Langley AFB VA	4,356	0	0	0	0	0
Laughlin AFB TX	1,550	0	0	0	2,592	0
Little Rock AFB AR	1,689	0	0	0	1,689	0
Little Rock AFB AR	0	0	0	0	0	0
Luke AFB AZ	1,750	0	0	0	0	0
MacDill AFB FL	4,055	0	0	0	4,055	0

Air Force Installation	Biomass (MWh)	Landfill Gas (MWh)	Geothermal (MWh)	Solar (MWh)	Wind (MWh)	Unknown (MWh)
Maxwell AFB AL	2,250	0	0	0	0	0
McChord AFB WA	1,960	0	0	0	1,960	0
McConnell AFB KS	1,231	0	0	0	1,231	0
McGuire AFB NJ	2,117	0	0	0	2,117	0
Minot AFB ND	3,104	0	0	0	0	0
Moody AFB GA	1,730	0	0	0	0	0
Mountain Home AFB ID	2,268	0	0	0	0	0
Nellis AFB NV*	0	0	0	31,772	0	0
Offutt AFB NB	5,883	0	0	0	0	0
Pope AFB NC	991	0	0	0	991	0
Randolph AFB TX	2,790	0	0	0	0	0
Robins AFB GA	7,729	0	0	0	0	0
Schriever AFB CO	0	0	0	0	11,244	0
Scott AFB IL	4,008	0	0	0	4,008	0
Seymour Johnson AFB NC	2,754	0	0	0	0	0
Shaw AFB SC	2,809	0	0	0	0	0
Sheppard AFB TX	3,000	0	0	0	10,595	0
Tinker AFB OK	0	0	0	0	24,300	0
Tonapah AFB NV	1,442	0	0	0	0	0
Travis AFB CA	3,287	0	0	0	3,287	0
Tyndall AFB FL	3,100	0	0	0	0	0
Vance AFB OK	705	0	0	0	0	0
Whiteman AFB KS	2,958	0	0	0	0	0
Wright-Patterson AFB OH	6,000	0	0	0	6,000	0
USAF A, Colorado Springs CO	5,958	0	0	0	1,700	0
CONUS Bases	6,200	0	0	0	10,962	0
USAFE (all bases)	0	0	0	0	2,236	1,643
Total	184,203	0	0	31,772	239,143	5,025

* Purchased from project on base

C. Water Conservation

The Air Force consumed 28.15 billion gallons of water in FY 2009 — a reduction of 4.67 billion gallons from FY 2008 usage. The square footage utilized to calculate the FY 2007 baseline water intensity was 612,012 thousand square feet (ksf), resulting in 55.8 gallons per square foot per year (gal/sf-y). In FY 2009, the square footage used to calculate the water intensity was 553,975 (ksf), resulting in 50.8 gal/sf-y, decreasing the intensity 8.9 percent from the FY 2007 baseline metric. (Note: The reduction in square footage

realized between FY 2007 and FY 2009 is a result of Military Family Housing (MFH) privatization.)

The Air Force is implementing stronger conservation measures to reduce landscape irrigation and encourage low water plantings. The Air Force continues to aggressively pursue water reduction initiatives to meet the new two percent-per-year intensity reduction mandate. Here are some examples for FY 2009:

1. **Lackland AFB**, Texas, purchased 75 million gallons of recycled water for use on irrigation and implemented a policy to turn off all non-recycled water irrigation systems.
2. **Maxwell AFB**, Alabama, repaired irrigation well, saving over 700 thousand gallons annually.
3. **Tyndall AFB**, Florida, evaluated watering practices in improved areas and revised their irrigation schedule to save 50.3 million gallons annually with no negative effects on green spaces.
4. **Lajes Field**, Azores, held a week-long conservation campaign to commemorate World Water Day 2009; issued daily emails to base personnel with facts, figures, and conservation tips; hosted a DoD Dependents School field trip to local water springs; and sponsored an essay/poster contest on the subject of conservation.
5. **Incirlik AB**, Turkey, replaced leaking water mains, reducing water loss by eight percent.
6. **US Air Force Academy**, Colorado, repaired the water system in the Vandenberg cadet's hall and upgraded all fixtures; anticipated annual water savings of 1.2 million gallons.
7. **Hanscom AFB**, Massachusetts, received funding for repairs of approximately 6150 feet of steam and condensate pipes, with anticipated annual water savings of around 10.9 million gallons and a recovery heat loss value of 7316MWh.
8. **Hickam AFB**, Hawaii, installed automated irrigation systems at various buildings to replace manual watering, reducing the irrigation requirement by 8.8 million gallons per year.
9. **Misawa AB**, Japan, installed low-flow showerheads in dormitories that limit water flow rates to 2.25 gallons per minute, resulting in annual water savings of 4.7 million gallons.

10. Cheyenne Mountain Air Force Station, Colorado, installed waterless urinals and low-flow flush valves in two facilities. The low flow flush valves limit the water flow to 1.6 gallons per flush. The installation is expected to have an annual water savings of 540 thousand gallons.

11. MacDill AFB, Florida, redesigned portions of their water purification system, capitalizing on recirculation rather than flushing to maintain water purity, which reduced consumption by over two million gallons per year.

D. Metering of Electricity Use

The Air Force developed an economical and life-cycle cost-effective metering strategy to satisfy the EPA05 mandate of installing electric meters on facilities by 1 October 2012, where economically feasible. In FY 2008, the Air Force invested over \$10 million in electric meter installations. In FY 2009, over 90% of appropriate facilities are metered electrically, and the Air Force is on track to complete on or ahead of the 1 Oct 2012 deadline. The Air Force Civil Engineer (CE) will acquire a NextGen software platform that encompasses all CE functions and will incorporate the metering program to allow bases, Commands, and Air Staff to seamlessly review meter and other energy-related data. This system will provide an essential analysis tool for evaluating facilities' energy profiles, identifying problem areas, and developing good energy projects to make progress toward goals. As a result of the NextGen initiative, purchase of software to link base-level advanced metering systems was placed temporarily on-hold, but not the purchase and installation of the advanced meters. At this time, CE, in cooperation with Communications, is developing the statement of work for the metering software. The Air Force anticipates approval and award of this software package contract in FY 2010.

E. Federal Building Energy Efficiency Standards

Of the 98 designs started in FY 2009, 100 percent will be life-cycle cost-effective and 30 percent more efficient than required by relevant codes, such as the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90.1, or the International Energy Conservation Code. A complete listing of the projects is part of the Air Force Data Management Report.

III. Implementation Highlights of FY 2009

A. Life-Cycle Cost Analysis (LCCA)

Life cycle cost analysis was used on all new Air Force construction projects and retrofit projects, including ESPC, UESC, and Energy Conservation Improvement Program (ECIP) projects. Examples include:

- 1. Arnold AFB, Tennessee**, replaced interior lighting serving Facility 879 and the surrounding area, resulting in an annual savings of approximately 400MWh.
- 2. Elmendorf AFB, Alaska**, reduced energy consumption and increased efficiency by retro-commissioning 21 buildings. Depending upon the age of the building, retro-commissioning can often resolve problems that occurred during design or construction, or address problems that have developed throughout a building's life. These changes have yielded up to a 25 percent reduction in energy consumption in similar projects. Elmendorf is projected to save 23,665MWh per year.
- 3. Langley AFB, Virginia**, studied alternatives to an HVAC condenser loop with geothermal heat pumps, because the cooling tower serving the loop had to be demolished for new facilities. Life cycle cost was derived for three options: replace the tower; use the water loop in Back River; or install ground source heat pump (GSHP) wells. The GSHP alternative was selected, though the initial investment was significantly higher.
- 4. Scott AFB, Illinois**, upgraded HVAC controls in facilities across the base. Central control of building temperatures will allow consistent monitoring and reduce energy use.
- 5. Scott AFB, Illinois**, the HQ Air Mobility Command performed audits at its installations, completing over 30 percent of its total facility square footage. The comprehensive audits identified over 300 potential energy conservation improvements, ranging from no/low cost measures to substantial infrastructure investment.

B. Retrofits and Capital Improvement Projects

- 1. Aviano AB, Italy**, installed occupancy sensors at the Fire Crash Station, building 1434, in bathrooms and installed light switches in other building areas, because all building lights were controlled by one main switch. Installing these devices resulted in estimated annual energy savings of 15MWh.
- 2. Buckley ANG, Colorado**, repaired and upgraded their EMCS base-wide. This included replacing pneumatic controls, upgrading digital control managing system

firmware, and expanding existing controls into all HVAC systems throughout the identified facilities. Connectivity was achieved through a central monitoring station capable of graphic interface with Buckley AFB, expandable to control Colorado Air National Guard's geographically-separated units. Savings are estimated to be 1516MWh per year.

3. Osan AB, Korea, replaced 873 400W metal halide light fixtures with 200W induction lighting fixtures at 25 hardened aircraft shelters (HAS). Annual savings will be 1833MWh.

4. Minot AFB, North Dakota, installed a new GSHP system in Facility 202 with an annual savings of 574MWh. Windows were replaced with insulated windows at the west and south ends of Facility 167 and in Facility 768 for a total annual savings of 59.8MWh.

5. Hill AFB, Utah, installed dual technology lighting occupancy sensors in building 1102, Air Logistics Center Headquarters, resulting in annual energy savings of 9.6MWh per year.

6. Vandenberg AFB, California, implemented a lighting retrofit (T12 to T8) in 108 facilities (11,500 fixtures). In many spaces, occupancy sensors were included. In addition, high-intensity discharge lighting in high bay applications was replaced with 6-lamp T8s with occupancy sensors (fixture-integrated).

7. Los Angeles AFB, California, installed 13 skylights and daylight sensors, and replaced 125 T12 lamp fixtures with T8 lamp fixtures in a warehouse. In addition, the base retrofitted 50 toilets and urinals with low-flow devices; replaced high-intensity discharge (HID) lighting in the gym with compact fluorescent lamps along with daylight sensors; and replaced tennis court lighting with high efficiency fluorescents.

8. McGuire AFB, New Jersey, capitalized on available sunlight by converting an existing roof structure to day lighting-compatible by installing over 40 skylights. This measure is one of four that will help to make this 30,774-square-foot facility the first energy-neutral facility in Air Mobility Command.

9. Cannon AFB, New Mexico, reduced operating hours for wastewater treatment sequencing bath reactor (SBR) blowers from nine to three hours per day -- a direct result of installing dissolved oxygen probes in the two SBRs and the sole sludge digester basin. This reduced running time equates to an annual savings of 232.9MWh.

10. Cannon AFB, New Mexico, replaced nine Seasonal Energy Efficiency Ratio (SEER) -8 direct exchange (DX) units, ranging from two to 60 tons each (total: 196

tons) with new SEER-13 DX units, realizing energy savings of approximately 27MWh and demand savings of 113kW per month.

C. Use of Performance Contracts

The Air Force continues to exceed the energy intensity reduction goal and used direct funding of \$368M for energy projects in FY 2009 to meet requirements of Executive Order 13423. While no EPSC or UESC contracts were awarded in 2009, the Air Force continues to solicit these contracts and evaluate their use wherever feasible. Future Air Force POM initiatives include a \$250M energy portfolio to allow the Air Force to continue to directly fund energy projects and meet energy mandates and goals.

D. Use of Energy Star® and Other Energy-Efficient Products

The Air Force continues to pursue a policy that all purchases of computers, printers, and copiers will be specified as Energy Star®-compliant, as stated in EPA Act 05. Specifically, the AF Information Technology Commodity Council (ITCC) Quarterly Enterprise Buy (QEB) program is the source for more than 75 percent of the desktop, laptop, and computer monitor purchases across the Air Force. The program was implemented in 2003 and requires Energy Star certification on all products purchased from that date.

For facility and construction projects, design specifications for new and retrofitted equipment are reviewed to ensure they are in the upper 25 percent of efficiency or Energy Star®-compliant as stated in Unified Facilities Criteria (UFC) 3-400-01, Energy Conservation.

E. Sustainable Building Design and High Performance Buildings

The Air Force Sustainable Design and Development (SDD) Policy was signed on 31 July 2007, expanding and reinforcing existing policy relating to sustainable development concepts in planning, design, construction, and operation of facilities and infrastructure. Additionally, Engineering Technical Letter (ETL) 08-13, *Incorporating Sustainable Design and Development (SDD) and Facility Energy Attributes in the Air Force Construction Program*, was published in September, 2008, to provide guidance, recommendations, and requirements to achieve sustainable goals and energy reduction through the construction of new high-performance and sustainable Air Force facilities.

The SDD Policy states that starting in FY 2009, 100 percent of each MAJCOM's military construction shall be designed to be capable of achieving Leadership in Energy and Environmental Design (LEED) Silver certification and each MAJCOM shall select five percent of the total military construction for formal LEED registration/certification. This requirement will increase to ten percent in FY 2010. Currently, there are approximately 250 Air Force military construction projects registered with the U.S. Green Building Council (USGBC) LEED program. To date, six buildings and 612 residential units have

achieved formal LEED certification. It is projected that 37 percent of the FY 2009 projects will be formally certified. Below is a sampling of the Air Force exceptional projects:

1. Air Force Weather Agency Headquarters, Offutt AFB, Nebraska. This is the first Air Force building to achieve the USGBC LEED Gold certification. It also received the White House Closing Circle Award and the Air Force Honor Award for Sustainable Design. This structure is designed to use approximately 50 percent of the energy of a typical, similarly-sized office building. Energy efficiency has been achieved with low-wattage light fixtures/lamps, energy-efficient electric ballasts, daylight illumination, highly-efficient window glazing, and a ground source heat pump HVAC system. Water conservation efforts, saving approximately 550,000 gallons per year (30 percent reduction in potable water use) have been implemented through outdoor irrigation elimination (native plant selection), waterless urinals, low-flow showerheads, and ultra-low-flow lavatory faucets. Other sustainable measures include the diversion of 95 percent of construction waste from landfills, to achieve a total of 41 LEED points.

2. Fitness Center/Energy and Sustainability Demonstration Center, Tyndall AFB, Florida. This \$16.6 million, two-story, 71,336-square foot fitness center is designed to achieve 42 percent energy reduction relative to the industry energy standard, exceeding the requirements of EPAAct05 by 12 percent. Energy efficiency will be achieved through the use of high-efficiency cooling and heating systems, increased insulation, spectrally-selective glazing, and the use of Energy Star- and FEMP-rated products. Water conservation efforts have been incorporated into the design, including low-flow toilets, urinals, and shower systems. Other sustainable measures include green power derived from alternative energy sources, harvesting of natural daylight, and a solar hot water system. The sustainable aspects have put the facility on track to achieve 54 LEED points, which would result in a prestigious LEED Platinum certification level upon completion of construction.

3. Restore/Repair Hurricane Damaged MFH, Keesler AFB, Mississippi. This \$282M project is the largest military family housing project in Air Force history. Currently, 876 housing units are complete and 149 housing units are under construction. Of the completed housing units, 612 have achieved LEED Silver certification. Those still under construction will be LEED Silver-certified upon completion. In all of the housing units, energy efficiency has been addressed through use of Energy Star appliances, high-efficiency lighting, SEER-16 HVAC units, radiant barriers in the attics, high R-value windows, and air-tight building envelopes. Testing has shown that these new housing units are 30-60 percent more energy-efficient than conventionally-constructed units. Water conservation efforts have been addressed through the use of high-efficiency water fixtures and fittings, drought-tolerant sod and

plants, and drip irrigation with rain sensors. These water savings efforts have resulted in a 30 percent reduction in indoor water usage and a 50 percent reduction of overall irrigation demand. Other sustainable measures include proper site selection, use of existing infrastructure, use of Green Label products, minimum efficiency reporting value (MERV) 11 filters in air handlers, outdoor direct venting of water heaters, exhaust fans, and construction waste diversion. Upon project completion, Keesler AFB will be the largest LEED for Homes-certified project in the nation.

4. Child Development Center, MacDill AFB, Florida. This \$7M facility is designed to reduce annual energy consumption by approximately 30 percent in accordance with the requirements of EPAAct05. Energy efficiency has been addressed through the use of Energy Star-rated equipment, high-efficiency lighting, high R-value glazing, SEER-16 HVAC units, MERV-13 HVAC filters, and an air-tight building envelope. Water conservation efforts have been implemented through the use of high-efficiency water fixtures and fittings, drought-tolerant sod and native plants, and irrigation with rain sensors. These water savings efforts will result in a 20 percent reduction in indoor potable water usage and a 50 percent reduction in overall irrigation demand. Other sustainable measures include preferred parking for low-emitting and fuel-efficient vehicles, diversion of 75 percent of construction waste from landfills, use of recycled materials, and purchase of regional materials. The project is on track to achieve 37 LEED points, which will result in an LEED Silver certification award upon completion of construction.

5. Renovate Historic Dormitory, F.E. Warren AFB, Wyoming. This \$8.6M, two-story, 27.3 ksf renovation of a 100-year-old historic dormitory is designed to reduce annual energy consumption by approximately 42.5 percent, exceeding the requirements of EPAAct05 by 12.5 percent. Water conservation efforts have been implemented through the use of low-flow toilets, urinals, and showers. These water-saving efforts will result in a 20 percent reduction in indoor potable water usage. This renovation also includes asbestos and lead-based paint abatement, disposal of lead-contaminated dust accumulated in the attic and interstitial spaces between floors; structural masonry upgrades to meet current seismic construction requirements; and antiterrorism,/force protection design features. The project is on target to achieve LEED Silver certification upon completion of construction.

6. Base Realignment and Closure (BRAC) Constant Overwatch ESF/GOV/POV Check, Canopy, Gatehouse, F.E. Warren AFB, Wyoming. This \$4.9M entry control facility includes a security gatehouse, identification check stations, overhead canopy, commercial vehicle inspection facility, overwatch, final denial barriers, and associated roadways. The gate is designed to reduce annual energy consumption by 30 percent in accordance with the requirements of EPAAct05. Water conservation efforts and water efficient landscaping will result in a 72 percent reduction of potable water use. The demolition of a large asphalt parking area which

will be restored to native grassland, along with the minimization of new pavements, will result in a net decrease in impervious area. Upon completion of construction, these sustainable efforts are on track to achieve 29 LEED points and an LEED certification.

7. New Construction Large Crash Fire Rescue Station Facility, Travis AFB, California. This \$12.1M project will replace a 45-year-old deteriorated, non-energy efficient, crash/rescue station that also serves as one of three structural fire stations required to meet base response times. The new facility will house 74 assigned personnel, accommodate training for 48 co-located reserve personnel, provide office spaces, and meet base storage requirements. Currently under design, the completed facility will be submitted for LEED Gold certification under the LEED NC v2.2 rating system. Energy efficiency will be addressed through the use of Energy Star appliances, high-efficiency lighting, an HVAC heat-recovery system, system controls, and day lighting. Other sustainable measures to be incorporated into the design include alternate transportation accommodations, heat island reduction, high-efficiency water fixtures and fittings, and drought-tolerant sod and plants. Further, the construction process will maximize regional material use, recycled content, use of existing infrastructure, and construction waste management.

8. American Recovery and Reinvestment Act-Funded Dormitory, Keesler AFB, Mississippi. This structure is in the preliminary design stage and is expected to consume approximately 70 percent of the energy of a typical, similarly-sized dormitory building. Energy efficiency will be addressed through use of R-30 roof insulation, R-14 wall insulation, and highly-efficient window glazing. Other sustainable measures will include the use of high efficiency gas-fired boilers that will exceed ASHRAE 90.1 baseline gas use efficiency, variable speed pumping to minimize hot/cold water pump energy consumption, and exhaust air energy recovery to precondition outside air prior to passing through active dehumidification coils. Upon completion of construction, these sustainable efforts are on track to achieve 38 LEED points and a LEED Silver certification.

F. Energy Efficiency/Sustainable Design in Lease Provisions

Under the Federal Property and Administrative Services Act ("Property Act"), the General Services Administration (GSA) is the sole authority for leasing general-purpose urban office space in the United States for any governmental entity, including the Air Force.

G. Distributed Generation

1. **Maxwell AFB**, Alabama, completed a micro-grid study with the help of the Sandia National Laboratory
2. **Vandenberg AFB**, California, is engaging the local utility provider, Pacific Gas and Electric, for a DoD/Edison Electric Institute (EEI) initiative (instituted in FY 2009) total energy portfolio assessment. This initiative will address not only energy reduction strategies and projects, but also demand-side management programs and additional generation, be it renewable or conventional. Vandenberg has a unique opportunity because of the nearby South Vandenberg power plant.

