

Department of Defense



Fiscal Year 2007 Energy Management Implementation Plan

**USD (AT&L)
January 2007**

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I. INTRODUCTION

The Department of Defense (DoD) is committed to achieving the energy reduction goals set forth in the Energy Policy Act of 2005 (EPAct 2005) and Executive Order (EO) 13123, "Greening the Government through Efficient Energy Management". In accordance with the EO 13123, all Federal agencies prepare an Annual Implementation Plan that outlines specific plans to make progress toward those goals. This document represents the DoD Implementation Plan for Fiscal Year (FY) 2007.

This implementation plan provides a detailed account of the strategic approaches that will be employed department-wide. It was developed using plans submitted by each of the Defense Components. The organization of this document follows that of the Annual Energy Management Report.

This introduction serves to demonstrate DoD's understanding of EPAct 2005 and EO 13123 requirements and to summarize the department's integrated approach to achieve the goals. The remainder of the document consists of two chapters. Section II provides details concerning the department's energy management and administrative structure. Section III presents the department's specific FY 2007 implementation strategies, planned projects, and goals.

Federal Facilities Energy Program Goals are summarized below:

Green House Gas 30 percent reduction by 2010 from 1990 (EO)

Energy Efficiency Standard Buildings – 35 percent Btu/ft² reduction by 2010 from 1985 (EO)
 Industrial Buildings – 25 percent Btu/ft² reduction by 2010 from 1990 (EO)
 All Buildings - 20 percent Btu/ft² reduction by 2015 from 2003 (EPAct)
 Excluded Buildings - no goal, but energy use must be reported (EPAct)
 Facility Audits - 10 percent/year (can count alt financing) (EO)
 Apply Sustainable Principles - (EO and EPAct)
 Model Lease Provisions Supporting Sustainable Design - (EO)
 New Buildings LCCE - energy usage 30 percent below ASHRAE (EPAct)

Building Metering Meter all buildings by 2012 to the extent maximum practicable (EPAct)

Energy Efficient Products

Include the procurement of Energy Star and DOE designated equipment in all contracts wherever possible (EPAct)

Renewable Energy Install 200,000 solar energy systems by 2010 (EO)
 Obtain 3 percent of electric energy from renewable 2007-2009 (EPAct)
 Obtain 5 percent of electric energy from renewable 2010-2012 (EPAct)
 Obtain 7.5 percent of electric energy from renewable after 2013 (EPAct)

<u>Petroleum</u>	Reduce usage (EO)
<u>Source Energy</u>	Reduce Usage (EO)
<u>Financing</u>	Accomplish all projects that are life cycle cost effective (EO)
<u>Training and Education</u>	Assure that all appropriate personnel receive training (EO) Designate exemplary new and existing facilities as energy and renewable showcases (EO)
<u>Water Conservation</u>	Implement Best Management Practices <ul style="list-style-type: none"> - 30 percent of facilities by 2006 (EO) - 50 percent of facilities by 2008 (EO) - 80 percent of facilities by 2010 (EO)
<u>Vehicles</u>	Federal alternative fueled vehicles must use alternative fuels (EPAct)

EO – Executive Order 13123

EPAct – Energy Policy Act of August 8, 2005, Public Law 109-58

Energy conservation is a high priority for the Department. Reduction in energy consumption can create substantial dollar savings and reduce greenhouse gas emissions. DoD intends to meet the goals of this order by implementing the following broad strategies:

- Implement cost-effective energy conservation projects with direct appropriations and alternative financing through Utility Energy Service Contracts (UESC) and Energy Savings Performance Contracts (ESPC), and by procuring energy-efficient products and services.
- Implement water conservation best management practices to achieve water efficiency.
- Promote renewable energy technology by purchasing renewable power and implementing renewable energy projects when cost-effective based on life-cycle analysis.

II. MANAGEMENT AND ADMINISTRATION

Energy management on DoD installations is focused on improving efficiency, eliminating waste, and enhancing the quality of life while meeting mission requirements. Accomplishing these objectives will reduce costs and ensure that the program goals are achieved.

The DoD facilities energy program is decentralized with Defense Component headquarters providing guidance and funding, and each military installation managing site-specific energy and water conservation programs. Funding of energy projects is multi-faceted, using a combination of Government and alternative financing initiatives. Installations are responsible for maintaining awareness, developing and implementing projects, and ensuring that new construction meets sustainable design criteria.

A. Energy Management Infrastructure

1. Senior Agency Official

The Principal Deputy Under Secretary of Defense (Acquisition, Technology and Logistics) is the DoD Senior Agency Official responsible for meeting the goals of EO 13123.

2. Agency Energy Team

The DoD Installations Capabilities Council (ICC), chaired by the Deputy Under Secretary of Defense (Installations & Environment) and chartered to address a broad spectrum of installation issues, is designated as the DoD Agency Energy Team. The membership of the ICC contains the cross-section of DoD senior leadership necessary to make decisions needed to remove obstacles hindering compliance with EO 13123.

B. Management Tools

1. Awards (Employee Incentive Programs)

To increase energy conservation awareness and to recognize energy-saving efforts, DoD rewards individuals and organizations that demonstrate excellence in their energy-savings and water conservation efforts. These rewards serve to highlight and share the best practices among DoD agencies and to motivate employees. Below are specifics submitted by various DoD agencies.

The Army

Energy conservation awards are awarded to individuals, organizations and installations to recognize their energy/water saving efforts. In addition to recognition, these awards provide motivation for continued energy-reduction achievements. The installations participate in two major energy awards programs—the *Secretary of the Army Energy and Water Management Awards* and the *Department of Energy Federal Energy and Water Management Awards*. Each program recognized individuals and organizations for exceptional performance in implementing energy efficiency achievements set forth in EO 13123.

- Secretary of the Army Energy and Water Management Awards: In FY 2007, the Army will continue to use these awards as an incentive to recognize the efforts of proactive Army energy managers who propose and execute energy-related actions and/or projects, which result in exemplary energy savings at installations. This will be accomplished by directly encouraging Army energy managers to submit applications for all applicable projects.
- Federal Energy Management Program (FEMP) Energy Awards. In FY 2007, the Army will also use FEMP awards to reward exceptional performance by Army energy managers in meeting the requirements of EO 13123 and EAct 2005.

Department of Navy (DON)

- Update awards criteria to include metering requirements
- Present awards and have recognition programs designed to reward successes. Sponsor (Secretary of the Navy (SECNAV) Awards program. Participate in FEMP's Federal awards program
- Publicize the awards programs and winner's accomplishments. Post winners on Internet, newsletters, articles, video, in-house courses

Air Force

- The Air Force will continue to use the FEMP Annual Energy and Water Management Awards program to nominate the individuals and bases that exemplify the drive to meet the federal reduction goals.
- Two of the major commands will continue with their awards program by having their bases compete for the best energy/water programs within their commands.
- The Air Force leadership will continue to sponsor the Reduced Energy Appreciation Program (REAP) to reward three installations for the best in energy reduction in the Air Force.

Defense Commissary Agency (DeCA)

- DeCA will continue to use existing performance awards and on-the-spot awards procedures in conjunction with a facility energy and environmental conservation recognition program.
- DeCA's Europe Region 10-member, Utilities Task Force will be nominated for awards through the Secretary of Defense Environmental Awards program and the FEMP Energy and Water Management Awards program for leading the region in reducing energy use and utilities cost during FY 2007.

Defense Contract Management Agency (DCMA)

DCMA will use the FEMP Annual Federal Energy and Water Management Awards Program to nominate individuals, facilities or teams that perform exceptional work in implementing Executive Order 13123.

Defense Finance and Accounting Service (DFAS)

The agency will use Special Act Awards, Time Off Awards and Team Awards to recognize the efforts of specific personnel, teams and sites that make significant accomplishments in the Energy Management Program.

Defense Logistics Agency (DLA)

DLA will use the FEMP Annual Energy and Water Management Awards Program to nominate individuals and facilities that perform exceptional work in implementing EO 13123. DLA will participate in local and regional awards programs if and when possible.

National Geospatial-Intelligence Agency (NGA)

- NGA will continue to reward its government Energy Team member's through performance awards.
- NGA will continue to incorporate energy conservation as part of the award fee for Base Operations Services (BOS) Contracts at each of our sites.

National Security Agency (NSA)

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.

