

1AD and FB Regulation 420-1

Net Zero Energy, Water, & Waste

**Fort Bliss Energy,
Water, & Waste
Program**

Headquarters

1st Armored Division

Fort Bliss, Texas

30 May 2017

Unclassified

DEPARTMENT OF THE ARMY
HQ, 1st Armored Division
Fort Bliss, TX 79916
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* HQ, 1st AD and FB Reg. 420-1

Net Zero Energy, Water, and Waste
FORT BLISS ENERGY, WATER, and WASTE PROGRAM

History. The summary of changes reflects the portions affected by this revision.

Summary. This is the initial release of the Fort Bliss Energy & Water Conservation Program.

Applicability. This regulation applies to all Active Army, U.S. Army Reserve, Army National Guard organizations, and DA Civilians assigned or attached to Fort Bliss. It also applies to all Department of Defense organizations, other Federal organizations, state and local, and privately owned organizations resident on Fort Bliss.

Proponent and exception authority. The proponent of this publication is the Directorate of Public Works.

Army management control process. This publication does not contain management control provisions.

Supplementation. Supplementation of this publication is prohibited without prior approval from the Records Management

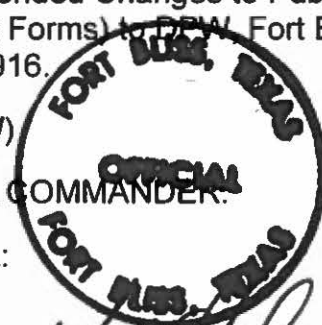
Division, Publications and Forms Manager (FMO).

Suggested Improvements. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to DPW, Fort Bliss Texas 79916.

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This publication is only available in electronic media.

SUMMARY of CHANGE

Fort Bliss Regulation 420-1, Fort Bliss Energy, Water, & Waste Program

This is the initial release, dated 30 May 2017—

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Contents (Listed by paragraph)

Chapter 1

General Information

- 1-1. Purpose
- 1-2. Applicability
- 1-3. References
- 1-4. Explanation of Abbreviations and Terms
- 1-5. Checklist for Commanders / Leaders / Staff
- 1-6. Responsibilities
 - 1-6.1. Commander, 1st Armored Division
 - 1-6.2. Commander, Fort Bliss Garrison
 - 1-6.3. Directorate of Public Works (DPW), Sustainability & Energy Division (SED)
 - 1-6.4. Directorate of Public Works (DPW), Operations and Maintenance Division (OMD)
 - 1-6.5. Directorate of Public Works (DPW), Engineering Services Division (ESD)
 - 1-6.6. Directorate of Public Works (DPW), Master Planning Division (MPD)
 - 1-6.7. Directorate of Public Works (DPW), Environmental Division (ED)
 - 1-6.8. Directorate of Public Works (DPW), Business Operations and Integration Division (BOID)
 - 1-6.9. Fort Bliss Qualified Recycling Program Roles and Responsibilities for Commanders, Directors, and Tenants
- 1-7. Violations of Regulation

Chapter 2

Net Zero Waste and the Qualified Recycling Program

- 2-1. General
- 2-2. Responsibilities

Chapter 3

Energy & Water Monitoring, Awareness and Training

Section I: Building Efficiency Monitor (BEM) Program Implementation⁶

- 3-1. General
- 3-2. Responsibilities
- 3-3. Implementation of Building Efficiency Monitor Program

Section II: Training

- 3-4. General
- 3-5. Responsibilities
- 3-6. Implementation

Chapter 4

Energy Conservation Policy

Section I: Facilities

- 4-1. General
- 4-2. Responsibilities
- 4-3. Utility Metering
- 4-4. Implementation
- 4-4. Conservation Ideas and Suggestions

Section II: Heating Policy

- 4-5. General Heating Policy
- 4-6. Exceptions to Heating Policy

Section III: Air Conditioning Policy

- 4-7. Startup and Shutdown of Air Conditioning Systems Basis
- 4-8. General Air Conditioning Policy
- 4-9. Exceptions to Air Conditioning Policy

Chapter 5

Lighting

- 5-1. Design Requirements
- 5-2. Lighting Intensities for Facilities
 - Table 1: DOD IES Cross Reference of Facility Name or Function*
 - Table 2: Illumination in Medical and Dental Facilities*
 - Table 3: Illumination in Child Development Centers*
 - Table 4: Illumination in Warehouses*
 - Table 5: IES Sports Classifications*
 - Table 6: Illumination of Functional Areas of other Facilities*
- 5-3. Emergency Lighting
- 5-4. Exit Lighting
- 5-5. Maintenance Area Lighting
- 5-6. Street, Area, and Security Lighting
- 5-7. Installation Requirements

Chapter 6

Water Conservation Policy

- 6-1. Water Security Mission
- 6-2. IMCOM Energy and Water Efficiency Campaign Plan
- 6-3. Design Requirements
- 6-4. General Water Use Practices
- 6-5. Irrigation Water Restrictions
 - Table 7: Summary of Outdoor Watering Restrictions*
- 6-6. Non-Essential Water Use Restrictions
- 6-7. Additional Water Use Restrictions

6-8. Drought and Water Emergency Plan

Table 8: Drought Stage 2 Numbered Address Watering

Chapter 7

Energy & Water Conservation Checklist for Commanders/Leaders/Staff

7-1. Management:

7-2. Vehicles:

7-3. Training Exercises:

7-4. Aviation:

7-5. Facilities:

Annex List

Appendix A: References

Section I: Required and Related Publications

Army Regulations (AR)

DOD Manuals

Other Standards

Laws and Presidential Orders

Section II: Glossary & Abbreviations

Chapter 1: General Information

1-1. Purpose. This publication provides guidance and local procedures to implement the Fort Bliss Energy and Water Conservation program in accordance with policies established in U.S. Code of Federal Regulations, Title 10 CFR, AR 420-1, EPACT 2005, EISA 07, and EO 13423 and 13514. Conservation of energy and water at Fort Bliss is mandatory. Fort Bliss is required to reduce energy and water consumption by 3% per year from baseline years. Recycling is mandatory on Fort Bliss. This regulation directs who will recycle, how to recycle, where to recycle and what to recycle on Fort Bliss. OPOD 14-067 and the DoD SSPP require all Garrisons to divert a minimum of 50 percent of their waste from landfills annually. It also requires a minimum of 60 percent diversion of construction and demolition debris. Additionally, Fort Bliss is a Net Zero waste installation which requires 100 percent diversion of waste from landfills by 2020.

1-2. Applicability. This regulation applies to all military and civilian personnel assigned to resident and tenant organizations on Fort Bliss including mobilization and demobilization activities and commercial activities on Fort Bliss. This regulation provides concept, policies, objectives, and procedures, and assigns responsibilities for the implementation of an installation Energy and Water Conservation Program to efficiently manage energy and water resources and mandatory compliance with the Fort Bliss Recycling Program. The regulation also applies to contractors who consume energy and/or water and generate construction and demolition debris on Fort Bliss. Residents of Residential Communities Initiative (RCI) Military Housing will conserve energy & water and recycle in accordance with the specified RCI recycling program.

1-3. References. Required and referenced publications are listed in Appendix A.

1-4. Explanation of Abbreviations and Terms. Abbreviations and terms are explained in the glossary in Appendix A.

1-5. Checklist for Commanders / Leaders / Staff. Leadership can utilize a short checklist to think about how to conserve energy and water as well as create a more sustainable Fort Bliss. The checklist is located in Chapter 7.

1-6. Responsibilities.

1-6.1. Commander, 1st Armored Division. The Fort Bliss Senior Mission Commander provides leadership oversight and direction to ensure compliance with this policy by all Fort Bliss personnel. The Senior Commander requires that all units occupying facilities appoint Building Efficiency Monitors (BEMs) for all buildings and facilities on Fort Bliss.

1-6.2. Commander, Fort Bliss Garrison. The Garrison Commander at Fort Bliss has the responsibility to execute Installation Management Command (IMCOM) resources for the energy and water conservation program.

- a. The Garrison Commander approves resource allocation for energy and water conservation.
- b. The Garrison Commander has visibility and approval authority for Installation Status Report (ISR) inputs for Fort Bliss that include opportunities for sustainment, repair, and modernization of the installation for energy and water efficiency.
- c. The Garrison Commander will strive to minimize occupied building and facility space to the smallest possible footprint. This will allow empty facilities to be placed in 'vacant' status with minimal energy and water usage.
- d. The Garrison Commander is the lead for the Garrison Energy & Water Conservation (GEWC). As part of the quarterly Fort Bliss Sustainability & Qualified Recycling Program meeting, GEWC will review programs for progress toward conservation goals, make recommendations for improvement, and provide updates on conservation compliance by Garrison units.
 - (1) The GEWC is composed of the Garrison Commander, Garrison Deputy, Directorate of Public Works, Resource Management, and other members of the Garrison as needed. If a GEWC member is unable to attend a meeting, an alternate member may attend in his/her place.
 - (2) GEWC Members shall:
 - i. Receive, record, review and report recommendations on all assigned actions by the GEWC Chair.
 - ii. Conceive, develop, evaluate, and report recommended actions on energy conservation ideas or programs to the Garrison Command for consideration and implementation.
 - iii. Oversee and coordinate the Building Efficiency Monitors (BEM) program.
 - iv. Disseminate information on energy and water conservation awareness.
 - v. The Directorate of Public Works (DPW) Sustainability & Energy Division representative will serve as Secretary of the GEWC and will be responsible for recording and issuing the minutes of the GEWC meetings.

1-6.3. Directorate of Public Works (DPW), Sustainability & Energy Division (SED). The Sustainability & Energy Division (SED) of the Directorate of Public Works has staff and operational responsibilities for the energy and water conservation program and its subprograms at Fort Bliss. The SED will:

- a. Appoint at least one Certified Energy Manager (EM) for each 5 million square feet of facility space. The EMs manage and control the energy and water management and conservation program in accordance with AR 420-1, Section 22-4. EMs also attend the Garrison Energy and Water Steering Committee meetings. EMs are supported by other Certified Energy Managers, water and

waste management personnel, the privatized utility partners, privatized Army housing, and members of the Directorate of Public Works in Operations and Maintenance Division, Environmental Division, Engineering Services Division, and in the Master Planning Division.

