DEPARTMENT OF DEFENSE
FISCAL YEAR 2000 ANNUAL ENERGY MANAGEMENT REPORT

Executive Summary of Energy Efficiency Progress

The Department of the Defense (DoD) is on track to reduce energy use in its standard buildings and facilities by 30 percent by 2005 and 35 percent by 2010 relative to 1985 consumption levels, on a British Thermal Units (Btu) per gross square foot (sqft) basis. In Fiscal Year (FY) 2000, DoD consumed 210.97 trillion Btu (TBtu) in its buildings and facilities. This is a 23 percent reduction from the FY 1985 baseline and 3 percent below the previous year.

In FY 2000, DoD's industrial and laboratory facilities consumed 32.28 TBtu. These energy intensive facilities have reduced consumption by 22.65 percent since the FY 1990 baseline year. DoD has reached the FY 2005 goal of Executive Order (EO) 13123 and is well on track for meeting the FY 2010 goal of a 25 percent reduction.

The DoD Energy Program initiatives that contribute the most to achieving this progress include facility equipment retrofits (particularly using private capital), energy awareness efforts, energy manager training, audit programs, procuring energy efficient products and the use of sustainable design in new construction. Other contributing factors include integrated energy planning, source energy considerations when fuel switching, taking maximum advantage of electrical market transformation, enhanced use of renewable energy and demonstration of innovative technologies.

DoD leads the Federal Government with approximately 2.2 billion square feet of facilities. The annual energy bill for military installations exceeds $2.4 billion. Additionally, DoD purchases $2.7 billion worth of mobility fuels—mostly diesel and jet fuel. Although significant progress has been made in reducing overall energy consumption, electricity use continues to increase because of a growth in electronic equipment, air conditioning and automation requirements.

I. Management and Administration

Energy management at 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 facilities energy program is decentralized, with Defense Component headquarters providing guidance and funding, and installations managing site-specific energy and water conservation programs. Energy project funding comes from a combination of government and alternative financing initiatives. Military 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 existing DoD Installations Policy Board (IPB), chaired by the Deputy Under Secretary of Defense (Installations) and chartered to address a broad spectrum of installation issues, has been designated as the DoD Agency Energy Team. The membership of the IPB contains the cross-section of DoD senior leadership necessary to make decisions needed to remove obstacles hindering compliance with the EO.

B. Management Tools

1. Awards (Employee Incentive Programs)

Energy conservation awards are presented to individuals, organizations, and installations in recognition of their energy-savings efforts. In addition to recognition, these awards provide the motivation for continued energy-reduction achievements. In October 2000, the Department of the Navy (DoN) held its FY 2000 annual Secretary of the Navy awards ceremony in Washington, DC, hosted by Navy Under Secretary Robert B. Pirie, Jr. Seven awards were presented to Navy and Marine Corps winners in the categories of facilities, ships, and air squadrons. In August 2000, Active Army, U.S. Army Reserve, and Army National Guard commands were presented with Secretary of the Army's Energy and Water Management Awards for FY 1999 accomplishments in energy management. The Services also participate in the Department of Energy (DoE) Federal Energy and Water Management Awards Program. In FY 2000, DoD received twenty-four awards [Army (10), DoN (9), Air Force (4), and OSD (1)]. In addition to DoE and Service energy award programs, the White House recognized the Army's Energy Team with a Presidential Award for Federal Energy Management, and the Omaha Public Power District awarded the prestigious J.M. Harding Energy Award to *Offutt AFB, NE*. Additionally, the Defense Commissary Agency (DeCA), the National Imagery and Mapping Agency (NIMA), Washington Headquarters Service (WHS), and the National Security Agency (NSA) incorporate on-the-spot awards and incentive awards to recognize exceptional performance and participation in the energy management program.

2. Performance Evaluations

Energy management provisions are included in performance plans of the DoD Energy Chain of Command, including major command, base and site energy managers. To ensure the inclusion of management provisions, action items were established in the FY 2001 DoN shore energy plan, while the Army conducts scheduled assistance visits to installations.

3. Training and Education

Awareness and training programs are a critical part of DoD's efforts to achieve and sustain energy-efficient operations at the installation level. In FY 2000, a total of 2,361 DoD personnel were trained through either commercially available or in-house generated technical

courses, seminars, conferences, software, videos, and certifications. The U.S. Army Logistics Integration Agency (USALIA), Army Corps of Engineers Huntsville Engineering and Support Center (CEHNC), Civil Engineer Corps Officer School (CECOS), Air Force Institute of Technology (AFIT) Civil Engineering School, and DeCA sponsored in-house courses and seminars. Certified Energy Managers (CEM) training was provided by Association Energy Engineers (AEE) instructors. The Services held installation energy management conferences and DoD personnel attended the Energy 2000 Workshop in Pittsburgh, PA. DoD was a co-sponsor of Energy 2000, with WHS being an active participant in the planning committees for both Energy 2000 and Energy 2001 (content creation, speaker and vendor recruitment and presentation arrangements). The Components utilized CDs, Internet homepages, satellite downlinks and videos to enhance their energy awareness programs.

DoD has an active program to identify and procure energy-efficient products, specifically through the Defense Logistics Agency (DLA). DLA and General Services Administration (GSA) product catalogs are widely used, as well as the Construction Criteria Base (available on CD-ROM and the Internet). Purchasing agents are strongly encouraged to procure ENERGY STAR® products and products in the top 25 percent of energy efficiency when they are cost-effective. As an example, the Naval Facilities Engineering Service Center gave DoE a mailing list of all DoN energy managers for the distribution of DoE's energy-efficient products guide. A DoN letter accompanied the guide requesting that energy managers include purchasing agents on the distribution list for the guide.

4. Showcase Facilities

DoD continues to be a leader in DoE-designated showcase facilities demonstrating new and innovative energy saving technologies. In 2000, the U.S. Army Forces Command (FORSCOM) worked with DoE to designate *Fort Irwin, CA*, as an energy showcase installation. *Fort Irwin* has exceeded a 42 percent reduction in Btu/sqft through a systematic program to identify cost-effective energy projects, followed by an aggressive program of implementation supported by Southern California Edison (SCE). This showcase installation demonstrated a variety of technologies including natural lighting and passive solar features, energy saving controls, thermal storage, solar photovoltaics, and gas-fired chillers. Other showcase facilities include:

- *United States Naval Academy, Annapolis, MD*, features a variety of administrative, dormitory, athletic, and family housing facilities. These facilities incorporate a 200 kilowatt (kW) fuel cell, a compressed natural gas (CNG) fueling station and CNG vehicles, high efficiency chillers, lighting, steam traps, and low flow showerheads and faucets. Training for operations and maintenance personnel was also conducted.
- *Ventura County Naval Base, Port Hueneme, CA*, includes a variety of administrative and family housing facilities. The public works department's office building utilizes day-lighting features such as light shelves and photosensitive dimmable fixtures, energy efficient lighting, motors and variable speed drives, Heating, Ventilation and Air Conditioning (HVAC) heat recovery, digital controls, solar hot water and photovoltaics, and rain water recovery. A self guided audio tour, web page kiosk, and informative posters make this facility a learning and evaluation center, as well as a working administration facility. Other technologies include a 200kW fuel cell, lighting, motors, variable speed drives, HVAC

controls, family housing whole house upgrades (including lighting and appliances), de-centralized heating systems, compressed natural gas and electric vehicles and fueling stations.
- *Eglin AFB, FL*, has an administration facility incorporating lighting (T-8s with electronic ballasts, compact fluorescent lamps and LED exit lights) and an upgraded HVAC system with Direct Digital Controls (DDC) and new low kW/ton chillers.
- *Edwards AFB, CA*, has an administration facility with a Supervisory Control and Data Acquisition (SCADA) system to control numerous facilities' HVAC systems.