H. Industrial Facility Efficiency Improvements

1. **Lajes AB**, Azores, is blending well water with water treated by the water treatment plant. The estimated savings is 30 million gallons per year, or \$200K. An additional benefit is the reduced run-time for the water treatment plant, resulting in some electrical savings.
2. **Arnold AFB**, Tennessee, replaced an existing service air system serving the Engineering Test Facility (ETF) test area. The project involved replacing and “right-sizing” the compressors and other air system components. The installation resulted in an estimated annual savings of approximately \$500K.
3. **Andersen AFB**, Guam, programmed the chiller at building 21003 for chilled-water temperature reset, resulting in annual energy savings of 233.6MWh.
4. **Charleston AFB**, South Carolina, replaced two chillers at building 324, a 40-ton chiller at building 58, and one boiler and two multi-zone air handler units at building 4450.

APPENDIX F: DEPARTMENT OF THE NAVY

I. Management and Administration

A. Energy Management Infrastructure

1. Senior Agency Official. Mr. Roger M. Natsuhara, acting Assistant Secretary of the Navy for Installations and Environment (ASN (I&E)), is the designated senior Department of Navy (DON) official for Energy.

2. Agency Energy Team.

- a) Mr. Byron Paez is Chief of Staff for the Naval Energy Office, reporting to the Undersecretary of the Navy. Mr. Roger M. Natsuhara, Principal Deputy Assistant Secretary of the Navy for Installations and Environment (PDASN (I&E)), is designated as the Chairman of the Department of Navy Shore Energy Policy Board. Mr. Chris Tindal is the Deputy Director for Renewable Energy, Naval Energy Office (PDASN I&E).
- b) Major General Eugene G. Payne, Jr., Assistant Deputy Commandant, Installations and Logistics (Facilities) oversees development, management and execution of the Marine Corps Facilities Energy and Water Management Program. Captain (USN) Anthony Ermovick, Head, Facilities Branch (HQMC LFF), provides direct program support and develops guidance as appropriate. Mr. Scott Houldsworth, HQMC LFF, serves as the Marine Corps Facilities Energy Manager.
- c) Rear Admiral Mossey is the Vice Commander of Navy Installations Command and Director, Shore Readiness Division (N46) on the Chief of Naval Operations staff. Captain Ken Branch is the Deputy of Shore Readiness Division (N46). Lieutenant Commander Anthony Conley represents the Commander Navy Installations Command (CNIC), and serves as the Utilities Program Manager and Task Force Energy shore working group coordinator.
- d) Captain Jim Brown is the Chief, Navy Energy Coordination Official on the Chief of Naval Operations staff.
- e) Mr. William Tayler, Director of Energy Development, Naval Facilities Engineering Command (NAVFAC).

B. Management Tools

Marine Corps released its Ten by '10 Facilities Energy & Water Management Campaign Plan in April 2009. The Campaign plan provides an overarching framework, direction, actions, and metrics necessary for Commands to perform planning, programming, and

management functions related to the use of energy and water resources on Marine Corps installations. To sustain management focus, address energy and water management issues and create a forum for information exchange, Marine Corps Facilities/Public Works Officers and senior energy managers attended regional meetings with key representatives from Marine Forces Command (MARFORCOM), Marine Forces Pacific (MARFORPAC), Marine Corps Installations East (MCIEAST), Marine Corps Installations West (MCIWEST) and NAVFAC. A wide variety of topics were discussed including strategic planning, Leadership in Energy & Environmental Design (LEED), Energy Star Buildings, metering implementation, and water resource management.

Commandant of the Marine Corps, Gen. James T. Conway along with the honorable Raymond E. Mabus, Secretary of the Navy, hosted and headlined a one-day Energy Summit on August 13, 2009. The topics discussed ranged from cutting back on inefficient energy use on the battlefield, operating in an expeditionary environment, energy challenges at installations and attempts to attain self sufficiency and sustainability. The summit was open to the public and titled "Lightening the Load - Reducing the Footprint in the Expeditionary Environment - A National Security Imperative for Success.

Chief of Naval Operations, ADM Gary Roughead, established Task Force Energy to coordinate energy strategy across shore facilities and weapons platforms. A Naval Energy Forum was held in October 2009 during which, the CNO, CMC and SECNAV all emphasized the strategic importance of energy security, energy and water intensity reduction, and alternative energy generation for tactical operations and shore infrastructure. SECNAV established aggressive renewable and alternative energy goals in addition to Congressional mandates for energy efficiency, consumption, and carbon footprint reduction goals. Navy has programmed funds in FY 2011 to leverage American Recovery and Reinvestment Act energy investments as a first step towards achieving these goals.

1. Awards (Employee Incentive Programs). The Secretary of the Navy (SECNAV) hosts an annual energy awards ceremony to recognize outstanding achievements in the efficient use of energy. Five SECNAV awards were issued to the top installations in the categories of facilities and industrial installations. The SECNAV award winners were: Naval Base (NB) Kitsap, Washington; Submarine Base (SUBASE) Kings Bay, Georgia; Naval Undersea Warfare Center (NUWC) Keyport, Washington; Marine Corps Air Station (MCAS) Miramar, California; Marine Corps Recruiting Depot (MCRD) Parris Island, South Carolina. In addition, installations with an aggressive and successful program were recognized as achieving Platinum (highest) or Gold (second highest) level rankings for their energy programs.

DON installations and individuals also received two Presidential Energy and Water Management awards and eight awards from the Department of Energy, Federal Energy

and Water Management Program. The Presidential award winners were: NB Kitsap, Washington; and Naval Air Station (NAS) Oceana, Virginia. The Federal Energy Management Program (FEMP) award winners were: MCAS Miramar, California; NB Ventura County, California; Naval Air Warfare Center (NAWC) China Lake, California; Marine Corps Base (MCB) Kaneohe, Hawaii; MCB Camp Pendleton, California; NB Kitsap, Washington (two awards); and an exceptional service award for NAVFAC Northwest in Silverdale, Washington.

2. Performance Evaluations. The Navy created an agency-wide standard description of the roles and responsibilities of its energy managers to define all the elements of the energy management function at the installation level and the regional level. These roles and responsibilities are used in existing job series to set the performance expectations. DON continues to effectively employ energy management services provided by Resource Efficiency Managers (REMs). REMs are expected to produce energy savings equal to twice their cost, contributing at least a 2:1 return on investment.

3. Training and Education. In FY 2009, over 200 personnel received training in areas specified in statute, regulations, and Executive Orders, to include; Energy Managers, Energy Conservation Officers, Maintenance Mechanics, Planners, Equipment Mechanics, Facilities Supervisors, Accountants, Admin. Officers, Project Managers, Assistant Public Works Officers, Architects, Environmental Engineers, Electrical Engineers, Division Directors, Controls Mechanics, Civil Engineers, Budget Analysts, Boiler Plant Personnel, Regional Energy Managers, and Utility Engineers. Training opportunities included but are not limited to: Operations and Maintenance, Controls, Design, Lighting, Electric Codes, Renewable Energy, LEED Training, Natural Gas Seminars, Water Resource Management, Steam Plant Improvement, Renewable Energy, Energy Accounting, Energy Savings Performance Contracting, Measurement and Verification, Training on Equipment found in Federal facilities and Certified Energy Manager (CEM) Training. Approximately 170 DON personnel have registered as “Certified Energy Managers” since the training program’s inception. DON has leveraged industry and academia to enhance experiences of energy professionals through workshops such as GovEnergy, which present opportunities to obtain knowledge and insights on state of the art energy technologies, practices, strategies for meeting DON program objectives and methodologies for measurement and verification of progress toward goals.

The sources of training include Federal, academic, and commercially available resources such as the: University of North Carolina, Department of Energy (DOE), Association of Energy Engineers, Johnson Controls, various utility companies, Temcon, Allen Bradley, Northwest Energy Efficiency Council, Sandia National Labs, American Institute of Architecture, National Technology Transfer, Inc, Navy Civil Engineer Corps Officer School, American Solar Energy Society, University of

Wisconsin, Federal Energy Management Program, U.S. Green Building Council, American Water Works Assoc., Florida Solar Center, General Services Administration, and the GovEnergy 2009 workshop.

DON expanded its energy awareness program beyond energy professionals to include all personnel to promote awareness and stress the importance of reducing energy consumption. A variety of media alternatives are available as training sources for policy, publications and program execution tips for energy managers, as well as materials targeted to educate and involve the entire DON community; military, civilian, contractor, and dependents. Timely dissemination of key information is achieved through the distribution of a monthly newsletter titled *Energized*, and weekly flash emails to energy managers and Regional Commands. Promotional materials are distributed to engage all personnel in discussion of energy management practices necessary to assist DON in meeting energy goals.

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

FY 2009 DON energy expenditures were \$121K less than FY 2008 due to effective energy management and declining fuel oil prices. Energy intensity is down 30% from 1985 and 15.2% from the FY 2003 baseline. In current year dollars, energy costs are \$131K less than the original 1985 baseline despite a period of the most dramatic energy price increases in history.

1. Goal Subject Buildings. FY 2009 DON energy expenditures were \$121K less than FY 2008 due to effective energy management and declining fuel oil prices. Energy intensity is down 30% from 1985 and 15.2% from the FY 2003 baseline. In current year dollars, energy costs are \$131K less than the original 1985 baseline despite a period of the most dramatic energy price increases in history.

2. Excluded Facilities. DON excludes mission critical, concentrated energy use transmitters, simulators, cold iron support to ships, and some private party facilities as authorized by the DOE criteria guidelines. A list of exempt facilities is provided in paragraph IV.

3. Non-Fleet Vehicle and Equipment Fuel Use. Non-fleet vehicle and equipment fuel use is captured by the Federal Automotive Statistical Tool (FAST) reporting system and reported separately to DOE.

B. Renewable Energy

DON received \$208M in American Recovery and Reinvestment Act (ARRA) funds for renewable energy development for construction of approximately 20MW of solar electric generation on DON lands, increasing solar generation by 500%. DON established renewable program offices to award Power Purchase Agreements (PPA), Energy Joint Ventures (public/private) and Enhanced Use Lease (EUL) contracts leveraging private sector funds to construct renewable plants on DON land. The renewable tax credits for developers significantly contribute towards improving cost/benefit ratios of renewable technology. A \$200M, 40MW solar multiple award contract (MAC) is expected to be awarded in FY 2010.

There are two primary renewable energy goals for DON to comply with: The Energy Policy Act of 2005 (EPAct 2005) and the 10 U.S.C. section 2911(e). EPAct 2005 requires 3% renewable electricity consumption, increasing to 7.5% by 2013. 10 U.S.C. section 2911(e), strives for 25% renewable energy produced or procured by DoD by 2025.

In FY 2009, DON consumed renewable electricity equivalent to 0.6% of annual electricity consumption (EPAct 2005 goal). These sources include wind and solar electric generation. DON is making significant progress toward the 10 U.S.C. section 2911(e) goal, generating 18.9% of electricity (including generation of electricity on DON land, electricity sold to the grid, and thermal renewable energy such as solar hot water and ground source heat pumps) from renewable sources.

Research, Development, Test, and Evaluation (RDT&E) funds for renewable systems have been used to validate innovations and manage transitions of viable technologies to deployment on DON installations. In FY 2009, the DON placed emphasis on thin film solar and other building level renewable systems, energy storage, and ocean renewable energy technologies.

1. Self-Generated Renewable Energy. DON is increasing generation of renewable energy, adding approximately 20MW of solar electricity generation, and installing a 1.5 MW wind turbine at Marine Corps Logistics Base (MCLB) Barstow, California. DON is operating the largest wind/diesel hybrid plant in the world at Naval Station (NAVSTA) Guantanamo Bay and two of the largest federal photovoltaic systems in the United States at NB San Diego and Marine Corps Air Ground Combat Center (MCAGCC) Twenty-nine Palms, California.

In FY 2009, DON generated and consumed 15,395 MWh of renewable electricity and 675,000 MBtu of ‘new’ renewable thermal energy. Including all renewable energy sources (electric and thermal), DON is consuming the equivalent of 3.2% of its total electricity from renewable sources.

The Navy’s geothermal plant at NAWC China Lake, California, delivered 1.2 million MWh of electricity in FY 2009, to the state electric grid. Most of this resource was developed prior to 1990 and does not contribute to the 3% EPAct 2005 goal which is aimed at fostering new development. The generation at China Lake does provide credit toward the DoD renewable goal, and is the vast majority of the 18.9% DON renewable energy achieved to date. The next largest contributor is the trash to energy plant at Norfolk Navy Shipyard which contributes 1.4% of the DON total renewable generation. Projects made operational in FY 2009 include:

Table F-1 Operational Projects of FY 2009

State	Installation
Wind Energy	
CA	MCLB Barstow
Photovoltaic	
AZ	MCAS Yuma (two applications)
CA	NAWS China Lake
CA	NB Ventura County
CA	NWS Seal Beach
CA	MCAGCC Twenty-nine Palms (four applications)
CA	MCRD San Diego
CA	MCB Camp Pendleton
FL	NAS Whiting Field
HI	MCB Hawaii
Japan	NAF Atsugi
NC	MCAS Cherry Point
NH	NSA Portsmouth
WA	NB Kitsap (4 applications)
WA	NAS Whidbey Island (2 applications)
Solar Thermal	
CA	NB Point Loma
CA	NAS Lemoore

2. Purchase of Renewable Energy. DON installations in Washington State purchased 20,830 MWh of renewable wind energy in FY 2009 from Bonneville Power Administration. This is the second year these installations have received renewable electricity off the grid.

C. Water Conservation

DON consumed 67.8 gallons of water per gross square foot (GSF) a 7.9% reduction from the FY 2007 baseline, exceeding the 4% reduction goal. Most progress this year was made through wider implementation of low flow showerheads, faucets and other low cost initiatives. DON installations also implemented a number of extensive water

conservation projects, repairing and replacing valves and leaking water and steam lines. NAS Whidbey Island, Washington replaced their entire water distribution system. SUBASE Kings Bay modernized their water treatment system. DON spent \$78.4M on water consumption in FY 2009.

DON purchased water-conserving products, including:

Table F-2 Purchased Water conserving products

Product	Quantity
Irrigation Controls	72
Low-flow and waterless urinals	305
Urinal flush valves	119
Urinal flushing controls	15
Low-flow toilets	518
Dual flush toilets	68
Low-flow shower heads	5025
Shower timers	10
Faucet Aerators	7248
Efficient Faucets	603
Valves	201
Freeze Protection Devices	385
Instant water heaters for sinks	12

D. Metering of Electricity Use

DON has electricity meters on over 15,000 buildings. These facilities account for about 64% of all the electricity consumption within the Department, however only 1,700 of these meters will meet the advanced metering requirements of EAct 2005. DON awarded projects to install 8,900 advanced meters and metering systems at various Marine Corps installations and in the Navy regions Northwest, Southwest, Washington and Southeast regions in FY 2010. This will bring advanced metering systems to 23% of facilities.

75% of the AMI projects are wireless and provide full two-way control at each base and across the respective regions. As a result of extensive partnering sessions with local utilities, the Navy will be able to participate in Demand Response events with the utility, thereby reducing consumption and costs with net positive impact in the region.

Additionally, DON awarded a \$1M AMI project with O&MN funding at Pacific Missile Range Facility (PMRF) Barking Sands, Hawaii. This project will be 100% wired using a fiber optic backbone communicating with 66 advanced electric and 33 water meters to a local Data Acquisition Server (DAS). It is anticipated that an AMI project for Hawaii

(Naval Station Pearl Harbor and Hickam AFB) will be awarded with ARRA funding this year as well. This project will establish a regional DAS that will communicate with the local DAS at Barking Sands.

DON will start streaming meter data live at its first pilot site at Naval Base Ventura County in December. This data will be pulled from three sites: Port Hueneme, Point Mugu and San Nicholas Island, from electrical and mechanical (gas, steam, and water) meters. Data will be recorded every fifteen minutes and reported every four hours.

CNIC requires a secure wireless network called PSNet to collect metered data and other facility systems data such as fire alarm, security cameras and digital controls for Heating Ventilation and Air Conditioning. Navy is developing strategies to install advanced metering systems capable of interfacing with PSNet and the Navy Marine Corps Internet to bring energy use data from the meter to a data warehouse and to all desktop computers to make use of the data for billing and energy management purposes.

E. Federal Building Energy Efficiency Standards

Naval Facilities Engineering Command issued Engineering Construction bulletin (ECB 2008-1) that required facilities military construction projects to meet LEED Silver and EAct 2005 requirements. The policy objective is to strive to achieve 30% below the ASHRAE baseline, or the most life cycle cost effective percent reduction possible, as required by EAct 2005. DON is expecting 99% of the FY 2010/11 military construction facilities to meet or exceed Federal standards and achieve life cycle cost effective sustainable designs.

F. EISA Covered Facilities and Energy Managers

DON has designated one energy manager per installation for those installations with sizeable utility costs. Additional support is being provided by increasing contracted energy management services using REMs. DON recommends one energy manager or REM per every \$10M in energy costs.

Navy awarded \$8.3M in energy audit contracts in FY 2009 to audit 100% of facilities in the Mid-Atlantic, Washington D.C, Southeast, and Marianas regions. DON is exceeding the requirement to audit 25% of installations square footage (or energy use) annually. These audits will produce energy projects for implementation in FY 2011 and beyond.

III. Implementation Highlights of FY 2009

A. Life Cycle Cost Analysis

All DON energy projects (centrally funded and financed) are required to evaluate savings on a life cycle basis. Projects submitted utilize the National Institute of Standards and Technology (NIST) publication handbook 135 and Department of Energy (DOE) energy discount factors as guidance. The NIST guidance and DOE's Building Life Cycle Costing software make up the standards for determining project economics. Sustainable development projects use life cycle costing methodology and follow the whole building design guide. Purchasing agents are encouraged to review guidance and tools available from FEMP, EPA Energy Star, GSA and DLA for purchasing energy efficient products.

B. Retrofits and Capital Improvement projects.

Retrofits continue to be performed using primarily alternative financing, and to a lesser extent, but through use of installation funds. Implementation of Energy Savings Performance Contracts (ESPC) and Utilities Energy Savings Contracts (UESC) did not meet targets necessary to achieve annual 3% energy intensity reductions. ESPC development and implementation process was examined in a lean six sigma project that recommended project management be led by NAVFAC Operations with assistance from Utilities and Energy subject matter experts.

In addition, installations will be required to develop energy plans to include projects necessary to meet targets. These changes coupled with significant investment in ARRA funds will put DON back on target to implement the necessary volume of energy projects to meet annual reductions in FY 2010. However, DON will need to continue to increase investments in energy efficiency and renewable energy projects to 'catch up' for prior lack of implementation necessary to meet prior year targets. The situation is improving as DON awarded \$143M in financed energy projects, \$43M more than last year, but \$100M short of the amount necessary to keep on track with energy reductions. Energy Conservation Investment Program (ECIP) projects focused on installing solar hot water for swimming pools, installing ground source heat pumps, and design of a 400 kW wind farm at Naval Base Ventura County San Nicholas Island. Discussion of financed retrofit projects continues in section C below.

military construction requests now include costs to cover LEED and EPAAct requirements as standard business practice. DON is budgeting for sustainable construction in Guam facilities and 69% of all facilities projects. Policy includes achieving life cycle cost effective reductions below the ASHRAE 90.1-2004 standard. DON continues to invest all ECIP military construction funds in renewable projects and is poised to increase implementation of wind and solar energy should Congress increase appropriations.

All Marine Corps new building construction (starting with the POM 2012 military construction program) and major building renovation projects involving complete roof

replacements (starting with all FY 2010 Facility Sustainment Restoration and Modernization projects, where design requirements will not substantially impact project execution) will incorporate roof-top solar thermal, photovoltaic, and/or energy reducing coatings technologies into the project. The most cost effective single or combination of technologies should be used to maximize the amount of hot water and electricity provided to the building through renewable energy resources.

C. Use of Performance Contracts

Based on past projects, DON estimates it needs to invest \$250M/yr in energy efficient equipment (financed + appropriated) in order to meet legislative and Executive Order energy reduction goals. UESC and ESPC are invaluable financial mechanisms to fund energy efficiency measures.

DON awarded \$144M financed energy projects that will provide about 812,000 MBtu annual energy savings once constructed. A few examples follow: A 250 kW solar array was awarded at Naval Base, Guam. This \$16M ESPC project will provide solar electricity to the installation reducing the overall electricity purchase from the local utility by over 6,350 MWh annually.

Naval Station Jacksonville awarded a \$17.2M UESC project to upgrade numerous inefficient utility systems including lighting, HVAC, motors and water conservation measures. The project, once completed, will reduce energy and water consumption aboard the Naval Station by 65,104 MBtu and 14.9 million gallons of water which, when paid off, will yield over \$2M in annual utility costs.