- b. Establish goals and procedures for the use and conservation of energy and water.
- c. Establish reporting procedures to monitor and assure energy and water conservation procedures and goals are being implemented and met.
- d. Assist Commanders and Directors in improving facility energy and water use by developing guidance, procedures and training required by regulation and best practices.
- e. Pursue new alternatives to reduce facility energy and water use.
- f. Identify impending energy and water shortages and inform the Garrison Commander and appropriate staff of situations which may disrupt the normal functions / activities of the installation.
- g. Compile and submit information required by higher headquarters on facility energy and water consumption. Reporting requirements will be made under the Army Energy and Water Reporting System (AEWRS).
- h. Develop and nominate worthy projects for energy and water conservation for possible implementation.
- i. Ensures all applicable service contracts contain energy, water, and waste diversion language to support Fort Bliss goals.
- j. Ensures all applicable service contracts contain language to support the collection and reporting of data on construction demolition waste, construction water use, and waste weights to the Directorate of Public Works, Environmental Division.
- k. Develop an "Energy & Water Conservation Plan" for each fiscal year to outline goals, metrics, potential projects, training, and outreach opportunities for energy and water conservation. Draft Plan is due in the fourth quarter of the fiscal year for the following fiscal year.

1-6.4. Directorate of Public Works (DPW), Operations and Maintenance Division (OMD). The Operations and Maintenance Division (OMD) of the Directorate of Public Works has staff and operational responsibilities for the energy and water conservation program and its subprograms at Fort Bliss. The OMD will:

- a. Establish reporting procedures to monitor and assure energy and water conservation procedures and goals are being implemented and met.
- b. Assist commanders and directors in improving facility energy and water use by developing guidance, procedures and training required by regulation and best practices.
- c. Pursue new alternatives to reduce facility energy and water use.

- d. Identify impending energy and water shortages and inform the Garrison Commander and appropriate staff of situations which may disrupt the normal functions / activities of the installation.
- e. Compile and submit information required by higher headquarters on facility energy and water consumption. Reporting requirements will be made under the Army Energy and Water Reporting System (AEWRS).
- f. Develop and nominate worthy projects for energy and water conservation for possible implementation.
- g. Ensures all applicable service contracts contain energy, water, and waste diversion language to support Fort Bliss goals.
- h. Ensures all applicable service contracts contain language to support the collection and reporting of data on construction demolition waste, construction water use, and waste weights to the Directorate of Public Works, Environmental Division.
- i. Develop an "Energy & Water Conservation Plan" for each fiscal year to outline goals, metrics, potential projects, training, and outreach opportunities for energy and water conservation. Draft Plan is due in the fourth quarter of the fiscal year for the following fiscal year.

1-6.5. Directorate of Public Works (DPW), Engineering Services Division (ESD).

The Engineers will implement into their designs the latest sustainable design criteria in accordance with applicable laws, regulations and policies. The Engineers will:

- a. Support the Energy and Water Manager with engineering assistance in the development of policy, review of design documentation, and the development of sustainable energy and water projects.
- b. ESD will conform to the Installation Design Guide and ensure that the ESD contribution to future updates to the Installation Design Guide include the most recent advancements in energy, water, and waste diversion technology to meet Fort Bliss goals.
- c. Ensure all indoor lighting (previously required to be on 24/7), except LED exit fixtures required by code, to be either on switches or motion detectors. If there is a safety requirement, motion detectors will meet the requirement.
- d. Ensure that doors and windows between conditioned spaces and non-conditioned spaces are designed to inhibit being rigged to stay open.
- e. Replace all motors and pumps with high efficiency Energy Star® equipment and appropriate controls every time a replacement is required, or when rewinding motors.
- f. Ensure all building renovations and new construction (through the DPW and the US Army Corps of Engineers) have the required "OPEN" LonWorks (Local Operating Network; LonWorks platform uses an affiliated Internet protocol (IP) tunneling standard, ISO/IEC 14908-4, (ANSI/CEA-852)) HVAC (Heating, Ventilation, and Air Conditioning) Controls. Projects will include advanced smart electric, natural gas, and water meters integrated through the secure network

back to the UMCS (Utility and Monitoring Controls System) in the BOCC (Buildings Operation Command Center) to help monitor all utilities use and also help reduce energy with HVAC controls.

- g. Engineers will conform to EAct 2005 that states that Federal agencies are required to purchase FEMP designated efficiency products:
https://www4.eere.energy.gov/femp/requirements/laws_and_requirements/energy_star_and_femp_designated_products_procurement_requirements.
- h. Engineers will utilize, cost permitting, the FEMP's designated products listing includes WaterSense plumbing fixtures and pre-rinse spray valves:
http://energy.gov/sites/prod/files/2014/04/f14/eeprod_categories.pdf.

1-6.6. Directorate of Public Works (DPW), Master Planning Division (MPD). The Master Planning Division will:

- a. Support the energy and water conservation program by providing recurring updates to the Installation Design Guide (IDG) that include engineering and design best practices for energy and water conservation and waste diversion to meet Fort Bliss goals.
- b. Support Net Zero Waste by updating the Installation Design Guide to include best practices for low construction waste design and ensuring that recycling of construction waste is considered in all designs.

1-6.7. Directorate of Public Works (DPW), Environmental Division (ED). The Environmental Division will:

- a. Support the energy and water conservation program by providing pertinent information and environmental expertise.
- b. Continue tracking, documentation, and reporting of Green House Gas (GHG) emissions for Fort Bliss.
- c. Management of the Qualified Recycling Program (QRP) for Fort Bliss.
- d. Provide training for appointed Environmental Officers.
- e. Only the Qualified Recycling Program is authorized to coordinate or contract the sale of recyclable materials. Scavenging and removing materials inside recycling containers is strictly prohibited except for re-use of cardboard boxes. Proceeds from the sale of recyclables benefit the Fort Bliss community by supporting the recycling program, pollution prevention, energy conservation, occupational safety and health, and Morale, Welfare and Recreation (MWR) projects per Title 10 U.S. Code 2577(b)(1).
- f. Provide training and information dissemination on Fort Bliss Single Stream Recycling. Only the recyclable materials listed below can be placed in the SSR dumpsters with no sorting required.
 - (1) Paper - including white and colored paper, brown paper bags, newspapers, phonebooks, catalogs and magazines.
 - (2) Shredded paper - in clear plastic bags and tied.

- (3) Cardboard – flattened.
- (4) Aluminum and tin cans – emptied of liquids, food, tobacco, etc.
- (5) Plastics # 1-7 – including bottles, jugs, dairy tubs, milk jugs, water, soda, detergent/soap bottles and yogurt and margarine containers – emptied of liquids, food and tobacco. If there is no recycle symbol with #'s 1-7 embossed on the plastic item, it is not recyclable. Plastic bags - place multiple bags within a single bag and tie.
- g. Recycling Drop-Off Point. ED will manage the Fort Bliss Recycling Drop-Off Point is located at Building 1336 Marshall Road which is accessible 24 hours/day, 7 days a week. (For additional information, call (915) 568-5724 or (915) 568-1537). In addition to SSR, the following materials may be recycled at the drop off point:
 - (1) Ink and toner cartridges - place in original box or container.
 - (2) Personal electronics – computers, monitors, keyboards, TVs, radios, lamps, microwaves, etc. No large appliances such as refrigerators, stoves, etc. No property book or government items.
- h. Other Recyclables. ED will assist in coordination of scrap metal that must be recycled through DLA (Defense Logistics Agency - Disposition Services), call (915) 568-8700/(915) 569-7760.
- i. Inspections. SSR dumpsters are inspected weekly by the DPW-ED to ensure compliance with the recycling order. When recycling deficiencies are found through the inspection process, the EO and/or facility manager will be contacted to perform a joint recycling assessment to identify a corrective action plan that the unit/organization will implement. Inspection findings are reported to the responsible EO's commander/director/contracting officer.

1-6.8. Directorate of Public Works (DPW), Business Operations and Integration Division (BOLD). BOLD will ensure that work orders for "proprietary approval" (i.e. customer funded and implemented projects) are provided with the energy and water conservation policy and design guidelines to be implemented into their construction and renovations with the latest sustainable design criteria in accordance with applicable laws, regulations and policies. BOLD will:

- a. Support the Energy and Water Manager in the development of policy, review of design documentation, and the development of sustainable energy and water projects from the point of view of internal Directorate of Public Works processes.
- b. Ensure all Proprietary Approval work orders, building renovation work orders, and new construction work orders are approved by the Sustainability & Energy Division (SED). SED will ensure that each have the requirement for "OPEN" LonWorks (Local Operating Network; LonWorks platform uses an affiliated Internet protocol (IP) tunneling standard, ISO/IEC 14908-4, (ANSI/CEA-852)) HVAC (Heating, Ventilation, and Air Conditioning) Controls. Projects will include advanced smart electric, natural gas, and water meters integrated through the secure network back to the UMCS (Utility and Monitoring Controls System) in

the BOC (Buildings Operation Center) to help monitor all utilities use and also help reduce energy with HVAC controls.

1-6.9. Fort Bliss Qualified Recycling Program Roles and Responsibilities for Commanders, Directors, and Tenants. Commanders, directors and tenants shall be responsible for ensuring that those within the scope of their authority are fully compliant with this order. They will:

- a. Appoint Environmental Officers (EO) at every organizational level e.g., company, battalion, brigade and directorates.
- b. Ensure that their appointed EOs and units are trained.
- c. Ensure that the EOs implement recycling best practices in this regulation.
- d. Ensure that all personnel receive Fort Bliss recycling training at least once.
- e. Ensure that indoor recycling containers provided by the Fort Bliss Recycling Program are available, accessible and used only for the purpose of recycling and that the contents are transferred to the large, blue Single Stream Recycling (SSR) dumpsters for pick up.
- f. Ensure that SSR dumpster lids are closed at all times.
- g. Ensure that areas around the SSR dumpsters are clear of trash and wood debris.
- h. Ensure that all unit/organization sponsored or sanctioned events include recycling. 'Litter-Free' containers are available for events. Please call (915) 568-1537 to reserve your containers.
- i. Ensure that subordinate units understand that only the Qualified Recycling Program is authorized to coordinate or contract the sale of recyclable materials. Scavenging and removing materials inside recycling containers is strictly prohibited except for re-use of cardboard boxes.
- j. Ensure units comply with Fort Bliss Single Stream Recycling (SSR) rules. Only the recyclable materials listed below can be placed in the SSR dumpsters with no sorting required.
 - i. Paper - including white and colored paper, brown paper bags, newspapers, phonebooks, catalogs and magazines.
 - ii. Shredded paper - in clear plastic bags and tied.
 - iii. Cardboard – flattened.
 - iv. Aluminum and tin cans – emptied of liquids, food, tobacco, etc.
 - v. Plastics # 1-7 – including bottles, jugs, dairy tubs, milk jugs, water, soda, detergent/soap bottles and yogurt and margarine containers – emptied of liquids, food and tobacco. If there is no recycle symbol with #'s 1-7 embossed on the plastic item, it is not recyclable. Plastic bags - place multiple bags within a single bag and tie.
- j. Any contracted activity on Fort Bliss will include contract language to ensure recycling of non-hazardous solid waste and construction/demolition debris in order to meet Net Zero Waste/Army goals. Weights or volumes diverted will be

reported to the Directorate of Public Works-Environmental Division (DPW-ED), QRP Manager, Lilia Lenhart, (915) 568-5724.