Washington Headquarters Services (WHS)

The web based Pentagon energy information site, developed in FY 2005, will be launched in FY 2007. This site will contain a link to an employee suggestion program. The energy team will meet quarterly and identify the best suggestion of the quarter. An annual award will be given to the employee with the best overall suggestion.

The Pentagon Heating & Refrigeration Plant (H&RP) has an Award Fee in their contract as a Most Efficient Organization (MEO) resulting from a previous A-76 Competition. The incentive award includes an operational component for energy efficient. In FY 2007, the energy manager will be a part of the award fee process. Evaluations will continue to be conducted quarterly.

1. Performance Evaluations

Energy management provisions will continue to be included in performance plans of the DoD Energy Chain of Command, including major command, base, and site energy managers. Below are specifics submitted by DoD components.

The Army

As directed in Army Regulation (AR) 11-27, Army Energy Program, the Army will include energy and water conservation responsibilities in the position descriptions of members of the Army's energy team, principal program managers, heads of field offices, facility managers, designers, energy managers and their supervisors. The goal is for Army energy and water programs to be managed intensively to ensure efficient and effective use of energy. Regional offices of the Installation Management Command (IMCOM) will continue to conduct scheduled assistance visits to their respective installations and verify that installations are in compliance with the provisions of EO 13123, AR 11-27 and EAct 2005. These visits will include verification of energy manager position descriptions and evaluations of personnel responsible for the energy program.

Department of Navy

- Continue to standardize the energy management function and make energy manager functional requirements a part of performance evaluations.
- Implement Resource Efficiency Manager (REM) deployment plan to provide daily energy management at the installation level.

Air Force

- The Air Force will continue to require each level of management be accountable for energy and water conservation within their units.
- Continuous updates to position descriptions will be made throughout the Air Force in meeting the new energy mandates established in the EAct 2005.
- The Air Force will continue to add additional REM for use at our Major Commands (MAJCOM)/bases. These additional individuals will provide the needed depth to help those commands meet the new aggressive goal of 2 percent reduction per year.

DeCA

- Implementation of energy provisions of EO 13123 will be incorporated in the position descriptions and performance evaluations of all members of the Agency energy team and facility/energy managers.
- DeCA Europe position descriptions for each employee in facilities will be revised to include the requirements of EO 13123.

- The Human Resources Directorate will develop a performance standard for employees with energy conservation as a collateral duty.

DCMA

Energy Management responsibilities and duties will be included as part of the individual's performance plan.

DLA

DLA has an Energy Manager at each host facility. Energy consumption and cost reporting requirements are described as other duties as assigned within the position description.

NGA

- NGA will continue to include energy conservation as part of government team members' performance appraisal process.
- NGA will continue to ensure BOS team member's performance includes energy conservation as a consideration during contract evaluation for award fee.

NSA

The NSA management staff remains committed to saving energy, and reducing costs to the government. The NSA senior energy official, Mr. Steve Lopez, has a provision in his annual employee performance appraisal addressing the goals of EO 13123

WHS

Some job descriptions and critical elements include energy conservation principles for appropriate management and operations personnel and are updated on an annual basis. Pentagon Building Management Office's effort to perform job description updates for its management and operations personnel will continue.

2. Training and Education

Awareness and training programs are important for DoD to achieve and sustain energy-efficient operations at the installation level. Below are some specifics that the DoD components are planning for FY 2007:

The Army

The Army *Energy and Water Campaign Plan for Installations* emphasizes certification of all Army installation energy managers. The Army uses commercial energy management training resources such as the Association of Energy Engineers (AEE) to meet training requirements of EO 13123, EPLA 2005, and the *Campaign Plan*. During FY 2007, Office of the Army Chief of

Staff for Installations Management (OACSIM) will sponsor Certified Energy Manager (CEM) training for Army energy managers, which will be conducted by AEE and will include four days of intense instruction culminating with a four hour examination. The managers who successfully complete the course will be recognized as energy professionals who can be dedicated full-time to implement effective Army energy and water management and conservation programs. OACSIM sponsors and funds this training every year. Other training events will include:

- **Army Energy Forum.** The 2007 Army Energy Forum will be held in conjunction with the Department of Energy's (DOE) annual conference and exposition, Energy 2007, scheduled for August 6-11, 2007. The two-day Forum will be attended by many Army energy managers, from the installation through headquarters level. They will discuss a broad range of installation energy issues including topics such as EAct 2005; procurement of energy efficient products; metering; ESPC, renewable energy; and the *Army Energy Strategy and Campaign Plan*, which forms the foundation for the future direction and resource requirements for optimal energy and water management for the Army. Following provisions of the *Strategy a Campaign Plan* will ensure the Army provides save, secure, reliable, environmentally compliant and cost-effective energy and water services to Soldiers, families, civilians and contractors on Army installations.
- **Energy 2007.** Army headquarters will assist co-sponsor Office of the Secretary of Defense (OSD) at Energy 2007. The conference will provide training workshops and up-to-date industry information to many Army energy professionals on challenges for the Army's energy program and compliance with EAct 2005.
- **Regional Training.** IMCOM regions will provide training to their installations. They will bring together installation staff, HQ Army staff, DOE staff, and various other energy consultants and personnel to discuss strategies, programs and procedures to improve energy operations and assist in meeting the goals of EAct 2005 and EO 13123. Other IMCOM regions will participate in FEMP training via web cast and teleconferencing.
- **Army Energy Program Website.** The Army's energy website, developed in conjunction with the Department of Energy Pacific Northwest National Laboratory, under contract to the Army will continue to provide up-to-date information on energy programs (<http://army-energy.hqda.pentagon.mil/>.)

Department of Navy

- Train energy managers and related supervisors. Utilize private industry and university sources where available. Update in-house training for DON specific material.
- Encourage certification for full-time energy managers.
- Update and maintain energy monitor and energy awareness training materials.
- Train Project Team Members to become Certified Project Facilitators

- Provide training to purchasing agents on purchase of energy efficient products.
- Train operations and maintenance (O&M) personnel in energy efficient O&M procedures.
- Train planners, designers, construction agents and energy managers in sustainable development principles, Leadership in Energy and Environmental Design (LEED) criteria and the American Society of Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) 90.1-2004, *Energy Standard for Buildings Except Low-Rise Residential Buildings*.
- Educate energy managers in Energy Star Building application process.
- Publicize program successes. Increase awareness and knowledge of program goals, tools, and progress at three organizational levels: Washington D.C, region, and installation.
- Maximize use of information technology for improved decision making, e.g., DON Energy web site, e-mail, Internet, displays, reports, newsletters, handbooks, and guidance.

Air Force

- The Air Force Institute of Technology (AFIT) energy-training program will sponsor one training class for new base-level energy managers in FY 2007. The training course has been updated to reflect the new EPC Act 2005 requirements.
- The Air Force will continue to provide ESPC training with a web based training program to ensure all newly assigned individuals are educated on how to use ESPC at their installations. This web site will be opened to all agencies both inside and outside the government.
- All energy/water educational information received from outside sources will be disseminated to each major command and all installations.
- The Air Force will continue to support the annual DOE energy workshop and sponsor the Air Force MAJCOM energy meeting held in conjunction with the DOE event.
- HQ Air Force Civil Engineer Support Agency (AFCESA) publishes an Energy Newsletter on a bimonthly basis that includes current/upcoming events plus links to energy information both inside and outside the government.

DeCA

- DeCA will train approximately 175 store-level personnel in commissary-level energy management and energy efficiency practices and procedures. This will be accomplished through annual, worldwide training through our 2-day, commissary specific, Facility Energy Supervisor (FES)/Refrigeration maintenance Quality Surveillance Representative (QSR) training seminar. DeCA's FES training goal is two trained FES per facility or commissary.