Naval Station Oceana implemented an ESPC worth \$50M to install ground source heat pumps throughout the installation. This follow on to a similar FY 2003 award at their Dam Neck Annex is projected to reduce total annual energy consumption on the installation by over 155,000 MBtu and water consumption by 19.5 million gallons. The project will reduce annual electricity purchases by over 6,200 MWh and, once paid off, will yield \$3.6M in annual utility cost reductions.

D. Use of Energy Star® and Other Energy Efficient Products

The DON eBusiness Office, Card Management Group, incorporates in their guidance relevant information about federal buyers being directed to purchase products that are Energy Star labeled or FEMP identified products. Government Services Administration (GSA) is a regular instructor at the Navy in-house energy manager's course and has partnered with the DOE and the Environmental Protection Agency (EPA) to offer the federal community a broad range of energy efficient products. They have identified energy efficient products in catalogs and on GSA Advantage, an online shopping and ordering system that provides access to thousands of contractors and millions of products and services.

A survey was conducted of energy efficient products use. Thousands of energy efficient products are being installed throughout DON. Energy star performance criteria are included in acquisition requirements for systems and appliances in privatized family housing units. Energy efficient operations are included in some Base Operating Support contracts.

E. Sustainable Building Design and High Performance Buildings

NAVFAC Instruction 9830.1, Sustainable Development Policy, June 9, 2003, implements sustainable development principles and strategies to reduce the total cost of ownership of facilities. The policy requires the use of the USGBC LEED Green Building Rating System. The Assistant Secretary of Navy (Installations and Environment) Memorandum, August 4, 2006, directs Navy and Marine Corps Commanders to take steps to plan, program and budget to meet the requirements in EAct 2005, the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding and achieve at least LEED Silver level rating performance is achieved in new and replacement facilities.

The Navy has provided sustainable development training to over 680 of their staff since 2004 and continues to provide this training by classroom and online techniques. NAVFAC currently has 122 LEED Accredited Personnel. The Navy has 315 projects registered with the US Green Building Council for LEED certification. A few examples are:

1. **Bachelor Quarters**, Naval Training Center, Great Lakes, IL – LEED Certified
2. **Airborne Mine Countermeasures Facility** (FY04), Naval Station, Norfolk, VA – LEED Certified
3. **Aircraft Maintenance Hangar** (FY04), Naval Station, Norfolk, VA – LEED Certified
4. **Drill Hall** (FY06), Naval Station Great Lakes, IL – LEED Gold
5. **Child Development Center** (FY04), Naval Air Station Oceana, VA – LEED Silver
6. **Bachelor Enlisted Quarters** – (FY07), MCB Camp Lejeune, NC – LEED Certified
7. **Reserve Training Center & Vehicle Maintenance Facility** (FY07), MCB Camp Lejeune, NC – LEED Silver

Case studies of six of the USGBC certified buildings are shown on FEMP's High performance Federal Building Database <http://femp.buildinggreen.com/> DON budgeted \$48.6M for sustainable construction in FY 2010 military construction, a significant improvement over previous years, and including these requirements is now standard business practice. Sustainability Guidelines for Reconstruction of Navy Facilities and Sustainable Installation Guidelines are tools that NAVFAC is developing to implement sustainable design in existing buildings.

F. Energy Efficiency/Sustainable Design in Lease Provisions

Leased space must also comply with the energy and water efficiency requirements of the Energy Policy Act of 1992. The Navy must rely upon GSA to ensure the above provisions are included in buildings that they lease for the Navy. The Department of Navy currently leases 57.5 million square feet of building facilities.

G. Distributed Generation.

DON makes significant use of distributed generation cogeneration systems. 40MW of capacity are on-line and another 39MW began generation in Yokosuka Japan in FY 2009. The Yokosuka plant is the largest ESPC implemented by DON. The \$105M project brought natural gas to the installation, installed two reciprocating engines and two gas turbines with heat recovery providing both 50 Hz and 60 Hz power, and will save 8 million gallons of fuel oil annually. The contract price includes all major overhauls for 20 years, all paid for out of energy savings. Cogeneration credits provide 6% of DON's energy reduction progress. DON also utilizes distributed generation for island installations, remote applications, and technology demonstrations.

Wind farms and photovoltaic systems continue to provide power at numerous installations. New renewable photovoltaic power systems were made operational at several locations in Arizona, California, Hawaii and in the Northeast and Northwest. Another 20MW of solar electricity will be generated when ARRA projects are completed in FY 2011/12. In early FY 2010, Navy Southwest region will award a multiple award solar contract with potential to build 40MW of solar photovoltaic systems on DON land. A 1.5 MW wind turbine will produce an average of 3,000 MWh/year at MCLB Barstow. Please see section on self generated renewable energy for more details. DON is installing wind anemometers at 21 locations to evaluate feasibility of mid-size wind turbines, and develop site data packages for wind energy projects. DON worked with DOE NREL to develop software to evaluate cost/benefit of wind, PV, solar wall, and solar thermal systems at all installations. A DON renewable plan will be completed in FY 2010.

DON continues to validate the performance of fuel cells. Marine Corps Base Camp Pendleton, California has total capacity of 750 kW of molten carbonate fuel cells operating in a combined heat and power configuration. A contract was awarded to build another molten carbonate fuel cell at PMRF, Kaneohe, Hawaii.

The DON Geothermal Program Office (GPO) is actively exploring for geothermal resources at NAF El Centro, NAS Fallon, NAWC China Lake, MCAS Yuma (Chocolate Mountains Aerial Gunnery Range), and the MCAGCC Twenty-nine Palms, California. Exploration for geothermal resources at MCAGCC Twenty-nine Palms began in last winter, and included the drilling of five temperature gradient holes. The final phase of exploration, deep exploratory drilling, will be completed at NAF El Centro and MCAGCC Twenty-nine Palms in FY 2010. If fluid temperatures warrant it, movement toward development will follow. Temperature gradient drilling and deep drilling are expected to follow ongoing exploration activities at Fallon, China Lake and MCAS Yuma in FY 2010/11. Permitting of the Hay Ranch project at NAWC China Lake was completed and the flow of fresh water to the geothermal reservoir should begin by end of December. The Hay Ranch project and, ongoing production/injection drilling are designed to achieve an output increase at the China Lake geothermal field, of 22.5% by the end of 2010. To date, China Lake has achieved a 10% increase in production compared to last year.

As requested by Congressional adds to the DON budget, NAVFAC Engineering Service Center (ESC) is developing solar thin film adhesives to withstand typhoons in Guam, modeling solar PV and battery storage for buildings, and helping to develop a linear magnetic generator wave energy buoy and a horizontal axis tidal flow generator to further development of ocean renewable technology. DON completed a survey of wave heights and tidal/current flows at all installations, based on available data, to match up with emerging technology and estimate ocean renewable energy potential. An ARRA RDTE project will develop cold water pipe, heat exchanger and other high risk components to further develop Ocean Thermal Energy Conversion technology.

H. Exempt Facilities Inventory

DOE guidance for implementing EAct 2005 allows excluding mission critical facilities such as cold iron support to ships, and energy consumed by transmitters and simulators. The guidelines also permit excluding private party consumption that the government has no control of. The following are DON exclusions:

Table F-3 DON Exempt Facilities

Exemption	Installation Name
Cold Iron	NSB NEW LONDON CT
Cold Iron	NSY NORFOLK VA
Cold Iron	NAVFAC MID-ATLANTIC, VA
Cold Iron	LANTORDCOM DET CHARLESTON SC
Cold Iron	NAS KEY WEST FL
Cold Iron	NAVSUPACT PORTSMOUTH, NH
Cold Iron	NSB KINGS BAY GA
Cold Iron	NAVSURFWARCEN COASTSYSTA PANAMA CITY FL
Cold Iron	NAB LITTLE CREEK VA
Cold Iron	NAVSTA NEWPORT RI
Cold Iron	NAVSTA ROTA SP
Cold Iron	NAVSTA INGLESIDE TX
Cold Iron	NAVBASE SAN DIEGO CA
Cold Iron	NAVBASE CORONADO SAN DIEGO CA
Cold Iron	NAVSHIPYD PUGET SOUND WA
Cold Iron	NAVMAG INDIAN ISLAND WA
Cold Iron	COMFLEACT CHINHAE KS
Cold Iron	COMFLEACT YOKOSUKA JA
Cold Iron	NAVBASE GUAM
Cold Iron	COMFLEACT SASEBO JA
Cold Iron	NAVSTA PEARL HARBOR HI
Cold Iron	NAVBASE POINT LOMA, CA
Cold Iron	SUBASE BANGOR WA
Cold Iron	NAVSTA EVERETT WA
Cold Iron	NAVBASE VENTURA COUNTY, CA
Simulator	LANTORDCOM DET CHARLESTON SC
Simulator	NAVBASE SAN DIEGO CA
Simulator	NAVBASE CORONADO SAN DIEGO CA
Simulator	NAS KINGSVILLE TX
Simulator	NAS LEMOORE CA
Simulator	NAVSURFWARCENDIV PORT HUENEME CA
Simulator	NAVBASE POINT LOMA, CA
Simulator	MCAS MIRAMAR, CA
Simulator	NAVAIRENGCEN LAKEHURST NJ
Transmitter	NAVBASE CORONADO SAN DIEGO CA
Transmitter	NAVRADTRANFAC SADDLEBUNCH KEYS, FL
Transmitter	NAVAIRENGCEN LAKEHURST NJ
Transmitter	NAVRADSTA T JIM CREEK OSO WA

Exemption	Installation Name
Private Party	NAVBASE SAN DIEGO CA
Private Party	NAVBASE CORONADO SAN DIEGO CA
Private Party	NAVMEDCEN SAN DIEGO CA
Private Party	NAVAIRWARCENWPNDIV CHINA LAKE CA
Private Party	COMFLEACT YOKOSUKA JA
Private Party	NAF ATSUGI JA
Private Party	CBC GULFPORT MS
Private Party	MCAS IWAKUNI JA
Private Party	NAVFAC HAWAII
Private Party	NAVSTA ROTA SP
Private Party	NAS LEMOORE CA
Private Party	NAVBASE POINT LOMA, CA
Private Party	CG MCAGCC TWENTYNINE PALMS CA
Private Party	MCAS MIRAMAR, CA
Private Party	SUBASE BANGOR WA
Private Party	NAVBASE VENTURA COUNTY, CA

APPENDIX G: DEFENSE CONTRACT MANAGEMENT AGENCY

I. Management and Administration

A. Energy Management Infrastructure

- 1. Senior Agency Official.** The Senior Agency Official input to be completed by OSD.
- 2. Agency Energy Team.** Emma C Lewis: Administrator for HQ DCMA Energy Management Program; Virginia Hankins: Energy Manager DCMAA-ACTF, Bratenahl, OH; David Gavira: Energy Manager DCMAW-CS, Carson, CA; Natividad Ortega: Energy Manager DCMA-DSEF, Prince George, VA

B. Management Tools

- 1. Awards (Employee Incentive Program).** DCMA will use DoE FEMP Annual Federal Energy and Water Management Awards Program to nominate individuals, facilities or teams that perform exceptional work in implementing Executive Order 13123.
- 2. Performance Evaluations.** Energy Management responsibilities and duties will be included as part of the individual's performance plan.
- 3. Training and Education.** DCMA Energy Manager attended the DoE Energy Manager Certification Workshop 2009 Building Operation Management-Specification to Boost Energy Efficiency Workshop (WebCast); and FEMP Introduction ESPC Workshop, LEED for Existing Building: Operation & Maintenance (WebCast).

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

- 1. Goal Subject Buildings.** In FY 2009, DCMA's actual utilization was 130,494 Btu/sq ft compared to 104,425 Btu/sq ft from the FY 2003 baseline. This is an 8% increase from the baseline.
- 2. Excluded Facilities.** DCMA has no self-generated renewable energy.
- 3. Non-Fleet Vehicle and Equipment Fuel Use.** DCMA has no non-fleet vehicle and equipment fuel use.

B. Renewable Energy

1. Self-Generated Renewable Energy. DCMA has no self-generated renewable energy.

2. Purchase of Renewable Energy. DCMA purchased no renewable energy in FY 2009.

C. Water Conservation.

DCMA water usage in FY 2009 was 17.5 million gallons at a cost of \$13.9K, compared to the previous year which was 3.3 million gallons at a cost of \$10.5K. DCMA is unable to calculate increase or decrease in water consumption due no data being available for Bratenahl facility in 2008.

D. Metering of Electricity Use.

There is a total of three standard meters for the Brathenahl, Ohio and one standard meter for the Carson, CA facilities being used for Electricity

E. Federal Building Energy Efficiency Standards.

DCMA has no new construction to report for FY 2009.

F. EISA Covered Facilities and Energy Managers.

DCMA is in the process of providing training for all Energy Managers.

III. Implementation Strategies

A. Life Cycle Cost Analysis

DCMA is performing no life-cycle cost analysis at this time.

B. Retrofits and Capital Improvement Projects.

DCMA had no retrofits and capital improvement projects in FY 2009.

C. Use of Performance Contracts.

DCMA has no performance contract.

D. Excluded Facilities Inventory

DCMA has no exempt facilities.

APPENDIX H : DEFENSE COMMISSARY AGENCY (DECA)

Executive Summary

Significant changes from trends developed from previous year data submissions are addressed in this narrative section of the Annual Report. Any requirements to provide percentages change in percentages, or ratios also include the accompanying denominator and numerator, as requested by OSD, to facilitate compilation at the DoD level. The Defense Commissary Agency (DeCA) has addressed specific goals identified in your FY 2009 Implementation Plan to assist OSD in evaluating our progress in implementing energy management strategies that were identified in the previous year's Implementation Plan.

I. Management and Administration

A. Energy Management Infrastructure

1. Senior Agency Official.

2. Agency Energy Team.

DeCA Energy chain of command; Mr. Philip E. Sakowitz, Jr., Director and Chief Executive Officer; Mr. Thomas E. Milks, Deputy Director; Ms. JoAnn Chambers, Chief of Staff; Mr. James J. Hudson, Jr., Director, Performance and Policy; Mr. E. Carroll Shepherd, III, Agency Energy and Environmental Manager

E. Management Tools

1. Awards (Employee Incentive Programs).

DeCA currently uses its Agency Incentive Awards Program to recognize individuals and groups with special act and on-the-spot awards for their energy savings achievements.

DeCA's Energy Management Program Policy Directive incorporates provisions for energy savings suggestions under the Agency's incentive awards through our existing Improve Defense Commissary Agency's Efficiency and Service (IDEAS) suggestion program and on-the-spot awards.

The DeCA West region expects to establish an energy efficiency awards program in FY 2010 as an initiative of the DeCA West Energy Task Force.

DeCA Europe implemented an employee incentive program to reward employee-generated suggestions and initiatives resulting in energy reduction.

DeCA East continued its energy task group that evaluates and initiates programs to improve energy and water management. The task group initiates awards to individuals that have provided exceptional efforts in accomplishing program goals.

DeCA will participate in the FY 2010 Federal Energy and Water Management Awards program.

2. Performance Evaluations.

Performance plans for the DeCA Director, Deputy Director, and region directors hold them accountable for meeting the Facility Condition Index metric, as identified in the Agency Balanced Scorecard, and includes energy conservation measures.

Region directors have facility maintenance (including refrigeration/heating, ventilating, and air conditioning (HVAC) maintenance) responsibilities in their position descriptions.

Performance plan for each DeCA region chief of operations, zone manager, store director, and central distribution center (CDC) manager has a critical element for unit cost management and control. Utilities costs are a significant part of facility operational costs; therefore, proper reporting is essential. Utilities management, control, and awareness include quarterly reporting of energy use and costs from each facility to the region-designated energy conservation representative, who reviews, consolidates, and forwards to HQ DeCA.

Energy management provisions, including sustainable design practices, are in position descriptions and performance evaluations of the Facilities Program Manager and other facilities personnel, including field engineers.

DeCA field engineers are also identified as the Region Energy Conservation Officer for their respective region or sub-region. Their responsibilities include review of regional office-managed projects to ensure energy conservation and sustainable design practices are being implemented. Energy conservation design practices are also included as duties and responsibilities in the position descriptions of DeCA field engineers.

DeCA West field engineers have references within their respective position descriptions stating that they are to comply with Executive Order 13423 and will be DeCA West Energy Task Force team members.

Energy management provisions are in position descriptions and performance evaluations of the Agency Energy and Environmental Manager and the Energy and Environmental Engineer.

The Agency's strategic plan and key objectives for Fiscal Years 2009-2013 include goals for improving the condition of our facilities, which also includes reducing facility and commissary energy use. This is directly related to reducing our store unit operating costs. DeCA has accomplished this by improving the infrastructure through reduction of maintenance backlog and execution of new construction, modernization, maintenance and repair, and store equipment requirements that incorporate state-of-the-art efficiencies.

Each DeCA region has a region energy task force. These teams meet three to four times per year and continuously look for energy saving programs/projects in an effort to achieve both short- and long-term energy efficiency.

Each DeCA West Energy Task Force member has an obligation to ensure best practices of energy efficient practices are being implemented, and this is annotated on their performance plan.

DeCA Europe Facility or Energy Managers are evaluated on their performance of energy reporting and usage.

3. Training and Education.

DeCA energy and environmental engineers, two design and construction engineers, and two of our primary energy consulting/energy audit contractors attended GovEnergy in August 2009.

The Agency Energy and Environmental Manager and the Energy and Environmental Engineer are designated as "appropriate personnel" for the Agency and have completed the North Carolina State University Energy Management Diploma Program.

DeCA's Agency Energy and Environmental Manager is a Certified Energy Manager.

Each commissary, CDC, and office facility has an energy management supervisor, whose title is "Facility Energy Supervisor" identified and assigned. Commissaries and CDCs have a requirement to maintain two trained Facility Energy Supervisors/Quality Surveillance Representatives (FES/QSR) on staff at all times. These people attend this training, at a minimum, every 3 to 4 years.

The DeCA Center for Learning hosted 6 FES/QSR courses during FY 2009. The FES/QSR training course is a 2-day, commissary-specific course. Instruction includes formal classroom training for energy awareness and conservation practices, quality assurance, reporting, energy monitoring, and the basic operation of refrigeration monitoring and control systems (RMCS). Also, a site visit to a nearby commissary facility is conducted to acquire “hands-on” experience and serve as a vehicle for student evaluation.

We continue to pursue our goal of two trained FES per store. Our target audience in FY 2009 was commissary store administrators, general managers, and associates responsible for completing DeCA energy management reports. We trained 146 commissary store personnel during our FY 2009 training cycle. Training and travel costs were \$187,600. Students represented facilities in Europe, the Far East, and CONUS.

DeCA commissary department operations courses address energy usage and conservation in the store director, meat management, produce management, grocery, and quality assurance courses. These courses are taught throughout DeCA's worldwide operations.

All DeCA employees are required to view our 12-minute commissary energy awareness video, “Put Yourself in the DeCA Energy Efficiency Picture,” within 30 days of hire. This video is also incorporated in our FES/QSR and executive courses. This commissary-specific energy awareness training video is provided to all DeCA commissaries, CDCs, and office facilities. All associate and store-level contractors are also required to view DeCA’s Environmental Management System (EMS) Awareness Video distributed in FY 2008.

Training materials, including DeCA-produced videos “Put Yourself in the DeCA Energy Efficiency Picture” and “DeCA Environmental Management System Awareness Training,” are available at each store and office for initial and refresher energy and environmental awareness training.

Annual continuing education unit (CEU) requirements to maintain state professional engineer licensing and certifications are met by reviewing articles in professional periodicals and attending related training. Benefits include maintaining professional licensing and awareness of current and developing new technologies impacting energy conservation.

Our new Contracting Directorate Program Manager has completed green procurement training.

The DeCA Government Purchase Card (GPC) Program requires 100 percent of new candidates to complete training on Greening the Government, Recycled Content Products, Environmentally Preferable Purchasing, Energy Star, Bio Based Products, and Low Stand-by Devices prior to being appointed as a participant. Ninety-seven percent of all GPC participants have completed green procurement training. Students represented commissary supply technicians, secretaries, customer service leads, department managers, store administrators, and directors from all regions; secretaries; and program managers from regions and Headquarters. Our goal is to train 100 percent of all previously existing cardholders and primary and alternate certifying officers/approving officials.

All DeCA GPC participants are required to view the self-paced training PowerPoint slide presentation entitled “Mandatory Sources and Products.” The GPC self-study training modules provide the Web site addresses for EPA www.energystar.gov/products, GSA Advantage, and DoD E-mail for easy access to products with 25 percent energy efficiency.