1-7. Violations of Regulation.

- a. Violations of energy regulations, conservation policies, or instances of energy and water waste and abuse may be reported in writing to the Directorate of Public Works, ATTN: DPW, Energy Manager, or telephonically at (915) 568-6514, or through the Pride Service Order Desk (915-568-1107). Additionally, reports can be made through the Interactive Customer Evaluation (ICE) link / program at <http://ice.disa.mil/index.cfm>, referencing the Energy Manager.
- b. The DPW Energy Manager will conduct an incident investigation on all reported energy and/or water incidents. The affected Major Unit Commander, Director, or supervisor will be notified through the Garrison Commander of any corrective action required.
- c. Violations of recycling program regulations may be reported in writing to the Directorate of Public Works, ATTN: DPW, Qualified Recycling Program Manager, or telephonically at (915) 568-5724, or through the Pride Service Order Desk (915-568-1107). The affected Major Unit Commander, Director, or supervisor will be notified through the Garrison Commander of any corrective action required.

Chapter 2: Net Zero Waste and the Qualified Recycling Program

2-1. General. AR 420-1 and guidance set forth by the DPW govern the Net Zero Waste policies and procedures for the reduction, reuse, recycling, and disposal of waste in facilities and support infrastructure on Fort Bliss. Other references for Net Zero Waste include: Executive Order 13693-Planning for Federal Sustainability in the Next Decade, 19 March 2015, FY14 Department of Defense (DoD) Strategic Sustainability Performance Plan (SSPP), June 2014, 40 Code of Federal Regulation 246, Source Separation for Material Recovery, 01 June 11, Integrated Solid Waste Management Plan, Fort Bliss, 06 December 2012, USAG Regulation 200-2, Fort Bliss Recycling Regulation, 28 January 2008, and the Installation Management Command Operational Order (OPORD) 14-067, Integrated (Non-Hazardous) Solid Waste Management, 18 April 2014. Recycling is mandatory on Fort Bliss. This order directs who will recycle, how to recycle, where to recycle and what to recycle on Fort Bliss. OPORD 14-067 and the DoD SSPP require all Garrisons to divert a minimum of 50 percent of their waste from landfills annually. It also requires a minimum of 60 percent diversion of construction and demolition debris. Additionally, Fort Bliss is a Net Zero waste installation which requires 100 percent diversion of waste from landfills by 2020. To comply with this order, recycling is mandatory on Fort Bliss.

2-2. Responsibilities.

- a. **Roles and Responsibilities.** Commanders, directors and tenants shall be responsible for ensuring that those within the scope of their authority are fully compliant with this order. They will:
- (1) Appoint Environmental Officers (EO) at every organizational level e.g., company, battalion, brigade and directorates.
 - (2) Ensure that their appointed EOs and units are trained.
 - (3) Ensure that the EOs implement this recycling order.
 - (4) Ensure that all personnel receive Fort Bliss recycling training at least once.
 - (5) Ensure that indoor recycling containers provided by the Fort Bliss Recycling Program are available, accessible and used only for the purpose of recycling and that the contents are transferred to the large, blue Single Stream Recycling (SSR) dumpsters for pick up.
 - (6) Ensure that SSR dumpster lids are closed at all times.
 - (7) Ensure that areas around the SSR dumpsters are clear of trash and wood debris.
 - (8) Ensure that all unit/organization sponsored or sanctioned events include recycling. 'Litter-Free' containers are available for events. Please call (915) 568-1537 to reserve your containers.
 - (9) Any contracted activity on Fort Bliss will include contract language to ensure recycling of non-hazardous solid waste and construction/demolition debris in order to meet Net Zero Waste/Army goals. Weights or volumes diverted will be reported to the Directorate of Public Works-Environmental Division (DPW-ED), QRP Manager, Lilia Lenhart, (915) 568-5724.
- b. **Recyclable Sales.** Only the QRP is authorized to coordinate or contract the sale of recyclable materials. Scavenging and removing materials inside recycling containers is strictly prohibited except for re-use of cardboard boxes.
- c. **Single Stream Recycling.** Fort Bliss practices single stream recycling, which means recyclable materials listed below can be placed in the SSR dumpsters with no sorting required.
- (1) Paper - including white and colored paper, brown paper bags, newspapers, phonebooks, catalogs and magazines.
 - (2) Shredded paper - in clear plastic bags and tied.
 - (3) Cardboard – flattened.
 - (4) Aluminum and tin cans – emptied of liquids, food, tobacco, etc.
 - (5) Plastics # 1-7 – including bottles, jugs, dairy tubs, milk jugs, water, soda, detergent/soap bottles and yogurt and margarine containers – emptied of liquids, food and tobacco. If there is no recycle symbol with #'s 1-7 embossed on the plastic item, it is not recyclable. Plastic bags - place multiple bags within a single bag and tie.
- d. **Non-Recyclable Items.** Do NOT place glass, Styrofoam, building and plant materials (yard waste) in the SSR dumpsters. Their presence renders the entire load contaminated and impacts the recyclables profit margin.
- e. **Recycling Drop-Off Point.** The Fort Bliss Recycling Drop-Off Point is located at Building 1336 Marshall Road which is accessible 24 hours/day, 7 days a week.

(For additional information, call (915) 568-5724 or (915) 568-1537). In addition to SSR, the following materials may be recycled at the drop off point:

- (1) Ink and toner cartridges - place in original box or container.
 - (2) Personal electronics – computers, monitors, keyboards, TVs, radios, lamps, microwaves, etc. No large appliances such as refrigerators, stoves, etc. No property book or government items.
- f. Other Recyclables. Scrap metal must be recycled through DLA (Defense Logistics Agency - Disposition Services), call (915) 568-8700/(915) 569-7760.
 - g. Inspections. SSR dumpsters are inspected weekly by the DPW-ED to ensure compliance with the recycling order. When recycling deficiencies are found through the inspection process, the EO and/or facility manager will be contacted to perform a joint recycling assessment to identify a corrective action plan that the unit/organization will implement. Inspection findings are reported to the responsible EO's commander/director/contracting officer.
 - h. Sale of Recyclables. Proceeds from the sale of recyclables benefit the Fort Bliss community by supporting the recycling program, pollution prevention, energy conservation, occupational safety and health, and Morale, Welfare and Recreation (MWR) projects per Title 10 U.S. Code 2577(b)(1).
 - i. Command and Signal.
 - (1) Command. Directorate of Public Works – Environmental Division is the primary staff proponent.
 - (2) Control. Qualified Recycling Program Manager is Ms. Lilia Lenhart at (915) 568-5724 or via email at lilia.a.lenhart.civ@mail.mil.

Chapter 3: Energy & Water Monitoring, Awareness and Training

Section I: Building Efficiency Monitor (BEM) Program Implementation

3-1. General. AR 420-1 and guidance set forth by the DPW govern the policies and procedures for the Energy and Water Conservation Policy in facilities and support infrastructure on Fort Bliss.

3-2. Responsibilities.

- a. Energy & Water Manager (EM). The EM manages and implements the energy and water management and conservation program in accordance with AR 420-1, Section 22-4.
- b. Building Efficiency Monitors (BEM). The BEM is responsible for the onsite implementation of the energy and water conservation program for their assigned facilities. BEMs must become familiar with building operations schedule, building utility meters, heating systems, heating fuels, fuel sources, storage facilities, fuel consumption, equipment usage, and appliances within facilities under their respective control and supervision associated with their respective

facilities. Familiarization can be achieved through on-site surveys, inspections, and attendance at the quarterly Building Efficiency Monitor training.

3-3. Implementation of Building Efficiency Monitor Program.

a. Creating a Building Efficiency Monitor Program

(1) Generate an Operations Order (OPORD) to engage all units, organizations, and tenants to ensure all facilities have an appointed Building Efficiency Monitor (BEM).

(2) Energy and Water Managers will generate a body of training materials to provide quarterly training to appointed BEMs.

(3) Energy and Water Managers will publish energy and water conservation materials, tips, and lessons learned to all BEMs throughout the year. Energy and Water Managers will be available for questions and meetings with unit representation to address issues with energy and water.

b. Building Efficiency Monitor

(1) The Building Efficiency Monitors (BEM) is an additional duty for the unit's assigned Facility Manager that has signed for custody of the building / facility through the Directorate of Public Works, Real Property. The BEM, and an alternate, will be officially appointed in writing.

(2) The Building Efficiency Monitors (BEM) will promote energy conservation within their respective building and inspect assigned buildings monthly for the installation in accordance with policies established in AR 420-12, paragraph a-2.

(3) The BEM's will inspect assigned buildings monthly to ensure operating schedules, temperatures, and lighting is within acceptable levels. Building temperatures will comply with AR 420-1 (chapter 22-12-b-1) or as amended by Headquarters guidance.

(4) The BEM's will, at a minimum, inspect for gaps around doors, broken windows, damaged or missing weather stripping, dirty air filters and other forms of energy waste or abuse, and will submit reports of these inspections to the Energy and Water Managers. Any significant facility shortfall should also be submitted as a service order to the Base Operations Support contractor.

Section II: Training

3-4. General. AR 420-1 and guidance set forth by the DPW govern the policies and procedures for the Energy Conservation Policy in Facilities.

3-5. Responsibilities.

- a. Fort Bliss Energy and Water Manager (EM). The EM will provide training opportunities for Building Efficiency Monitors at least quarterly. The training will consist of practical energy and water conservation practices, any new regulations or restrictions regarding energy and water, and changes in reporting

procedures. The EM will also schedule on site visits with BEM's to provide field guidance for energy and water conservation oversight.

- b. Building Efficiency Monitors (BEM). The BEM is responsible for attending the quarterly training. The BEM will communicate to the building occupants the lessons learned from inspections and operations.

3-6. Implementation.

- a. Building Efficiency Monitors will attend the one to two-hour course presented quarterly by the Energy and Water Managers. BEM training will be tracked by the DPW Energy Office.
- b. The Energy and Water Manager will provide periodic tips, best practices, and other guidance throughout the year to all BEMs.
- c. Training will consist of class room presentations conducted by installation energy and water managers, handouts, and onsite inspections of BEM facilities.

Chapter 4: Energy Conservation Policy

Section I: Facilities

4-1. General. AR 420-1 and guidance set forth by the DPW govern the policies and procedures for the Energy Conservation Policy in Facilities.

4-2. Responsibilities.