- DeCA will add LEED awareness to energy training, education and awareness for store and region personnel.
- Each employee will view a 12-minute, commissary energy awareness video, “Put Yourself in the DeCA Energy Efficiency Picture.”
- A course providing detailed instruction in operating and interpreting the Refrigeration Monitoring and Control System (RMCS) computer will continue to be offered on a site-request basis to increase the operating efficiency of refrigerated cases. The Energy Management Program Directive will be updated with provisions requiring all DeCA employees to view our 12-minute, commissary energy awareness video, “Put Yourself in the DeCA Energy Efficiency Picture,” within 30 days of hire. The video will continue to be presented annually to store directors and managers as a part of the Commissary Operations Basic and Advanced Courses. These courses are in a formal classroom format.
- The DeCA Center for Learning will host seven FES/QSR classes during FY 2006. These courses provide commissary and zone training on energy usage, conservation, and reporting. In addition, the Department of Operations courses address energy usage and conservation in the Store Director, Meat Management, Produce Management, Grocery Management, and Quality Assurance courses. These courses are taught throughout DeCA's worldwide operations, and are recurring. Instruction includes lecture and field experiences.

DCMA

Agency Energy Managers will attend the AEE World Energy Engineering Congress (WEEC) to fulfill the requirement for comprehensive training and to stay current in available technology to fully implement the provisions of EO 13123 and to develop a better understanding of the new requirements of the EAct 2005.

DFAS

DFAS will provide training to members of the Commercial Equipment Management Team (CEMT) to further awareness, involvement and capabilities in the pursuit of energy management. The CEMT will provide training and update briefings to site managers and facilities specialists. The CEMT will provide energy awareness educational materials to Corporate Communications for inclusion in communications products or will be making information available on the agency ePortal.

DLA

All Energy Managers attend DOE and AEE formal, interactive computer and correspondence courses to stay abreast of all new technology in order to implement the provisions of EO 13123.

NGA

- NGA personnel will expand attendance at WEEC 2007 to include action officers at all sites.
- NGA will take steps to ensure the designated agency energy manager receives all necessary training to ensure compliance with EAct 2005 requirements.

NSA

During FY 2007, NSA plans to train appropriate personnel on performance and commissioning tools and methods, direct digital control strategies, and LEED. NSA will also be implementing an outreach program notifying employees of ways to conserve energy.

WHS

An education and training program has been partially developed for building a sustainable operations team across the five target areas: site, water, energy, materials, and indoor environmental quality. The energy awareness program will publicize energy goals, share information on energy saving strategies and share energy usage with building occupants.

In FY 2007, the education and training program will continue to be developed. More training sessions will be conducted to cover previously presented topics to different audiences as well as to cover new educational material. The intent of the FY 2007 activities will be focused on increasing awareness and developing a culture of sustainability within the Pentagon. A major tool to create this awareness will be the web based Pentagon energy information site planned for launch in FY 2007. Engineering and Technical Services Division (ETSD) plans to present the knowledge it has gained from its metering programs established during FY 2006 and FY 2007 at the Energy 2007 Conference in August 2007.

3. Showcase Facilities

DoD will continue to participate in DOE-designated Showcase Facilities to demonstrate new and innovative energy saving technologies. Showcase facilities highlight promising best commercial practices and the use of innovative techniques to improve energy and water efficiency. The Department intends to emphasize the benefit of these facilities and has a target of developing at least one Showcase Facility for each of the services. Below are some examples of DoD agency specific plans:

Department of the Navy

- Identify and publicize at least one showcase project per year.
- Identify, evaluate, and implement promising best commercial practices. Partner with DOE and private sector to validate state-of-the-market energy (including renewable) technologies and business practices at DON sites.

- Demonstrate promising technologies, conduct surveys and return on investment (ROI) analysis to determine potential DON applications for electronic high intensity discharge ballasts, electro-magnetic pulse condenser water treatment, and computerized digital demand based hot water controls. Validate performance of fuel cells, wave power and ocean thermal energy conversion systems.
- Provide activities and financed project developers with technical information and with sources for information on best commercial practices. Provide criteria to assist in proper installation and O&M for new technology.

Air Force

The Air Force will strive to have at least one new/renovated facility from each of the major commands designated as a showcase facility. These facilities will be considered showcase due to the use of sustainable design criteria and will meet the Energy Star building conditions.

DeCA

DeCA's 2007 showcase facility is the Naval Amphibious Base Little Creek, VA Commissary. A lighting study is currently underway to identify new lighting equipment and strategies in order to reduce the energy consumption (watts per square foot) in order for commissary facilities to meet the requirements of the ASHRAE Standard 90.1. A prototype project incorporating the recommendations from the study will be accomplished at Little Creek. DeCA senior leadership will be able to evaluate how appropriate the design is from an operational standpoint as well as an energy efficiency perspective before incorporating the features in all new designs. The proposed design is expected to reduce the life-cycle lighting costs by 12 to 30 percent.

DLA

DLA has one showcase facility in the Military Construction (MILCON) program, which is the construction of a new physical fitness center at Defense Supply Center Columbus (DSCC). This building will include U.S. Army Corps of Engineers (USACE) Sustainable Design and Development (SDD) concepts.

NSA

NSA is undertaking a renewable energy showcase facility for FY 2007. However, DOE requires Showcase Facilities to be publicized with possible news articles and tours. Due to security regulations, NSA buildings are closed to the public.

WHS

The Pentagon Building has previously been designated as the “Energy Showcase Building” for DoD. The goal of the Pentagon Renovation and Construction Program (PENREN) is to provide an exemplary sustainable DoD facility. In addition, the LEED for Existing Buildings (EB) and Integrated Emergency Management System (**IEMS**) programs will provide the framework for the development of an exemplary sustainable operations and maintenance program.

III. Implementation Strategies

EPAct 2005 and EO 13123 provide DoD with a number of strategies that can be employed to meet the goals and promote Federal leadership in energy management. It is DoD's philosophy to give the Defense Components the flexibility of managing their own energy programs to meet these goals. The primary objectives are to improve energy efficiency and eliminate energy waste. The following are strategies that DoD agencies will employ in FY 2007.

The Army

The Army Energy Program provides execution flexibility to regions and installations in meeting the goals of EO 13123 and EPAct 2005. The primary approach has been to develop an overall Army Energy Strategy, which was approved in 2005 by Secretary of the Army and the Chief of Staff of the Army. The Energy Strategy has five initiatives: Eliminate waste in existing facilities, Increase energy efficiency in new construction, Reduce dependency on fossil fuels, Conserve water resources, and Improve energy security. In FY 2007, the Army will deploy the roadmap contained in the *Army Energy Strategy for Installations*, scheduled to be completely implemented in FY 2008, to further develop the supporting plans to help achieve the objectives of the Army Energy Strategy. The *Campaign Plan* provides a systematic approach and funding stream through FY 2030 for accomplishing the goals of EO 13123 and EPAct 2005. Additionally, the Army will continue doing the following:

- Investing in energy efficient technologies, such as high efficiency lighting and ballasts, energy efficient motors, and packaged heating and cooling equipment with energy efficiency ratios (EER) that meet or exceed Federal criteria for retrofitting existing buildings. The Army will use the Energy Conservation Investment Program (ECIP) program and private sector funding from ESPC, UESC, and Demand Side Management (DSM) to make these investments on our installations.
- Investing in Energy Monitoring and Control Systems (EMCS). The Army will use the ECIP program and ESPC projects to install EMCS on several installations, as well as upgrade and expand existing systems at others.
- Providing training to region and installation level energy coordinators. During FY 2007, as discussed earlier, the Army will centrally-fund participation of about 50 Army regional and installation level energy managers at the Army Energy Forum, to be held in conjunction with Energy 2007. The Army will also fund a CEM training course, available through AEE. This will provide an opportunity to help Army Energy Managers become nationally recognized professionals in the field of energy management.
- Metering Implementation Plan. In FY 2007, the Army will develop the final execution plan for the Army Metering Implementation plan. The plan was prepared based upon OSD, DOE and EPAct 2005 guidance. Between FY 2008-2012, the plan will install approximately 4,700 electric meters on facilities that are cost-effective to meter. The metering plan will greatly facilitate energy audits in approximately 4,770 of the greatest electricity-consuming facilities.