The following DoN locations have been identified as candidates for new showcase recognition:
- *Bldg 33, Washington Navy Yard, Washington, DC*, is a historic administration building incorporating sustainable design and development.
- *Naval Air Station North Island, San Clemente Island, CA*, features wind farm electric generation technology.
- *Bachelor Officers Quarters, Great Lakes, IL*, includes high levels of insulation in the roof, walls and slab perimeter, high-performance windows, high-efficiency electric lighting, utilization of existing steam system for heating, a DDC control system with setback, variable speed drive motors, dual level switching on lights, and energy-efficient transformers.

II. Energy Efficiency Performance

A. Energy Reduction Performance

1. Standard Buildings

FY 2000 was DoD's best year in energy reduction per sqft for standard buildings since FY 1993. Energy consumption was 3.16 percent below FY 1999 and 23.05 percent below the FY 1985 baseline—two-thirds towards the EO 13123, FY 2010 energy reduction goal of 35 percent. Part of this progress resulted from definitional changes that moved some facilities between categories. The baseline is now computed from the revised FY 1985 consumption and square footage data reported by the Components. Therefore, the previously reported baseline of 135,354 Btu/sqft has changed to 136,744 Btu/sqft.

2. Industrial and Laboratory Facilities

The billion Btu (Bbtu) and sqft information reported in the DoD Scorecard for this reporting cycle established a FY 1990 baseline of 213,349 Btu/sqft for the newly defined Industrial, Labs, Research and Energy Intensive Facilities category. The Scorecard provides for the first time a comparison for FY 2000 consumption relative to the new FY 1990 baseline. No comparison can be made between FY 2000 and FY 1999 because this category has been redefined since then. For this new facilities category, DoD has achieved a 22.65 percent reduction in Btu/sqft consumption relative to the FY 1990 base year reported on the Scorecards—about 91 percent of the FY 2010 goal set by EO 13123.

Because the relationship between energy consumption and production is generally non-linear, making it difficult to establish a consistent baseline with which to compare progress, DoD has decided to use energy usage per gross square foot as the performance measure for the

industrial and laboratory facility category. Additionally, to simplify data collection, and the associated metering and reporting costs, DoD considers an entire base an industrial facility if 60 percent or more of the base-wide energy use is for industrial purposes. A list of industrial bases is provided in part IV, D.

3. Exempt Facilities

DoN is the only component in DoD to list facilities classified as exempt. DoN exempts mission critical, concentrated energy use transmitters, simulators, cold iron support to ships, and some private party facilities. These are non-production-oriented facilities with little or no square footage, making conventional performance measures meaningless. The mission criticality of these end users is such that energy efficiency measures are evaluated on a case-by-case basis. A complete list of exempt facilities is provided in part IV, E.

4. Tactical Vehicle and Equipment Fuel Use

Total tactical vehicle fuel use was 199,151 BBtu in FY 2000, decreasing 6 percent from FY 1999, primarily through improved fuel efficiency of equipment and energy conserving operating procedures. Improving fuel efficiency in DoD tactical equipment increases vehicle range and sustainability, and reduces logistics support requirements. The reduction in jet fuel consumption (9 percent from FY 1999) was the significant factor in the overall reduction. The Navy has saved $110 million annually in fuel costs for its ship and aircraft fleets through technological advances and operational practices. Ships have improved the efficiency of engineering plant operations by operating in trail shaft mode rather than split plant mode, and keeping redundant equipment, such as boilers and air conditioning units, in standby status whenever possible. Steam powered ships have electronic boiler controls installed to improve efficiency. Additionally, ship watch standers received training on operating equipment in an efficient manner. Military aircraft use the most energy-efficient aircraft speed/altitude profiles compatible with mission requirements. Combined training and operational flights are used in pilot training squadrons. Flight time at high drag, high power, and dirty conditions are minimized. Landing pattern hold times are decreased. Hot refueling is eliminated unless required by operational necessity.

While there are some obstacles, such as the availability of suitable alternative fuel vehicles (AFV) models and the availability of adequate alternative fuel infrastructure, DoD is making steady progress towards meeting the requirements of EO 13149, “Greening the Government Through Federal Fleet and Transportation Efficiency.” The Army issued an AFV policy and developed a power and energy strategy. This strategy establishes goals and policy for tactical vehicles, establishes policy framework, provides a means to measure improvement, and recommends activities to better synchronize investment, acquisition, sustainment, and disposal based upon energy implications.

DoD’s commitment to meeting the goals of EO 13149 to use alternative fuels in AFVs and to reduce the use of fossil fuels was underscored by the multi-Component participation in implementing a bio-diesel fueling site at the Navy Exchange Service Station near the Pentagon. Additional contributors included the National Bio-Diesel Board and the U.S. Department of Agriculture. Bio-diesel may be used in any vehicle that uses diesel as a fuel. The B20 fuel (20 percent bio-diesel and 80 percent diesel fuel) provided at the Navy Exchange Service Station

is an approved alternative fuel. This bio-diesel pump may be used by Federal, State and local government agencies.

B. Renewable Energy

DoD plans to install renewable energy technologies and purchase electricity from renewable sources when life-cycle cost-effective. Since DoD policy is to privatize utility systems whenever economical, power generation systems will generally be contractor-owned or located at remote, grid independent sites.

1. Self-Generated Renewable Energy

As these technologies have become more cost-effective, DoD has integrated photovoltaic power systems, solar water heating systems, and transpired solar collectors (solar walls) into its facilities. Self-generated power is often coupled with ground-source heat pumps, solar water heating systems and photovoltaic arrays to generate electricity at isolated locations, such as range targets, airfield landing strip lighting and remote water pumping stations. Active solar heating applications have included maintenance facility solar walls, swimming pool heating, and hot water heating. Projects installed in FY 2000 include solar domestic hot water heaters at *Camp Stover,Hawaii* (10 Million Btu (MMBtu)) and *MCLB 29 Palms, CA* (2.9 BBtu). Solar photovoltaics were utilized at *Naval Base San Diego, CA* (2550 kWh/yr); *Naval Air Station, North Island, CA* (39,420 kWh/yr); and *Naval Air Warfare Center, China Lake, and Santa Cruz Island, CA* (238,345 kWh/yr). A solar roof was constructed at *Ford Island, HI* (3,150 kWh/yr) while an outdoor warning system was installed using solar backup batteries at *Goodfellow AFB, TX* (16,400 Btu/yr). Geothermal heat pumps have been installed at *MCB Camp Lejeune, CA* (.42 BBtu); *Tyndall AFB, FL* (7200 kWh/yr); and *Charleston AFB, SC* (824,925 kWh/yr). The *Pentagon Heating and Refrigeration Plant Complex* has installed a 30-kW photovoltaic array (58,600 kWh/yr).