- a. Energy users are instructed to extract and apply all measures and procedures that are applicable to their needs and environment and which can be implemented within their organization or activity. Applicable measures and procedures should be incorporated into individual unit or activity conservation plans and programs.
- b. Personnel designated with energy conservation duties and responsibilities must become familiar with operating schedules, building utility meters, heating systems, heating fuels, fuel sources, storage facilities, fuel consumption, equipment usage, appliances and rates within facilities under their respective control and supervision associated with their respective facilities. Familiarization can be achieved through on-site surveys, inspections and attendance at the DPW Building Energy & Water Monitor training.

4-3. Utility Metering.

- a. Sufficient metering is essential to the implementation, control, and verification of energy and water conservation programs.
- b. In order to implement sufficient metering and to accurately assess the implementation of conservation measures, all new construction will implement

- metering for electric, water, and natural gas. In addition, any major renovations or repair / replacements will include metering.
- c. Army projects and unit funded "proprietary approval" projects (projects that are implemented by the user) of greater than \$100K shall include advanced smart electric, natural gas, and water meters integrated through the secure network back to the UMCS (Utility and Monitoring Controls System) in the BOCC (Buildings Operation Command Center) to help monitor all utilities use and also help reduce energy with HVAC controls. Projects less than \$100K will add metering through the Fort Bliss privatized utilities as part of the project.
 - d. Reimbursable customers are encouraged to implement smart meters interconnected with the BOCC, but will, as a minimum, obtain electric, water, and natural gas metering through the appropriate Fort Bliss privatized utility for every new interconnection. The meters will report the quantity of utility commodity consumed and the peak rate of consumption at a minimum. Existing reimbursable customers will have 6 months from the implementation of this policy to ensure that all of their facilities are properly metered for all utilities.

4-4. Implementation.

- a. Conservation Controls for Heating and Air Conditioning.
 - (1) Temperature. Building temperatures will be in compliance with limitations set by this regulation. Requests for exceptions to policy will be consolidated at major unit or activity level and submitted for approval to the Directorate of Public Works, ATTN: Energy & Water Manager, IMBL-PWO. Requests for exceptions to policy must be fully justified (and medical statements from Occupational Health, MEDDAC, or personal physician enclosed when applicable) and signed by the major unit commander or activity director.
 - (2) Commanders, directors and supervisors at all levels will consolidate and concentrate operations and activities in the minimum number of facilities with the minimum number of operating hours necessary to accomplish missions. Particular attention toward consolidation will be paid to bachelor housing. Unoccupied buildings, when practical, will be winterized and all utilities will be minimized and/or lowered to safe levels. Units must notify DPW of all deployments and redeployments so that the process of identifying unoccupied facilities and utility minimization can occur. Requests for winterization or to place a building in 'vacant' status while the building is not in use or the owning unit will be deployed for an extended period of time will be submitted on Facilities Engineering Work Request (DA Form 4283).
 - (3) Personal Heating and Cooling Devices. The operation of portable heating and cooling devices is prohibited where the intent is to circumvent the heating and cooling standards. Supplemental heating and cooling may be used when cost effective energy reductions can be achieved by reducing usage of primary heating and cooling systems or personal comfort levels cannot be achieved by reasonable adjustments of the primary system. Such

devices are particularly effective where only a few people occupy a portion of a large building, and conditioning is only required in a small section of the facility. The use of energy efficient personal fans are not Cooling Devices but are allowed for ventilation & personal comfort. Personal fans are a very energy efficient means to achieve personal comfort as the moving air feels 5 to 8 degrees cooler than ambient temperature. Use of personal supplemental heating or mechanical cooling devices must have supervisor written endorsement. Use of portable devices must be verified and approved by a Fire Inspector and the DPW, Energy & Water Manager. (AR 420-1, 22-12-2-b) When approved, portable devices shall only be used when the rooms are occupied.

- (4) Activities requiring elevated temperatures for special processes (such as paint shops) will schedule their operations to take advantage of warm weather and peak daytime temperatures.
 - (5) All personnel will dress as appropriate for weather conditions.
 - (6) Weather stripping and Caulking. Buildings will be properly weatherproofed. Weather stripping and caulking repairs will be referred to the DPW Service Order Section, (915) 568-1107. Requests for major repairs will be submitted on a DA Form 4283 (Facilities Engineering Work Request) to the DPW Work Reception desk.
 - (7) DPW OMD Representative will develop and implement SOP's to ensure that central heating and air conditioning plants are operated at maximum efficiency and on the minimum schedule to meet mission requirements.
 - (8) DPW OMD Representative will ensure that all pumps and motors that have automatic controls are in automatic mode at all times unless the equipment is under repair.
 - (9) DPW Engineers and Representatives shall ensure that any new design or replacements of pumps & motors are both high efficiency, have appropriate controls, and be properly sized for the operation/task. Over sizing equipment will result in inefficient operations.
- b. Conservation Controls for Electricity.
- (1) All electrical appliances, to include interior and exterior lighting, will be turned off when not in use.
 - (2) Refrigerators. Refrigerators are authorized in work and office areas for area use with sizing based on number of personnel supported. Use one cubic foot per person as an average to determine size and quantity of refrigerators that are appropriate. All refrigerators will be the highest Energy Star® rated available when purchased. Old refrigerators will be identified by BEMs and replaced with high efficiency units as soon as possible. Refrigerators in work areas and offices intended for only one person's use are prohibited. Exceptions allowed for general officers and commanders who have conference room meeting requirements that justify the single use (AR 420-1, 22-12-b-4)

- (3) Lighting levels will be maintained in accordance with Illuminating Engineering Society of North America (IESNA) 9th Edition Handbook. Reduction in lamp size or partial elimination of existing lighting will be made when necessary to ensure these authorized levels are not exceeded.
- (4) Lighting for ornamental purposes is not authorized.
- (5) All efforts will be made to avoid energy and water waste and abuse. DPW OMD Representative will develop and implement SOP's to ensure that all electrical and water systems are maintained and operated at maximum efficiency.
- (6) Energy Star®. All new and replacement appliances will be the highest ENERGY STAR® rated or on the Federal Energy Management Programs list of approved appliances.
- (7) All existing incandescent bulbs to be replaced with compact florescent, florescent, LED or Energy Star®-rated luminary
- (8) Computers and monitors should be turned off every day when not actively in use, if the equipment is Energy Star® rated, as required by statute and regulation, then it has a sleep mode. Computers should only be left on overnight when required by the Network Enterprise Center to perform software upgrades. For scanners, copy machines, faxes, printers and other office equipment, program the sleep mode to activate automatically when not actively in use. If the sleep mode is activated after any 20 minutes of inactivity, then the equipment is not required to be turned off when not in active use.
 - i. Computers will only be turned off by the computer shutdown procedures recommended by the manufacturer/Operating System.
 - ii. Once computers are shut down, they will not have power further restricted by such means as turning off power to a power strip. This allows the NEC to power up computers in an emergency patch situation without any physical limitations to the systems access to power. This only pertains to the systems central processing unit. Peripheral equipment such as monitors, printers and scanners may be shut down via a power strip.
 - iii. Activities coordinating with the NEC to load/update software and that have a to do so are authorized to leave their systems on overnight or on the weekend for an extended period of time.
 - iv. The NEC can, in emergency cases regarding a valid Information Assurance situation require that systems be left on for appropriate scanning/patching until such time as that condition or requirement is no longer valid.
 - v. Eliminate and remove all extra refrigerators, microwaves, coffee pots and other appliances that service only one or two persons except as permitted by AR 420-1, chapter 22. Permit only the quantity of appliances needed for the number of personnel. Personal radios and task lighting are allowed and excluded from this requirement.
- c. Conservation and Controls for Space.

- (1) Units having two barracks which show a utilization of troop housing spaces of 45% or less will close one barracks and consolidated space. Units will notify the DPW Energy Office to adjust temperatures and minimize consumption.
- (2) Units having three barracks which show a utilization of troop housing spaces of 60% or less will close one barracks and consolidated space. Units will notify the DPW Energy Office to adjust temperatures and minimize consumption.
- (3) Units having four barracks which show a utilization of troop housing spaces of 70% or less will close one barracks and consolidated space. Units will notify the DPW Energy Office to adjust temperatures and minimize consumption.
- (4) Temporarily vacated buildings (89 days or less) which have heating or water heating equipment will be winterized by the assigned unit as follows (with additional set back procedures possible based on evaluation by DPW Energy and Water Managers):
 - i. Thermostat will be set at the minimum temperature of 45 degrees F.
 - ii. Windows and doors will be secured.
 - iii. All lights and appliances will be turned off.
- (5) Permanently vacated buildings (90 days or more) which have heating or water heating equipment will be winterized as follows (with additional set back procedures possible based on evaluation by Energy and Water Managers):
 - i. Assigned unit will submit request for winterization on DA Form 4283 (Facilities Engineering Work Request)
 - ii. DPW will perform work necessary to winterize building in addition to that performed by the assigned unit as stated above.
 - iii. Assigned unit will notify DPW Energy Office at least 30 days prior to the unit's return to the facility.
- (6) Buildings closed temporarily will be heated no higher than 45 degrees F in periods of extreme cold to protect plumbing fixtures. Assigned units are responsible for checking for freeze damage.
- (7) Empty rooms or sections in buildings utilized as BEQ/BOQ housing will be considered temporarily vacant and closed as in paragraph 4 above.
- (8) Administrative and storage functions will be consolidated as to occupy the minimum practical space. Consolidation will take place whenever possible. Excess space for which there is anticipated need may remain under the control of the major command.

4-4. Conservation Ideas and Suggestions. The conservation measures and procedures outlined above in no way exhaust all available means of conserving energy. Individual support through all avenues of energy conservation, to include the development of new conservation methods, is essential and encouraged. Suggestions can be made through the Energy and Water Manager, Benny.j.tomlinson.civ@mail.mil,

through Garrison leadership, or through the Interactive Customer Evaluation (ICE) link/program at <http://ice.disa.mil/index.cfm>. The development of the energy & water awareness campaign will include alternative routes for suggestions including social media and the Fort Bliss website.

Section II: Heating Policy

4-5. General Heating Policy.