- Utility Systems Surveys. The Army will continue to perform surveys at installations to enhance utilities efficiencies and reduce energy consumption. Forty-four surveys have been performed that identified \$13.5 million in savings, in addition to other system improvements and efficiencies. During FY 2007 we will survey 24 installations to identify possible ways that electricity billings can be reduced and offer recommendations for other cost reducing measures.
- Utility rate interventions. The USACE will continue to represent Army before Public Service Commissions when utility providers propose rate increases. In FY 2006 USACE intervened in seven rate cases of which six are still awaiting final ruling by the Public Service Commissions. One resulted in successfully negotiating a settlement prior to the utility officially filing before the State Commission. Of note, since 1999 the team has intervened in 45 rate cases that resulted in \$65.5 million in cost avoidance, which translates to an 80 to 1 return on investment. With the changing economic environment and other influencing rate design factors, there is an anticipation of rate cases increasing. While rate cases do not reduce energy consumption, they do affect energy dollars. In most rate intervention efforts, USACE's presence saves more dollars in cost avoidances than can be calculated. In a number of recent cases there was clearly an impact by mitigating costs which almost certainly would have been passed on had USACE not intervened. The team anticipates six to eight rate cases in FY 2007.

A. Life-Cycle Cost Analysis (LCCA)

EPAct 2005 and EO 13123 provide DoD with a number of strategies that can be employed to meet the goals of the order and promote Federal leadership in energy management. It is DoD's philosophy to give the Defense Components the flexibility of managing their own energy programs to meet these goals. The primary objectives are to improve energy efficiency and eliminate energy waste. The following provides a narrative on the strategies Defense Components will employ in FY 2007.

The Army

Army installations will continue to utilize LCCA in making decisions about investment in facilities maintenance and repairs and construction projects to reduce energy and water consumption and lower the costs. The Army is required to use building systems and/or equipment that meets or exceeds the energy performance standards set forth in 10 US Code of Federal Regulations 435, local building standards, etc, which results in the lowest life-cycle cost.

Department of the Navy

- Perform risk management analysis to control energy price increases.
- Develop standard utilities software to track utilities costs and enable better budget and cost management.

- Make energy and water efficiency investment and cost decisions based on LCCA.
- Base energy efficiency audits on LCCA in all centrally and alternatively financed projects. Update guidance based on current DOE price escalation factors.
- Use sustainable development principles, incorporating life cycle costing, as the standard business practice for all MILCON and major repair scope facility construction projects.
- Purchase life cycle cost effective energy efficient products. Work with acquisition force to develop methods and implement changes to current practices. Train purchasing agents in life cycle costing and distribute the EPA and FEMP energy efficient products guides.
- Implement renewable energy projects that reduce life cycle costs.
- Purchase electricity from renewable energy sources that reduce life cycle costs.

Air Force

- The Air Force will continue to require all new construction to be life-cycle cost effective and require the use of established criteria to meet these conditions. Each major command and base will review their respective projects to ensure compliance with the energy criteria.
- ESPC and UESC will be a major tool to accomplish the requirement of implementing projects that meet the 10-year simple payback rule.

DeCA

The DeCA Design Criteria Handbook (DeCAH 20-1) emphasizes LCCA 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 and display cases, maximized use of glass door refrigerated cases instead of open cases, use of RMCS for the most efficient operation of refrigeration systems and heating, ventilation, and air conditioning (HVAC), automatic water controls for restroom fixtures, 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.

DCMA

Recommendations from the SAVEnergy Audit performed in FY 2006 will be evaluated to determine the feasibility or potential for energy/water conservation and renewable energy measures that are life-cycle cost-effective. DCMA has budgeted \$80K in FY 2007 funding to implement energy efficiency projects.

NSA

NSA will continue to utilize comprehensive energy audits to identify life cycle issues regarding energy conservation projects. The agency's Facility Planning Board and the Energy Team prioritize this list according to mission, payback, and O&M cost value. New projects are added to the list and prioritized accordingly.

WHS

An important element within LCCA is operational cost. Metering programs that aim to isolate energy usage within a construction or renovation project will verify the energy cost to operate the facilities. The Pentagon Wedge 2 renovation project has implemented a metering program to accomplish this task. Using over 200 submeters, the majority of which are advanced electrical meters, the Wedge 2 metering program will identify electric, chilled water, steam, natural gas, and potable water usage. The ability to record this data will assist operational cost assessments for future projects. In addition, these installations support the EPA Act 2005 initiative to install advanced metering to the most practicable extent possible.

Wedge 3's renovation project has begun implementing this same type of measures and verification (M&V) program. The Pentagon will continue this implementation effort in FY 2007 with its performance period planned to commence in FY 2008. In addition to carrying out its efforts in Wedge 3, the Pentagon will also begin implementing the program in other areas within the building.

The metering program will serve as an analysis tool to develop energy efficient strategies that will contribute to goals associated with LCCA. The program will establish energy baselines and load demand patterns that allow for thorough evaluations on efforts such as ESPCs or ECIPs.

Equipment will be analyzed to determine the best location for the instrumentation that will allow utility bill verification and provide operators and maintenance personnel with information to optimize system performance and troubleshoot irregularities. This data will assist operators to balance the system and maximize system performance.

The Pentagon's goal is to continue implementing its M&V program into every large subsection within the building to measure energy usage to the highest extent practicable. The efforts of this implementation effort will be shared at Energy 2007.

B. Facility Energy Audits

Energy audits, as well as commissioning and re-commissioning of HVAC systems, evaluate current energy usage and assist installations in determining the best locations to incorporate energy savings measures. EO 13123 requires Federal agencies to audit approximately 10 percent of their facilities each year.

The Army

EO 13123 requires Federal agencies to audit approximately 10 percent of their facilities each year. Since auditing 10 percent of Army facilities each year has been cost prohibitive in the past, the Army conducts a large percentage of its energy audits using alternative financing through UESC and ESPC projects. The Army also uses its Energy Awareness and Assessment Program as a vehicle for auditing facilities. In addition to facility audits, Renewable and Energy Efficiency Planning and the Federal Energy Decision Screening system will be used to assist this process by determining the investment required to implement energy projects with a 10-year payback or better. Also, in FY 2007 the Army will use the FEMP sponsored Assessment of Load and Energy Reduction Techniques (ALERT) audits and/or SAVEnergy Audits.

Department of Navy

- Audit 10 percent of facilities annually for energy and water efficiency improvement projects. Priorities are given to installations where it is likely that projects can be financed and paid for within a 10-year payback term.
- Utilize in-house and DOE audit teams to identify low cost, high payback opportunities for reducing energy costs through operational changes and O&M practices. Target installations with high energy costs and consumption

Air Force

- Air Force will continue to meet the 10 percent per year auditing requirements by installing and analyzing data from Automatic Meter Reading (AMR) systems. Establish a metering timeline to have a final plan in FY 2007 and start installing in FY 2008. The goal is to meet the DoD installation rate of 15 percent/yr.
- ESPC and UESC projects will be the primary way for the Air Force to meet the 10 percent annual energy audits as required by EPOA 2005.
- The Air Force Academy plans to request a FEMP Energy Efficiency Expert Evaluation site visit during FY 2007
- The Air Combat Command (ACC) REM will visit a minimum on 9 bases in FY 2007 to audit approximately 6,500 ksf of facilities and develop energy efficiency projects.
- At least one Air Force base will be audited by a DOE sponsored energy audit team.

DeCA

- DeCA will audit at least 10 percent of its total inventory (approximately 17 million SF) in FY 2007.
- The prioritization criteria for audits are the most energy intensive facilities and then the oldest facilities.

DFAS

DFAS will delay the initiation of an energy audit until after enduring sites have reached their end state. A plan to conduct an energy audit at one site per year will be implemented until all of our stand alone sites are audited and the audits will then be repeated in a cyclical manner.

DLA

DLA will perform one audit at Defense Supply Center Richmond (DSCR). All other DLA host sites facility audits are complete.

NGA

NGA will begin a re-audit of facilities in St Louis with the intent to identify areas for energy conservation and installation of advanced energy metering systems. In addition, NGA will explore the possibility of purchasing renewable energy for facilities located in the St Louis area.

National Security Agency

During FY 2007 NSA will continue to perform energy audits on facilities and specific mechanical and electrical systems on an as needed basis. Older systems will take precedence and be studied first providing they will not be overcome by scheduled renovation. Partial audits are mainly due to on-going or planned building renovation projects. Additionally, comprehensive commissioning and re-commissioning of HVAC systems will continue to be performed.

WHS

The Pentagon has developed an ESPC partnership with Honeywell. ETSD will work with Honeywell in FY 2007 to evaluate effective energy conservation measures (ECMs) that can be implemented on the reservation. Focuses for these efforts in FY 2007 will be on minimizing plug loads during non-occupied hours as well as steam production and distribution inefficiencies.