2. Purchase of Renewable Energy

Since renewable sources of electricity generation generally have higher capital equipment costs, they usually do not compete well with the conventional utility supplier of electricity. However, the Armed Services have made significant progress in the purchase of renewable energy generated from solar, wind, geothermal, and biomass sources when cost-effective. For example, in FY 2000, the Army purchased 276 megawatt-hours (MWh) of electrical power generated from renewable sources, the *Air Force Academy* purchased 45 MWh of wind generation from the local utility, and DoN purchased 163,696 MWh renewable electricity and 803,530 BBtu of renewable thermal energy. Within DoN, *Naval Shipyard, Norfolk, VA*, purchases electricity and steam from its now privatized waste to energy plant, while *Naval Air Station, Keflavik, Iceland* purchases hot water from geothermal wells, and electricity from hydroelectric plants (Iceland considers hydroelectric as renewable).

3. Million Solar Roofs (MSR)

DoD is committed to the MSR initiative and continues to emphasize the use of solar and other renewable energy sources where it is cost-effective. Passive solar designs, such as building orientation and window placement and sizing, are already being implemented in a variety of building types and new facility construction. DoD anticipates more growth in the

implementation of renewable energy and active solar technologies due to the recent availability of DoE's technology-specific energy savings performance contracts (ESPC). In addition, active solar heating applications have been expanded to include maintenance facility solar walls, swimming pool heating, and hot water heating in family housing. The Army has approximately 3,000 "solar roofs" in use at its installations, and expects to develop and implement other solar and solar-thermal projects in FY 2001. At *Yuma Proving Ground, Yuma, AZ*, the Army operates a 900 kW photovoltaic utility-size array and generates approximately 7 percent of the power utilized by the installation annually.

In addition to the projects listed under "self-generation renewable energy," the following are examples of solar projects implemented in FY 2000:

- *Fort Hood, TX* – 294 units of solar (PV) parking lot lighting
- *Fort Bragg, NC* – 37 units of solar (PV) parking lot lighting
- *Fort Polk, LA* – 24 units of solar (PV) lighting
- *Fort Irwin, CA* – 44 units of solar (PV) lighting
- *Fort McPherson, GA* – 40 units of solar (PV) lighting
- *Fort Lewis, WA* – 8 units of solar (PV) lighting
- *Fort Gillem, GA* – 59 units of solar (PV) lighting
- *Hickam AFB, HI* – 21 solar hot water systems
- *Andersen AFB, Guam* – two solar hot water systems
- *Kadena AB, Japan* – two solar hot water systems

C. Petroleum

Petroleum-based fuel use in facilities has decreased 65 percent from the FY 1985 baseline. Facility consumption was 101.4 TBtu in FY 1985 (Buildings/Facilities and Excluded Buildings/Industrial/) and 35.2 TBtu in FY 2000 (Standard Buildings/Facilities, Industrial/Laboratory/Research/Other Energy-Intensive Facilities, and Exempt Facilities). Reductions were accomplished primarily through fuel switching (to natural gas), tune-ups, steam trap replacements and improved controls in boiler plants. A significant factor in the reduction is Defense Energy Support Center's (DESC) Natural Gas Competitive Procurement Program. The objective of this program is to obtain cost-effective supply of natural gas for DoD installations while maintaining supply reliability, thereby assisting the Components to minimize their reliance on petroleum products. In FY 2000, DESC competitively procured 66 TBtu of natural gas (20 TBtu more than in FY 1999) for the 163 DoD installations that participated in the program and achieved over $32 million in cost avoidance ($3 million more than in FY 1999). Boiler conversion from fuel oil to natural gas reduced petroleum usage by 3,200,000 gallons (480 BBtu), from FY 1999. Where fuel switching is not possible, maximum efforts will be taken to improve the efficiency of plants and systems using petroleum-based fuels and reducing the demand for this resource.

D. Water Conservation

In FY 2000, DoD consumed 207,371 million gallons of potable water and spent $309,525,000 on water related services. The Services are striving to increase water conservation awareness and reduce its water use—particularly where tight water supplies may potentially impact mission accomplishment and personnel morale. Although DoD water use has decreased steadily, the costs associated with its use have not come down proportionately, due to an

increase in the unit cost of water in many regions. For instance, while the Army's water use dropped by almost 45 percent between FY 1992 and FY 1999, the cost of water service only decreased by 13 percent (the unit cost of water has more than doubled). Similar trends exist for water disposal volumes and costs. In the same time period, water disposal volume dropped by 49 percent, while costs decreased by only 8 percent. This reflects a unit disposal cost increase of 80 percent. Greater treatment and testing requirements imposed on water suppliers by the Safe Drinking Water Act and amendments have increased the cost of providing potable drinking water. Additionally, some installations that purchase their water are increasingly likely to be on rate schedules designed to encourage conservation, such as increasing block rates or summer peak-demand charges. Thus, water conservation efforts, in addition to being environmentally responsible, can help installations stretch dwindling Operation and Maintenance (O&M) dollars. Also, those water conservation measures that reduce wastewater quantities provide an additional opportunity for savings.

Water conservation measures not only reduce water use and cost, but also reduce energy consumption (for pumping) and sewage treatment costs. Additionally, water conservation helps to reduce the quantities of wastewater treatment chemicals (most notably chlorine) being released into the environment, and reduces the risk of drawing down aquifers or saltwater intrusion into aquifers.

III. Implementation Strategies

DoD's philosophy is to give the Defense Components the flexibility to manage their own energy programs to meet the goals of Energy Policy Act (EPAct) and EO 13123. DoD's primary objectives in implementing strategies are to improve energy efficiency, eliminate energy waste and reduce costs.

A. Life-Cycle Cost Analysis

DoD facilities utilize life-cycle cost analysis in making decisions about their investment in products, services, construction, and other projects to lower costs and to reduce energy and water consumption. DoD considers the life-cycle costs of combining projects, and encourages bundling of energy efficiency projects with renewable energy projects, where appropriate. Projects are generally prioritized for capital funding and execution based upon the greatest life-cycle savings to investment ratio. The use of passive solar design and active solar technologies are recommended where cost-effective over the life of the project. Sustainable development projects use life-cycle costing methodology and follow the Whole Building Design Guide. For example, the Air Force used life-cycle analysis for five new facilities being built as part of the F-22 beddown program at *Tyndall AFB, FL,* and for a $14M retrofit project at the *Air Force Academy, CO*. Evaluation of DeCA's *NAVSUBASE Kings Bay* commissary expansion project revealed that a dual path DX unit was $204,000 more long-term, cost-effective than connecting to the installation central loop chilled water and desiccant system.

B. Facility Energy Audits

Comprehensive audits were conducted on 161,582 thousand square feet (ksf) (12.4 percent of facility square footage) in FY 2000. Since 1992, comprehensive audits were completed on a total of 758,801 ksf (55 percent of facility square footage). Auditing 10 percent of facilities annually has been cost prohibitive and many Components have been unable to fully

fund the audit program. To make up for part of this shortfall, Components obtain audits as part of alternative-financed energy savings projects whenever feasible. In addition to energy audits performed in conjunction with alternative-financed projects, the Army uses the "Renewables and Energy Efficiency Planning" (REEP) model, a headquarters-level screening tool for energy and water conservation opportunities that evaluates energy technologies based on their energy savings potential, financial viability, and global warming reduction potential. REEP is a project identification model that forecasts quickly and accurately the effects of installing a new piece of equipment or technology at specific installations and can provide Army-wide analysis for specific constraints. This program can be coupled with an integrated energy methodology developed by CERL to help installations prepare an energy master plan and strategy. The methodology will evaluate an installation's progress towards goals, determine what needs to be done, and what technologies should be considered and developed. In addition, the model assists in developing an investment strategy that uses alternative financing to achieve the goals, and provides monitoring and verification guidance for the installation.