- a. All new construction, retrofits, and renovations are required to install occupancy sensors for heating and cooling.
- b. Heat will not be provided to buildings during periods when the outdoor temperature is above 60 deg F, except where exceptions to policy have granted by the DPW Energy Manager. These may include medical facilities, special cases of medical exceptions, special equipment requirements or special process facilities.
- c. Temperatures will be reduced in buildings when unoccupied (nights, weekends, holidays, and so forth.) to 55 degrees F or lowest thermostat setting if the thermostat cannot be reduced to 55 degrees F. Some facilities may require thermostat programming to turn on heating prior to occupancy to account for the time it takes for the building's internal temperature to come into compliance with this policy.
- d. Use of personal supplemental heating or mechanical cooling devices must have supervisor written endorsement. Use of portable devices must be verified and approved by a Fire Inspector and the DPW, Energy & Water Manager. (AR 420-1, 22-12-2-b) When approved, portable devices shall only be used when the rooms are occupied.
- e. The indoor temperatures listed in paragraph f. are considered to be the maximum allowed during the heating season. (Excerpted from AR 420-1, chapter 22) Lower temperatures are authorized consistent with health and mission accomplishment.
- f. Seasonal Heating Temperatures in occupied facilities will be maintained in the range of 68 degrees Fahrenheit plus or minus 2 degrees Fahrenheit during working hours and heating setback temperatures during unoccupied times shall be set at 55 degrees Fahrenheit plus or minus 5 degrees Fahrenheit. Temperatures in warehouses and similar active working spaces, like maintenance bays, will be at 60 degrees Fahrenheit plus or minus 5 degrees Fahrenheit during occupancy and 45 degrees Fahrenheit plus or minus 5 degrees Fahrenheit during unoccupied periods. Warehouses will not be heated if they are usually devoid of human activity and if freezing and condensation are not issues. Museum activities recognized by the Center of Military History will maintain heating and cooling in accordance with AR 870-20.

4-6. Exceptions to Heating Policy

- a. Requests for exception to heating policy for special equipment requirements and special process facilities will be in writing and signed by the Commanding Officer, Director, or Activity Chief of the initiating organization. Requests should be directed to the Energy Manager, DPW. Sufficient justification must be included in the request in order to determine the equipment's environmental requirements. This includes equipment specifications, technical manuals and other reference materials.
- b. Requests will be consolidated at the major unit or activity level and signed by the Commanding Officer or Activity Chief. This will prevent numerous individual requests from being received at various times.
- c. Exceptions to heating policy expire every two (2) years or if the mission of the facility changes with affected period.
- d. When the condition of the occupied facility is unable to maintain constant or adequate temperature control and ventilation in occupied portions of the facility due to age, sub-standard design, or system conditions, the Director of Public Works will grant exceptions to the heating policy to ensure all occupants have the minimal comfort standards.

Section III: Air Conditioning Cooling Policy

4-7. Startup and Shutdown of Air Conditioning Cooling Systems Basis. Air conditioning startup and shutdown policy is based on the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) effective temperature principle. The effective temperature on a psychometric chart represents a line of constant human comfort based on a combination of temperature and humidity conditions. The 85 degrees Fahrenheit effective temperature "comfort line" has been identified by ASHRAE as the most applicable for this policy. Operation of air conditioning systems and equipment shall conform to the following criteria:

- a. If the maximum daily outdoor temperature and coincident relative humidity (or wet bulb temperature) falls on or above the "comfort line" for 4 out of 5 consecutive days, then air conditioning systems may be placed in operation. The DPW is responsible for determining when these conditions have been met and notifying the command group and installation personnel.
- b. During the cooling season, air conditioning in administrative space will be shut off, or the thermostat set to the high limit (no later than normal) one hour after quitting time. It will not be restarted until one half hour before work begins in the morning.
- c. Air conditioning season ends after four consecutive days of peak temperature and coincident relative humidity fall below the "comfort line".
- d. Those with special medical exceptions, medical, communication, computer, and operational facilities requiring cooling to protect equipment may request an exception to the above policy requirements. Also, those buildings which do not

have adequate ventilation as determined by the DPW may be granted an exception to policy.

- e. Supplementation of the air conditioning startup policy by a more rigorous local policy is authorized by the Garrison Commander.

4-8. General Air Conditioning Cooling Policy.

- a. Air conditioning will not be used when ventilation will suffice, except where needed to provide a controlled environment for special purposes such as special medical exceptions, medical treatment facilities, communications centers, computer centers, and operational facilities requiring cooling to protect equipment.
- b. Air conditioning will be limited to hours of occupancy. Some facilities may require thermostat programming to turn on cooling prior to occupancy to account for the time it takes for the building's internal temperature to come into compliance with this policy.
- c. Air conditioning will not be provided to buildings during periods when the outdoor temperature is below 60 degrees F, except in medical and special process facilities or where special medical exceptions are authorized.
- d. The indoor temperatures listed below are considered to be the minimum allowed during the air conditioning season. (Excerpted from AR 420-1 Chapter 22) Higher temperatures are authorized consistent with health and mission accomplishment.
- e. Cooling season temperatures for occupied working and living spaces shall be maintained in the range 78 degrees Fahrenheit plus or minus 2 degrees Fahrenheit. Cooling set-up temperatures during unoccupied times shall be set at 85 degrees Fahrenheit plus or minus 5 degrees Fahrenheit. Space temperature for medical and medical research operations will comply with these standards unless exempted by UFC 4-510-01. Museum activities recognized by the Center of Military History will maintain heating and cooling in accordance with AR 870-20.

4-9. Exceptions to Air Conditioning Policy.

- a. Requests for exception to air conditioning policy for special equipment requirements and special process facilities will be in writing and signed by the Commanding Officer or Activity Chief of the initiating organization. Requests should be directed to the Energy Manager, DPW. Sufficient justification must be included in the request in order to determine the equipment's environmental requirements. This includes equipment specifications, technical manuals and other reference materials. Personal computers in themselves do not justify a requirement for air conditioning exceptions in policy. Exceptions to policy for equipment cooling will be based on the guidelines in ARMY Regulation 420-1.

- b. Request should be consolidated at the unit or activity level and signed by the Commanding Officer or Activity Chief. This will prevent numerous individual requests from being received at various times.
- c. Request for medical exception to policy must contain the doctor's justification and be approved by the Chief of Clinical Services. Medical exceptions to policy will be forwarded to the DPW Energy Manager.
- d. Exceptions to air conditioning policy expire two (2) years from approval date or if the mission of the facility changes with affected period.
- e. The use of energy efficient personal fans are not Cooling Devices but are allowed for ventilation & personal comfort. Personal fans are a very energy efficient means to achieve personal comfort as the moving air feels 5 to 8 degrees cooler than ambient temperature. Personal fans will be turned off when the area is unoccupied.
- f. When the condition of the occupied facility is unable to maintain constant or adequate temperature control and ventilation in occupied portions of the facility due to age, sub-standard design, or system conditions, the Director of Public Works will grant exceptions to the cooling policy to ensure all occupants have the minimal comfort standards.

Chapter 5: Lighting

5-1. Design Requirements. The design of interior, exterior, and sports lighting shall be in accordance with fundamentals and recommendations of the IES Lighting Handbook (reference (7a)); published by the Illuminating Engineering Society (IES), subject to the modifications and clarifications noted in Sections 1 through 7. All incandescent lighting is to be eliminated throughout Fort Bliss and replaced with the highest efficiency lighting that is life cycle cost effective.

5-2. Lighting Intensities for Facilities. Maintained lighting intensities shall conform to those recommended in the current edition of the IES Lighting Handbook except as modified herein. The IES intensities were published as minimums for specific tasks. However, they will be considered maximum design levels not to be changed significantly except in areas designed for an integrated air-conditioning and lighting system. The recommended intensities required for the predominant specific visual tasks in an area may be provided by the general illumination for the area. However, maintained general illumination will not exceed 75 foot-candles in any area, unless otherwise indicated herein. Where fluorescent general lighting levels exceed 50 foot-candles in air-conditioned areas, an integrated air-conditioning and lighting system shall be evaluated, and lighting fixtures shall meet the necessary requirements.

- a. **Conservation Requirements.** All general purpose lighting in Federal buildings will be Energy Star® products or products designated under the Department's Federal Energy Management Program (FEMP). Normally, general illumination levels in administrative areas shall not exceed 50 foot-candles at work stations,

30 foot-candles in work areas, and 10 foot-candles in non-working areas. These illumination levels, in conjunction with energy conservation, shall be obtained by the most life-cycle cost-effective techniques including, but not limited to the following:

- (1) Multiple switching of multi-lamp fixtures and/or multiple switching of fixture groups in large rooms, to permit lights to be turned off at unoccupied work stations and installing 2 lamps in 4-lamp fixtures having integral toggle switches capable of disconnecting one ballast (2 lamps) from the supply source.
 - (2) Time clock and/or photoelectric control of general indoor and outdoor lighting.
 - (3) Multilevel switched ballasts to provide non-uniform general lighting.
 - (4) More efficient lighting sources, fixtures, and lamps.
 - (5) Grid-type ceilings with the capability of interchanging relocatable panels and lighting fixtures without rewiring. (This type of ceiling will provide flexibility to accommodate changes in functional requirements of occupants.)
 - (6) Lower wattage lamps (25 watt versus 32 watt fluorescent lamps).
 - (7) Many spaces, including lobbies and circulation areas, require general ambient lighting at relatively low foot-candle levels (10 foot-candles or less). Such spaces are ideal candidates for solar day lighting. In addition, day lighting strategies should be considered in warehouse, high-bay, and other situations to supplement lighting needs using daylight rather than electrical lighting.
 - (8) Fort Bliss is developing alternative guidelines and policies for adaptive lighting to further reduce lighting levels when not needed.
- b. Special Requirements. If an intensity greater than 75 foot-candles is required for a particular task, it will be provided by localized (supplementary) lighting. The ratios between general and supplementary illumination shall not exceed those recommended by IES. Supplementary lighting normally will be provided by the user of the facility. However, power for such lighting shall be provided.
 - c. Environmental Factors. The finish and color of surrounding surfaces, equipment and furniture shall be selected for reduced glare, increased light use and acceptable brightness balance. Lighting equipment and layout shall be coordinated with other facilities to prevent interferences and to promote good appearance.
 - d. Cross Reference of DoD Facilities to IES Tables. In some instances the names and functions of facilities used by DoD are not the same as names and functions of similar facilities given in the IES tables of recommended levels of illumination. For purposes of comparison, the following cross references are given in table 1, below.

Table 1: DOD IES Cross Reference of Facility Name or Function

TABLE 1 DOD-IES CROSS REFERENCE OF FACILITY NAME OR FUNCTION

Applicable Areas of DoD Facility Name or Function in IES Tables	Designation of Facility Name or Function in IES Tables
Administration Areas	Offices, Drafting, Conference, and Accounting Rooms
Auto Maintenance Shops	Garages, Service Stations
Barracks and OQ's	Hotels Stores
Chapels	Churches and Synagogues
Classroom Buildings	School
Dining Facilities	Food Services Facilities
Guard Clubs, Brigs	Municipal Buildings – Fire and Police
Service Clubs	Auditoriums, Food Service, Facilities, Offices, Schools, Stores
Warehouses	Storage Rooms or Warehouses
Parking for Military Vehicles (with minor repair area)	Parking Area, Service Stations

- e. Medical and Dental Facility Illumination. Lighting intensities for medical and dental facilities shall conform to the IES recommendations with the exceptions listed in tables 2 and 6, below.