Training developed by the DeCA GPC Agency Program Coordinator is also presented in 3-day GPC hands-on training” conducted as a classroom course. This module is presented on site to students as a 4-hour lesson including sample green and bio based products and brochures, hands-on tools and practice searching for Green products using Internet sites, and shopping services such as Energy Star.gov, DoD E-mail, and GSA Advantage. Samples of green and bio based products used in class are obtained without cost from sources such as the Susquehanna Association for the Blind and Vision Impaired; GSA; and US Department of Agriculture, Office of the Assistant Secretary for Administration.

Since FY 2007, all current GPC participants were required to complete the Energy Star® training module, regardless of how long they have been a participant. Benefits include reduced energy costs as more energy efficient products are purchased, improved efficiency in purchasing Energy Star® products, and better understanding of Agency energy usage.

Costs for the training include lost productivity while completing the training for self-study module, and TDY costs for hands-on training. Benefits include reduced energy use and costs, increased knowledge of product availability and tools, and more efficient purchasing of green products and services.

Higher level Affirmative (Green) Procurement Training sponsored by the Air Force has been taken by: Chief, Contract Policy and Systems Division; contracting’s environmental point of contract; as well as by the GPC Agency Program Coordinator to further the training and education of energy management policies at the mid and upper levels of DeCA management.

II. Energy Efficiency Performance

A. Energy Reduction Performance

1. Goal Subject Buildings. DeCA's energy use in combined facilities (all DeCA reporting facilities) was 146,051 Btu/GSF for our revised FY 2003 base year. Energy use for FY 2009 was 136,703 Btu/GSF based on data reported through the 4th quarter of FY 2009. Percent change from FY 2003 was a decrease of 6.4 percent or $([136,703 - 146,100]/146,100)*100$. Meeting our energy goal is a unique challenge, as commissaries are energy intensive facilities with a fixed refrigeration load of approximately 50 percent of total energy use.

The Agency's current energy use is currently about 10 percent better than the Energy Star® energy intensity for such facilities. From FY 1996 to FY 2003, DeCA reduced annual energy use intensity by 12.8 percent or $([143.6 - 164.7]/164.7)*100$. New and renovated commissaries typically increase in energy use by 0.2 percent from older designs due to patron demand for frozen and pre-prepared food items. Increased energy intensity is also directly affected by decreased warehouse space and an increased sales area footprint. Initiatives identified in our current effort to complete a strategic energy and water resource plan should enable DeCA to achieve the FY 2015 energy reduction goal of an additional 30 percent, assuming adequate funds and or financing resources are available.

Note: Due to the fact that DeCA is a tenant on host installations and normally a third-party customer (not directly billed from the local power company), we continue to find billing irregularities which, when corrected, result in significant changes to our reported energy use. We have achieved much progress in this area since November 2002 in obtaining more accurate energy use and cost data from host installations. DeCA Utilities Task Forces, ad hoc committees formed to investigate and solve high energy use and utility billing problems, continue to provide assistance to overcome reporting inaccuracies from host installations.

2. Excluded Facilities. DeCA is not billed for utilities at six locations (Kodiak, Alaska; Cairo, Egypt; Mineo, Italy; Sugar Grove, West Virginia; Riyadh, Saudi Arabia; and Ankara, Turkey).

3. Non-Fleet Vehicle and Equipment Fuel Use. Not applicable to DeCA in FY 2009.

B. Renewable Energy

1. Self-generated renewable energy. A photovoltaic (PV) power system was installed at our Los Angeles AFB Commissary in April 2008 using Energy Conservation Investment Program funds. In FY 2009, the PV system provided an average monthly savings of approximately \$1,618.

A solar hot water system was designed and the construction was awarded in FY 2009 for our NAB Little Creek Commissary.

Division 1, Section 01115, details sustainable design requirements that include renewable energy.

The General Design Information section of DeCA Handbook 20-1, DeCA Design Criteria Handbook, states DeCA's policy toward renewable energy. Paragraph 5.11.2 states, "Design facilities to minimize life-cycle cost of the facility using energy efficiency, water conservation, or solar or other renewable energy technologies."

DeCA guide specification Section 01115, DeCA Sustainable Requirements, is based on Executive Order 13423, Federal Agency Memorandum of Understanding; the Energy Policy Act of 2005; and the Energy Independence and Security Act of 2007. Many commissary designs incorporate passive solar features, such as day lighting.

Heat reclaim from our refrigeration systems is always considered and normally used. Day lighting is also considered in design development.

Geothermal heat pump systems are now analyzed when considering design alternatives since larger capacities have become available.

2. Purchased Renewable Energy. DeCA normally purchases energy as a third-party customer from its host installations and is currently not permitted to take credit for renewable energy purchased from host installations, as they are receiving the renewable energy purchase credit.

C. Water Conservation

DeCA potable water use and cost for FY 2009 are 278.5 million gallons per year and \$1,023,400, respectively. The water intensity value is 15.88 gal/sf/yr, which is a 12.7 percent or $([15.88 - 18.20]/18.20)*100$ decrease from FY 2007 consumption of 18 gal/sf/yr. Seventy-three percent of DeCA facilities have water meters; 61 percent are billed from actual meter readings.

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.

Proposed landscaping for new facilities is closely reviewed during all phases of the design for low maintenance and watering requirements. DeCA Design Criteria includes the requirement for xeriscaping and drip versus sprinkler irrigation systems. Rainwater collection systems are being considered to collect irrigation water.

More emphasis has been placed on the immediate necessity to repair leaky and/or faulty plumbing fixtures as they are identified. If the installation/base maintenance workforce is not available to resolve the problem, outside (off-base) maintenance will be sought to acquire immediate correction of the problem.

Closer monitoring and improved quality checking of commissary store quarterly water use and cost reports (DeCA Form 20-1) have been implemented. Store directors continue to stress the importance of conserving water in their daily operations.

The DeCA East Utilities Task Force directed all locations conduct a comparative reading of water meters each month to validate consumption as reported by host installation.

At the DeCA HQ facility, Fort Lee, Virginia, landscape irrigation has been turned off. We are going “green” by going brown. Our HQ addition, currently under construction, does not have a sprinkler system in the design. We will no longer use the sprinkler system. We limit our watering to the flower beds.

DeCA West installed irrigation system timers at various locations set to minimize water usage for lawn and landscaped areas. Landscaped areas that required heavy irrigation to maintain have been reworked to incorporate a desert style landscaping that requires less irrigation.

In DeCA Europe, water conservation is an ongoing initiative with maintenance upkeep, replacing existing valves with new low flow sensor-activated, and quick repairs to water leaks.

D. Metering of Electricity Use

Eighty-nine percent of DeCA facilities have electric meters. Our metering plan has been revised to coordinate additional metering and advanced metering with individual host installations as they pursue their DoD metering plans as DeCA is normally a tenant organization. DeCA's goal is to reimburse the host installations for meters installed with the understanding that DeCA will have real time, electronic access to metered data for energy monitoring and analysis purposes.

DeCA continues to have issues with some military installations that refuse to read or bill DeCA in accordance with the meter readings.

E. Federal Building Energy Efficiency Standards

Commissaries have a fixed refrigeration load equal to about 50 percent of their total energy use.

All DeCA facility designs started since the beginning of FY 2007 are designed to meet the Energy Policy Act of 2005 (EPACT '05) and EO 13423 and are expected to meet or exceed the Federal building efficiency standards.

Design began on three new commissaries in 2009, Fort Campbell, KY; Fort Carson, CO; and Portsmouth NNSY, VA. They are expected to exceed the ASHRAE 90.1 requirements by at least 30 percent.

Energy efficiency has historically been given careful attention during the design and construction of commissary facilities. The large energy consumption requirements of commissary equipment have inspired DeCA to pioneer such technologies as heat reclaim and desiccant dehumidification years before the private sector began using them. The DeCA Design Criteria Handbook (DeCAH 20-1) has been updated to incorporate the latest guidance required by EPACT '05 and EO 13423.

DeCAH 20-1 emphasizes life-cycle cost analysis of systems for different types of fuel sources. Designs include other items such as: occupancy sensors, energy efficient lamps and ballasts, LED exit signs, high efficiency motors on air handling units, electronically commutated motors (ECM) for display cases, maximized use of glass door refrigerated cases instead of open cases, LED lighting for frozen food display cases, use of RMCS for the most efficient operation of refrigeration systems and HVAC, automatic water controls for restroom fixtures for efficient use of water, use of dual path and desiccant air handling units for the most economical means of cooling and dehumidification, maximized use of wall and roof insulation, implementation of energy efficient doors and windows, and plastic curtains on refrigerated cooler doors.

DeCA's new 90,000 square foot Headquarters addition is expected to be certified LEED® Silver upon completion in early FY 2010. The new four-story addition will bring more than 90,000 square feet of space that includes admin areas, a cafeteria, several multi-purpose rooms, and a warehouse.

III. Implementation Highlights of FY 2009

A. Life Cycle Cost Analysis

The DeCA Design Criteria Handbook, which emphasizes use of life-cycle cost requirements in the design of commissaries, was revised in FY 2007, and is available online at <http://www.decafacilities.com/decadesign/>. The General Design Information section states DeCA's policy toward renewable energy. Paragraph 5.11.2 states, "Design facilities to minimize life-cycle cost of the facility using energy efficiency, water conservation, or solar or other renewable energy technologies." It also outlines the requirement for specific criteria for performing the analysis, such as the discount rate, analysis period, etc. The use of life-cycle cost alternatives is a primary focus in the design determination required during major and sustainment project development. The handbook emphasizes life-cycle cost evaluation of HVAC systems for alternate fuel sources and other energy reduction strategies, including direct expansion and gas-fired systems.

Siting, building orientation, insulation, and reflective glass coatings are all considered during design to reduce the building heat load and the required capacity of the air conditioning plant and the balance between the system's first cost and its operating costs.

Solar energy systems and passive solar design are considered when the life-cycle cost analysis indicates favorable payback. Skylights are considered with respect to cost versus electrical savings and added heat and air conditioning requirements. Computer analysis of planned facilities is used to determine the energy use budget and life-cycle cost of systems and materials.

DeCA has always been concerned about energy efficiency due to the energy-intense nature of the building type – the refrigeration system comprises 50 percent of the total facility energy consumption. The following list of items has been incorporated into DeCA's Design Criteria over the past 10 plus years:

- Siting, building orientation, insulation, reflective glass coatings are all considered during design to reduce the building heat load and the required capacity of the air conditioning plant and the balance between the system's first cost and its operating costs.
- Solar energy systems are considered when the life-cycle cost analysis indicates favorable payback.

- Passive solar design.
- Clerestory windows to introduce light and minimize heat.
- Skylights considered with respect to cost versus electrical savings and added heat and air conditioning requirements
- Computer analysis of the building to determine the energy use budget and life-cycle cost of systems and materials
- Commissioning (15 percent lower energy use)
- Wall systems with R10 insulation (minimum) IAW ASHRAE 90A.
- Foundation insulation in cold climates.
- Pressurized building envelope with vapor retarders in conjunction with insulation.
- High-albedo (white) thermoplastic polyolefin (TPO) roofing.
- Thermally insulated exterior doors (including overhead roll-up doors).
- Double door “air lock” at entry/exit vestibules.
- Insulated glass separated by dehydrated inner-space.
- Energy Star® equipment.
- Glass door displays for dairy and frozen foods.
- Electronically communicated motors (ECM).
- Premium efficiency, energy saving motors with 95 percent efficiency rating.
- Pumps operate within 25 percent of the midpoint of maximum efficiency curve.
- High efficiency water heaters.
- Dual path dehumidifiers reduce air conditioning tonnage.
- Heat reclaim/recovery systems from our refrigeration systems to supply heat to the domestic water system, or to supplement sales area heat, or to provide reheat for the dehumidification process.
- Terminal heat transfer units.
- Products complying with DOE/FEMP Buying Energy Efficient Products.
- Refrigeration system.
 - Condensers are specified with lower condensing temperatures than standard commercial practice, reducing compressor energy requirements.
 - Parallel compressor rack system
 - Compressor management responds to demand through electronic pressure control.
- Refrigeration Monitoring and Control System (RMCS)
 - Equipment monitoring and control.
 - Lighting control.
 - RMCS reduces lighting intensity 50 percent during restocking and cleaning.
- Under case return air (also eliminates cold aisles).
- Air conditioning equipment specified with highest energy efficiency ratios (EER) available in commercial equipment.

- Optimized operations and maintenance requirements and procedures.

- Relative humidity maintained around 40 percent to minimize ice formation on cooling coils, reducing energy consumption and reducing defrost energy requirements.
- Lighting controls.
 - Timed switches.
 - Photoelectric switches.
 - Occupancy sensors.
 - Outdoor motion sensors.
- Research each project for utility company rebates.
- High efficiency lighting.
- High performance building envelopes.
- High efficiency packaged air conditioning and heat pumps.
- High efficiency chillers.
- High efficiency motors.
- Heating, ventilating, and air conditioning (HVAC) controls.
- High efficiency refrigeration systems.
- Day lighting.
- Cogeneration.
- Power conditioning.
- Fluorescent lighting.
 - High efficiency T-8 lamps.
 - Low-mercury (“green” lamps).
 - T-5 lamps being studied for cost effectiveness.
 - Walk-in coolers (LED currently being evaluated).
 - State-of-the-art, energy efficient fixtures and ballasts.
- LED – Solid state lighting.
 - Low temperature display case lighting.
 - Exit signage.
 - Low temperature walk-in lighting.
 - Dock lighting.
- Sustainable principles required by Executive Order 1342.
- Compliance with the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (2006)
 - Employ integrated design principles.
 - Optimize energy performance.
 - Protect and conserve water.
 - Enhance indoor environmental quality.
 - Reduce Environmental Impact of Materials.

Designs include occupancy sensors, energy efficient lamps and ballasts, LED exit signs, high efficiency motors on air handling units and display cases, maximized use of glass door refrigerated cases instead of open cases, use of refrigeration monitoring and control systems for the most efficient operation of refrigeration systems and HVAC, automatic water controls for restroom fixtures for efficient use of water, use of dual path and desiccant air handling units for the most economical means of cooling and dehumidification, maximized use of wall and roof insulation, implementation of energy efficient doors and windows, and plastic curtains on refrigerated cooler doors.

Plastic or metal swing air curtain doors are replacing the strip curtains on walk-in refrigeration equipment in the freezers, meat, dairy, and produce rooms in new and renovation projects.

DeCA guide specification, Section 01115, *DeCA Sustainable Requirements*, again requires life-cycle cost analysis to ensure construction technologies are cost effective. DeCA has developed a strategy to reduce energy consumption Agency-wide by 30 percent by FY 2015, as required by the Energy Independence and Security Act of 2007.

Submittals during the design phases, including life-cycle analysis of all major construction projects, are reviewed and comments are provided by the region as applicable for the specific location.

In FY 2009, an analysis was conducted relative to fax machine repairs at the Agency's Headquarters. Machines with the lowest life-cycle costs were selected for procurement.

B. Retrofits and Capital Improvement Projects.

DeCA completed lighting efficiency upgrades through group re-lamping and lighting retrofit projects for DeCA commissaries at Dover AFB, DE; NAS Pensacola, FL; Hunter AAF, GA; NAWS China Lake, CA; Elmendorf AFB, AK; F.E. Warren AFB, WY; Fort Leavenworth, KS; Mountain Home AFB, ID; and Vandenberg AFB, CA.

Combined and integrated cooling, heating, and refrigeration systems are a standard design concept for installation of new or replacement refrigeration systems in the commissaries.

Significant energy efficient replacement refrigeration system projects were completed in FY 2009 for DeCA commissaries at Fort Stewart, GA; Fort Sam Houston, TX; Selfridge ANG, MI; Dover AFB, DE; Langley AFB, VA; Yongsan, ROK; Fort Lee, VA; Mitchell Field, NY; Offutt AFB, NE; MCB Camp Pendleton, CA; Dyess AFB, TX; NAS Corpus Christi, TX; Ord Community, CA; Osan AB, ROK; and NB Bremerton, WA.

In FY 2009, awarded an alteration project for Naval Amphibious Base, Little Creek Commissary, VA, to evaluate and possibly incorporate in DeCA's design criteria lower overall light conditions, light layering, daylight harvesting, and solar heat for domestic hot water systems.

construction projects were awarded in FY 2009, which included motion detector-operated LED lights in glass door display cases. Locations were selected to test this product in small, medium, and large stores sizes.

Several roof projects were completed in FY 2009, including the replacement of the deteriorated insulation and installation of a light reflective roof surface improving the energy efficiency of the entire roof system.

C. Use of Performance Contracts

DeCA is working with Defense Energy Service Center (DESC) with the Defense Logistics Agency (DLA) for potential ESPC contractors to conduct phase 1 project planning, including initial exploration of feasibility for pay-from-savings projects.

D. Use of Energy Star® and Other Energy-Efficient Products.

DeCA Design Criteria Handbook (DeCAH) 20-1 incorporates energy efficient criteria guide specifications and product specifications developed for new commissary construction and renovation.

The Energy Star® Finder for Supermarkets was used to evaluate the design for the new commissary at Fort Bliss, TX. The DeCA design performs better than 88 percent of commercial supermarkets, uses 41 percent less energy, and produces 40 percent less carbon emissions.

Motors and other equipment are specified to comply with the Energy Star® requirements, when available.

The DeCA Headquarters Facility Manager upgraded elevator controls, replaced the cooling tower, replaced the boiler, installed variable frequency drives, and installed high efficiency motors on HVAC components. He upgraded facility HVAC controls system, commissioned new HVAC equipment, re-commissioned existing equipment, and replaced stairwell and restroom lighting with dimmable/motion activated lighting. Also, replaced all interior high intensity discharge (HID) lighting with compact fluorescent lights, which consume less than half of the energy and have a much longer life with the same amount of light.

New or replacement balers were purchased for our commissaries in consideration of efficient disposal of cardboard products.

Since FY 2006, the DeCA GPC has required all new GPC program participants to complete training on the Energy Star® Program prior to being issued an account.

In FY 2009, all contracting series, GS-1102 (Contract Specialists), were required to take the mandatory green procurement class, Continuous Learning Center course number CLC 046, Green Procurement.

The DeCA Government Purchase Card (GPC) Program requires 100 percent of new candidates to complete training on Greening the Government, Recycled Content Products, Environmentally Preferable Purchasing, Energy Star®, Bio Based Products, and Low Stand-by Devices prior to being appointed as a participant. In FY 2009, Energy Star® products continued to receive utmost consideration when developing specifications and issuing acquisitions for energy using products.

Information technology hardware and computer and copying equipment are acquired under the Energy Star® program using GSA schedules and either government-wide or service contracts.

All DeCA GPC participants are required to view the self-paced training entitled Mandatory Sources and Products, a PowerPoint slide presentation. Training is posted in DeCA Public Folders for easy accessibility. The GPC self-study training modules provide the Web site addresses for EPA Energy Star.gov, GSA Advantage, and DoD Email for easy access to products with 25 percent energy efficiency. GPC hands-on training classes include hands-on practice with Web sites searching for compliant products.

GPC training is also presented in 3-day GPC hands-on training conducted as a classroom course. This module is presented on site to students as a 4-hour lesson including sample green and biobased products and brochures, hands-on tools and practice searching for Green products using Internet sites, and shopping services such as Energy Star.gov, DoD Email, and GSA Advantage.

Since FY 2007, all current GPC participants were required to complete the Energy Star® training module, regardless of how long they have been a participant. Benefits include reduced energy costs as more energy efficient products are purchased, improved efficiency in purchasing Energy Star® products, and better understanding of Agency energy usage.

Costs for the training include lost productivity while completing the training for self-study module, and TDY costs for hands-on training. Benefits include reduced energy use and costs, increased knowledge of product availability and tools, and more efficient purchasing of green products and services.

The DeCA GPC Agency Program Coordinator developed Agency training to meet this requirement as a part of duties and responsibilities of the Agency/Organization Program Coordinator. Samples of green and bio based products used in class are obtained without cost from sources such as the Susquehanna Association for the Blind and Vision Impaired; GSA; and US Department of Agriculture, Office of the Assistant Secretary for Administration.

Higher level Affirmative (Green) Procurement Training sponsored by the Air Force has been taken by: Chief, Contract Policy and Systems Division; contracting's environmental point of contract; as well as by the GPC Agency Program Coordinator to further the training and education of energy management policies at the mid and upper levels of DeCA management.

Energy Star® products continue to receive utmost consideration when developing specifications and issuing acquisitions for energy using products.

Information technology hardware and computer and copying equipment are acquired under the Energy Star® program using GSA schedules and either government-wide or service contracts.