C. Financing Mechanisms

Partnerships with the private sector through Utility Energy Service Contracts (UESC) and Energy Savings Performance Contracts (ESPC) are a crucial tool for financing energy efficiency measures that allow installations to improve their infrastructure and pay for the energy efficiency measures through the savings generated by the project over time. In FY 2000, DoD through a decentralized approach, awarded 40 UESC and 58 ESPC task orders/contracts producing a total life-cycle savings of $782.6 million with the contractors' share being $603.5 million (including interest charges). These contracts include many infrastructure upgrades and new equipment to help the installations reduce energy and water consumption. Examples include new thermal storage systems, chillers, boilers, lights, motors, EMCS systems and water reducing devices. Savings generated over time (estimated to be about 77 percent of total savings) are returned to the contractor to pay for the improvement measures. Normally, cost savings are used to first pay the contractor, and then are used to offset other base operating support expenses. In some cases, however, installations decide to seek a shorter contract term and defer all Government cost savings until contract completion. In these cases, the savings generated by UESCs and ESPCs help to reduce the energy consumption, but do not reduce the total costs of operation until the contracts expire. After contract expiration and the retrofits are paid for, DoD will be able to obtain full cost savings.

Congress zeroed out DoD's request for $50 million for the Energy Conservation Investment Program (ECIP) in FY 2000 and appropriated $15 million of the requested $33.5 million in FY 2001. However, in FY 2000, DoD received a Congressional add of $4 million to facilitate implementation of ESPC contracts. A similar $4 million Congressional add for ESPCs is in the FY 2001 Defense Appropriations Bill.

D. ENERGY STAR® and Other Energy-Efficient Products

When life-cycle cost-effective, the Defense Components select ENERGY STAR® and other energy-efficient products when acquiring energy-consuming products. Guidance generated by DoE, General Services Administration (GSA) and DLA for energy–efficient products are being incorporated into the sustainable design and development of new and renovated facilities. The components invest in energy efficient technologies, such as high-efficiency lighting and ballasts,

energy efficient motors, and the use of packaged heating and cooling equipment with energy efficiency ratios that meet or exceed Federal criteria for retrofitting existing 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. An example of this is the recently awarded Navy and Marine Corps Intranet contract that requires the use of green computers. DeCA requires premium efficiency fan motors for HVAC systems, electronically commuted fan motors on the refrigeration display cases, T-8 fluorescent light fixtures on display cases, and T-8 lighting for sales areas. Another example of the program being utilized was the Pentagon Renovation Program using ENERGY STAR®/National Fenestration Rating Council's guidance for the replacement windows.

E. ENERGY STAR® Buildings

DoD currently does not have any ENERGY STAR® certified buildings, because our buildings generally are not metered and temporary metering schemes are cost prohibitive. This program, developed by the U.S. Environmental Protection Agency (EPA) to promote energy efficiency in buildings, requires measured building data and a comparison with archetypes in various regions of the country. However, a memorandum of understanding (MOU) signed in June 1997 between DoD, DoE, and EPA allows military installations to self-certify buildings as ENERGY STAR® equivalents if comprehensive audits were conducted and all projects with a 10-year or better payback were implemented. To date no buildings have been certified under this MOU.

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 have been incorporated into the master planning process of each of the Services. Installations are encouraged to approach land use planning and urban design in a holistic manner and integrate it with energy planning. DoN co-sponsored the development of the Whole Building Design Guide, and a commissioning guide, in cooperation with the Passive Solar Industries Council, which incorporates US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) criteria. DoN is also looking at opportunities to apply sustainable development concepts to ship pier-side loads. Additionally, the U.S. Army Corp of Engineers has developed a 3-day sustainable workshop to train DoD personnel in sustainable design.

The use of sustainable design within DoD is highlighted by the *Naval Training Center, Great Lakes, IL*, Bachelor's Enlisted Quarters (BEQ) project. The project implemented increased perimeter insulation (roof, walls, and foundation), high-performance windows, maximum use of day-lighting, high efficiency electric lighting with dual settings, a DDC remote control system, variable speed drive motors on mechanical equipment, and energy-efficient transformers. This project was awarded the first LEED certification by the USGBC during their Federal Facilities Summit Conference. Other DoN projects include academic facilities at *Annapolis, MD*; BEQ facilities at *Marine Corps Base Quantico, VA*; Research, Development, Training &Evaluation (RDT&E) laboratory, *Dalhgren, VA*; Strike Fighter Weapons Training Center, Engine Maintenance Shop and Aircraft Armament Facilities, *NAS Lemoore, CA*; Missile Support Facility, *Bremerton, WA*; and DoN administrative buildings. The Air Force used

sustainable design for its Fitness Center at *Buckley AFB, CO,* its $14 million renovation of Harmon Hall, and its $32 million new addition to the Cadet gym at the *Air Force Academy, CO*. Additionally, every effort has been made to incorporate sustainable design initiatives in all phases of the *Pentagon Renovation Program.* These initiatives include environmentally preferred products (furniture, carpet, paint, etc.) and equipment choices for the building envelope, electrical, and mechanical systems.

G. Energy Efficiency in Lease Provisions

DoD emphasizes energy and water conservation in leased facilities and each Service has issued guidance directing that all leased spaces comply with the energy and water efficiency requirements of the EPAct. It is DoD's intent 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. These leases should 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 relies upon GSA to ensure the above provisions are included in buildings that they lease for DoD.

H. Industrial Facility Efficiency Improvements

Several major initiatives for industrial facility efficiency improvements are under way including fuel switching at *Altus AFB, OK,* waste heat usage to run 1500 tons of absorption chillers at *Wilford Hall Medical Center, Lackland AFB, TX* and installing two thermal storage units serving seven facilities at *Laughlin AFB, TX*. The Army utilized the Process Energy and Pollution Reduction software developed by and available from CERL to evaluate their energy reduction potential in industrial facilities. DeCA, with a large inventory of commissary stores, installs dual-path air conditioning to control humidity as an alternative to natural gas or propane fired desiccant dehumidification systems. DeCA also uses and plans to increase the use of heat-pipe technology for dehumidification and heat reclaim. Domestic hot water heat reclaim systems are standard in most large commissary store systems. Remote diagnostic monitoring of Refrigeration Monitoring and Control Systems is used at approximately 175 individual commissaries to assure that refrigeration and lighting systems are being operated and maintained at their design specification. Discrepancies are forwarded to DeCA's maintenance contractors on a daily basis for correction. Lighting controls were monitored and adjusted by this same method in FY 2000. This surveillance resulted in improved contractor maintenance and improved equipment operation and less energy consumed. The DeCA Eastern Region Utilities Task Force was formed in FY 2000 to identify potential energy savings with the objective of driving total operating costs down.

I. Highly Efficient Systems

DoD encourages the components to combine cooling, heating, and power systems in new construction and/or retrofit projects when cost effective. The Army is currently in the third year of a 5-year, $300 million central boiler plant modernization program. The goals of this program are to update the aging central boiler plant infrastructure that are currently found on many of our installations. These projects have resulted in upgraded or new boilers, new distribution systems, improved high efficiency pumps and motors, and updated system controls in all of these plants.