Table 2: Illumination in Medical and Dental Facilities

AREA	Foot Candle Intensity*
Anesthesia and Preparation	30
Central Sterile Supply	50
Fracture Room	50
Linen Room	30
Exits, Floor Level	5
Corridors in Patient Care Areas	30
Corridors, Other	10

** Supplementary lighting and general illumination in specialized areas, where needed for rooms and spaces in medical and dental facilities, will be prescribed by The Surgeon General of the using Service.*

- f. Child Development Center Illumination. Provide lighting levels according to the design criteria in the Illuminating Engineering Society of North America (IESNA) Lighting Handbook. Continue the elimination of incandescent lighting where possible. Do not use narrow spectrum fluorescent bulbs. Lighting levels are summarized in table 3 below.

Table 3: Illumination in Child Development Centers

LIGHTING REQUIREMENTS for CHILD DEVELOPMENT CENTERS			
Location	Lux (ft. candle) Level	Multiple Switching	Dimming Rqmt
Corridors	215 (20)	Yes	No
Lobby	320 (30)	Yes	No
Reception: Task Ambient	755 (70) 540 (50)	No	No
Isolation	320 (30)	No	No
Staff Offices/Staff Room	540 (50)	Yes	No
Training Room	540 (50)	Yes	Yes
Child Activity Rooms	540 (50)	Yes	No
Diapering	540 (50)	No	No
Kitchen: Task Ambient	540 (50) 215 (20)	No Yes	No No
Toilets	320 (30)	No	No
Storage	320 (30)	No	No
Mech./ Elect. Rooms	215 (20)	No	No
Exterior Walkways, Drives, Parking	54 (5)	No	No
General Outdoors	5.4 (0.5)	Automatic w/ manual override	No

- g. Hanger Illumination. The general maintained illumination level of hangers shall not exceed 75 foot-candles.
- h. Warehouse Illumination. The general illumination level in warehouses shall not exceed the values listed in table 4 (Illumination in Warehouses) measured 4 feet from the floor.

Table 4: Illumination in Warehouses

Type of Warehouse	Foot Candle
Inactive	5
Active-bulk	10*
Rack	20
Bin	5**
Mechanical Material Handling	
Control Centers and Stations	30
Loading and Unloading Areas	20
Accumulation Conveyor Areas	10

* Main aisles may be lighted to 15 foot-candles.

** Specialized lighting designed to illuminate the bins as required is to be provided by the user.

- i. Exterior Sports Illumination. Outdoor sports lighting shall conform to the classifications stated in the IES Lighting Handbook as listed in table 5, IES Sports Classifications.

Table 5: IES Sports Classifications

Sport	IES Classification
Baseball	Municipal and Semi Professional
Softball	Industrial League
Football	Class III or IV
Other	Recreational

- j. Illumination in Functional Areas of Other Facilities. The general illumination level in other functional areas shall not exceed the intensities indicated in table 6, Illumination of Functional Areas of other Facilities.

Table 6: Illumination of Functional Areas of other Facilities

Area	Foot Candle
Accounting	50
Auditorium	20
Cafeteria	25
Computer Rooms	50
Conference	30
Corridors	10
Drafting room	75
Elevator Machine Room	15
Emergency Generator Room	15
Garage Entrance	30
Garage Driving and Parking	5
General Office	50
Janitor's Closet	5
Kitchens	50
Lobbies	15
Lounges	15
Mechanical Rooms	15
Parking Lots	0.5
Stairways	20
Storage Rooms	5
Switchgear	15
Toilets	20
Transformer Vaults	15

- k. **Special Facility Illumination.** Where fluorescent or high intensity discharge lighting is prohibited and the required intensity exceeds 30 foot-candles, the general lighting system should be designed with a combination of daylight and supplementary high efficiency lighting for specific tasks where required.

5-3. Emergency Lighting: Emergency lighting systems shall be provided in accordance with the requirements of NFPA 101 (reference (7b)). In facilities with standby electric power systems, provisions shall be made to transfer the exit lighting system to the standby generating source. Emergency supplementary lighting of 2 foot candles along aisles and walkways in high bay areas where high intensity discharge lighting is used shall be provided. In buildings with large electrical loads, full consideration shall be given to possible economies from the use of higher voltages and/or frequencies for the lighting system (see Sections 2.2.A and 2.2.B in the IES Lighting Handbook)).

5-4. Exit Lighting: Exit lighting and exit signs shall conform to NFPA 101. Exits, exterior steps and ramps shall be adequately lighted to prevent accidents. Exit signs will be Light Emitting Diodes fixtures. Separate lighting shall not be provided if street or other permanent lighting gives at least one foot-candle-at the exit, steps or ramp.

5-5. Maintenance Area Lighting: Crawl spaces with utility services, interior utility tunnels, and walk-in pipe chases shall be lighted as, required (approximately one foot-candle) for the safety of maintenance personnel. Switches for these lights shall be equipped with pilot lights and located in areas that are normally occupied. Keyed switches may be used if required. Receptacles shall be located at reasonable intervals in these maintenance areas for temporary work lights and portable tools.

5-6. Street, Area, and Security Lighting:

- a. **Street and Area Lighting.** Streets, parking areas, and walks in residential, administrative, and community support areas shall be lighted to provide safe vehicular and pedestrian circulation. Lights shall be at street intersections, and between intersections at spacing of approximately 150-200 feet. Walks and steps in public walks, not adjacent to streets shall be separately lighted. Control of exterior street and area lighting normally will be by automatic timers and/or photoelectric cells.
- b. **Security Lighting.** Since most security lighting must meet specialized requirements, it will be designed to meet the user's needs using the most energy-efficient lighting practicable.
- c. **Exterior Lighting.** AR 420-1 requires that off-hour and exterior lighting be eliminated, except when essential for safety and security purposes as required by AR 190-11 and AR 190-51. Additionally, the Army is facing significant fiscal challenges, and elimination of exterior night lighting offers an opportunity to reduce utility expenses, in some cases, with no or minimal capital improvement or equipment costs. Fort Bliss will minimize or eliminate night lighting to support required energy consumption reductions and to support energy security. Additional benefits are reduced maintenance cost and limiting emissions of greenhouse gasses. Lighting after dark on installations is often excessive and uncontrolled due to inefficient fixtures, over lighting, or a lack of or inoperable controls. If lighting is required, a risk assessment will be conducted and the use of motion sensor controls will be considered and evaluated for cost effectiveness. Safety and security concerns are to be evaluated and all options will be considered to ensure reduction of lighting while meeting legal or regulatory requirements (e.g. arms storage).

5-7. Installation Requirements:

- a. **Barracks.** In open sleeping areas, low-level night lights shall be located so that beds are not directly illuminated. Occupants' rooms may have a night light or a secondary room light of low illumination located to facilitate moving about during night hours without disturbance to sleeping occupants. Occupants' rooms shall have one or more switches conveniently located inside the room to control general room illumination. Barracks with open sleeping areas or partial partitions

shall have separate switches for each sub area in an easily accessible location. Switches shall be located so that access is not blocked by, double-decked beds or lockers. Luminaries used in open area barracks, or in barracks with partial partitions, shall direct light into the area served by each switch so that spillage into adjacent areas is a minimum.

- b. Communications Facilities. General lighting shall be arranged parallel to equipment aisles wherever possible, to provide maximum illumination and to avoid overhead cable trays. In areas where manual equipment is used, operator efficiency must be assured by carefully positioning luminaries to avoid glare and excessive light on the face of the equipment, while maintaining a reasonable light level on the horizontal surface. Supplementary lighting may be provided over work benches in maintenance and test areas.
- c. Hospitals. Where practicable, general lighting in medical, surgical and clinical areas shall use recessed luminaries having flush glass or plastic panels to minimize dust collection. Luminaries in neuropsychiatry patient areas shall have impact resistant tempered glass lenses, and those located in bedrooms shall incorporate a low wattage night light, separately switched. Over each bed in patients' bedrooms (except neuropsychiatry) a wall-mounted luminaries having a locally controlled direct lighting component, and an indirect lighting component supplied from a separate lamp for general illumination in the vicinity of the bed shall be provided. A low wattage, shielded, wall mounted night light shall be provided in patients' rooms of 4 beds or less; and for larger rooms an additional light shall be provided for each group of 4 beds. In rooms where equipment sensitive to radio frequency radiation is operated, adequate RFI shielding shall be installed on fluorescent units.
- d. Officers' Clubs, NCO Clubs and Service Clubs. Ballrooms and lounges serving multiple functions shall have the general lighting arranged for multiple switch control so that different intensities may be selected. Small hand-operated dimmers may be used in lieu of multiple switch control provided that costs are comparable. Facilities shall be provided to permit connections of portable spots, floods or accent lights as required. For the general lighting, ballrooms may be provided with motor operated dimmers controlled from the bandstand and main entrance.
- e. Training Facilities: Classroom lighting immediately in front of the lecture platform may be controlled from a point convenient to the speaker's platform and also at the entrance. Auditorium lighting may be controlled by motor operated dimmers from the platform (off stage) and the main entrance to facilitate use of audio-visual aids. Lighting may also be controlled from those points by switches. Minimum lighting shall be provided so that notes may be taken during the use of visual aids. Indoor rifle ranges shall be provided with indirect or low brightness luminaries in the firing area to avoid undesirable reflections. Target luminaries and those in the firing lanes shall be protected by shields from stray bullets.
- f. Warehouses. Lighting arrangements shall suit the warehousing techniques employed. For pallet storage general lighting may be confined to the aisles with

supplementary lighting units provided in the aisles and directed to illuminate the storage areas. The latter shall be controlled separately from the aisle lighting. Trolley-mounted luminaries may be employed where shifting of the luminaries is practicable. Lights shall be controlled from panel boards except that lights at aisle inter-sections and intermediate key points may be remotely controlled by low voltage switches from multiple points to permit passage of security guards and access to panel boards. Provision shall be made at loading doors for supplementary or portable lighting for the illumination of truck or rail car interiors.

- g. Weapons Systems Control Area. Lighting shall be specially engineered. Low levels of lighting may be required to permit observation of luminous panels without reflected glare or undesirable contrasts in brightness. Separately controlled luminaries shall be provided for normal illumination operations and cleaning purposes.

Chapter 6: Water Conservation Policy

6-1. Water Security Mission. The water security mission is to make water a consideration in all Army activities in an effort to reduce demand, increase efficiency, seek alternative sources, and create a culture of water accountability while sustaining or enhancing operational capabilities.

6-2. IMCOM Energy and Water Efficiency Campaign Plan.