DeCA continues to review and pursue opportunities to utilize electronic communication and data transfer, which conserves the use of paper, postage, and personal resources.

Energy Star® compliance is a requirement for information technology hardware and computer vendors to participate. One hundred percent of the Program Management Directorate (PM) acquisitions are energy efficient. DeCA PM published a hardware standards document to assure 100 percent energy efficient hardware purchases.

DeCA design criteria requires premium efficiency fan motors for HVAC systems, electronically commuted fan motors on the refrigeration display cases, and T-8 fluorescent light fixtures with electronic ballasts or LED lighting in display cases for new and renovated facilities.

Incremental cost for implementing Energy Star® in new designs in DeCA is very low. It is estimated at less than 2 percent of the project cost. Daylight harvesting would be one area DeCA is being driven to by the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007 that would probably not otherwise be pursued due to the future maintenance issues.

E. Sustainable Building Design and High Performance Buildings

DeCA incorporates sustainable development principles into every major project designed and constructed by DeCA.

DeCA Design Criteria, Guide Specifications, and Master Architect-Engineer Statement of Work all require incorporation of sustainable principles.

The DeCA Design Criteria Handbook, which emphasizes use of life-cycle cost requirements in the design of commissaries, was revised in FY 2007, and is available on line at <http://www.decafacilities.com/decadesign/>. Division 1, Section 01115, details sustainable design requirements that include renewable energy.

Design criteria has included sustainable principles for several years. The criteria emphasizes use of life-cycle costs, pollution prevention, and other environmental and energy costs associated with the construction and life-cycle operation of the facility.

Detailed requirements are incorporated for items such as energy efficient lighting, dual-path HVAC, premium efficiency fan motors, refrigeration monitoring and control systems, lighting controls, and roof membrane materials. DeCA design criteria are reviewed and updated annually.

Standard design principles used are as follows:

- Storm water management
- During site selections, sensitivity to habitat of endangered species and wetlands, preference to urban areas with existing infrastructure;
- Advocate alternative transportation by providing bicycle racks and size automobile parking to meet, but not exceed, what is needed;
- Maximize water efficiency by using automatic water controls for restroom fixtures;
- Implementation of a building commissioning plan;
- Maximizing use of energy saving techniques, to include implementing heat reclaim from the refrigeration systems to provide space heating and water heating, using refrigeration compressor systems;
- Implementing a RMCS for control of the refrigeration system and HVAC system to ensure efficient operation;
- Maximizing use of more efficient glass door refrigerated display cases rather than open cases;
- Maximizing use of the most energy efficient lighting systems and implementing the most advanced lighting equipment available;
- Use of lighting occupancy sensors to ensure lighting is off when rooms are not in use;
- Dual path HVAC unit for the sales area which allows for a more efficient method of cooling;
- Maximum use of wall and roof insulation;
- Implementation of the most energy efficient doors and windows;
- Maximum use of utility metering;
- CFC reduction in HVAC and refrigeration equipment;
- Use of fire suppression systems that use no HCFCs or Halons;
- Use of cardboard balers;
- Maximum use of existing building structures, rather than replacing, through our major add/alt projects;
- During building demolitions recyclable materials are saved;
- Use of materials with recycled content;
- Meet indoor air quality standards.

F. Energy Efficiency/Sustainable Design in Lease Provisions

DeCA uses GSA as a leasing agent for its few leased facilities. Lease-back facilities include the Harrison Village Commissary, IN; DeCA West office facilities, Sacramento, CA; and the McClellan Commissary, Sacramento, CA. Consideration was given on all procurements, to include high efficiency systems for HVAC and water use. Devices that meet or reduce current flow rates for water use are used.

DeCA Europe did not negotiate new lease agreements in FY 2009, but will work with the base/installation command or the US Army Garrisons to negotiate with the property owners for obtaining sustainable and energy efficient facilities. They ensure the current facilities meet energy efficiency and water conservation requirements by requiring all plumbing fixtures to be water saver types, with energy efficient lighting when the lesser is required to upgrade facility systems.

G. Distributed Generation

Combined and integrated cooling, heating, and refrigeration systems are a standard design concept for installation of new or replacement refrigeration systems in the commissaries.

If the installation cannot provide dependable power to the commissary, DeCA's programming and design team reviews what other sources are available to supplement the power for the commissary building. DeCA typically uses generators for backup power of point of sale (POS) and emergency lighting systems only. No combined heat and power systems were designed or installed in FY 2009. Geothermal heat pump systems are considered as design alternatives when cost effective.

Photovoltaic (PV) systems are considered in the new construction process and as DoD Energy Conservation Investment Program candidates surveyed. DeCA has a Government-owned PV system at our Los Angeles AFB Commissary, which was completed in FY 2008.

Utilities are normally provided by host installations to DeCA. New refrigeration systems utilize electronic controls, heat reclaim for HVAC and domestic hot water, and refrigeration compressor "floating head" to reduce energy usage.

APPENDIX I: DEFENSE FINANCE AND ACCOUNTING SERVICE

I. Management and Administration

The majority of DFAS Central and Field sites pay for utilities through lease arrangements with local reuse authorities, or General Services Administration (GSA), or through base operations agreements with active military host installations. DFAS has two sites in leased space where the agency directly pays the utilities:

Limestone, Maine - DoD-07-0NRCH

Rome, New York - DoD-07-0ULDF

A. Energy Management Infrastructure

- 1. Senior Agency Official.** The Director of Support Services, Mr. Bruce Keith, has been appointed as the agency's senior energy official.
- 2. Agency Energy Team.** The DFAS Corporate Energy Management Team (CEMT): Christian Mazzarella, DFAS Facilities Program Manager; Randy Shanafelt, DFAS Facilities Specialist

B. Management Tools

- 1. Awards (Employee Incentive Programs).** The Facilities Specialist was given a performance award for his efforts to promote the Agency Energy Management program during this fiscal year.
- 2. Performance Evaluation.** DFAS has added appropriate statements to include successful implementation of conservation actions in the position descriptions and performance evaluations of members of the agency energy team.
- 3. Training and Education.** One member of the Energy Management Team attended Training for a live web cast, in 2009. Pertinent energy information has been posted to the DFAS ePortal site for employee access.

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

- 1. Goal Subject Buildings.** DFAS did not have a baseline for FY 1985 as the agency did not exist then and has only started reporting as of FY 2003. Electrical consumption declined from 23,035.6 MWH in FY 2003 to 6,230.1 MWH in FY 2009, with a corresponding drop in annual cost from \$1,970.4K to \$726.6K. Purchased steam consumption increased from 14.5 BBtu to 16.0 BBtu with a cost increase from \$281.4K to \$382.0K. The site with steam usage has contacted the supplier and an improved metering system has been installed to capture a more accurate measure. The

Btu/GSF has fallen from 151,807 to 93,338 in the same time period.

B. Petroleum

DFAS did not have a baseline for FY 1985 as the agency did not exist then and only started reporting in FY 2003. Fuel oil consumption increased from the base year of 38.0 thou. gal to 57.6 thou. gal with a cost increase from \$37.0K to \$108.0K. Propane consumption was virtually unchanged. Natural gas consumption also declined from 118,940 thousand cubic feet to 0 thousand cubic Feet with a corresponding drop in annual cost from \$390.7K to \$0K. This was due to the sites closing that used natural gas.

C. Water Conservation

The water consumption declined from the base year of 5.5 Mgal to .7 Mgal for 2009 with a corresponding drop in annual cost from \$26.6K to \$17.4K.

D. Metering of Electricity Use

Buildings that DFAS currently occupy are all metered.

III. Implementation Strategies

A. Facility Energy Audits

Due to BRAC, and DFAS Transformation, DFAS will delay the initiation of an energy audit until after enduring sites have reached their end state.

B. Use of EnergyStar® and Other Energy Efficient Products

DFAS promotes all sites to use Energy-Efficient Products when replacing items.

APPENDIX J: DEFENSE INTELLIGENCE AGENCY

I. Management and Administration

A. Energy Management Infrastructure

- 1. The Senior Agency Official.**
- 2. Agency Energy Team.**

DIA Energy chain of command:

- LTG Ronald Burgess, Director
- Mr. James Manzelman, Deputy Director, Mission Services
- Mr. John Davis, Chief, Engineering and Logistics
- Mr. Wayne Bruce, Chief, Facility Engineering Division

B. Management Tools

- 1. Awards (Employee Incentive Programs).** DIA currently uses its existing performance awards procedures and on-the-spot awards. DIA plans to participate in the Federal Energy and Water Management Awards program in FY 2010.
- 2. Performance Evaluations.** DIA Facility engineers' position descriptions include a knowledge requirement for best practices for operating refrigeration/heating ventilating and air conditioning (HVAC) for energy conservation. Their responsibilities include review of all projects to ensure energy-efficient design strategies are invoked as well as to ensure HVAC commissioning practices are observed during construction.
- 3. Training and Education.** DIA sent a representative to the GovEnergy 2009 workshop.

II. Energy Efficiency Performance

A. Energy Intensity Reduction

- 1. Goal Subject Buildings.** DIA's energy intensity was 229,108 Btu/GSF for the FY 2003 base year, based on the original 864,000 SF DIAC facility. DIA's energy use (287.6 billion Btu) in FY 2009 amounts to an energy intensity of 216,972 Btu/GSF based on the present 1,325,610 SF DIAC facility, according to data reported through the 4th quarter of FY 2009. Percent change from FY 2003 is a decrease of 5.3 percent or $([216,972-229,108]/229,108)*100$.
- 2. Excluded Facilities.** DIA does not have any excluded facilities.

3. Non-Fleet Vehicle and Equipment Fuel Use. Not applicable to DIA in FY 2009.

B. Renewable Energy

1. Self-Generated Renewable Energy. DIA had a small pilot project for solar powered parking lot lights (2) installed in FY 2009.

2. Purchased Renewable Energy. DIA did not purchase any renewable energy in FY 2009.

C. Water Conservation

1. DIA potable water usage for FY 2009 was metered and recorded by the 11th CES at 47.99 MGY, which is equivalent to 36.2 gallons per gross square foot. DIA's potable water usage in FY 2007 was 56.95 MGY, which is equivalent to a water intensity of 43.0 gallons per gross square foot. Therefore, DIA's FY 2009 water intensity represents a **15.8%** decrease as compared to DIA's estimated water consumption in FY 2007, or $([36.2 - 43.0] / 43.0) * 100 = -15.8\%$. The reason for the dramatic decrease reported is likely due to a faulty reading from one of the four water meters, which indicated zero consumption through the first six months of FY 2009; therefore, it is not clear if DIA actually increased its water usage in FY 2009. In FY 2007, the installation billed its tenants based on estimated consumption.

2. DIA designs are reviewed for low consumption toilets and urinals, where projects involving new plumbing fixtures.

3. DIA is planning to replace all fixtures that have 3.5-gallon flush valves with 1.6-gallon valves.

4. Landscape irrigation is kept to a minimum at the DIAC site; where site water is used it will be obtained through new 400' foot water wells being installed on the east side of the DIAC complex.

D. Metering of Electricity Use

DIA is enrolled in a demand response program and implementing interval metering at the DIAC.

E. Federal Building Energy Efficiency Standards.

The NCMi Addition has been designed to achieve better than 30% energy efficiency beyond the minimum energy code requirements set forth in ASHRAE 90.1-2004. The

design incorporates inverter motor technology, a heat recovery wheel and lighting controls throughout.

III. Implementation Highlights of FY 2009

A. Life Cycle Cost Analysis (LCCA)

See below

B. Retrofits and Capital Improvement Projects

DIA design criteria emphasizes use of life-cycle cost requirements in new facility construction. Life-cycle costs are evaluated in selection of HVAC system design strategy, such as in selection of distributed water-source heat pumps versus central station air handling systems. DIA design guidance places emphasis on compliance with the Energy Policy Act 2005 in achieving 30% greater energy efficiency than the baseline ASHRAE-recommended energy requirements (Standard 90.1-2004, Appendix G). During major design efforts, consideration is given not only to energy-efficient building envelope design, but also to high efficiency chillers, premium efficiency fan and pump motors, heat recovery chillers, condensing boiler and low-temperature heating hot water systems, water-side economizers, variable water flow chiller evaporators, lighting controls and energy efficient lamps and ballasts.

C. Use of Performance Contracts

In FY 2009 DIA received an initial proposal from Washington Gas to perform seven different energy conservation measures (ECMs) for potential award through the UESC vehicle in FY 2010.

D. Use of Energy Star® and Other Energy-Efficient Products

In FY 2009, equipment energy efficiency was mandated in DIA project specifications developed when issuing acquisitions for energy using products. All new equipment purchases were made to comply with ENERGY STAR® products and American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90.1, *Energy Standard for Buildings Except Low-Rise Residential Buildings*

Information technology hardware and computer and copying equipment are acquired under the ENERGY STAR® program using GSA schedules and either government-wide or service contracts.

DIA continues to review and pursue opportunities to utilize electronic communication and data transfer to conserve on resources. DIA now runs an industrial shredding operation for disposal and recycling of its classified waste; this project allows for briquettes, the end product of the shredding process, to be resold for their heating value to prospective agriculture-based customers.

E. Energy Efficiency/Sustainable Design in Lease Provisions

DIA continues to request that building owners incorporate current commercial energy efficient design with lighting controls, set back thermostats, energy efficient equipment and low-flow plumbing fixtures. The energy and utility costs are included in a given lease agreement so the corresponding rental fee includes these costs, where applicable. This provides a built-in incentive to the owner to use the most cost effective energy-using equipment to maximize energy savings.

APPENDIX K: DEFENSE LOGISTICS AGENCY

I. Management and Administration

A. Energy Management Infrastructure

1. The Senior Official. The Deputy Assistant Secretary of the Army for Energy and Partnerships (DASA(E&P)) is the Senior Agency Official for the Army.

2. Agency Energy Team. Presently the director of Energy Resource Management team at HQ DLA is Don Juhasz, PE, CEM. Two current positions are advertised to work directly for and with him (one a federal energy engineer position and the other a contract energy engineer). In addition, six site located federal Energy Engineering positions are advertised and funded. Col Laffey has raised the energy conversation to be one of the principles of the DLA transition model having involvement from senior SES and Flag Officer at DLA.

B. Management Tools

1. Training and Education. DES-I has visited and conducted level one energy audits at the five permitted DLA sites and seven locations overall in the last 60 days providing both training and energy awareness briefings to site directors and location supervisors on efforts and procedures that they can implement now that will reduce wasteful and unnecessary energy consumption. Locations have implemented energy awareness and training via such means as:

- a) Articles in the “Federal Voice” (site newspaper) where energy efficiency tips and concepts are discussed and also highlighted the visit of the DLA HQ Energy Resource Management Director.
- b) Providing the memo to all sites from the Under Secretary of Defense highlighting Energy Awareness Month, with a personal message from the Site Directors stressing energy conservation and awareness.
- c) Supported and publicized the recent “GreenGov” initiative which was designed to foster energy savings ideas from the site workforce.

II. Energy Efficiency Performance

A. Energy Efficiency Reduction Goal

1. Goal Subject Building. FY09 energy consumption per square foot was 3.5% below the FY03 baseline with a significant reduction occurring in the last quarter of this year. FY09 marks the 1st year (out of the last four) that DLA achieved below the baseline and is heading on a guide slope to achieve the 2015 goal of 30% reduction in energy density. This year is a 21% reduction and improvement over last year's performance.

Several activities can be identified that helped DLA's energy density reduction achievement this year. One is the awareness that energy has become a priority by DES leadership. military construction and ECIP projects that demolished inefficient site central heating plants and replaced them with higher efficiency distributive systems with significantly less distribution losses and added controls to turn off systems when facilities are unoccupied. Included in this effort was lighting retrofits and controls in warehouses whose lights remained on 24/7 in a high percentage number of facilities. A large number of lighting and control retrofits are part of the FY10 energy conservation and efficiency effort at DLA.

2. Excluded Facilities. None.

3. Non- Fleet Vehicle and Equipment Fuel Use. All DES fuel usage is locally measured and controlled, and all of it supports local vehicle uses. No information is reported through the FAST system. The quantities and costs reported in the data report are listed under the "Non-Fleet Vehicles and Other Equipment" heading so as to not confuse it with the "FAST" provided data.

The base consumption trend for FY 2006 to FY 2008 was a decrease in consumption of over 6%. We expect that this general trend was continued during FY09, but accurate numbers are not available because construction to the underground fuel storage and distribution system at Columbus resulted in 4 months of downtime for the system. During that 4 month window, some fuel purchases were made outside of the site fuel accounting system, therefore the consumption reported (4,325.4 MBtu, which represents a 24% consumption decrease) is not believed to be accurate.

One positive result of the Columbus construction project was the addition of an E-85 tank and dispensing system. In the last 2 quarters of FY09 E-85 consumption was greater than either unleaded or diesel fuel.

B. Renewable Energy

DLA has no reportable renewable energy projects to date. As part of our FY10 program, we have begun several solar energy projects including domestic water heating systems for both new construction and replacement of existing systems and an intergraded solar roof PV system and a full 1MW solar array. We have investigated “green roofs” but feel we should move towards using the energy that comes to a roof rather than absorbing or reflecting it. The potential for wind and geothermal projects for DLA where our sites are located is not favorable.

C. Water Conservation

DLA water conservation status for FY 2009 is an increase of 100% over the estimated baseline FY07 benchmark. The lack of meters and poor reporting created a large underreporting for FY07 and the baseline is unreliable and presumptuous at best. Water conservation efforts have been implemented over the past two years, most notably installation of automatic flush valves in high use areas but water leaks have not been investigated and would add substantially to the FY07 baseline. Efforts in FY10 will include water leak detection surveys. In addition, water conservation efforts will be increased when full time energy manger are on board at the sites.

D. Metering of Electricity Use

DLA electric metering status is planned to be in compliance with EPACT 05 standards in advance of the FY1 2 requirement. To date the following status is provided:

1. Minimal current facilities have electrical meters.
2. There are a significant number of “smart meters” scheduled for installation during FY10.
3. Funding and a plan have been provided to Huntsville with the USACE for the balance of the facilities to receive “smart meters” by the end of FY12.
4. Many of our facilities are controlled and provided utilities services by other DoD agencies for which those facilities are included in those services metering programs.

E. Federal Building Energy Efficiency Standards

Two building designs in FY09 are subject to this standard. The Child Development Center, project CSC-07765 in Columbus and project 430, the DLA Headquarters Building at New Cumberland. The Columbus design agent stated that he performed an energy consumption calculation and determined that the new facility will have a 21% savings as opposed to the 30% target. The New Cumberland HQ building has been

directed into a redesign in order to assure it meets greater than 30% energy reduction and LEED Silver status.

III. Implementation Highlights of FY 2009

The largest impact to FY09 consumption levels was the implementation of de-centralized heating services and the installation of motion sensor and replacement of HID lighting fixtures with T-5 high output systems.

Other significant actions accomplished during FY09 are as follows:

Accomplishment of site energy surveys and awareness briefings and training.

construction and replacement of 29 air cooled condensing units with 2 central glycol chillers that have “free cooling” by the use of flat plate heat exchangers that use outside air when it is less than 60 degrees outdoors but a cooling load still exist internal to a facility.

Connection of remote “smart meters” to independent energy management systems. These projects will result in HVAC systems operating only as required by occupancy loads and weather conditions.

APPENDIX L: MISSILE DEFENSE AGENCY

I. Management and Administration

A. Energy Management Infrastructure

1. The Senior Official. MDA does not participate directly on this committee because MDA's interests are represented by OUSD(AT&L) and ODUSD(I&E). MDA's Environmental Executive coordinates, as necessary, with the Steering Committee on EO 13423 implementation, program management, and performance reporting at the Defense Agency level.

2. Agency Energy Team. MDA administers a cross-functional Sustainability Work Group formed in response to the issuance of EO 13423; its team members include Operations and Installations Management (MDA/DXI) leaders across the Agency and addresses energy, water, and fuel reductions. Our Work Group leads MDA's implementation of EO 13423 (and EO 13514) compliance program, associated task execution, and fosters the development of performance monitoring mechanisms to document our progress in meeting EO targets.