C. Financing Mechanisms

Partnerships with the private sector through UESC and ESPC are a crucial tool for financing energy efficiency measures and allow installations to improve their infrastructure and pay for the energy efficiency measures through the savings generated by the project over time.

The Army

Army installations will continue to access all of the financing mechanisms available to them, including ESPC, UESC, ECIP, and various forms of appropriated funds. As part of the *Army's Energy and Water Campaign Plan for Installations*, HQDA has developed dedicated funding to modernize utility systems.

- ESPCs are partnerships with the private sector companies, known as Energy Savings Companies (ESCO). These contracts allow installations to improve their infrastructure and implement energy projects, while paying for the measures with the anticipated savings being generated by the project over time (10-25 years). In FY 2007, the Army will continue to award ESPC contracts wherever possible.
- UESC are similar to ESPCs. The most notable difference is that the projects are financed and implemented through utility companies. These contracts allow installations to improve their infrastructure and implement energy projects, while paying for the measures with the anticipated savings being generated by the project over time. In FY 2007, the Army will pursue opportunities to award UESC contracts.
- Utility Privatization. In FY 2007, the Army plans to evaluate and make an award decision on 23 utility distribution systems.
- ECIP is MILCON funding used for energy reduction and renewable energy projects. The Army will continue to pursue use of available ECIP funding.

Department of Navy

- Add M&V to UESC delivery orders.
- Develop and annually update program funding requirements.
- Educate commanding officers, comptrollers, and installation staff on the benefits of alternatively financed energy and water projects.
- Continue to utilize centralized team of engineers and contracts specialists to develop and execute alternatively financed delivery orders.

- Update guidance and data collection systems for financed projects in response to GAO concerns.
- Utilize existing government UESC and ESPC contracts where appropriate and award DON specific contracts if necessary.
- Target \$170M/yr (first cost) annual investment in energy projects. The investment will consist of a mix of ECIP, O&M, and financed energy projects.
- Include energy efficiency and cost reductions in standard MILCON, special projects, and sustainment, restoration and modernization projects.

Air Force

- ESPC and UESC will continue to be the primary mechanisms used to meet mandated energy/water goals. There are 8 ESPC proposals in the system and expect to award in FY 2007 for an estimated investment from the ESCO of \$93,485K.
- The Air Force will continue to participate in the ECIP with the program emphasis on renewable energy projects. For FY 2007 there are \$16 Million for 15 projects. The energy savings expected when these are implemented will be 103,365 Million Btus and over \$2.4 Million annually.
- Additionally, finance mechanisms such as the Air Force Productivity Investment Fund (PIF) and Fast Capitalization Fund (FASCAP) will be used to develop projects where appropriate.

DeCA

In FY 2007, DeCA will continue to pursue construction via ESPC task order measures using partnerships with DOE Northeast Region and possibly Huntsville District, USACE.

DCMA

DCMA will investigate alternative financing mechanism to fund energy efficiency projects.

DLA

DLA will use Defense Working Capital Fund (DWCF), UESC, ECIP, and ESPC to reduce energy consumption and cost.

WHS

An ESPC partnership has been established with Honeywell to help meet the audit goals of EO 13123. The Pentagon will facilitate energy audits with its ESPC partner to identify energy saving strategies. Upon identifying and evaluating these strategies, the Pentagon will select the most practical strategies and authorize ESPC implementation.

D. Energy-Star® and Energy-Efficient Products

When life-cycle cost-effective, the Defense Components are encouraged to select Energy Star® and other energy-efficient products when acquiring energy-consuming products. Guidance generated by DOE, GSA, and DLA for energy-efficient products are being incorporated into the sustainable design and development of new and renovated facilities. Defense components will invest in energy-efficient technologies, such as high efficiency lighting and ballasts, energy-efficient motors, and use of packaged heating and cooling equipment with EER that meet or exceed Federal criteria for retrofitting existing buildings.

The Army

When life-cycle cost effective, the Army will continue to require use of Energy Star® and other energy efficient products. This enables installations to factor energy effectiveness into purchase decisions and to factor in both the purchase and operating costs of the item into the overall purchase price to determine best value.

Department of Navy

- Purchase life cycle cost effective energy efficient products. Work with acquisition force to make use of the DOE and EPA energy efficient products guides.
- Include energy performance criteria in statements of work for acquisition of products and services such as construction, service contracts, leases, privatized utilities contracts, and government owned/contractor operated facilities.
- Develop standard business practices, contract clauses, and guidance.

Air Force

Each project folder with energy and water utility impacts receives an Energy and Water Conservation Compliance memorandum listing Energy Star ® products or FEMP-recommended energy efficient equipment as is required by EAct 2005.

DeCA

DeCA's Contracting Business Unit will continue to use written procedures to include ensuring and validating that, as much as practicable, efficient-energy using products are identified within the specifications and evaluation criteria received from and coordinated with the Director of Operations or other customers.

DFAS

DFAS will encourage video teleconferencing or conference calls in lieu of travel, encourage carpooling and telecommuting and encourage PC and peripheral equipment energy conservation.

DLA

DLA will continue to use the USACE and Naval Facilities Engineering Command (NAVFAC) for design of new construction and renovations. DLA will also continue to use Energy Star® products such as computers, printers, etc.

NGA

NGA maintains an aggressive annual replacement program for advanced personal computers and monitors. The agency will continue to comply with current guidelines to insure procurement of energy consuming devices with ENERGY STAR® enabled features that are within the top 25 percent of available efficiencies.

NSA

As in previous years, NSA will continue to use Energy Star® and other energy efficient products in all maintenance and repair projects and/or renovations and will continue to include energy efficient criteria in our specifications.

WHS

The Pentagon has developed a plug load management program to reduce electrical usage in its office spaces. The program functions with the use of energy saving power strips such as the Watt Stopper®. The power strips use occupancy sensors to shed inserted plug loads. This function aims to reduce energy usage during unoccupied office operations. The program is planning a beta testing implementation in a small sample of office areas.

In FY 2007, the Pentagon will review the beta testing results from the plug load equipment installation. Using the data available from a submeter installation, the Pentagon will identify the installation's performance and locate other areas within the building where these installations can be effective.

Links to this program and other energy efficiency related topics will be available through a web-based energy information site that will provide educational materials and information.

The Pentagon will also review Tenant Fit Out Manuals used by the renovation program to ensure inclusion of Energy Star® compliant products.

E. ENERGY STAR® Buildings

The Energy Star® Building program was developed by the Environmental Protection Agency to promote energy efficiency in buildings. Actual Energy Star® Buildings certification and labeling is based on measured building data and a comparison with archetypes in various regions of the country. Since DoD buildings are not generally metered and temporary metering schemes may be cost prohibitive, DoD has not been able to certify buildings under this program. However, DoD, DOE, and EPA completed a memorandum of understanding (MOU) regarding Energy Star® labels for all DoD buildings in June 1997. The MOU considers buildings as Energy Star® buildings equivalents if they were included in comprehensive audits and all projects with a 10-year or better payback are implemented, to the maximum extent practicable, within agency resources and allows the installation to self-certify and develop a local label for non-metered buildings. Below are some approaches that Defense components are using:

The Army

Since the Army buildings are not generally metered and temporary metering schemes may be cost prohibitive, the Army has not been able to certify buildings under this program. Army Regions and installations will strive to assess their buildings against the ENERGY STAR® criteria to determine an accurate count of the number of buildings in which energy projects with a 10-year or better payback have been installed and report this equivalent number for the FY 2007 Annual Energy Report.

Department of Navy

- Increase number of EPA certified Energy Star® buildings.
- Optimize the use of energy management systems and direct digital controls to monitor facilities and maintain energy efficiency. Minimize O&M costs for these systems.
- Integrate energy efficiency in anti-terrorism force protection procurements.

Air Force

- The Air Force will continue to educate the bases on the use of the Energy Star® software program and the criteria to apply for this certificate. No estimate of how many facilities will meet the criteria for FY 2007. All new Military Family Housing (MFH) units will be designed and built using the Energy Star® program.
- HQ AFCEA located at Tyndall AFB, FL received the Energy Star® rating in FY 2004 and will be applying for another Energy Star® in FY 2007.