- a. Measure and reduce energy and water consumption.
- b. Increase energy and water efficiency and modernized infrastructure.
- c. Improve development of renewable and alternative energy, and access to energy and water supplies.
- d. Improve development of renewable and alternate energy for vehicle fleet mobility fuel.
- e. Reduce carbon "footprint" on the environment.

6-3. Design Requirements. IMCOM has mandated all Army Garrisons to implement the criteria implemented in the IMCOM Energy and Water Conservation Design Guide for Sustainment, Restoration, and Modernization (SRM) Projects and MILCON Construction. The criteria set forth is to be utilized in all new construction and major repair projects.

Design guide criteria will also be followed when replacing plumbing fixtures on post as part of repair and maintenance activities.

- a. DPW Engineers and Representatives will utilize, cost permitting, the FEMP's designated products listing includes WaterSense plumbing fixtures and pre-rinse spray valves:
http://energy.gov/sites/prod/files/2014/04/f14/eeprod_categories.pdf.

- b. Lavatory faucets and their accessories will be EPA Water Sense listed and have a maximum flow rate of 0.5 gallons per minute.
- c. Showerheads shall be EPA Water Sense listed and have a maximum of 1.5 gallons per minute discharge.
- d. Tank-type toilets will be EPA Water Sense labeled with a maximum effective flush volume of 1.28 gallons per flush.
- e. Flush-o-meter valve-type toilets will be EPA Water Sense listed and use no more than 1.6 gallons per flush

6-4. General Water Use Practices.

- a. All must prevent water they are utilizing from running into the street. No water is to run from unattended hoses. When water is emptied from wading pools or other collective devices, it will be released where it can be used by lawns and vegetation and not drained into the streets.
- b. Maintenance requirements or problems at all facilities that result in water leaks must be reported to the Directorate of Public Works Service Order Desk. When placing a service order, specify that water is leaking, source of the leak if known, and any pertinent information regarding the size of the leak, such as steady drip, stream as wide as a pencil, or stream like a fire hose.
- c. All temperature settings on water heating will be set no higher than the following maximum temperatures:
 - (1) Housing quarters: 120 degrees F.
 - (2) Troop Housing: 105 degrees F at point of use.
 - (3) Dining facilities with automatic dishwashers and booster pumps: 140 degrees F.
 - (4) Dining facilities with no booster pumps: 180 degrees F.
- d. Swimming pools will be maintained using the minimum amount of water necessary to provide adequate filtration and recirculation of water. Water temperature will not exceed 75 degrees F.
- e. All water faucets not in use will be turned off.
- f. All plumbing will be properly maintained to prevent water leaks. Repairs and maintenance will be performed by self help, preventive maintenance personnel and service orders.
- g. DPW OMD will perform maintenance, repairs and surveys as required to ensure maximum efficiency of water and hot water systems.

6-5. Irrigation Water Restrictions. The following mandatory restrictions shall apply to all units and tenants on Fort Bliss, TX from 1 April to 30 September each year:

Table 7: Summary of Outdoor Watering Restrictions

Summary
No Army Housing, Army Lodging, or Residential Communities Initiative (RCI) "Residential" watering on Monday.
"Residential" Even number address/building number residents water Tuesday, Thursday or Saturday.
"Residential" Odd number address/building number residents water Wednesday, Fri day or Sunday.
Schools, parks, golf courses, industrial sites, landscaped areas under Directorate of Public Works management or Residential Communities Initiative (RCI): water Monday, Wednesday, Friday.
Time restriction for residents, from April 1 through September 30 watering permitted before 10:00 AM and after 8:00 PM on designated days. Additional restrictions may be applied, as directed by the Garrison Commander.

- a. For Army Housing, Army Lodging, or Residential Communities Initiative (RCI) housing landscaping, all outdoor irrigation of grass, trees, plants or other vegetation which building addresses are even numbered, may be done only Tuesdays, Thursdays and Saturdays; and on the side of the street on which buildings are odd numbered, such vegetation may be irrigated only on Wednesdays, Fridays and Sundays.
- b. All outdoor irrigation of grass, trees, plants or other vegetation on Directorate of Public Works management or Residential Communities Initiative (RCI) managed landscaping, parks, golf courses, schools and cemeteries may be permitted only on Mondays, Wednesdays and Fridays.
- c. From April 1st to September 30th, all outdoor irrigation of vegetation is prohibited between the hours of ten (10) a.m. and eight (8) p.m.
- d. The Director of Public Works shall have the authority to review special situations and hardship cases in a staffed request for exemption through the Directorate of Public Works, Energy & Water Manager.

6-6. Non-Essential Water Use Restrictions. The following mandatory restrictions shall apply to all tenants on Fort Bliss, TX at all times:

- a. Non-Essential Water Use:
 - (1) The washing of automobiles, trucks, trailers, boats, airplanes and other types of mobile equipment shall be done only with a hand-held bucket ("bucket" means a bucket or other container holding five gallons or less) or a hand-held hose equipped with a shut-off nozzle that completely shuts off the flow of water, even if left unattended. This restriction does not apply to the washing of the above mentioned vehicles when conducted on the premises of an installation commercial car wash. This restriction does not apply to the

- washing of government vehicles or tactical equipment in government owned wash racks.
- (2) The washing of automobiles, trucks, trailers, boats, and other types of mobile equipment for fund-raising purposes must be conducted at a commercial car wash.
- b. Water Waste: The following uses of water are defined as "wasting water" and are absolutely prohibited:
- (1) Irrigating any turf grass, tree, plant, or other vegetation, or otherwise utilizing the Fort Bliss water supply system to permit or cause water to pond, or to flow, spray or otherwise move or be discharged from the premises of any property within Fort Bliss to or upon any street, alley, gutter or ditch, or other public right-of-way, or into a storm water drainage system or facility.
- (2) Failing to report a leak within one working day of the discovery of the leak. Reports should be made to the Directorate of Public Works Service Order Desk. When placing a service order, specify that water is leaking, source of the leak if known, and any pertinent information regarding the size of the leak, such as steady drip, stream as wide as a pencil, or stream like a fire hose.
- (3) Washing sidewalks, driveways, parking areas, tennis courts, patios or other impervious surface areas with a hose is prohibited, except in emergencies to remove spills of hazardous materials or to eliminate dangerous conditions which threaten the public health, safety, or welfare. "Impervious surface area" means any structure, street, driveway, sidewalk, patio or other surface area covered with brick, paving, tile or other impervious or nonporous material.
- c. When referred to in this subsection, "swimming pool" shall mean any portable or permanent structure containing a body of water twenty-four inches or more in depth and containing one thousand one hundred twenty-two gallons or more of water and intended for recreational purposes.
- d. No person, unit, organization, or tenant shall use water for residential or non-residential single pass cooling or heating purposes unless the water is reused for other purposes as verified by the Directorate of Public Works. "Single pass cooling or heating" means the use of water without recirculation to increase or decrease the temperature of equipment, a stored liquid or a confined airspace.

6-7. Additional Water Use Restrictions: The Directorate of Public Works may implement the following additional restrictions and regulations curtailing water use upon the declaration of a water emergency and by the order of the Garrison Commander:

- a. Prohibit all Dining Facilities and restaurants from serving water to their customers except when specifically requested by the customer.
- b. Prohibit the operation of any ornamental fountain or similar structure.
- c. Reduce or prohibit the use of 'construction water' for dust suppression and other construction uses in all areas of the installation, except with reclaimed water or brackish groundwater.

- d. Prohibit the filling, refilling or adding of water to all swimming pools.
- e. Prohibit the washing of all vehicles and equipment except upon the premises of a commercial car wash.
- f. Require that the washing of motor vehicles, airplanes, boats or other types of mobile equipment, upon the immediate premises of a commercial car wash or a commercial service station, shall occur only between the hours of twelve noon and five p.m.

6-8. Drought and Water Emergency Plan: The Garrison Commander may declare a water emergency in case of a severe drought or in the event of any condition which interrupts the ability of the Directorate of Public Works, the El Paso Water Utilities, and the Fort Bliss Privatized Utilities to supply water, where curtailment of the use of water is necessary due to war, security concerns, a natural disaster, to protect the public health, safety or welfare, or to preserve the water supply. During such a water emergency, the Garrison Commander may impose any additional restrictions on the use of water from the Fort Bliss water supply system in all or in any part of the installation. Any exceptions to these restrictions will be reviewed on a case-by-case basis by the Garrison Commander. The Garrison Commander will implement additional drought restrictions based on the following three stage scale for Drought. :

- f. Drought Stage 1: Stage 1 is used to prepare Fort Bliss for an impending drought and emulates the City of El Paso drought response. The Directorate of Public Works will inform Fort Bliss residents of the drought conditions and ask for a voluntary reduction in water usage.
 - (1) A voluntary reduction goal of 25 percent in indoor and outdoor water use.
 - (2) Increased public education.
 - (3) Dining Facilities and restaurants are requested to voluntarily discontinue serving water except upon request.
 - (4) BAQ, Hotels and motels are urged to implement water conservation measures, including the reduction of laundry water usage.
 - (5) Any construction contractor utilizing water is urged to decrease water consumption by 25 percent.
 - (6) Any of the above measures may be implemented as warranted.
- g. Drought Stage 2: All Stage 1 response options remain in effect. Additionally:
 - (1) Outdoor watering will be limited to once per week as per the following schedule. Watering will occur before 9:00 a.m. and after 8:00 p.m. and shall be limited to two hours per day. The last number of the street address or building number shall determine watering days.

**Table 8: Drought Stage 2 Numbered Address Watering
Watering Schedule**

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Last # of Address or BLDG #	None	0,1	2	3,4	5,6	7,8	9

- (2) Outdoor watering performed with a permanent drip irrigation system, sub-surface irrigation, or reclaimed water is exempt. Using a bucket to water trees, shrubs and flowers is permitted.
 - (3) Parks and schools on Fort Bliss shall water in accordance with a special schedule issued by the Directorate of Public Works and will reduce consumption by a specific amount per month based on reduction targets set by the Directorate of Public Works to meet basic demand.
 - (4) Golf courses irrigating with potable water supplied by Fort Bliss shall water in accordance with a special schedule issued by the Directorate of Public Works and will reduce consumption by a specific amount per month based on reduction targets set to meet basic demand.
 - (5) No new landscaping shall be installed or planted except for Xerascapes which are drip irrigated using a permanent system, use subsurface irrigation, or are irrigated with reclaimed water.
 - (6) Routine fire hydrant flushing and testing shall be curtailed.
 - (7) Existing swimming pools cannot be filled with potable water after April 1.
 - (8) Restaurants shall serve water only on request.
 - (9) Impervious surface cleaning with potable water shall be prohibited, except where conducted by order of the Directorate of Public Works, Environmental Division.
 - (10) BAQ, Hotels and motels must implement water conservation measures, including the reduction of laundry water usage.
 - (11) The Garrison Commander may order the installation of a restriction device or downsizing of the water meter due to violations of the implemented water restrictions.
- h. Drought Stage 3: All Stage 1 and 2 drought management response options shall remain in effect. The following additional restrictions are imposed.
- (1) All outdoor watering is prohibited, except when performed with a bucket or permanent drip irrigation system, subsurface irrigation, or where reclaimed water is used.
 - (2) The irrigation of golf courses with potable water supplied by Fort Bliss, water wells located on Fort Bliss, or El Paso Water Utilities is prohibited.
 - (3) All car, trailer, truck, or boat washing is prohibited, except in facilities certified by the Directorate of Public Works. Washing of tactical vehicles shall be prohibited or reduced, based on mission needs.
 - (4) No swimming pools shall be filled. This includes permanent and 'backyard' temporary pools.
 - (5) All water use for construction, dust control and/or compaction is prohibited, except with reclaimed water or brackish groundwater.
 - (6) New water meters shall be approved for connection to the water system only as required for military expansion and/or high priority mission development projects, as determined by the Garrison Commander.