MDA has a separate Energy Team within our Sustainability Work Group that focuses on energy and water management. The team is currently:

- a) Identifying potential renewable energy resources and determining MDA's capacity for acquiring renewable energy at its host installations. The team coordinates the renewable energy requirements as defined by EAct 2005, EO 13423, and EO 13514, particularly as they relate to MDA military construction projects and host-tenant agreements.
- b) Integrating the requirements of EAct 2005, EISA, and EOs 13423 and 13514 into new buildings being built for MDA (military construction projects). These projects and their estimated completion dates (ECDs), are:
 - Von Braun III at Redstone Arsenal, AL (ECD 2011)
 - MDA Headquarters Command Center, Fort Belvoir, VA (ECD 2010)
 - MDA Field Activity Office, Dahlgren Naval Station, VA (ECD 2011)
- c) Coordinating MDA's conservation efforts with our host installations to ensure the maximum energy management benefits are realized through renewable energy acquisitions, dovetailing host-tenant conservation programs and procedures, and the implementation of green technologies while also reducing the potential for conflicts with host programs, policies, and procedures.

d) Developing an Energy Conservation Campaign that identifies energy-saving activities for each MDA location. MDA's Energy Conservation Campaign achieves resource reductions by promoting the environmental and socioeconomic value and benefits of energy conservation. The campaign engages MDA employees on a "personal responsibility" level to instill personnel behavioral changes to achieve energy, water, fuel, and greenhouse gas (GHG) reductions.

B. Management Tools

1. Awards (Employee Incentive Programs). MDA is developing an Environmental Stewardship Awards Program (ESAP) to recognize significant efforts that help MDA achieve the targets of EOs 13423 and 13514, including measurable energy and water reduction initiatives. MDA's Director will present the first environmental stewardship award in 2010.

2. Performance Evaluations. MDA's Office of Human Resources (MDA/DXH) is currently drafting language that will be included in selected employee job descriptions based on the function of a given position as it relates to environmental and energy performance targets of EO 13423.

Generic EO 13423, EO 13514, and environmental stewardship compliance language will be included in selected MDA internal job descriptions wherever possible. Affected positions will include staff involved in senior leadership, procurement, facilities (design, efficiency, renovation, and operations), electronics management, pollution prevention, and transportation. Specific job responsibilities can include mandatory participation in MDA's Sustainability Work Group, MDA's Energy Conservation Campaign, or other activities that support EO compliance, performance monitoring, and reporting.

MDA/DXH and DXI are integrating EO conformance measures into annual employee performance reviews for MDA (military and civilian) personnel. While performance criteria varies for different job positions, examples of weighted performance evaluation factors include Environmental Awareness and Green Procurement coursework and participation in work groups or teams that support MDA's implementation, execution, and reporting for EO targets.

3. Training and Education

a) **Environmental Awareness Training.** MDA developed an Environmental Awareness Training course in 2006 that introduces employees to applicable environmental laws, regulations, EOs, green procurement, and MDA's statutory

obligations. The course assists employees in identifying how their duties affect MDA's environmental compliance and discusses these concepts within the framework of employee knowledge and responsibilities. This training is a mandatory online course for all MDA staff and new hires and MDA requires periodic Environmental Awareness refresher courses and monitors employee completion.

MDA is currently updating the Environmental Awareness Training module to reflect the new requirements of EO 13514 and describe employee obligations in achieving the EO's annual targets. The new module will be available in FY2010.

b) Procurement Training. MDA annually identifies staff engaged in the acquisition of goods and services and has made Green Procurement Training mandatory for these individuals (e.g., government purchase cardholders, contracting staff). All MDA procurement staff must complete the online Green Procurement Training module offered through the Defense Acquisition University (DAU) each fiscal year.

DAU's Green Procurement Training module encompasses the requirements for federal agencies to acquire energy & water efficient products, EPEAT Silver-registered (or EPEAT-Gold) personal electronics, and low standby power devices to decrease MDA's annual energy intensity.

II. Energy Efficiency Performance

A. Energy Intensity Reduction

1. Goal Subject Buildings. As shown in Table 1, MDA owns no buildings or real property. Most of MDA's utility provisions occur through full-service leases and Inter-Service Support Agreements (ISSAs) that meet the Department of Energy's (DOE's) criteria for excluded facilities (see next item, Excluded Facilities).

MDA currently operates out of 19 different facilities, not including incidental spaces occupied to support test operations at DoD facilities worldwide. MDA also plans to occupy three additional military construction buildings slated for occupancy by 2012.

Table 1 documents MDA's tenant status at federal and commercial sites. The "FY2009 MDA Building Inventory" tab provides an overarching summary of MDA facility information; the "Energy Data" tab summarizes available energy and water use data. The "Lease Info" tab provides lease information about currently occupied and planned MDA buildings. A lack of data precludes developing realistic FY2003 energy intensity baselines and FY2007 water intensity baselines.

MDA has provided energy and water usage data in all instances where metered data is available in the Data Report.

2. Excluded Facilities. In accordance with DOE’s “Guidelines Establishing Criteria for Excluding Buildings from the Energy Performance Requirements of Section 543 of the National Energy Conservation Policy Act as Amended by the Energy Policy Act of 2005”, MDA is largely excluded from reporting energy usage because of its tenant status and lack of facility ownership. MDA is continuing to seek metered energy data for our use of Building 1705 at Dahlgren.

Specifically, these DOE’s Guidelines state: “...Agencies are not required to identify or report information on non-Federal buildings and building space for which the Government does not directly pay for energy used.” These buildings include:

- a) **Buildings with Fully-Serviced Leases.** DOE assumes that agencies will not list or report energy consumption in buildings with fully-serviced leases, where the landlord is responsible for paying energy bills. In these cases, the agency has little control over building operations and cannot implement energy efficiency.
- b) **Assumed exclusions for certain types of leased space.** This applies to leased space where the Government may pay for some energy but not all, the space comprises only part of a building, or the expiration date of the lease limits the ability to undertake energy conservation measures.

MDA owns no facilities or real property. As shown in Table 1, MDA occupies administrative and test support spaces at multiple federal facilities, military installations, and commercially-owned buildings. With few exceptions, MDA’s utility services (energy, water, steam, sewer, waste removal, and recycling) are provided through full-service leases and ISSAs that estimate MDA’s energy and water usage based on square footage of leased area.

Additionally, MDA frequently occupies “mixed-use” space, where MDA personnel and activities comprise only a portion of a building’s general occupancy. These buildings often contain a significant number of non-MDA personnel and activities that make Agency-specific energy or water usage impossible to determine.

Between FY2010 and FY2011, MDA’s facility and operational structure are expected to change significantly as a result of the requirements of BRAC 2005. BRAC 2005 required MDA to consolidate and relocate the majority of its administrative functions to the US Army’s Redstone Arsenal in Huntsville, AL; a small number of MDA personnel will remain in the National Capital Region (NCR).

In support of BRAC 2005, MDA is currently engaged in the following military construction projects:

- (1) **Von Braun (VB) III Complex** at the US Army’s Redstone Arsenal in Huntsville, AL. Begun in FY2007, VB III will be an 840,000 sq ft sole-occupancy facility that will accommodate up to 2,649 MDA personnel. VB III is scheduled for completion in FY2011.
- (2) **MDA Headquarters Command Center (HQCC)** at the US Army’s Fort Belvoir post. The HQCC will be a 99,000 sq ft sole-occupancy facility that will house 292 MDA personnel. MDA’s HQCC is scheduled for completion in FY2010.
- (3) **Dahlgren Field Activity Office (Expansion)** at the Dahlgren Naval Station, VA. MDA commissioned Building #1705 in 2007 to serve as the AEGIS Program Support facility, which is a component of the US Naval Sea System Command. The Dahlgren Field Activity Office will be expanded to 44,000 sq ft, and is expected to accommodate 176 MDA personnel. Construction will be completed in FY2011.
- (4) MDA designed these military construction projects in accordance with EPAct 2005 and the Sustainable Building criteria set forth in EO 13423; these plans integrate Whole Building Design Guide concepts and will be LEED-certified. Each of the design plans was revised to incorporate metering to provide MDA with credible data and reporting capabilities on its energy, water, and gas usage upon building completion and occupancy. While MDA is responsible for the design, construction, operation, and maintenance of these structures, the legal ownership of these buildings will reside with DoD and be managed through the host military service, as shown in Table 1.

MDA anticipates that its annual energy and water intensity usage “as reported” will increase as these military construction projects are completed and the buildings are occupied even though our “actual” usage intensity will decrease through construction and occupation of LEED-certified buildings. Specifically, as MDA moves into new facilities in Huntsville, AL and the National Capital Region, the leased space currently covered through full-service leases and ISSAs will decrease. These facilities are presently excluded from energy and water usage reporting and there is no available metered data.

Furthermore, with the completion and occupancy of VBIII, HQCC, and the Dahlgren Field Activity Office Expansion, MDA will be able to accurately report on its energy and water use intensity for the first time. This phenomenon does not mean that MDA is increasing its overall consumption of energy and water; conversely, the sustainable design, efficiency, consolidated locations, and configuration of these new facilities are expected to significantly reduce MDA’s energy and water consumption. MDA asks that ODUSD(I&E) recognize that these new facilities will result in a net decrease in overall MDA energy and water use in the future.

3. Non-Fleet Vehicle and Equipment Fuel Use. Non-fleet vehicle and equipment fuel usage for MDA is primarily associated with mission support activities for the development, testing, and deployment of the Ballistic Missile Defense System (BMDS). Examples include vehicles and equipment used to transport, operate, and maintain BMDS test assets (e.g., missiles, interceptors, radars and other sensors, etc.). Although many of these non-fleet vehicles and equipment belong to the host installations, MDA is still in the process of establishing its baseline for annual petroleum consumption and comprehensively tracking fuel use (by type) in its non-fleet vehicles and equipment.

MDA's policy is to pursue all opportunities for reducing fuel consumption, including non-fleet vehicles and equipment. MDA's Vehicle Management Directive and Standard Operating Procedures, and Green Procurement Program formally address the acquisition of more fuel-efficient vehicles and equipment, advanced technology vehicles, and equipment that reduce our annual petroleum intensity.

4. Vehicle Fleet Consumption. In FY2008, MDA migrated from the Voyager Card and SF-82 fuel purchasing system to FAST, which automatically tracks Agency vehicle acquisitions and fuel purchases by fuel type. MDA began collecting data to populate the FAST and establish a fuel consumption baseline in 2008. Continued vehicle inventory efforts combined with improved oversight of monthly FAST data input will allow MDA to obtain reliable fleet fuel consumption data and allow FEMP to acquire the data automatically.

B. Renewable Energy

In accordance with EPLA 2005 and EOs 13423 and 13514, it is MDA's policy to promote the acquisition of renewable energy in all possible scenarios. MDA is currently limited in decisions to acquire renewable energy because utility provisions are a component of our full-service leases and ISSAs with host installations. However, MDA currently purchases steam derived from burning biomass to heat two buildings on the Redstone Arsenal, operated by the U.S. Army, including the new VB II facility. MDA will also purchase this renewable steam energy once construction of VB III is complete.

1. Self-generated renewable energy. As a tenant organization, MDA has only a limited ability to pursue projects related to energy use from self-generated electricity or renewable energy thermal projects. MDA is currently evaluating the potential installation of solar carports in the parking lot of its VB III facility, currently under construction at Redstone Arsenal. The carports would have photovoltaic arrays and generate electricity for use in the adjacent office building. To the extent feasible, MDA will encourage its host facilities to pursue such projects, especially as we

acquire access to new test facilities in the South Pacific (e.g., Wake Island, Reagan Test Site in the Marshall Islands).

2. Purchased renewable energy. As a tenant organization, MDA has made no purchases of renewable energy either in the form of RECs or as part of competitive power purchases.

C. Water Conservation

DOE's guidance for "Establishing Baseline and Meeting Water Conservation Goals of Executive Order 13423" states: "Water used at certain types of facilities, i.e., non-Federal buildings for which the utility costs are not paid by the reporting agency, should not be included in water reporting.

Examples of these facilities types are Leased facilities – facilities with fully-serviced leases, where the landlord is responsible for paying all water bills. Agencies have little control over how the building is operated and maintained and cannot implement water conservation measures.

Please refer to MDA's responses in Section A-2, Excluded Facilities. MDA has very little metered data for energy, water, gas, and other utilities, which are typically provided through full-service leases and ISSAs.

MDA is reporting available water intensity information in the Data Report for FY2009 based on the available water data provided to us. As stated previously, MDA's current military construction projects will consolidate MDA's administrative operations to three new sole-occupancy facilities. These facility designs include metering that will enable MDA to report water use intensity once buildings are completed and occupied in FY2010 and FY2011.

D. Metering of Electricity Use

Please refer to MDA's responses in Section A-2, Excluded Facilities. MDA has very little metered data for energy, water, gas, and other utilities, which are typically provided through full-service leases and ISSAs.

E. Federal Building Energy Efficiency Standards

In support of BRAC 2005, MDA is presently planning three military construction projects in support of BRAC 2005:

- 1. VB III Complex** at the US Army's Redstone Arsenal in Huntsville, AL (scheduled for completion in FY2011)
- 2. MDA HQCC** at the US Army's Fort Belvoir post, VA, scheduled for completion in FY2010, and

3. Dahlgren Field Activity Office (Expansion), VA, scheduled for completion in FY2011.

These buildings have been designed in accordance with EPAAct 2005 and the Sustainable Building criteria set forth in EO 13423 and Whole Building Design Guide. Each building will be LEED-certified and MDA is working towards achieving the LEED-Silver certification for the HQCC and Dahlgren facilities. Design plans for each building were revised to incorporate metering to provide MDA with credible data and reporting capabilities on its energy, water, and gas usage upon building completion and occupancy. While MDA is responsible for the design, construction, operation, and maintenance of these structures, the legal ownership of these buildings will reside with DoD and be managed through the host military service, as shown in Table 1.

F. EISA Covered Facilities and Energy Managers

In accordance with DOE’s “Guidelines Establishing Criteria for Excluding Buildings from the Energy Performance Requirements of Section 543 of the National Energy Conservation Policy Act as Amended by the Energy Policy Act of 2005,” MDA is largely excluded from reporting energy usage because of its tenant status and lack of facility ownership.

MDA plans to assign energy managers for its new military construction facilities (described earlier). These managers will be responsible for reporting on energy and water consumption, exploring and/or implementing green technologies at each facility as appropriate (e.g., green roofing, solar carports in parking lots), implementing site-specific energy conservation personnel procedures (e.g., “Last out – Lights out” programs), and for reporting on the effectiveness of energy and water conservation measures used in these facilities.

III. Implementation Highlights of FY 2009

A. Life Cycle Cost Analysis

B. Retrofits and Capital Improvement Projects

DoD Components shall indicate their plan for, and compliance with, the EISA section 434 requirement that any large capital energy investment in an existing building involving replacement of installed equipment (such as heating and cooling systems) employ the most energy efficient designs, systems, equipment, and controls that are life-cycle cost effective.

C. Use of Performance Contracts

1. Energy-Savings Performance Contracts (ESPCs)

2. Utility Energy Services Contracts (UESCs) delivery/task orders issued in FY 2008 (include orders on regional Super-ESPCs) identifying the location and

contracting agency. The Defense Component's management structure, use of other agency contracts, verification methods used, barriers to increased usage and recommendations, and other usage of savings from ESPCs should also be included. Components are reminded of the January 24, 2008, OSD policy memo to attain a minimum investment value of 10 percent of total electrical consumption through these tools. Components not achieving this standard shall explain why and provide a plan to achieve required energy reduction with reduced use of these tools.

MDA recognizes the value of ESPC and UESC projects in reducing energy consumption and is committed to reducing its annual energy consumption. We also are working with our host installations to establish ESPC and UESC contracts as a tool for energy reduction.

As a tenant organization MDA currently has no significant capital improvement projects underway. As MDA transitions to its own LEED-compliant facilities in the next few years (occupancy by FY2012), our overall energy and water usage will decrease

IV. Data Tables and Inventories

A. FY 2009 Annual Energy Management Data Report

Available energy and water management data for MDA facilities is summarized in Table 1. Although most MDA facilities are buildings with fully-serviced leases and are not subject to reporting, we have included this information to document our current lease arrangement and provide basic data about planned future facilities for which MDA will be the sole user.

B. Excluded Facilities Inventory

We excluded the majority of MDA's facilities which are located at Navy, Air Force, and Army installations, as well as several foreign countries across the globe. Energy and water costs for these facilities are typically borne by the host installation and not passed directly on to MDA. Energy and water use data are not available for MDA's operational facilities at Fort Greely, AK and Vandenberg AFB, CA.

V. OMB Circular A-11

MDA currently does not have sufficient metered data to complete the energy management portion of Circular A-11 and defers submitting these data until we occupy buildings that are not under fully-serviced leases and where metered energy data are available. We expect this to be the case for all three military construction buildings being built for MDA. These buildings will be LEED-compliant, and MDA's HQCC and Dahlgren facilities are expected to meet the LEED-Silver standard.

MDA issued Directive 4500.01 in August 2008, *Management and Use of Motor Vehicles*. This Directive establishes policy and procedures, delegates authority, and assigns responsibility for

official motor vehicles assigned to or leased and/or acquired by MDA. The Directive also includes a requirement for MDA's Operations Directorate to review a representative portion of MDA vehicle contracts and leases to ensure that MDA's fleet management practices promote "right-sizing" of MDA vehicles and fleets, and the use of hybrid and alternative fuel vehicles (AFVs) and alternative fuels (AFs).

As part of this ongoing effort, MDA already has modified lease agreements to obtain AFVs and already has acquired several E85 flexible fuel vehicles. MDA will increase its use of hybrid and AFVs as soon as practicable, and consider proximity to AF stations in future leases and tenant agreements. We currently collecting the baseline and FAST data needed to complete the transportation management portion of Circular A-11. As we progress to better accounting systems for vehicles and fuels, the quality of available data will significantly improve.

MDA uses in-house SETA staff to develop and implement our EMS. No direct costs are associated with this project beyond staff time. We have provided Green Procurement training to MDA acquisition professionals, provided environmental awareness training to more than 4,000 MDA employees and contractors, and have a compliance assurance oversight process in place to identify MDA environmental risks and potential liabilities at installations where we conduct testing. All of these tasks are conducted using in-house SETA staff, as indicated in Table 1.3 of Circular A-11.

APPENDIX M: NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

I. Management and Administration

A. Energy Management Infrastructure

1. The Senior Official. Cynthia G. Snyder, Director, Installation Operations Office (SIO) is the senior NGA official responsible for installation operations at all assigned sites. Director of SIO is responsible for facility-wide investments in energy, water management, implementation of conservation practices and other cost-cutting measures.

2. Agency Energy Team. The energy program for NGA falls under the Quality Assurance Division (SIOQ) in the Installations Operations Office. SIOQ provides support to the sites in the development of operational procedures and assists in the development of site-specific energy and water management programs. SIOQ also prepares the annual Energy Report. The Agency Energy Manager is Mr. Jorge Casares. The site managers and their assigned staff develop and implement all site-specific plans and pursue strategies to accomplish energy and water consumption reduction goals.

NGA Facility Engineers identify and analyze opportunities to improve NGA's energy management programs. This includes identifying opportunities to reduce utility costs and use of energy and water at all of NGA's existing sites.

NGA Energy Team:

Jorge Casares, NGA Energy Manager
Anthony Jewel, Site Manager Bethesda (acting)
Ted Coon, Action Officer Bethesda
Ken Murphy, Site Manager St. Louis
Mark Lodholz, Action Officer St. Louis
Robert Marquart, Site Manager Washington Navy Yard
Marcos Irizzary, Action Officer Washington Navy Yard
Erick Knowles, Site Manager Reston
Mark Wood, Action Officer Reston

B. Management Tools

1. Awards (Employee Incentive Programs). NGA provides an opportunity for performance and incentive awards for government Energy Team members. Two members of NGA energy management team were recipients of FY2009 Performance Award

2. Performance Evaluations. NGA considers energy conservation as part of the government team members' performance appraisal process

3. Training and Education.

a) NGA personnel attended Intelligence Community Environmental and Energy conferences during FY 2009

- (1) Greening the IC 2009 (Washington, DC) – Energy Conference sponsored by Defense Intelligence Agency
- (2) Danish Embassy Energy Showcase (Washington DC)
- (3) GovEnergy (Rhode Island) – Energy Training Workshop and Tradeshow

b) NGA Personnel received training as part of the BOMI curriculum

- (1) Technologies for Facilities Managers
- (2) Electrical Systems and Illumination

c) Educated all new NGA purchase card holders and approving officials in Green Procurement standards.

d) During 2009, NGA/SIOQ outreach efforts included Awareness Training sessions, cross agency communication and collaboration with internal stakeholders. These advocacy and awareness efforts addressed the following requirements and topics:

- (1) Greening Data Centers – procurement of energy efficient IT equipment
- (2) Federal laws related to environmental, safety, transportation and energy requirements
- (3) Power savings and standby devices
- (4) Biofuels and alternative fuel vehicles

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

1. Goal Subject Buildings. NGA's energy utilization rate for FY2009 was 218,140 Btu/GSF compared to a rate of 177,040 Btu/GSF in FY 2003. Increases were experienced in both electricity usage and fossil fuel consumption for heating purposes (natural gas and fuel oil). This represents a 23.2% increase compared to the FY2003 benchmark.