The Navy used an ESPC to install a 5 MW gas turbine with 70,000 lb/hr heat recovery steam generators at *Naval Shipyard, Portsmouth, NH.* Several Air Force projects have included the use of geothermal and biomass systems. *Tyndall AFB, FL,* and *Bolling AFB, DC,* have installed ground source heat pumps, and *Wright-Patterson AFB, OH,* has awarded an ESPC to construct a 1.2 MW biomass unit at the base. DeCA's new refrigeration systems utilize electronic controls, heat reclaim and "floating head" to reduce energy usage.

J. Off-Grid Generation

DoD is pursuing off-grid generation where it is life-cycle cost-effective. The Army's *Fort Hood* is harvesting the sun's energy by using two new innovative energy reduction technologies: solar parking lot lighting and an active day lighting system. Each of the 156 units of active day lighting installed produces the equivalent of approximately 600 to 800 watts of florescent light—virtually eliminating all daytime electric lighting—equating to more than 1.4 BBtu of renewable energy. The solar parking lot lighting system uses just two panels to produce 800 kilowatt-hours per year, eliminating more than 1 ton of pollution in emissions. These 2 projects combined to produce a total of approximately 2.5 BBtu, and saved the installation $103,000 in FY 2000. DoN utilized the sun's energy as well as wind power. DoN also installed three 225 kW wind generators at *San Clemente Island, CA,* producing 5.2 million kWh electricity and three solar photovoltaic systems (160 kW total) at *Santa Cruz Island* producing 238,000 kWh electricity. The Air Force provided off-grid generation by installing 8 solar powered lights at school bus stops, an outdoor warning system using photovoltaic technology and the use of electric generators to reduce electric demand by 2.4 MW.

K. Water Conservation

In addition to establishing an overall water baseline to evaluate water usage and monitor the impact of future water efficiency improvements, Defense Components concentrated on water conservation methods such as early leak detection and repair, installation of low-flow water-efficient fixtures in housing and administration buildings, and public awareness programs. *Fort Huachuca, AZ* is a leading Army installation in water management. During FY 1999, the base reduced water consumption by 12 percent (an 86 million gallon decrease) from quantities used in the prior year, saving $284,000 in annual water production costs. These reductions were achieved through a concerted effort by all base organizations to implement cost-effective water conservation projects, along with a high-visibility water conservation education program. The work included a water control system that reduces tank overflow greatly, installing 71 waterless urinals that save approximately 3.2 million gallons of water per year (bringing *Fort Huachuca's* total number of waterless urinals to 275), and installation of low-flow 1.5 gallon per minute showerheads in facilities. In addition, *Fort Huachuca* implemented the "Water Wise and Energy Smart" outreach program to provide community education on energy and water conservation and natural resource stewardship.

The Navy performed leak detection on distribution systems, reviewed water management operating procedures, and corrected system maps. Through FY 2000, over 455,695 Kgal per year in leaks have been identified and fixed, and cost-effective projects worth over $15 million have been identified. Low flow fixtures were installed at *NWS Charleston, SC,* and *NAS Sigonella, Italy,* resulting in saving 17,200 Kgal per year. The Air Force performed numerous retrofits and all new facility construction projects were equipped with the latest water efficient

devices. DeCA required low consumption toilets and urinals with electronic flush sensors for new and renovated commissaries. DeCA also require use of electronic sensor controlled lavatories with mixing valves and flow control devices. The upgrade project at the *Nellis AFB, NV,* commissary utilized a "waterless type urinal". NSA implemented a water treatment program to recycle water at their cooling towers. The *Pentagon Renovation Program* includes water efficient plumbing fixtures and infrared controllers. Also, a comprehensive survey of the Federally owned water mains was completed and the resulting information is being used to formulate a project implementation plan and funding request.

IV. Data Tables and Inventories.

A. OMB Circular A-11, Exhibit 55. See attached.

B. Energy Scorecard for FY 2000. Submitted December 6, 2000 to OMB.

C. Goals of Executive Order 13123 and NECPA/EPACT. See below.

D. Industrial and Laboratory Facility Inventory. See below.

E. Exempt Facilities Inventory. See below.

IV.C. Goals of Executive Order 13123 and NECPA/EPACT

Executive Order 13123

Category	Goal	Comments
Greenhouse Gas Emissions	30% reduction by 2010	Base year is 1990. DOE will calculate agencies' progress toward this goal and report it on agencies' annual energy scorecards
Energy Efficiency		
Standard Buildings	0% improvement by 2005 5% improvement by 2010	Base year is 1985
Industrial and Laboratory Facilities	0% improvement by 2005 5% improvement by 2010	Base year is 1990
Exempt Facilities	N/A	Despite lack of quantitative goal, agencies should implement strategies to improve energy efficiency at these facilities.
Renewable Energy	Implement renewable energy projects Purchase electricity from renewable energy sources Install 2,000 solar energy systems at Federal facilities by 2000 Install 20,000 solar energy systems at Federal facilities by 2010	Installation of Federal solar energy systems will help support the Million Solar Roofs initiative
Petroleum	Reduce petroleum use	Switches to alternative energy sources should be life-cycle cost effective
Source Energy	Reduce use of source energy	Accomplish by undertaking projects that are life-cycle cost effective

Water Conservation	Reduce water consumption*	Accomplish via life-cycle cost effective measures, energy-savings performance contracts, or other financing mechanism

NECPA/EPACT

Energy Efficiency	20% improvement by 2000	Base year is 1985
Financing	Undertake all energy efficiency improvement projects that have a simple payback period of 10 years or less by 2005	E.O. 13123 expands this goal by mandating that any energy efficiency project that is life-cycle cost effective be undertaken
Audits	Conduct audits for energy efficiency on 10% of facilities annually	E.O. 13123 includes language supporting this goal

* FEMP has established water efficiency improvement goals as directed by the Executive Order. Agencies must implement Water Management Plans and Best Management Practices according to the following schedule:

05% of facilities by 2002
15% of facilities by 2004
30% of facilities by 2006
50% of facilities by 2008
80% of facilities by 2010

For more detail, see the FEMP guidance document Water Efficiency Improvement Goal for Federal Agencies

IV.D. Industrial and Laboratory Facility Inventory

Army
The following buildings/facilities were classified last year as process buildings.

Facility	Address	Location
Holston Army Ammunition Plant	4509 West Stone Dr.	Kingsport, TN
Radford Army Ammunition Plant		Radford, VA
AAFES Food Processing Plant	Industriestrasse	67269 Grünstadt, Germany
Laundry Facility	204 Louisiana Ave.	Ft. Leonard Wood, MO

Navy

DoN's industrial inventory is based on the OSD definition that if 60 percent or more of the base-wide energy use is for industrial purposes, the entire base can be designated industrial.