- (7) All street sweeping shall be discontinued, except that performed with reclaimed or brackish groundwater.

Chapter 7: Energy & Water Conservation Checklist for Commanders/Leaders/Staff

7-1. Management:

- a. Have the mission elements prepared comprehensive plans for energy and water conservation?
- b. Is energy and water conservation being discussed at all planning meetings and leadership updates?
- c. Has a Garrison Energy & Water Steering Committee (GEWSC) been established?
- d. Have Facility Managers / Building Efficiency Monitors (BEM) been appointed, in writing, for all facilities?
- e. Do Facility Managers / Building Efficiency Monitors (BEM) have energy and water conservation as part of their performance standards?
- f. Are energy and water conservation inspections held on a scheduled and unscheduled basis?
- g. Have First Armored Division units, Garrison elements, other assigned units, and tenants encouraged the use of the suggestion program to improve energy and water conservation?
- h. Has temporary duty and conference attendance been minimized through the use of multipurpose visits and alternative conferencing (such as phone and video teleconference)?
- i. Have energy and water conservation posters, signs, and other media been posted through the unit area (if not immediately available, have they been requested)?
- j. Have Commanders and leaders considered shifting high energy intensity activities (that use facility energy) to start and finish outside of the hours of peak energy consumption (1200-1800, Mon-Fri, June through September)? The cost of energy during this time is 5 times more expensive than non-peak times.
- k. Have Commanders and leaders considered water conservation with regard to organized activities?
- l. Have Commanders and leaders encouraged staff to report energy and water waste to the Directorate of Public Works or by calling in a service order to the Base Operations Support contractor for remediation?
- m. Have Commanders and Leaders considered optimizing operating schedules for facilities to maximize energy and water conservation?

7-2. Vehicles:

- a. Has vehicle use been managed to assure the most energy efficient combination of load carrying capacity and miles per gallon?

- b. Are vehicles and fuel consuming equipment maintained to perform at full efficiency?
- c. Has carpooling been encouraged within the workforce?
- d. Has the Command and leadership considered expanding Alternative Work Schedules (where authorized) to minimize the carbon footprint of soldier, staff, and employee personal vehicle traffic to and from the post?
- e. Has the Command and leadership considered Telework (where authorized) to minimize the carbon footprint of soldier, staff, and employee personal vehicle traffic to and from the post?
- f. Has a program been established to ensure that:
 - (1) Vehicle engines are turned off when the vehicle is parked? (Vehicles will be shut off while waiting for passengers.)
 - (2) Vehicle interiors are not pre-warmed except as required by equipment manuals?
 - (3) Vehicles are not idling unnecessarily?
- g. Are non-tactical vehicles used to the maximum extent possible for essential administrative missions / functions?
- h. Are troops marched to local training areas when possible?
- i. Are vehicle trips coordinated and combined at the highest possible levels?
- j. Have tactical vehicle movements been restricted to essential operational requirements?
- k. Have commercial transportation facilities been used to the maximum extent when efficient and economical service can be made available without detriment to the military mission?
- l. Is the minimum size vehicle available to satisfy the requirement?
- m. Have Commanders and Leaders considered procuring vehicles that utilize alternative fuels such as electric, ethanol, or compressed natural gas?

7-3. Training Exercises:

These suggestions are at the discretion of the Commander and are encouraged to further pursue the goals of a sustainable Army.

- a. Have facility or infrastructure energy intensive exercises been kept to the minimum required to maintain readiness?
- b. Does exercise / training planning include consideration of energy and water use and potential impacts?
- c. Are steps being taken to reduce fuel consumption on readiness exercises by scheduling a muster instead of readiness test and by limiting vehicle operation and movement during readiness tests?
- d. Can simulation be substituted for some field training exercises or command exercises?
- e. Has increased use of local training areas been considered?

- f. Have innovative energy and water conservation approaches to the support of training and mission exercises been endorsed, developed, and tested by the command?

7-4. Aviation:

These suggestions are at the discretion of the Commander and are encouraged to further pursue the goals of a sustainable Army.

- a. Are administrative flights restricted to trips that require more than 2 hours driving time, one way, by other military transportation?
- b. Are flight simulators used when authorized to meet aviator annual instrument flight minimums?
- c. Can ground time for aircraft at flight idle be reduced? (This includes limiting hot refueling to certain exercises for proficiency.)
- d. Is the smallest aircraft used for the job?
- e. Can missions be combined?
- f. Can the requirements for certain flight positions be reduced?

7-5. Facilities:

- a. Are commanders and unit leaders consolidating to the minimum number of facilities needed? Are all facilities being fully utilized?
- b. Are facilities being reported as vacant or temporarily vacant so that buildings can be set back for considerable energy and water savings?
- c. Are facilities being repurposed that do not meet energy and water conservation standards? Is there any other facility that can accommodate the requirement?
- d. Does each facility have an appointed Building Efficiency Monitor (BEM)?
- e. Are major renovation projects implementing utility metering (where applicable), energy and water conservation, and sustainable best practices as part of the renovation project?
- f. Are the facilities being operated in the most efficiency way possible?
- g. Are building / facility occupants aware of the energy and water conservation program?

Appendix A: References

Section I: Required and Related Publications

Army Regulations (AR)

360-81 Command Information Program
405-70 Utilization of Real Estate
420-1 Army Facilities Management

Qualified Recycling Program References (QRP)

Executive Order 13693-Planning for Federal Sustainability in the Next Decade, 19 Mar 15.

FY14 Department of Defense (DoD) Strategic Sustainability Performance Plan (SSPP), Jun 2014.

40 Code of Federal Regulation 246, Source Separation for Material Recovery, 01 Jun 11.

Integrated Solid Waste Management Plan, Fort Bliss, 06 December 2012.

USAG Regulation 200-2, Fort Bliss Recycling Regulation, 28 January 2008.

Installation Management Command Operational Order (OPORD) 14-067, Integrated (Non-Hazardous) Solid Waste Management, 18 Apr 14.

DOD Manuals

4140.25M Procedures for Management of Petroleum
4170.11 Installation Energy Management

Other Standards

ASHRAE American Society of Heating, Refrigeration and Air Conditioning Engineers Handbook
IMCOM Energy and Water Conservation Design Guide for Sustainment, Restoration, and Modernization (SRM) Projects and MILCON Construction
IES Illuminating Engineers Society Reference Manuals
Memorandum DASA (I&H), Sustainable Design and Policy update –Life Cycle Cost, 27 Apr 2007
Memorandum Guiding principles of Federal leadership in High Performance Buildings, Memorandum of Understanding, 6 Mar 2006
Memorandum Sustainable Design and Development Policy Update, Environmental and Energy performance, 8 Jul 2010

Laws and Presidential Orders

10 CFR 434 Code of Federal Regulations
10 CFR 435 Code of Federal Regulations
10 CFR 436 Code of Federal Regulations
41 CFR Code of Federal Regulations

EPACT2005 Energy Policy Act of 2005, 8 Aug 05
 EO13423 Executive Order 13423, Strengthening Federal Environmental, Energy
 and Transportation Management, 24 Jan 07
 EISA07 Energy Independence and Security Act of 2007, 19 Dec 07
 EO 13514 Federal Leadership in Environmental, Energy, and Economic Performance
 (8 October 2009)

Section II: Glossary & Abbreviations

1AD	First Armored Division
AEE	Association of Energy Engineers
AEWRS	Army Energy and Water Reporting System
AR	Army Regulation
ARIMS	Army Records Information Management System
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
BEM	Building Efficiency Monitor
BOID	Business Operations and Integration Division, DPW
CEM	Certified Energy Manager
CFR	Code of Federal Regulations
CG	Commanding General
CPAC	Civilian Personnel Advisory Center
DLA	Defense Logistics Agency
DOD	Department of Defense
DPW	Director/Directorate of Public Works
ECIP	Energy Conservation investment Program
ED	Environmental Division, DPW
EISA	Energy Independence and Security Act of 2007
EM	Energy & Water Manager
EMT	Energy Management Team
Energy Star®	Energy Star® is a registered trademark of the United States Government
EO	Executive Order; Environmental Officer
EPACT	Energy Policy Act of 2005
ESD	Engineering Services Division, DPW
ESPC	Energy Savings Performance Contract
ESTCP	Environmental Security Technology Certification Program
EWRG	Energy and Water Resources Group
°F	Fahrenheit
FEMP	Federal Energy Management Program
FORSCOM	Forces Command
FY	Fiscal Year
GC	Garrison Commander
GEWSC	Garrison Energy & Water Steering Committee

GFEBs	General Fund Enterprise Business System
IES	Illuminating Engineering Society
IG	Inspector General
IMCOM	Installation Management Command
ISWMP	Integrated Solid Waste Management Plan
LCCA	Life Cycle Cost Analysis
LED	Light-Emitting Diode
MPD	Master Planning Division, DPW
MEDDAC	Medical and Dental Activity
MWR	Morale Welfare and Recreation
NEC	Network Enterprise Center
NFPA	National Fire Protection Association
OMD	Operations and Maintenance Division, DPW
OPORD	Operational Order
PII	Personal identifier information
QRP	Qualified Recycling Program
RCI	Residential Community Initiative
RFI	Request for Information
RFP	Request for Proposal
RMO	Resource Management Office (Garrison)
RP	Real Property
SED	Sustainability & Energy Division, DPW
SOP	Standard Operating Procedure
SPB	Simple Pay Back
SSPP	Strategic Sustainability Performance Plan
SSR	Single Stream Recycling
UESC	Utility Energy Savings Contract
USAG	United States Army Garrison
WORB	Work Order Review Board