DeCA

DeCA will evaluate its newer DeCA Headquarters Sisisky Building, the original, main Headquarters building against Energy Star® Building criteria during FY 2007. DeCA expects to self-certify up to 85 continental U.S. (CONUS) commissaries in FY 2007. This represents 32 percent (85/264) of the commissary facilities.

DLA

DLA will continue to use DWCF and ESPC funds if and when possible to upgrade existing facilities to ensure they become more energy efficient. DLA will also update our standard design criteria in order to meet sustainable building design.

WHS

The Energy Star® Target Finder has evaluated the Pentagon Library and Conference Center (PLC2) Programmable Logic Controller (PLC) design to be in the top 12 percentile in energy performance. After a full year of performance, the Energy Star® Portfolio Manager will be used to evaluate its performance post construction. If the building rates in the top 25 percentile, it can apply for an Energy Star® label.

With Pentagon Wedge 2's construction completed at the end of October 2005, the wedge has consumed energy as a completed building for almost one year. Upon completion of its first year, the Energy Star® Portfolio Manager tool will be used to evaluate energy usage within the building.

WHS will also establish protocols to baseline the energy consumptions of the following facilities using the Portfolio Manager: Wedge 1, Pentagon Athletic Center, Remote Delivery Facility and Metro Entrance Facility. WHS will use the LEED EB rating tool to track progress on the development of a sustainable O&M program. The LEED EB program uses the Energy Star® rating as the benchmark for energy efficient operations. Energy Star® targets will be established for each new facility (i.e. Wedge 3) using the Energy Star® Target Finder program.

F. Sustainable Building Design

Sustainability initiatives require an integrated design approach to the life-cycle of buildings and infrastructure. The concepts of sustainable development as applied to DoD installations will continue to be incorporated into the master planning process of each of the Services. All new facility construction and major renovations will use ASHRAE standard 90.1 for design criteria and follow best value sustainable development principles. DoD components will document sustainable development costs on 1391 forms and are encouraged to approach land use planning and urban design in a holistic manner and integrate it with energy planning.

The Army

SDD is the design, construction, operation and reuse/removal of the built environment in an environmentally and energy efficient manner. The building must meet the need of today's customer without compromising the ability of future generations to meet their needs. The Army has embraced this concept and has identified projects since FY2002. USACE is incorporating sustainability principles into its design and military construction transformation process.

In 2007 the Army will continue the transition from SPiRiT to the US Green Building Council's (USGBC) LEED Building Rating System. Consideration of sustainable building practices and technologies will continue to decide current and future resource priorities, materials used, mission needs and building performance; and ensuring contract documents are written to support sustainable design, construction, and performance objectives.

Department of Navy

- Develop budgets (FY 2007) and construct (FY 2009) all applicable facilities to meet the LEED Silver level. Produce LEED checklists for all proposed MILCON projects (FY 2007).
- Budget for (FY 2007) and construct (FY 2009) new facilities 30 percent better than the International Energy Conservation Code or ASHRAE Standard 90.1, if life-cycle cost effective. Follow DOE guidance for implementing this requirement.
- Determine the cost of constructing to 30 percent below the ASHRAE standard, and work with DoD to update unit cost factors for facilities to include this cost.
- Ensure MILCON and special project requirements, design and building commissioning involves the energy management staff at the installation, and that follow-on O&M practices follow sustainable development practices.
- Develop a LEED-Antiterrorism Design Tool. This tool will provide designers with a view of each LEED credit and determine if antiterrorism requirements are conflicting, synergistic, or not applicable.
- Continue development of Uniform Facilities Criteria (UFC) for Sustainable Development. This UFC will consolidate and align the Services' policies, processes and guidance into a single Tri-Service resource
- Conduct online training for all business lines identifying changes in their processes to implement Sustainable Design/Development and conduct specialized sustainable training as needed.
- Develop enforceable design/build contract language to incorporate EAct 2005 requirements.

- Develop process and collect SDD planning, design, and construction data for NAVFAC projects. Identify where in the process sustainable features are dropped and take corrective action.
- Integrate Green Procurement into the NAVFAC Sustainable Development Program.

Air Force

The Air Force policy on sustainable design is being revised to include current mandates from the EPAct 2005. This new guidance will be used to ensure every MILCON project and major renovation project is reviewed using the current guidance on sustainable design. The Air Force plans to aggressively pursue the sustainable design objectives with Air staff providing guidance to the field to ensure the MILCON program meets the intent of sustainable design and construction. At this time several commands have policies directing the incorporation of sustainability (LEED) within all MILCON projects for FY 2007 and beyond.

DeCA

DeCA Design Criteria Handbook, DECAH 20-1 incorporates LEED based sustainable design requirements in siting, design, and construction of new facilities.

DLA

All of DLA design and construction of new facilities are done by the USACE and NAVFAC, which use Sustainable Building Design.

NGA

NGA will consolidate operations from its current locations throughout the National Capital Region to a stand-alone campus, New Campus East located at Fort Belvoir, Virginia by September 2011. NGA is currently located at seven sites in the national capital region: Washington Navy Yard, Bethesda, Maryland; Newington, Chantilly, Reston, and Sterling, Virginia; and the NGA College at Fort Belvoir, Virginia. The consolidation of the NGA organization on a new campus will fulfill the requirements of the Base Realignment and Closure Act (BRAC). Design begins in FY 2007, with the intent of maximizing the use of sustainable building practices. The campus will be designed to achieve LEED-NC Silver equivalency.

NSA

NSA will continue to use Sustainable Building Design criteria to achieve optimal energy performance. NSA has no plans for constructing any new buildings in FY 2007; however NSA uses the LEED criteria for building engineering and design.

WHS

The Pentagon Renovation Office (PENREN) incorporates sustainability requirements and goals in each of their design-build Requests for Proposal. Also, in all PENREN design-build contracts, they use the LEED rating system as the primary “green building” metric. The following projects are ongoing throughout FY 2007: 1) Wedge 4 design recently reached its 95 percent submission package with a requirement for LEED®- New Construction (NC) certification. 2) The Pentagon Memorial started construction in late FY 2006. Because it is an outdoor facility, LEED certification is unattainable. However, there will be efforts to implement LEED certification points within the design. 3) The Center Courtyard Café renovation has commenced and much like the Memorial project, it will try to achieve LEED certification points. Unlike the previously mentioned projects, LEED certification will not be a contractual requirement. 4) Wedge 5 design is scheduled to begin in late FY 2007. LEED®-NC certification will be contractually required for that project also.

G. Energy Efficiency in Lease Provisions

DoD will continue to emphasize energy and water conservation in leased facilities and each Service will issue guidance directing that all leased spaces shall comply with the energy and water efficiency requirements of the EAct 2005. While some of the Services are moving away from the use of leased buildings, preferring to make use of government-owned facilities, where leasing of building continues, it is DoD’s intent to have the landlord make appropriate investments in energy efficiency. These leases will amortize the investments over the economic life of the improvements. Build-to-lease solicitations for DoD facilities will contain criteria encouraging sustainable design and development, energy efficiency, and verification of building performance. DoD will continue to rely upon GSA to ensure the above provisions are included in buildings that they lease for DoD.

The Army

The Army will include energy and water conservation in all facility leases and requires (in AR11-27) that these leased facilities meet energy and water goals. Leases should amortize the investments over the economic life of the improvements.

Department of Navy

- Develop standard business practices, contract clauses, and issue guidance directing that all leased facilities comply with EO 13123 and EAct 2005.
- Include energy performance criteria in statements of work for acquisition and extension of leased facilities.
- Work with GSA to include these provisions in facilities they lease for DON.

Air Force

- The Air Force actively reviews its lease agreements to ensure compliance with energy and water conservation goals.
- All new leases will include reviews to ascertain whether they are Energy Star compliant or built using sustainable design criteria.

DeCA

DeCA uses GSA as a leasing agent for its few leased facilities. In FY 2007, DeCA will follow up on negotiation of the leases at our DeCA West Region Headquarters, Sacramento, CA to improve energy and water efficiency.

DCMA

At facilities where DCMA is a tenant, activities have been instructed to follow the host's energy program.

DLA

On facilities where DLA is a tenant, activities have been instructed to follow the host energy program.

NSA

If there are needs to consider leasing additional facilities, NSA typically fit-up these facilities prior to move-in. Should fit-up or renovation be required in any of these leased facilities, the same LEED criteria used in new construction design specifications will be used for fit-up.