Installation/Facility

AMFORRDRESINS BETHESDA MD
COMOPTEVFOR NORFOLK VA
EODT DIV INDIAN HEAD MD
FISC PEARL HARBOR HI
FISC SAN DIEGO CA
FISC YOKOSUKA JA
INTCOMBATSYSTESTFAC SAN DIEGO CA
MCLB ALBANY GA
MCLB BARSTOW CA
NAVAIRPROPCEN TRENTON NJ
NAVAVIONICCEN INDIANAPOLIS IN
NAVAVNDEPOT CHERRY POINT NC
NAVAVNDEPOT JACKSONVILLE FL
NAVAVNDEPOT NORTH ISLAND CA
NAVORDMISTESTSTA WHITESANDS NM
NAVPBRO MAGNA UT
NAVSHIPREPFAC GUAM GQ
NAVSHIPREPFAC YOKOSUKA JA
NAVSPASURFLDSTA CHULA VISTA CA
NAVSPASURFLDSTA HAWKINSVILE GA
NAVSPASURFLDSTA HOLLANDALE MS
NAVSPASURFLDSTA MARICOPA AZ
NAVSPASURFLDSTA SAVANNAH GA
NAVSPASURFLDSTA WETUMPKA AL
NAVSPASURFLDSTAELPHAB TRORC NM
NAVSPASURFLDSTAKIKLK ACH CT TX
NAVSPASURFLDSTAREDRVR LWSV AR
NAVWPNINDRESPLNT TOLEDO OH
NAVXDIVINGU PANAMA CITY FL

Installation/Facility

NOC PAC DET FALLBROOK CA
NOCPACDIV DET PORT HADLOCK WA
NSC JACKSONVILLE FL
NSC NORFOLK VA
NSC OAKLAND CA
NSC PENSACOLA FL
NSC PUGET SOUND BREMERTON WA
NSD GUAM GQ
NSWC DET BAYVIEW ID
NSWC DET FCDSA DAM NECK VA
NSWC DET FT. LAUDERDALE FL
NSWC DET SSES PHILADELPHIA PA
NSWC DIV CARDEROCK BETHESDA MD
NSWC DIV CRANE IN
NSWC DIV INDIAN HEAD MD
NSWC DIV PT HUENEME CA
NSWC DIV PT HUENEME CA
NSWC LCC DET MEMPHIS TN
NSWC NWAS CORONA
NSY NORFOLK VA
NSY PEARL HARBOR HI
NSY PORTSMOUTH NH
NSY PUGET SOUND BREMERTON WA
NUWC DET ANDROS ISL BF
NUWC DIV KEYPORT WA
NWS YORKTOWN SJC ANNEX
SIMA PASCAGOULA MS
SIMA SAN DIEGO CA
SUBASE PEARL HARBOR HI
SWFLANT KINGS BAY GA
SWFPAC BANGOR WA
TRIREFFAC KINGS BAY GA
UNISERUOFHEASCN BETHESDA MD
WPNSTA CHARLESTON SC

WPNSTA CONCORD CA
WPNSTA EARLE COLTS NECK NJ
WPNSTA SEAL BEACH CA
WPNSTA YORKTOWN VA
WV ABL MINERAL CO

Air Force

Building Location	Building Classification
Hill AFB UT	Industrial/Process
Tinker AFB OK	Industrial/Process
Robins AFB GA	Industrial/Process
Kelly AFB TX	Industrial/Process
McClellan CA	Industrial/Process
Arnold AFB TN	Industrial/Process/Laboratory

DeCA

Location of Industrial Facilities (Commissary Stores)

Name	City	State	Country
ABERDEEN	Baltimore	MD	U.S.A.
MCLB ALBANY	Albany	GA	U.S.A.
ALTUS	Altus	OK	U.S.A.
ANCHORAGE	Anchorage	AK	U.S.A.
ANDERSEN AFB	Yigo		Guam
ANDREWS AFB	Camp Springs	MD	U.S.A.
ANNAPOLIS	Annapolis	MD	U.S.A.
ARDEC	Patterson	NJ	U.S.A.
ARNOLD AFB	Tullahoma	TN	U.S.A.
ATHENS NSCS	Athens	GA	U.S.A.
ATSUGI	Yokohama		Japan
BANGOR	Silverdale	WA	U.S.A.
BANGOR ANGB	Bangor	ME	U.S.A.
BARBERS POINT	Pearl City	HI	U.S.A.
BARKSDALE AFB	Bossier City	LA	U.S.A.
BARSTOW MCLB	Barstow	CA	U.S.A.
BEALE AFB	Marysville	CA	U.S.A.
BOLLING AFB	Washington	DC	U.S.A.
BREMERTON	Bremerton	WA	U.S.A.
BROOKS	San Antonio	TX	U.S.A.
BRUNSWICK NAS	Portland	ME	U.S.A.
C. E. KELLY	Pittsburgh	PA	U.S.A.
C.M. PRICE	Granite City	IL	U.S.A.
CAMP CARROLL	Taegu		South Korea
CAMP CASEY	Tongduchon		South Korea
CAMP COURTNEY	Gushikawa		Japan
CAMP FOSTER	Naha		Japan
CAMP HOWZE	Munson		South Korea
CAMP HUMPHREYS	Pyongtaek		South Korea
CAMP KINSER	Naha		Japan
CAMP KURE	Hiroshima		Japan
CAMP LEJUENE	Jacksonville	NC	U.S.A.
CAMP MERRILL	Dahlonega	GA	U.S.A.
CAMP PAGE	Taegu		South Korea

CAMP PENDLETON	Oceanside	CA	U.S.A.
CAMP STANLEY	Uijongbu		South Korea
CAMP ZAMA	Tokyo		Japan
CANNON AFB	Clovis	NM	U.S.A.
CARLISLE	Carlisle	PA	U.S.A.
CHARLESTON AFB	Charleston	SC	U.S.A.
CHARLESTON NWS	Charleston	SC	U.S.A.
CHERRY POINT	Havelock	NC	U.S.A.
CHINA LAKE	Ridgecrest	CA	U.S.A.
CHINHAE NAS	Chinhae		South Korea
COLUMBUS AFB	Columbus	MS	U.S.A.
CORPUS CHRISTI	Corpus Christi	TX	U.S.A.
CRANE NWSC	Crane	IN	U.S.A.
CUTLER	Machias	ME	U.S.A.
DAHLGREN	Fredericksburg	VA	U.S.A.
DAVIS-MONTHAN	Tucson	AZ	U.S.A.
DDC (NEW CUMBERLAND)	Harrisburg	PA	U.S.A.
DOVER	Dover	DE	U.S.A.
DSCR	Richmond	VA	U.S.A.
DUGWAY	Dugway	UT	U.S.A.
DYESS AFB	Abilene	TX	U.S.A.
EDWARDS	Rosamond	CA	U.S.A.
EGLIN AFB	Niceville	FL	U.S.A.
EIELSON AFB	Fairbanks	AK	U.S.A.
EL CENTRO	El Centro	CA	U.S.A.
EL TORO MCAS	Santa Ana	CA	U.S.A.
ELLSWORTH AFB	Rapid City	SD	U.S.A.
F. E. WARREN	Cheyenne	WY	U.S.A.
FAIRCHILD	Spokane	WA	U.S.A.
FALLON	Fallon	NV	U.S.A.
FITZSIMONS	Aurora	CO	U.S.A.
FT. BELVOIR	Alexandria	VA	U.S.A.
FT. BENNING	Columbus	GA	U.S.A.
FT. BLISS	El Paso	TX	U.S.A.
FT. BRAGG - MAIN	Fayetteville	NC	U.S.A.
FT. BUCHANAN	San Juan		Puerto Rico
FT. CAMPBELL	Clarksville	TN	U.S.A.
FT. CARSON	Colorado Springs	CO	U.S.A.
FT. DETRICK	Frederick	MD	U.S.A.
FT. DRUM	Watertown	NJ	U.S.A.
FT. EUSTIS	Newport News	VA	U.S.A.
FT. GILLEM	Atlanta	GA	U.S.A.
FT. GORDON	Augusta	GA	U.S.A.
FT. GREELY	Delta Junction	AK	U.S.A.
FT. HAMILTON	New York	NY	U.S.A.
FT. HOOD I	Killeen	TX	U.S.A.
FT. HOOD II	Killeen	TX	U.S.A.
FT. HUACHUCA	Sierra Vista	AZ	U.S.A.
FT. HUNTER-LIGGETT	King City	CA	U.S.A.
FT. IRWIN	Fort Irwin	CA	U.S.A.