While energy reduction remains a high priority goal, energy utilization has increased compared to FY 2003 as NGA's mission and personnel strength has grown rapidly. The need to provide vast amounts of graphically intense data on a virtual real time basis requires energy intensive production equipment, storage media and transmission systems. In addition, NGA's large data center in St. Louis has gone through an expansion which resulted in 50% increase in electricity demand for that facility. Continued increase in energy consumption is expected **for the foreseeable future until data center demand stabilizes.**

2. Excluded Facilities. NGA does not have any facilities meeting the criteria for exclusion

3. Non-Fleet Vehicles and Equipment Fuel Use. Non-fleet equipment fuel use for NGA consists of fixed emergency generators at the Reston and Bethesda sites which provide critical backup emergency power for operational and life safety purposes, and at the Navy Yard for life safety purposes only.

B. Renewable Energy

1. Self-generated renewable energy. NGA does not self-generate energy for reuse. NGA investigated an investment in Solar Energy as an auxiliary energy supply for NGA's New Campus East facility. NGA facility engineers attended a technical exchange at a BP Solar facility. Thus far, NGA deemed presently available solar technologies to not be suitable for life-cycle cost effective self-generation.

2. Purchased renewable energy. NGA did not purchase renewable energy under existing utility contracts.

C. Water Conservation

FY 2007 consumption is used as the baseline for future consumption reduction requirements.

NGA reports water consumption figures for 4 of our 6 active sites, totaling 2.9 million gross-square-foot (GSF). The two sites not reported by NGA are captured by host locations: Washington Navy Yard is reported by GSA, which includes water costs in our lease payments; and usage for the NGA College on Fort Belvoir is reported by the Army.

In FY 2009 NGA consumed 122.7 million gallons of water at a cost of \$970.496, an increase in consumption of 17.2% compared to FY07. The consumption increase is attributed to the increased demands for cooling of energy intensive production equipment and increases in building population at NGA sites.

NGA established a Water Management Program in FY2003, which incorporated Water Management Plans for each of our 6 major sites. For FY09, NGA continued to place emphasis on implementation of Best Management Practices as an efficient and cost effective way to achieve water conservation.

D. Metering of Electricity Use

All 5 reporting NGA sites have standard meters providing consumption information for electricity, natural gas and water. Electricity consumption for the NGA College at Fort Belvoir is reported through the Army. If funding is available in FY10, NGA will audit the two western facilities (Arnold and St. Louis) with the intent of replacing existing meters with ones meeting FEMP standards for advanced metering. With completion of the New Campus East facilities in FY11, all NGA locations will be served by advanced meters.

E. Federal Building Energy Efficiency Standards

In FY09 NGA continued the construction of a BRAC project that will consolidate all sites in the east into a **new** campus located in Springfield, Virginia. The campus is being designed to meet the energy reduction guidelines of ASHRAE 90-1 and is on its way to receiving a Silver Certification in Leadership in Environmental and Energy Development (LEED) from U.S. Green Building Council.

III. Implementation Highlights of FY 2009

NGA researched and selected to adopt DoD E-Mall for all future purchases (2011) by NGA credit card holders. This program requires the purchase of green and energy efficient products. Ensured that NGA's Office of Acquisition Contracts Policy included environmental, energy, economic and ESOH performance language in NGA acquisitions and contracts.

NGA annually procures thousands of personal computers and monitors with EnergyStar enabled features. All of the products listed on NGA's approved hardware list include Energy Star features.

NGA engaged in discussions with EnerNOC corporation regarding NGA's participation in a demand response program. NGA future participation in this program promises to shed 3-4% percent from annual cost of electricity.

As part of the FY2005 BRAC mandated New Campus East project, NGA is actively committed to the guiding principles set forth in the Federal Leadership in High Performance and Sustainable Buildings MOU signed in 2006. Key activities in FY09 include:

- Implementation of an independent Commissioning Authority to provide design, construction and occupancy/operations phase services following guidelines published in ASHRAE Guideline 0-2005: the Commissioning Process.
- Identification during design of best practices, methods, processes and technologies required to meet LEEDS Silver criteria for new buildings.

APPENDIX N: NATIONAL SECURITY AGENCY

I. Management and Administration

A. Energy Management Infrastructure

1. Senior Agency Official. Mr. Stephen Lopez, Deputy Associate Director for Installations and Logistics (D/ADIL), is the designated senior NSA official for Energy, and oversees the Agencies energy and water management program.

2. Agency Energy Team. The NSA Energy Team is responsible for identifying and initiating energy conservation projects to meet the objectives of EO-13423. The following are members of the NSA's Energy Team, and represent various agency organizations:

- Lynette Hinrichs, NSA Energy Program Manager
- Leigh Brokovich, NSA Program Manager
- James Sturla, NSA Energy Manager
- Wah Chan, NSA Project Manager
- Craig Goralski, Chief of Facilities Engineering
- Ken Shoster, Chief Infrastructure Maintenance
- Glen Schech, Chief Operations, Maintenance, and Utilities
- Steve Hause, Finance and Accounting
- Tammy Hebron, Finance and Accounting
- Various representatives from OHES
- Various representatives from Security

B. Management Tools

1. Awards (Employee Incentive Programs). Awards are given to employees for outstanding performance, accomplishments, and innovative suggestions related to facilities projects and programs. Awards are also given to individuals or teams where unique initiatives and exceptional performance proved to be deserving of special recognition. These awards frequently involve energy saving ideas that are beneficial to the Agency.

2. Performance Evaluations. The NSA Energy team is committed to cost effective energy saving projects and programs designed to benefit the Agency in numerous areas. Mr. Lopez, (D/ADIL) the senior agency energy official has provisions included

in his annual employee performance appraisal directed at the agency energy conservation program.

3. Training and Education. Agency maintenance staff and first line managers attend training for their respective disciplines. Employees attended GovEnergy 2009, workshops, conferences, and symposiums, which included energy conservation modules. Benefits derived from this training include awareness and application of new and emerging energy saving technologies, new techniques, materials, and best management practices. Employees also attended FEMP workshops which provided training on ESPC, UESC, and Data Center Energy Reduction. Agency employees attended LEED-New Construction (NC) training, which resulted in 9 personnel passing the LEED-NC Exam and became LEED Accredited Professional’s. NSA had a Federal Financing Specialist from FEMP present information on the process to get an ESPC implemented. The Agency continues to market the web page, which is used to notify the workforce of “Green” initiatives, projects, and products being implemented at the agency. The Agency continues to provide energy savings tips and resources on the Green Program web page.

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

1. Goal Subject Facilities. The following data is a comparison of electric, oil, and natural gas in Btu’s/ft² between the 2003 base year, and the current year. Because of the nature of NSA’s mission, we have a high technical load in many facilities that is typically fixed and grows annually.

Table M-1

Base Year (2003)	Current Year (FY 2009)	Percentage Change
Btu/Ft2	Btu/Ft2	%
263,456	281,260	6.8

2. Excluded Facilities. NSA will not be requesting any exemptions FY-2009.

3. Non-Fleet Vehicle and Equipment Fuel Use. NSA does not currently have any non-fleet vehicles to report for FY-2009.

B. Renewable Energy

1. Self Generated renewable energy. NSA completed a project in March 2009 which produces renewable energy. The Visitor Center had a Photovoltaic (PV) Power Array installed on the rooftop, which saves approximately 75,000 kWh per year in electrical use.

2. Purchased renewable energy. NSA did not purchase renewable energy or REC's in FY-2009.

C. Water Conservation

In FY-09 NSA paid \$879,682 for 510 million gallons of water. Water use, calculated in gals per sq ft., decreased by 3% when compared to FY-2008.

NSA continues to implement water-conservation measures, and uses water saving fixtures in lavatories during renovation or repair projects. We are also evaluating several no-water, and low-water use devices for deployment on campus. Future plans also include installing separate water meters on each building to determine actual water consumption.

D. Metering of Electricity Use

NSA is in the process of updating, replacing, and repairing electric meters throughout the campus. Meter installation is being coordinated with the E-SCADA replacement/expansion program scheduled for completion around FY-14. Approximately 61% of buildings are metered to date, which equates to approximately 85% of all power consumed.

E. Federal Building Energy Efficiency Standards

No new building designs were started in FY-09.

F. EISA Covered Facilities and Energy Managers

For the FY-2009 energy report, EISA covered facilities are identified as a group of facilities at a single location managed as an integrated operation. There is currently only one energy manager for the seven groups identified in the EISA Covered Facilities page of the FY-09 Energy Management Data Report. However, this program is being expanded in FY-10 and more Energy Managers will be added.

III. Implementation Highlights of FY 2009

A. Life Cycle Cost Analysis

Energy audits identify life-cycle issues. NSA maintains this list of potential energy projects, which are prioritized by the Energy Team and Facility Planning Board according to mission, pay back, and O&M cost value. New projects are added to the list and prioritized accordingly.

B. Retrofits and Capital Improvement Projects

Various energy savings projects were undertaken in FY-09 which include: energy efficient lighting installations, building renovation projects utilizing LEED silver design criteria, EMCS replacement projects, and a renewable energy project which includes high efficiency HVAC, solar PV and lighting.

C. Use of Performance Contracts

1. Energy Savings Performance Contracts (ESPCs). NSA did not award any ESPC contracts in FY-2009. However, in FY-09 NSA began ESPC discussions with representatives at the Federal Energy Management Program (FEMP). An ESPC project facilitator has been assigned to NSA and a letter of interest has been drafted in FY-09 with the intent to distribute in FY-10.

2. Utility Energy Services Contracts (UESCs). NSA awarded 1 UESC contracts in FY-2009. NSA developed a business case and received a proposal, which is being evaluated, for a large lighting retrofit project which will reduce over 1 MW of connected load from our facility annually.

D. Use of ENERGY STAR[®] and Other Energy-Efficient Products

NSA utilizes ENERGY STAR, and energy-efficient products for all new installation, renovation, and O&M projects. Energy efficiency language is incorporated in all new construction and renovation project specifications. The NSA Green Team hosted three events which promoted ENERGY STAR products for the Agency and for the employees' homes.

E. Sustainable Building Design and High-Performance Buildings

NSA did not construct any new facilities during FY- 2009; however, LEED Silver criteria is used in engineering designs. NSA will also be pursuing certification on selected projects. There are currently projects being developed to have three buildings undergo an assessment to become LEED Certified. NSA has eight buildings in the process of being certified at various levels.

F. Energy Efficiency / Sustainable Design in Lease Provisions

NSA has several leases where energy efficient methods and products have been used for renovations and repairs. Employees working in these spaces follow all existing agency energy policies. When entering into a lease for unfinished space that NSA will fit-up, we employ the same design standards used for our new buildings and renovation projects.

G. Distributed Generation

NSA does not currently utilize these types of systems at this time

APPENDIX O: TRICARE MANAGEMENT AGENCY

I. Management and Administration

A. Energy Management Infrastructure

1. The Senior Agency Official.

- Tricare Management Activity/Portfolio Planning and Management Division

(1) The Tricare Management Activity/Portfolio Planning and Management Division (TMA/PPMD) energy program manager is Mr. Kent Bein. As the Defense Health Program (DHP) activity responsible for facility funding and criteria, TMA/PPMD leads and coordinates sustainable design, energy and water efficiency/conservation throughout DoD's medical facilities' program.

(2) TMA/PPMD's energy program manager serves as chairperson of the Health Facilities Steering Committee (HFSC) energy sub-committee for the coordination of DoD's service medical department's (Army MEDCOM, Navy BUMED and Air Force Surgeon General) energy management programs.

- Army Medical Command

(1) Army Medical Command (MEDCOM) established an energy management division headed by the MEDCOM Energy Program Manager, Mr. James Butts. The MEDCOM energy program manager receives policy guidance from the Department of Energy, DoD, TMA and through coordination with Headquarters Department of Army (HQDA) and other federal agencies. MEDCOM issues further guidance as necessary and supports the installations and MTFs in executing their energy programs.

- Navy Bureau of Medicine and Surgery

(1) The Senior Official and headquarters program manager are responsible for advocating policy, programs, and initiatives to implement applicable Executive Orders, DoD directives, other federal or agency requirements, and the Bureau of Medicine and Surgery (BUMED)-specific initiatives. In addition, they are responsible for managing and improving energy and water efficiency performance across BUMED.

(2) The BUMED Senior Official for energy management is CAPT Darryl Creasy, (202) 762-3512, email: Darryl.Creasy@med.navy.mil.

(3) The BUMED Energy Program Manager is LCDR Titania B. Cross, (202) 762-3523, email: Titania.Cross@med.navy.mil.

2. Agency Energy Team

a) TMA/PPMD

(1) The TMA/PPMD energy management team is the HFSC energy sub-committee. It includes members from each service's medical command and related organizations (e.g., NAVFAC, USACOE). This sub-committee was convened for the first time in March 2009, and meets quarterly. Current membership includes:

- Mr. K. Bein, TMA/PPMD (chair)
- Lt CDR T. Cross, Navy Bureau of Medicine
- Mr. J Butts, Army Medical Command
- Mr. D. Christiansen, Air Force Medical Support Agency
- Mr. J. Hardin, Army Corps of Engineers
- Ms. T. Henderson, Naval Facilities Command (NAVFAC)

b) MEDCOM

(1) Within MEDCOM, Fort Detrick and Walter Reed Army Medical Center (WRAMC) energy managers control site-specific energy and water conservation programs at their installations. Energy project managers at other Army installations medical treatment facilities (MTF) control their energy program in accordance with host installation operating agreements and in coordination with US government agencies, DoD, MEDCOM, TMA and other recognized conservation criteria.

(2) WRAMC Energy Team:

- Garrison Commander, Col Peter T McHugh;
- Base Operations Officer, Ronald Young;
- Supervisory General Engineer, Nino Fleri;
- Lead General Engineer, Tajinderdip Uppal;
- Energy Manager, Mohammed Moiduddin

- Alternate Energy Manager, Mechanical Engineer, Michael Early.

(3) The Fort Detrick Energy Manager is Mr. Mark Zangara

c) **BUMED.**

(1) BUMED's Energy and Water Management Team consists of a Senior Official for energy management, a headquarters program manager, and the energy managers at the Navy Medicine regions and activities.

(2) At the medical treatment facility level, the facility manager, or a member of their staff, is charged with managing and implementing facility-level energy and water efficiency initiatives and coordinating energy activities with the host installation's energy manager.

(3) All levels of the energy and water management team have a responsibility for energy and water efficiency at medical treatment facilities. While the facility manager's focus is on their own facilities, higher-level managers have both a facility and BUMED-wide responsibility.

(4) The BUMED Energy and Water Management Team is also supported by:

- Commander, Navy Installations Command (CNIC) and Commandant of the Marine Corps (CMC (LF)) host installation energy managers (at sites where BUMED is a tenant),
- Naval Facilities Engineering Support Command (NFESC) for engineering support,
- Naval Facilities Engineering Command (NAVFAC) for contracting and technical support for Energy Savings Performance Contracts (ESPCs), and
- The TRICARE Management Activity (TMA) for programming support in the development and implementation of Energy Conservation Investment Program (ECIP) projects.
- The Department of Energy, Oak Ridge National Laboratory for technical support and guidance.

B. Energy Management Infrastructure

1. Awards (Employee Incentive Programs). In FY2009, TMA/PPMD did not use employee incentives to reward exceptional performance in implementing EO 13423. Going forward, TMA/PPMD and the energy sub-committee will develop a plan and identify opportunities for leveraging these management tools.

a) **BUMED.** There are a variety of awards and recognition opportunities in the area of energy and water management that are available to BUMED facilities and BUMED leaders. At the activity level, the Navy hosts a Secretary of the Navy (SECNAV) energy awards ceremony annually to recognize exceptional achievements in energy and water efficiency. At the facility and individual level, the Federal Energy Management Program (FEMP) offers the Federal Energy and Water Management Awards each year.

At the individual building level, there are several opportunities to recognize energy and water management achievements. These include FEMP's Federal Energy Showcase Award to recognize and showcase buildings that are models for efficiency. From EPA/DOE, ENERGY STAR Label awards are available for high performing buildings. In this program, federal buildings are measured alongside private sector buildings. Naval Medical San Diego, a prominent BUMED hospital, was the first federal hospital to receive this prestigious recognition. LEED (Leadership in Energy and Environmental Design) recognition is also available for both new and existing buildings.

BUMED will utilize these awards to recognize its personnel, activities, and facilities for outstanding performance. At the National Naval Medical Center (NNMC), Bethesda, MD a comprehensive NNMC Environmental Awards Program (that includes categories for energy and water conservation) was developed in fiscal year (FY) 2009 and is being presented for review at the November 2009 Emergency Management Review to the Deputy Commander.

At the Naval Medical Center (NMC) Portsmouth, VA, performance incentives are available for exemplary performance relating to energy. Also suggestion boxes are installed around the command where energy saving projects can be submitted by staff members.

2. Performance Evaluations.

a) The **TMA/PPMD** energy manager position description and performance evaluation includes successful implementation of provisions of Executive Order 13423.

b) **MEDCOM** energy manager position descriptions includes references to EO 13423.

c) **BUMED:** The Navy has a standard description of the roles and responsibilities for energy managers. These will be used to set job performance objectives/expectations. The description outlines roles and responsibilities at both

the installation and regional levels and can be used to set performance expectations in performance plans.

d) For NMC Portsmouth and Naval Hospital (NH) Bremerton, the performance objectives of their Energy Managers reflect the implementation and execution of their energy programs. At NNMC Bethesda, the staff will utilize the National Security Personnel System (NSPS) performance evaluation mechanism to assist implementation of provisions of BUMED's energy management strategy.

3. Training and Education.

a) **TMA/PPMD.** The TMA/PPMD Energy Manager this year served by invitation as a select Kaiser Permanente (KP) Energy Think Tank panel member to plan and develop KP's energy conservation policy for the next 10 years. Mr. Bein and members of the energy sub-committee also attended training sessions at the Department of Energy's GovEnergy 2009 conference, where Mr. Bein was a guest speaker on Specialty Building Energy requirements; Hospitals.

b) **MEDCOM.** WRAMC: Energy Manager obtained Certified Energy Manager (CEM) certifications in FY09.

c) **BUMED.** A variety of training and educational resources are available to assist BUMED staff in the areas of energy and water management expertise. Internal to the Navy, the Department of the Navy Energy Program website offers a plethora of materials on the subject, including guidelines for energy management teams, guidelines for building energy monitoring, energy managers guidance, lessons learned, and other offerings. There are four energy awareness courses offered within Navy that reach from general employees to executive levels.

Trained facility energy managers are available to BUMED staff at BUMED tenant sites (approximately half of BUMED hospitals and most BUMED clinics are tenants on installations). The Association of Energy Engineers (AEE) offers many courses and certifications in the areas of energy management. The American Association of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) offers many training courses associated with energy-related equipment and systems (many of which are on-line).

In addition to training, the Navy has a variety of communications that are made available to all Navy staff in order to raise employee conservation and pollution prevention awareness. These include energy-related awareness materials, a regularly-distributed "Energized" newsletter, tips, success stories, and facts sheet.

In FY 2009, several BUMED facility managers participated in online energy training opportunities offered by Navy regions or attended public or private training.

C. Alliances and Collaboration

- 1. TMA/PPMD** coordinates and corresponds with non-federal energy experts throughout the country to share and develop health facility energy efficiency and conservation methods, policy, and long range conservation goals. This collaboration includes Kaiser Permanente, GE Health Care, Gunderson Lutheran Health Care, and other energy innovators throughout the health care community.
- 2. TMA/PPMD** holds membership in the Department of Energy's Healthcare Energy Alliance Steering Committee to further energy/water conservation and efficiency throughout health facilities in the United States and remaining global community.
- 3. TMA/PPMD** collaborates with and uses National Renewable Energy Laboratory (NERL) and Oak Ridge Energy Laboratory (OREL) to investigate health care facility renewable energy opportunities and to collect data and provide guidance to baseline measurement the various facility types in the Defense Health Program inventory.

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

Energy Management is complicated in DoD healthcare facilities due to a number of circumstances, including:

- Influx of wounded service members from Operation Iraqi Freedom and Operation Enduring Freedom
- Complex facilities with large energy demands for medical equipment and sufficient outside air changes
- 24/7 operations that increase our energy demand and limit opportunity for retrofits and upgrades

The data reported in this report represents two MEDCOM installations, Walter Reed Army Medical Center (WRAMC) and Ft. Detrick. All remaining MEDCOM facilities are reported to the Department of the Army. For these two installations, the FY2009 energy intensity was approximately 2% higher than the FY2003 baseline.