WHS

Continue to encourage the leaseholder to use efficient methods and to achieve Energy Star[®] certification.

H. Industrial Facility Efficiency Improvements

The Army

Initiatives for industrial facility efficiency improvements utilizing fuel switching, waste heat usage, and thermal storage units will continue for FY 2007. Exploration in efficiency opportunities in renewable energy technologies such as geothermal ground source heat pumps and photovoltaics will also be continued. Army Industrial facilities will continue to utilize the Process Energy and Pollution Reduction (PEPR) software developed by and available from CERL to evaluate their energy reduction potential.

Department of Navy

- Conduct industrial process specific audits for energy efficiency improvements. Partner with DOE's Office of Industrial Technologies Program, and Labs21 Program.
- Identify projects to improve steam systems, boiler operation, compressors, industrial processes, fuel switching, cogeneration and other efficient technologies in energy audits and fund to the maximum extent possible, within agency funding constraints. Local natural resources, such as biomass, geothermal, wind and solar, will be surveyed to optimize their use.
- Utilize ECIP funds and alternative financing contracts to effectively execute projects.

Air Force

- Academy Upgrade Burner Controls project. Heat Plant currently scheduled in the FY 2007 Sustainment, Restoration, & Modernization Program will increase boiler efficiency and reduce emissions.
- Robins AFB GA MILCON project to construct Paint/Depaint Hangers implements air recirculation during paint and cure cycles, radically reducing energy consumption.

DeCA

- Domestic hot water and HVAC heat reclaim systems are standard in most large commissary store systems. We will continue to explore efficiency opportunities in renewable energy technologies such as geothermal ground source heat pumps and photovoltaics.
- DeCA will complete lighting efficiency upgrades at a minimum of seven commissaries in FY 2007.
- DeCA's Agency Energy Manager will continue education initiatives for commissary, zone, region, and Headquarters management on the issue of warehouse sales and cost effective operation of doors between the sales area and the warehouse.
- Region and field engineers will continue to identify and replace refrigeration systems with newer more energy efficient refrigeration systems.
- DeCA East Region Utilities Task Force evaluated and approved the use of a "fabric-style" curtain to be specified in place of the conventional vinyl strip curtain used in display cases and walk-in coolers. These curtains are not only more durable than the vinyl type, but they also have a high insulating value to reduce heat and moisture infiltration. A FY 2007 DeCA wide contract will allow simplified bulk ordering of these for our commissaries and central distribution centers.

- New commissaries planned for execution in FY 2007 are Keesler AFB, MS; Robins AFB, GA; Chievres AB, Belgium; Livorno, Italy; Saratoga Springs, NY; and Richards-Gebaur Air Reserve Station, MO.

NSA

Several projects are underway to replace older R-12 and R-500 chillers with newer, more efficient, and environmentally safe refrigerant machines. Additionally, associated chilled water pumps will be converted to variable speed systems.

NSA continues the campus-wide EMCS replacement program. This new system is more flexible, monitors and controls more points, and uses new control strategies to control HVAC systems.

I. Highly Efficient Systems

DoD encourages Defense Components to combine cooling, heating, and power systems in new construction and/or retrofit projects when cost-effective. Components are also encouraged to survey local natural resources to optimize use of available biomass, bio-energy, geothermal, and other renewable or naturally occurring energy sources when life-cycle cost-effective.

The Army

The Army policy will use high efficiency products in the operation of central heating and cooling systems where large quantities of energy are used. The Army is preparing for a second round of a centrally-funded program to modernize aging central heating systems. Installations also will use O&M funds to implement energy saving projects.

Department of Navy

Include consideration of highly efficient systems in energy audits and project funding alternatives.

Air Force

The Air Force Academy utilizes biomass energy generated in the digesters at its on-site Waste Water Treatment Plant (WWTP) to produce hot water required by the waste treatment process in combination with a MicroTurbine generator (30 kW max) installed at the WWTP and added to the biomass energy process in FY 2006.

DeCA

DeCA plans no Combined Heat and Power (CHP) systems for FY 2007. Geothermal heat pump and photovoltaic systems will continue to be evaluated for commissary store use.

DLA

At the Defense Supply Center Columbus, DLA will de-centralize the heating plant and install individual boilers to optimize energy efficiency.

WHS

For the Pentagon Wedge 2 renovation project, an energy target for the design was established at 120 kBtu/sq.ft. The verification period will conclude in early FY 2007. Similar energy targets will be applied to Wedge 3-5 projects. Further analysis and tracking of the efficiency of Pentagon building systems will be achieved with the full implementation of the M&V Program.

J. Distributed Generation

DoD's policy is to privatize electrical distribution systems (and other utilities). In most cases, larger scale, off-grid, electrical generation systems should be owned and operated by contractors. Off-grid generation, owned and operated by Defense Components may make sense for mission criticality and remote sites when it is life-cycle cost-effective. In these cases, innovative energy generation technologies such as solar lighting, large photovoltaic arrays, wind turbine generators, micro-turbines and fuel cell demonstration projects will be utilized.

The Army

The Army will continue to pursue off-grid generation where it is life-cycle cost-effective. Innovative energy reduction technologies will be utilized for FY 2007. For example, Fort Lewis intends to install a small renewable demonstration project in FY 2007 and Fort Buchanan will continue to install photovoltaic (PV) street lighting systems, and Fort McPherson will install a 5kW proton exchange membrane (PEM) hydrogen fuel cell in one of their residences.

Department of Navy

- Develop a DON renewable energy plan based on resource availability, utility rates, rebates and life cycle cost effective applications.
- Install renewable electricity projects to provide an additional 50,000 MWH by 2010 and a total of 200,000 MWH by 2013.
- Improve energy and cost reporting of renewable energy projects.
- Validate the benefits of PEM fuel cells, wave power, and ocean thermal energy conversion in DON applications.

Air Force

- Davis-Monthan AFB is currently developing a project to build an 8 MW waste-to-energy plant. The power would be provided directly to the base distribution system, displacing grid power. Current plans are to award the contract in last FY 2007 or early FY 2008
- ACC plans to perform geological testing at Mountain-Home AFB with the intent to develop a geothermal power generation project on the base. Size of the system will be determined after test results are devaluated.

DeCA

- Solar powered outdoor lighting will be evaluated for DeCA facility and commissary store use.
- If the installation cannot provide dependable power to the commissary the programming and design review teams evaluate what other sources are available. Generators have typically been used for this backup power.
- Off-grid generation using photovoltaic sources is under consideration for energy efficiency and cost savings at our McGuire AFB, NJ Commissary.

DFAS

DFAS site facilities managers will work with the local energy management officials to develop appropriate plans for those sites located in energy problem areas.

K. Electrical Load Reduction Measures

Defense components will continue to identify load-shedding techniques to cut electricity consumption in buildings and facilities during power emergencies. Examples techniques include:

- Energy Monitoring and Control Systems (EMCS),
- Sub-metering,
- Cogeneration,
- Thermal storage systems,
- Duty cycling of air conditioning units in military family housing by EMCS,
- Alternative energy sources for air-conditioning, turning off unneeded lights with motion, sensors and separate lighting circuits, and
- Distributed Energy Resources (DER) for on-site generation using micro-turbines, fuel cells, combined heat and power, and renewable technologies.

In addition, DoD continues to focus its energy conservation program on measures that reduce electric consumption.

The Army

Army installations will use a variety of methods to reduce peak load and demand. They will also use other energy consumption and cost savings measures.

Department of Navy

- Implement cogeneration, DER, peak shaving and renewable electricity projects to reduce demand.
- Validate performance of heating and air conditioning duct sealants, high efficiency rooftop air conditioning systems, heat pipes, and improved air conditioning system occupancy controls and system filters.
- Utilize Energy Management Systems to automatically control loads.
- Develop installation and regional level metering system implementation plans.
- Develop acquisition strategy and award contracts for metering system purchase and installation.
- Where life cycle cost effective, install remote readable electricity meters on 15 percent of buildings annually.
- Benchmark facilities. Use real-time electrical consumption data to reduce energy costs and consumption.

Air Force

Beale AFB and Seymour Johnson AFB will continue to operate radio systems to limit demand by controlling electric water heaters and air conditioning loads during period of high demand.