FT. JACKSON	Columbia	SC	U.S.A.
FT. KNOX	Louisville	KY	U.S.A.
FT. LEAVENWORTH	Leavenworth	KS	U.S.A.
FT. LEE	Petersburg	VA	U.S.A.
FT. LEONARD WOOD	Waynesville	MO	U.S.A.
FT. LEWIS	Tacoma	WA	U.S.A.
FT. MCCLELLAN	Anniston	AL	U.S.A.
FT. MCCOY	La Crosse	WI	U.S.A.
FT. MCPHERSON	Atlanta	GA	U.S.A.
FT. MEADE	Laurel	MD	U.S.A.
FT. MONMOUTH	Eatontown	NJ	U.S.A.
FT. MONROE	Hampton	VA	U.S.A.
FT. MYER	Arlington	VA	U.S.A.
FT. ORD (MONTEREY)	Monterey	CA	U.S.A.
FT. POLK	Leesville	LA	U.S.A.
FT. RILEY	Junction City	KS	U.S.A.
FT. RUCKER	Daleville	AL	U.S.A.
FT. SAM HOUSTON	San Antonio	TX	U.S.A.
FT. SHAFTER	Honolulu	HI	U.S.A.
FT. SILL	Lawton	OK	U.S.A.
FT. STEWART	Hinesville	GA	U.S.A.
FT. WAINWRIGHT	Fairbanks	AK	U.S.A.
GOODFELLOW	San Angelo	TX	U.S.A.
GRAND FORKS AFB	Grand Forks	ND	U.S.A.
GREAT LAKES NTC	Waukegan	IL	U.S.A.
GUAM (OROTE)	Agat		Guam
GULFPORT NCBC	Gulfport	MS	U.S.A.
GUNTER AFB	Montgomery	AL	U.S.A.
HANNAM VILLAGE	Seoul		South Korea
HANSCOM	Bedford	MA	U.S.A.
HARIO HOUSING	Hario		Japan
HARRISON VILLAGE	Indianapolis	IN	U.S.A.
HICKAM AFB	Honolulu	HI	U.S.A.
HILL AFB	Ogden	UT	U.S.A.
HOLLOMAN AFB	Alamogordo	NM	U.S.A.
HUNTER AAF	Savannah	GA	U.S.A.
HURLBURT FIELD	Fort Walton Beach	FL	U.S.A.
IMPERIAL BEACH	Imperial Beach	CA	U.S.A.
IWAKUNI MCAS	Iwakuni		Japan
JACKSONVILLE	Jacksonville	FL	U.S.A.
KADENA AFB	Naha		Japan
KANEOHE BAY	Kaneohe Bay	HI	U.S.A.
KEESLER AFB	Biloxi	MS	U.S.A.
KEFLAVIK	Keflavik		Iceland
KELLY	San Antonio	TX	U.S.A.
KEY WEST NAS	Key West	FL	U.S.A.
KINGS BAY NSB	St. Marys	GA	U.S.A.
KINGSVILLE	Kingsville	TX	U.S.A.
KIRTLAND AFB	Albuquerque	NM	U.S.A.
KUNSAN AFB	Kunsan City		South Korea

LACKLAND AFB	San Antonio	TX	U.S.A.
LAKEHURST	Toms River	NJ	U.S.A.
LANGLEY AFB	Hampton	VA	U.S.A.
LAUGHLIN AFB	San Antonio	TX	U.S.A.
LEMOORE	Fresno	CA	U.S.A.
LITTLE CREEK NAB	Virginia Beach	VA	U.S.A.
LITTLE ROCK AFB	Jacksonville	AR	U.S.A.
LOS ANGELES AFB	Los Angeles	CA	U.S.A.
LUKE AFB	Phoenix	AZ	U.S.A.
MACDILL AFB	Tampa	FL	U.S.A.
MALLONEE VILLAGE	Fayetteville	NC	U.S.A.
MALMSTROM AFB	Great Falls	MT	U.S.A.
MARCH AFB	Riverside	CA	U.S.A.
MAXWELL AFB	Montgomery	AL	U.S.A.
MAYPORT NS	Atlantic Beach	FL	U.S.A.
MCCHORD AFB	Tacoma	WA	U.S.A.
MCCLELLAN AFB	North Highlands	CA	U.S.A.
MCCONNELL AFB	Wichita	KS	U.S.A.
MCGUIRE AFB	Wrighttown	NJ	U.S.A.
MEMPHIS NAS	Memphis	TN	U.S.A.
MERIDIAN NAS	Meridian	MS	U.S.A.
MINOT AFB	Minot	ND	U.S.A.
MIRAMAR NAS	San Diego	CA	U.S.A.
MISAWA AFB	Misawa		Japan
MITCHEL FIELD	Garden City	NY	U.S.A.
MOFFETT FIELD	Mountain View	CA	U.S.A.
MOODY AFB	Valdosta	GA	U.S.A.
MTN HOME AFB	Mountain Home	ID	U.S.A.
NELLIS AFB	Las Vegas	NV	U.S.A.
NEW LONDON	Groton	CT	U.S.A.
NEW ORLEANS NSA	New Orleans	LA	U.S.A.
NEW RIVER MCAS	Jacksonville	NC	U.S.A.
NEWPORT	Newport	RI	U.S.A.
NORFOLK NB	Norfolk	VA	U.S.A.
NORTH ISLAND	San Diego	CA	U.S.A.
OCEANA NAS	Virginia Beach	VA	U.S.A.
OFFUTT AFB	Bellevue	NE	U.S.A.
OSAN AFB	Osan		South Korea
PARRIS ISLAND	Beaufort	SC	U.S.A.
PATRICK AFB	Cocoa Beach	FL	U.S.A.
PATUXENT	Lexington Park	MD	U.S.A.
PEARL HARBOR	Honolulu	HI	U.S.A.
PENSACOLA	Pensacola	FL	U.S.A.
PETERSON	Colorado Springs	CO	U.S.A.
POINT MUGU	Point Mugu	CA	U.S.A.
POPE AFB	Fayetteville	NC	U.S.A.
PORT HUENEME	Port Hueneme	CA	U.S.A.
PORTSMOUTH	Portsmouth	NH	U.S.A.
PORTSMOUTH NNSY	Portsmouth	VA	U.S.A.
PRESIDIO OF SF	San Francisco	CA	U.S.A.