The data reported in this report represents BUMED's seven stand alone installations: National Naval Medical (NNMC) Center Bethesda, MD, NMC Portsmouth, VA, NMC San Diego, CA, Naval Hospital (NH) Beaufort, SC, NH Bremerton, WA, NH Guam, and Naval Health Clinic (NHC) Charleston, SC. Prior to FY 2007, this data was reported with the Department of the Navy. All remaining BUMED facilities are reported with the Department of the Navy.

Energy consumption for BUMED’s standalone installations in FY2003 was 196,400 MBtu/kSF. In FY2009, the consumption was 152,465 MBtu/kSF, a decrease of 22.4 % (see Table 1). This reduction is a significant decrease from the consumption of 172,629 MBtu/kSF reported in FY2008. In general the decrease in energy intensity can be associated with mild winters experienced in FY 2009.

1. Goal Subject Facilities.

Table O-1. TMA Energy Use Intensity

Installation	FY2003 MBtu/ksf	FY2009 MBtu/ksf	FY2009 % Change
Walter Reed Army Medical Center	221,000	222,820	0.80
Fort Detrick	321,300	330,160	2.80
MEDCOM Subtotal	264,954	269,859	1.90
BUMED Subtotal	196,400	152,465	-22.40
TMA Total	226,880	204,660	-9.80

2. Excluded Facilities. BUMED excluded the following facilities in its installation facility inventory of NH Bremerton, WA.

a) B04, Water Storage Tank - Structures such as outside parking garages which consume essentially only lighting energy, yet are classed as buildings. While great opportunity exists for energy efficiency measures in such structures, the relatively lower energy use per square foot of the unconditioned space should not be counted as “building” space. Energy used for airport and street lighting not directly associated with a building may also be assumed to be excluded from goals.

b) BFH5, Fleet Hospital Training Site (Tents)- Buildings where energy usage is skewed significantly due to reasons such as: buildings entering or leaving the inventory during the year, buildings down-scaled operationally to prepare for decontamination, decommissioning and disposal, and buildings undergoing major renovation and/or major asbestos removal. These buildings may be excluded only during the fiscal year when energy usage is skewed. Energy efficiency measures should be considered for down-scaled buildings awaiting disposal if the measures pay for themselves prior to building demolition.

3. Non-Fleet Vehicle and Equipment Fuel Use.

a) **BUMED** In FY 2008, the reported Btus for Non-Fleet Vehicle and Equipment Fuel Use were 1.7 Btus. In FY 2009, consumption decreased to 1.1 Btus. Installations purchased Energy Star grounds maintenance equipment, electric powered carts, more fuel efficient security vehicles, and installed permanent replacements for generator powered security lights required at main gates.

B. Renewable Energy

In most cases, TMA medical treatment facilities (MTF) are tenants on a larger installation and receive utilities (renewable and non-renewable) from the host installation. However, in FY2010, the energy sub-committee is evaluating opportunities for renewable and alternative energy sources integrated in our buildings and facilities.

As part of our effort to help DoD pursue renewable energy initiatives, TMA, MEDCOM and BUMED will seek opportunities for self-generation and renewable energy purchases. The ability to contribute in these areas may be limited at tenant-based facilities which make up the dominant portion of the portfolio. This occurs, of course, because many of these facilities are connected to district heating and/or cooling systems of the host installation.

1. Self-Generated Renewable Energy. Ft. Detrick produced 51,410 MBtu of steam from the incinerator plant.

C. Water Conservation.

WRAMC: In 2007, WRAMC identified numerous mechanical problems causing more than 100,000 gallons of water per day to be wasted. All of these problems have now been addressed, which has greatly reduced the water use intensity reported above.

Table O-2. TMA Water Use Intensity

Installation	FY2007 kgal/ksf	FY2009 kgal/ksf	FY2009 % Change
Walter Reed Army Medical Center	86.2	52.1	-39.6
Fort Detrick	196.0	40.4	-79.4
MEDCOM	134.3	47.0	-65.8
Subtotals			
BUMED Subtotals	62.0	48.9	-21.1
TMA Total	94.1	48.0	-49.0

D. Metering of Electricity Use

The Air Force Medical Support Agency has installed advanced meters at its 62 largest medical centers and clinics, and is using this data to target facilities for retro-commissioning and other energy project investments

WRAMC has recently completed construction on a new electrical substation that provides metering for all feeders. The metering is being upgraded to provide advanced metering capabilities, which would provide real-time data. Currently 18 advanced meters account for approximately 58% of electrical consumption. The percentage of electricity metered for FY10 is expected to rise to approximately 95%. Only 26% of appropriate buildings are individually metered (five buildings). Most of the 18 meters, provide data for multiple buildings.

BUMED has determined its energy and water metering requirements at all of its buildings and has determined the need for advanced meters in accordance with EPACT 2005 and EISA 2007. Due to Stimulus funding received by Navy and USMC for metering needs, BUMED will be provided with approximately 127 advanced meters planned for installation over the next several years.

E. Federal Building Energy Efficiency Standards

Fifty percent (50%) of 2010 military construction (2 of 4 hospital projects (Ft. Belvoir Hospital and Bethesda Military Medical Center) programmed to achieve 30% better than ASHRAE 90.1.

Design work for BUMED's new construction and renovation work is accomplished through NAVFAC, who will ensure all new design work will meet those standards where achievable. Note: 93% of new building designs started since the beginning of FY 2007 are expected to be 30% more energy efficient than relevant code, where life cycle cost effective.

III. Implementation Highlights of FY 2009

TMA PPMD

To establish a more robust DHP Energy Program, TMA/PPMD convened the HFSC energy sub-committee for the first time in March 2009. The goal of this committee is to share information and best practices across medical commands, coordinate efforts, and serve as a distribution point for DHP policy and guidance

TMA/PPMD completed energy audits at four medical centers:

- Wright Patterson Air Force Base Medical Center
- Portsmouth Navy Medical Center
- San Diego Naval Medical Center

- Jacksonville Naval Medical Center

Working with HFSC energy sub-committee members, began process of compiling energy and water cost and consumption data into the ENERGY STAR Portfolio Manager tool. This data will be used to:

- Track progress towards meeting energy and water intensity reduction goals
- Identify potential facilities for ENERGY STAR recognition (top performers)
- Target facilities for evaluations and investments

Provided strategic communications and guidance such as advanced metering best practices and state utility incentive fact sheets

MEDCOM

Walter Reed Army Medical Center FY2009 Implementation Highlights:

- Increased metering capabilities provided from 18 new advanced meters which became active during FY09. These meters will provide access to better energy data.
- Energy manager provides notifications to building occupants about thermostat settings, and establishing set point limits to reduce energy consumption.
- An ongoing set of three ESPCs has provided energy savings since 2002. In FY09, these ESPCs provided approximately 737 million Btus of energy savings.

BUMED

A. Life Cycle Cost Analysis.

BUMED's approach for energy projects is to always make decisions that consider life-cycle cost implications. All Navy energy projects are required to be evaluated on a life-cycle cost (LCC) basis (Executive Order 13123, Section 401). Evaluations will use the Department of Energy's Building Life Cycle Costing (BLCC) analysis software.

B. Facility Energy Audits.

In FY 2009, energy audits were performed at NMC Portsmouth, NH Jacksonville, and NMC San Diego. The audits resulted in approximately 47 recommendations with a proposed savings of \$5.4M. Several of the recommendations that were identified will be used for submission of ECIP projects in FY 11. Energy audits planned for FY 10 include NH Beaufort and NH Bremerton. At a minimum, BUMED will strive to conduct facility audits in the quantity required at agencies by EISA 2007 legislation and the FEMP guidance that interprets this legislation. This legislation, if interpreted rigidly, will force all agencies to perform comprehensive audits on 25% of their facilities annually leading to comprehensive audits in 100% of an agency's facilities every four years. Implementation needs to be more flexible to improve effectiveness in the face of limited

resources. An across-the-board strategy will force an agency to conduct comprehensive audits on its great performers and to repeat this exercise every four years. Thus, the great performers, which need little attention, will be competing alongside the poor performers for auditing resources. Recent communications in the development of FEMP's guidance indicates this flexibility will be incorporated into the guidance.

BUMED will focus its limited resources toward facilities with the most benefits as best possible. For BUMED's hospitals, this may not be such an issue since even efficient facilities, due to their large size, often have sizeable opportunities that can be uncovered by skilled assessors. For the hundreds of medium- to smaller-sized BUMED facilities (200 ksf and less), however, focused targeting will be important strategy for improving program effectiveness.

BUMED will utilize energy performance benchmarking to help prioritize its audits and guide strategic energy and water management decisions. Improved targeting is essential when dealing with mid-sized to smaller buildings where audit costs can represent a sizeable portion of improvement costs. Standard practice, both in the government and private sector, often deploys audit teams to buildings without having any idea of building performance. For maximum effectiveness, it is critical to minimize deployment of audit teams to higher performing buildings. For its mid-sized to smaller buildings, BUMED will target those in the lowest performance quartile for immediate auditing and improvements and assign the lowest priority to those in the highest performance quartile. EPA's Energy Star benchmarking capability will be utilized to quantify the performance of some building types (hospital, office, and warehouse) and benchmarking.

C. Energy Conservation Investment Program (ECIP) Projects

ECIP projects continue to be an available resource for improving BUMED facilities. Annually, BUMED facility managers will develop proposals for ECIP projects to leverage the available resources of this program for efficiency improvements. Two ECIP projects submitted for FY 2011 (as a result of FY 2009 performed energy audits) include: installing low flow water devices at NMC Portsmouth (\$217 K/year savings) and installed boilers at NH Jacksonville (\$700K/year savings).

D. Use of Performance Contracts

BUMED will utilize Performance Contract vehicles to help achieve energy and water cost savings. Due to their 24/7 operations and stringent environmental conditions, medical centers and hospitals are complex buildings where energy savings are not as simple to achieve as in other building types. Thus, the level of expertise offered by ESCOs and professional energy auditors will likely be needed to deliver substantial savings. Addressing BUMED clinics, laboratories, and other diverse building types,

particularly those located remotely from larger BUMED facilities, will likely require bundling if addressed via these contracts.

E. EnergyStar® Buildings

BUMED's Naval Medical Center San Diego was the first DoD hospital to be recognized as ENERGY STAR. Today, it is the first of only three DoD hospitals awarded this distinction. BUMED will rate the current energy performance of its medical centers and hospitals using the ENERGY STAR performance rating tool. This assessment will give BUMED an indication of the performance of these facilities relative to their peers and help BUMED identify its primary targets for energy improvements. Building size and energy costs by themselves, the general metrics used for targeting, are not sufficient for effective targeting. Knowledge of building performance, which is an indicator of efficiency, is key information for successful targeting.

As BUMED moves to assess its secondary targets (clinics), it will develop its own method for rating energy performance, as a rating system for clinics is not available from Energy Star. BUMED will pursue data from the Veterans Administration so that its clinic benchmarking capability will have a broad development basis. Benchmarking will allow BUMED to identify its best targets in its portfolio of approximately 200 clinics so its limited efficiency resources can be strategically deployed. This will substantially improve a simple approach like sending auditors to all facilities in decreasing order of size or perhaps the largest 50 which are prioritization strategies that can easily be improved upon.

EPA's ENERGY STAR benchmarking capability will be utilized to quantify the performance of some building types (hospital, office, and warehouse) and benchmarking. Based on recent efforts to utilize this tool, BUMED has embarked on a massive effort to collect data on facilities that comprise 75% of BUMED's total inventory. At this point, BUMED has populated Energy Star with approximately 50% of the required data.

F. Sustainable Building Design

Sustainable building design principles are part of the siting, design, and construction processes for Navy facilities. Navy Facilities Engineering Command is designing facilities at the LEEDTM "Silver" level. BUMED policy is to follow Navy policy and will therefore design its buildings to these criteria as well.

G. Energy Efficiency in Lease Provisions

Pursuant to EISA 2007 requirements, BUMED will seek ENERGY STAR certified buildings in leasing arrangements. Energy Star certification in the most recent year is the standard.

H. Distributed Generation

Naval Medical Center San Diego is BUMED's premier site for distributed generation to date. One of BUMED's largest medical facilities, this facility has a 4.5 MW onsite, combined heat and power generation system that provides both electricity and heating to the facility. BUMED will seek other opportunities to replicate this success and utilize distributed generation where site demands and rate structures make it practical. Assessments will be a part of performance contracts considered at BUMED's medical centers and hospitals.

At BUMED tenant sites, distributed generation improvements will be coordinated with the host installation, as self-generating electricity and heat on the hospital campus could substantially reduce the electricity and heating energy needs from the installation's distribution systems for these utilities. While distributed generation might provide substantial cost savings to BUMED, it could have both positive and negative impacts to an installation due to these reduced demands.

APPENDIX P: WASHINGTON HEADQUARTERS SERVICES

I. Management and Administration

A. Energy Management Infrastructure

1. The Senior Agency Official. During FY09, Terri Robertson was the Pentagon Energy Manager. Her position is located within the Defense Facilities Directorate (DFD) in the Engineering and Technical Services Division (ETSD). The official's role and responsibilities are to provide leadership for the WHS Energy Management Program and obtain resources for energy conservation projects.

The Pentagon Energy Manager is responsible for the utilities supplied to the Pentagon Reservation which includes the Pentagon, the Pentagon Heating and Refrigeration Plant (PH&RP), Federal Office #2 (FOB 2/Navy Annex), the Remote Delivery Facility (RDF), the Modular Office Complex (MOC) and all Reservation grounds and parking areas. The Energy Manager is also responsible for the utilities for the Hybla Valley Office Building (HYBLA) and the U.S. Court of Appeals for the Armed Forces (CMA). The total gross square footage for these facilities exceeds 8 million gross square feet.

2. Agency Energy Team. The DFD Energy Advisory Committee members included a chairman, Terri Robertson, Bob Cox, (Director, ETSD), James Buczek, Albert Blake and Swaraj Basu from ETSD; Robert Candido, Rob Walker, and a Building Operations Command Center Representative ((BOCC) – Paul Vierkutz) from the Pentagon Building Management Office (PBMO); Steve Carter and Robert Harvey from FOB2; and James Graves from the Pentagon Heating and Refrigeration Plant (PH&RP). There is also an additional smaller Sustainability Team was formed that includes Terri Robertson, Jim Buczek, Joe Eichenlaub, Crystall Merlino, and Mike Langone. These teams' responsibilities are to formulate and execute energy management strategies to meet or exceed the Executive Order goals and to report progress.

B. Management Tools

1. Awards (Employee Incentive Programs). PH&RP has an Award Fee in their contract as a Most Efficient Organization (MEO) resulting from a previous A-76 Competition. The PH&RP personnel must maintain performance requirements of the equipment through proper staffing, maintenance, repairs, etc. Each quarter the MEO may get up to \$25,000.00 in awards, a small portion of which is directly related to energy efficient operations. Through 3 quarters in FY09, they received 67% of the total available award with the 4th quarter award pending.

2. Performance Evaluations. Some job descriptions and critical elements include energy conservation principles for appropriate management and operations personnel and are updated annually.

3. Training and Education. During Earth Week each year, booths are arranged in the Pentagon to educate tenants about energy conservation, recycling and other environmental friendly activities. Pamphlets, cards, and other various reading materials are made available to provide information on practices and their benefits. Also, during October (Energy Awareness Month), booths are set up in the apex to educate tenants about energy conservation. The Pentagon Renovation Office (PENREN) conducted Sustainability and Environment Integrated Product Team (SE IPT) meetings throughout the year. These Meetings focused on initiatives to incorporate best practices in sustainable design and construction practices. These meetings included guest speakers that have knowledge and expertise in the built environmental field to share with PENREN new technologies and industry standards. PENREN also conducted a LEED-CI Workshop and a LEED for Operations & Maintenance Workshop. As for off- site conferences, Pentagon personnel participated in the 1) National Facilities Management and Technology Conference in Baltimore, MD and 2) the EnergyGov2009 Conference in Providence, RI. In all, about 36 of the appropriate personnel types were trained during FY09.

II. Energy Efficiency Performance

A. Energy Intensity Reduction Performance

1. Goal Subject Buildings. There were 213,963 Btu/GSF used in the Pentagon Reservation in FY09 compared to the 161,044 Btu/GSF used in FY03. The percent addition in usage from FY03 to FY09 was just over 32%. Two items should be noted about this information:

- The U.S. Court of Appeals (CMA) data is not included in the totals.
- GSF reflects the heating of Henderson Hall, a 262,000 sq.ft. military installation that does not receive electricity from the Pentagon. Therefore, a portion of its square footage has been added to reflect the total square footage the Pentagon encompassed for FY2009.

2. Excluded Facilities. Not applicable.

3. Non-Fleet Vehicle and Equipment Fuel Use. Not applicable.

B. Renewable Energy

1. Self Generated Renewable Energy. During FY09, the Pentagon had three photovoltaic systems which included 1) solar farm at the Pentagon Heating and Refrigeration Plant (PH&RP) with a combined capacity of 96 kW, 2) smaller photovoltaic systems (solar lights) at 48 various locations with a combined capacity of 14.4 kW, and 3) the solar thermal system at the PH&RP guard booth which consists of 400 sf of tiles with a total capacity of 11.7 kW to provide lighting, heat and air conditioning for the PH&RP guard booth. The total photovoltaic capacity of these systems was 122.1 kW.

The PH&RP solar farm was removed at no cost to Washington Headquarters Services during the latter part of FY09. This was done due to the necessity to build a HAZMAT facility on the footprint occupied by the solar farm. The solar farm was relocated to Ft Huachuca, AZ where they will have full capacity utilization due to the sun availability all year around.

Though we have transferred this renewable project off the Pentagon Reservation, we still have an effort to expand the use of renewable energy on the reservation. The Defense Facilities Directorate (DFD) had a renewable energy survey performed by the National Renewable Energy Laboratory to investigate the feasibility of future solar opportunities and other renewable projects on the Pentagon Reservation.

2. Purchase of Renewable Energy. No renewable energy was purchased during FY2009.

C. Water Conservation

In FY09, the Pentagon consumed 165.6 million gallons of water resulting in a cost of \$1,222,700 compared to FY03 with a consumption of 131 million gallons of water in a cost of \$278,300.

D. Metering Electricity Use

In FY09, all three of the buildings in this report are metered. The PH&RP and Wedge 2 of the Pentagon have advanced metering. This advanced metering is a part of the Pentagon Renovation. Therefore, the amount of advanced metering within the Pentagon will increase as the renovation progresses through each wedge. In the near future, we will be harvesting the data from these advanced meters through a new Energy Dashboard under development during FY09 for trending analysis in order to see any changes in energy usage that may indicate such issues as needed repair and maintenance.

E. Federal Building energy efficiency Standards

No changes to information provided in FY 2008.

III. Implementation Highlights of FY 2009

A. Life Cycle Cost Analysis (LCCA)

None were implemented in FY09. However, LCC has been implemented in prior years in the PENREN Project

B. Retrofits and Capital Improvement Projects

The Pentagon is currently going through an extensive renovation of wedges 2-5. This renovation includes the replacement of all building systems using more energy efficient technology.

An analysis of previous energy projects which included FOB#2 boilers, new windows, waterside economizer, HVAC controls and modifications, water reduction measures, and foot-candle test reduction area (4500 sf) are saving the Pentagon approximately \$5.5 million annually.

C. Use of Performance Contracts

The Energy Savings Performance Program (ESPP) was established between Department of Energy (DOE) and Washington Headquarters Services (WHS) December 2006. This long term commitment allows WHS in order to utilize DOE's term energy savings contractors (ESCOs) to support DoD's energy program to develop and implement creative ways to save energy. This program will provide DoD with a unique means to pay for major utility projects while realizing a savings. ESPP relates to one of the strategic goals for WHS and federal goal (Executive Order 13423) to reduce energy usage in Federal buildings. As a result, installation of Water Side Economizers at Heating & Refrigeration Plant (H&RP) and boilers at FOB2 were completed.

The Defense Energy Support Center (DESC) awarded a Demand Response services agreement to EnerNOC, Inc. which enables military and Federal sites to participate in Demand Response programs without the necessity of following standard contracting procedures. The Pentagon became a participant in this program in FY09. During the PJM Performance Audit in August 09, the Pentagon performed at 9,179 kW against a nomination of 9,000 kW or 102% performance which is a picture perfect performance.