DeCA

- In FY 2007, DeCA will continue to investigate installation of sub-metering to identify high intensity loads to be shed during emergencies; thermal storage systems or alternative energy sources for air-conditioning; continue to install motion sensors and separate lighting circuits to allow turning off of unneeded lights; and consider adding on-site generation using micro-turbines, fuel cells, combined heat and power, renewable, or other appropriate technology.
- DeCA is working with a solar energy consultant to install a roof mounted, PV solar array capable of producing 597 kWh annually to augment grid-generated power at our McGuire AFB, NJ commissary.

DCMA

DCMA will evaluate recommendations from the SAVEnergy Audit completed in FY 2006 to determine the feasibility or potential for energy and water conservation and renewable energy measures that are life-cycle cost-effective. DCMA has budgeted \$80K in FY 2007 funding to implement energy efficiency projects.

DCMA has budgeted \$10K in FY 2007 funding for renewable energy purchases to enable meeting the new requirement for three percent of electricity consumption to be from renewable sources in FY 2007-2009 and increasing to five percent in FY2010-2012, and 7.5 percent in FY13 and thereafter.

NGA

- NGA's largest facility in St. Louis has an established electrical load shed plan consisting of using the EMCS to cycle or shed all non-essential loads, such as air handlers serving administrative areas, non-essential lighting and other non- production loads.
- A similar plan will be considered for NGA's remaining facilities and the ALERT study facilitates the bases for planned actions.

NSA

In the event that load reduction is required due to an emergency, NSA will bring its generator plants on-line to provide power to the campus. This would provide a load reduction of approximately 40 MW. It should be noted that due to Agency operating conditions, and on-going maintenance work, this level of load reduction is not guaranteed.

WHS

The Pentagon has begun a plug load management program to reduce electrical usage in its office spaces. The Pentagon plans to analyze the program's results and use its analysis to dictate implementation within other areas of the building.

Honeywell will perform facility energy audits and investigating energy conservation measures that may be effective. There are 3 projects tentatively planned for implementation over the next fiscal year, one of which is an electrical load reduction measure. Using an M&V program applicable to the project, an evaluation will be performed to validate energy savings.

M. Water Conservation

EO 13123 requires water efficiency improvement goals for Federal agencies, suggesting specific strategies that include development of a water management plan and adoption of at least four of the FEMP Water Efficiency Improvement Best Management Practices (BMP). The BMPs range from system-related (boiler/steam, cooling tower, faucets and showerheads, etc.) to public information and education programs. Installations will incorporate water management plans in their existing operation and maintenance plans and will focus on dissemination of information to all levels to educate personnel on water conservation practices. Audits will be conducted to identify the best opportunities and where economical, installations will initiate water conservation projects using UESCs and ESPCs.

Defense Components will continue to concentrate on water conservation methods such as public awareness programs, early leak detection and repair, and installation of low-flow water-efficient fixtures in housing and administration buildings consisting of electronic flush sensors, electronic sensor control valves for hand wash lavatories, and waterless urinals.

The Army

The Army Energy and Water Campaign Plan for Installations. The Army will continue to execute the initiatives contained in the *Army Energy and Water Campaign Plan for Installations*. Executions actions and milestones identified for execution during FY 2007 include:

- Eliminate waste in existing facilities. Develop effective national, regional and installation energy management plans; provide full-time, trained and certified staff to lead the energy and water management program and its initiatives, establish energy management accountability throughout the chain of command; develop and implement information and knowledge management systems; develop a utilities modernization and recapitalization program for 100 percent of Government-owned utilities systems; develop an Energy Assessment Guide for energy managers and energy services contractors to use for conducting comprehensive energy assessments at Army installations; execute an Energy Awareness Program; and establish effective utilities procurement strategies.
- Increase the use of energy technologies in construction and major renovation projects that provide the greatest cost-effectiveness, energy efficiency and support to the Army's environmental objectives. Develop energy performance requirements, Btu/ft²/degrees-heating cooling/ year for new construction and renovations including support facilities for utility systems; develop energy design standards for new and renovated facilities to meet or exceed federal energy performance requirements; improve energy efficiency in sustainable design of new and renovated construction through LEED; provide training in building design and renovations with energy efficiency technologies; increase management tools for utility systems to meet the Energy Use Measurement and Accountability goals of EPA Act 2005; minimize the impact of fuel cost and availability at installations; establish an Army utility (electric, natural gas etc.) source evaluation program that selects a cost-effective and secure energy source option that includes alternative sources; implement authorization that allows

monies to be retained at the installation level based on utility savings—to be used for utility projects; increase performance verification in the use of alternative financing and available appropriated funds.

- Reduce the dependency on fossil fuels by increasing the use of clean, renewable energy, reducing waste, increasing efficiencies, and improving environmental benefits. Develop all cost-effective on-site renewable generation consistent with mission requirements; modernize and sustain central energy systems to reduce fossil fuel consumption; reduce on-site fossil fuel use for building space heating and domestic hot water.
- Reduce water use to conserve water resources for drinking and domestic purposes. Develop technical standards and training to facilitate project development and implementation.
- Improve the security and reliability of our energy and water systems in order to provide dependable utility service. Institute energy security concepts and methodologies in Army installation management operations; and use current and projected energy sources with greatest potential for availability and economy.

Department of Navy

- Improve percentage of installations reporting water consumption, and cost.
- Develop water management plans and implement at least four best water management practices in at least 40 percent of facilities.
- Develop and prioritize projects based on condition readiness and ROI.
- Centrally and/or locally fund projects and utilize alternative financing contracts.

Air Force

- The Air Force is using an Air Force Civil Engineer Support Agency (AFCESA)-developed water management guide. The guide has been disseminated to all levels to further educate personnel on water conservation practices.
- Installations have begun incorporating water management plans in their existing operation and maintenance plans.
- Where economical, we will begin initiating water conservation projects using ECIP and the regional ESPC contracts. ECIP has two projects approved in the FY 2006 program. These projects, \$2.8M for Water Efficient Landscaping at Nellis AFB NV and \$1.6M for Greywater Irrigation at Beale AFB CA, will save 145,000 kgal annually.

- Randolph AFB TX will install another 200 AMR water meters with leak detection capability.
- Goodfellow AFB TX will implement an ESPC to replace a grass ball field requiring irrigation to a synthetic grass not requiring water.

DeCA

- In FY 2007, DeCA will continue to implement best management practices for efficient use of water by requiring low consumption toilets and urinals with electronic flush-sensors for new, renovated, and existing commissaries.
- DeCA will implement water management plans in at least 40 percent of facilities by FY 2007.
- DeCA's design criteria will continue to require low consumption toilets and urinals with electronic flush-sensors for new and renovated commissaries. Electronic sensor-control valves will be specified on hand-wash lavatories. Waterless urinals will continue to be included in projects at all locations where host installations maintain these devices. Current locations are commissaries at Nellis AFB, NV; Davis-Monthan AFB, AZ; and Yuma Proving Ground, AZ.
- The DeCA East Utilities Task Force directed that all locations conduct a comparative reading of water meters each month to validate consumption as reported by the host installation. The Task Force developed a 10-point energy conservation checklist to increase water conservation.
- DeCA Europe Region has implemented a Utility Task Force Group composed of zone managers, the region engineer and project managers to oversee and ensure that all commissaries and administration facilities are aware of the importance of conserving water in our daily operation.
- For new commissary facilities in design, DeCA ensure that all plumbing fixtures meet the water conservation requirements as outlined in the DeCA Design Criteria. For existing facilities, we ensure that leaky or faulty plumbing fixtures are repaired or replaced in a timely manner.
- DeCA Regions continue to upgrade restroom facilities to include low-flow fixtures and where applicable, sensor-activated faucets and flush valves.

DCMA

DCMA will evaluate recommendations from the SAVEnergy Audit completed in FY 2006 to determine the feasibility or potential for energy and water conservation and renewable energy measures that are life-cycle cost-effective. DCMA has budgeted \$80K in FY 2007 funding to implement energy efficiency projects.

DFAS

DFAS site facilities managers will work with local authorities to develop and implement Water Management Plans and Best Management Practices for efficient use of water.

NGA

- NGA established a Water Management Program in FY 2003 and continues to implement at least one Best Management Practice (BMP) at each site in FY 2007.
- All water supplied to NGA in FY 2007 will be metered.