PUSAN	Pusan		South Korea
QUANTICO	Woodbridge	VA	U.S.A.
RANDOLPH AFB	San Antonio	TX	U.S.A.
REDSTONE ARSENAL	Huntsville	AL	U.S.A.
ROBINS AFB	Macon	GA	U.S.A.
ROCK ISLAND AR.	Rock Island	IL	U.S.A.
ROOSEVELT ROADS	Ceiba		Puerto Rico
SAGAMI DEPOT	Tokyo		Japan
SAGAMIHARA	Tokyo		Japan
SAN DIEGO NS	San Diego	CA	U.S.A.
SAN ONOFRE	San Clemente	CA	U.S.A.
SASEBO	Sasebo		Japan
SCHOFIELD BKS	Wahiawa	HI	U.S.A.
SCOTIA	Schenectady	NY	U.S.A.
SCOTT AFB	Belleville	IL	U.S.A.
SELFRIDGE ANG	Mt Clemens	MI	U.S.A.
SEYMOUR JOHNSON	Goldsboro	NC	U.S.A.
SHAW AFB	Sumter	SC	U.S.A.
SHEPPARD AFB	Wichita Falls	TX	U.S.A.
SIERRA	Herlong	CA	U.S.A.
SMOKEY POINT NS	Marysville	WA	U.S.A.
TAEGU	Taegu		South Korea
TINKER AFB	Oklahoma City	OK	U.S.A.
TOBYHANNA	Scranton	PA	U.S.A.
TRAVIS AFB	Fairfield	CA	U.S.A.
TWENTYNINE PALMS	Twentynine Palms	CA	U.S.A.
TYNDALL AFB	Panama City	FL	U.S.A.
USAF ACADEMY	Colorado Springs	CO	U.S.A.
VANCE AFB	Enid	OK	U.S.A.
VANDENBERG AFB	Lompoc	CA	U.S.A.
WALTER REED	Washington	DC	U.S.A.
WEST POINT	Highland Falls	NY	U.S.A.
WHIDBEY ISL NAS	Oak Harbor	WA	U.S.A.
WHITE SANDS MR	Las Cruces	NM	U.S.A.
WHITEMAN AFB	Knob Noster	MO	U.S.A.
WHITING FIELD	Pensacola	FL	U.S.A.
WINTER HARBOR	Bangor	ME	U.S.A.
WRIGHT-PATTERSON	Dayton	OH	U.S.A.
YOKOSUKA NESC	Yokosuka		Japan
YOKOTA AB	Tokyo		Japan
YONGSAN	Seoul		South Korea
YUMA MCAS	Yuma	AZ	U.S.A.
YUMA PG	Yuma	AZ	U.S.A.

IV.E. Exempt Facilities Inventory

Facility/Function	Location
Cold Iron	SUBASE NEW LONDON CT
Cold Iron	NSY NORFOLK VA
Cold Iron	PWC NORFOLK VA
Cold Iron	WPNSTA CHARLESTON SC
Cold Iron	NAS PENSACOLA FL
Cold Iron	NAS KEY WEST FL
Cold Iron	NAVSTA ROOSEVELT ROADS PR
Cold Iron	SUBASE KINGS BAY GA
Cold Iron	NAVSTA MAYPORT FL
Cold Iron	WPNSTA EARLE COLTS NECK NJ
Cold Iron	NAVSTA GUANTANAMO CUBA
Cold Iron	NSWC COASTSYSTA PANAMA CITY FL
Cold Iron	NAVPHIBASE LITTLE CREEK VA
Cold Iron	NETC NEWPORT RI
Cold Iron	NAVSTA ROTA SP
Cold Iron	NAVSTA PASCAGOULA
Cold Iron	NAVSTA INGLESIDE TX
Cold Iron	NUSC NEW LONDON LABORATORY
Cold Iron	NSC OAKLAND CA
Cold Iron	NAVSTA SAN DIEGO CA
Cold Iron	NAS NORTH IS SAN DIEGO CA
Cold Iron	NSY PUGET SOUND BREMERTON WA
Cold Iron	NSY PEARL HARBOR HI
Cold Iron	SUBASE PEARL HARBOR HI
Cold Iron	FLEASWTRACENPAC SAN DIEGO CA
Cold Iron	FLEET ACTIVITIES CHINHAE SK
Cold Iron	WPNSTA CONCORD CA
Cold Iron	COMFLEACT YOKOSUKA JA
Cold Iron	NAVSTA GUAM GQ
Cold Iron	CBC PORT HUENEME CA
Cold Iron	NAVSHIPREPFAC GUAM GQ
Cold Iron	COMFLEACT SASEBO JA
Cold Iron	PWC PEARL HARBOR HI
Cold Iron	NAVSTA PEARL HARBOR HI
Cold Iron	SUBASE SAN DIEGO CA
Cold Iron	NAVRESREDCOMREG 22 SEATTLE WA
Cold Iron	SUBASE BANGOR WA
Cold Iron	NAVSTA EVERETT WA
Simulator	WPNSTA CHARLESTON SC
Simulator	NAS PENSACOLA FL
Simulator	NAS JACKSONVILLE FL
Simulator	NAS DALLAS TX
Simulator	NAS KINGSVILLE TX

Simulator	NAVAIRDEVCEN WARMINSTER PA
Simulator	NAS LEMOORE CA
Simulator	NSWC DIV PT HUENEME CA
Simulator	MCAS MIRAMAR CA
Transmitter	NAS JACKSONVILLE FL
Transmitter	NAVSECGRUACT WINTER HARBOR ME
Transmitter	NRTF DIXON
Transmitter	RADTRANF ANNAPOLIS MD
Transmitter	NAVRADTRANFAC SADDLEBUNCH KEYS
Transmitter	NAVSECGRUACT SABANA SECA PR
Transmitter	NAVCOMMSTA JACKSONVILLE FL
Transmitter	NAVRADSTA /T/ JIM CREEK WA
Transmitter	NAVSECGRUACT GALETA IS PN
Other	NAS DALLAS TX
Other	NAVCOMMU WASHINGTON DC
Other	NAF EL CENTRO CA
Other	NSWC COASTSYSTA PANAMA CITY FL
Other	COMFLEACT YOKOSUKA JA
Other	NAVOBSY WASHINGTON DC
Other	NAF ATSUGI JA
Other	CBC PORT HUENEME CA
Other	CBC GULFPORT MS
Other	MCAS IWAKUNI JA
Other	PWC PEARL HARBOR HI
Other	NAVSTA ROTA SP
Other	NAS KEFLAVIK IC
Other	NAVCOMMSTA KEFLAVIK IC
Other	DoD SCHOOLS KEFLAVIK ICELAND
Other	HDQTRS 4TH MARDIV NEW ORLEANS
Other	NAVSTA PASCAGOULA MS

“Other” category includes energy consumed by non-Defense activities, private parties, contractors, and State and local governments.

Format for Reporting Green Energy Purchases To Receive Credit Toward Executive Order Goals

PURCHASES OF GREEN ELECTRICITY

		Annual Consumption	Annual Cost (Thou. $)	State	All Facilities (Y or N)	Fuel Mix of Electricity Purchase (percent)							
						Coal	Natural Gas	Oil	Nuclear	Hydro	Bio-mass	Geo.-thermal	Solar/ Wind
Elec. Purchase 1	MWH	163183	4635	VA	Y						100		
Elec. Purchase 2	MWH	513	37	Iceland	Y					100			
Elec. Purchase 3	MWH												
(Add additional purchases as necessary)													
Total Purchases	MWH	163696	4672										

PURCHASED BIOMASS OR LANDFILL GAS (RENEWABLE ENERGY SOURCES)

		Annual Consumption	Annual Cost (Thou. $)	State
Gas Purch. 1	Thou. Cu. Ft.			
Gas Purch. 2	Thou. Cu. Ft.			
Gas Purch. 3	Thou. Cu. Ft.			
(Add additional purchases as necessary)				
Total Purchases	Thou. Cu. Ft.			

PURCHASED THERMAL ENERGY FROM RENEWABLE ENERGY SOURCES

		Annual Consumption	Annual Cost (Thou. $)	State
Purchase 1	BBtu	71314	5476	VA
Purchase 2	BBtu	732216	8563	Iceland
Purchase 3	BBtu			
(Add additional purchases as necessary)				
Total Purchases	BBtu	803530	14039	