

**Headquarters
Eighth United States Army Korea
Installation Management Command
Korea Region**

**Army in Korea
Regulation 420-1**

18 November 2008

**Facility Engineering
FACILITIES ENERGY MANAGEMENT**

***This regulation supersedes Eighth Army Regulation 700-1, 1 November 1994.**

For the Commander:

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Summary. This regulation establishes responsibilities, prescribes policies, and standardizes procedures for Army Component facilities energy conservation in the Korea Theater.

Summary of Change. This document has been substantially changed. A full review of its content is required.

Applicability. This regulation applies to all US Army units assigned, attached or under the operational control (OPCON) of Eighth United States Army (Eighth Army) during armistice or contingency operations, and to the Ground Component Commander (GCC) during wartime operations. This regulation also applies to the Department of Army (DA) Civilians and DA contractors. This regulation applies to all installations, sub-installations, assigned and tenant units, directorates, staff officers, and activities supported by Installation Management Command, Korea (IMCOM-K) energy resources, occupants of quarters, civilians, and other IMCOM-K activities.

Supplementation. Commanders will not supplement this regulation without the IMCOM-K Public Works Division (PWD), hereafter referred to as “IMKO-PWD” approval.

Forms. Army in Korea (AK) forms are available at <http://8tharmy.korea.army.mil/>.

Records Management. Records created as a result of processes prescribed by the regulations must be identified, maintained, and disposed of according to AR 25-400-2. Record titles and descriptions are available on the Army Records Information Management System website at <https://www.arims.army.mil>.

Suggested Improvement. The proponent for this regulation is the IMCOM-K Public Works Division (IMKO-PWD-O), DSN 315-724-4479. Users may suggest improvements to this regulation by sending DA Form 2028 (Recommended Changes to Publications and Blank Forms) to the IMCOM-K Public Works Division (IMKO-PWD-O), Unit #15742, APO AP 96205-5742.

Distribution. Electronic Media Only (EMO).

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Chapter 1

General

1-1. Purpose

The purpose of this regulation is to establish the Installation Management Command (IMCOM), Korea Region Energy Management Program and prescribe policies and procedures to meet established goals consistent with mission, training, and combat readiness.

1-2. References

Required and related publications are listed in Appendix A.

1-3. Explanation of Abbreviations and Terms

Abbreviations and special terms used in this regulation are explained in the glossary.

1-4. Responsibilities

a. IMCOM, Korea (IMCOM-K), Public Works Division (IMKO-PWD) will:

(1) Develop and issue policy guidance for facilities energy (heating fuels and electricity); and approve exceptions to such policy.

(2) Establish goals for facilities energy use.

(3) Establish, review, and monitor reporting of facilities energy.

(4) Provide engineering assistance for development, implementation, and follow-through of facilities energy programs.

(5) Develop, coordinate, and monitor the Energy Conservation Investment Program (ECIP).

(6) Develop, coordinate, and monitor facilities and utilities upgrades to ensure energy efficiency.

(7) Act as the policy guidance point of contact for Garrisons and Directorates of Public Works (DPWs).

(8) Coordinate all facilities energy allocation actions.

(9) Provide training in facilities energy system design, operation, awareness, and policy.

b. The IMCOM-K Public Affairs Office will:

(1) Assist in developing promotional material and will disseminate it to the media so as to publicize energy awareness and efficiency.

(2) Emphasize energy efficiency and initiatives in the IMCOM-K Energy Awards Program, the awards themselves, the potential savings, and the savings realized.

c. The IMCOM-K Garrison Commanders will:

(1) Establish at least one full-time Energy Manager position at each Garrison and program funding to send the energy managers to Certified Energy Manager (CEM) training if they have not already attended, and the annual Energy Conference held in conjunction with the Army Energy Forum, normally held in August. The Garrison and/or the DPW shall provide a memorandum with DPW signature stating the name, office, rank, position, telephone number, and email address of the Energy Manager to IMCOM-K (IMKO-PWD-O) Unit #15742, APO AP 96205-5742. The Energy Manager participates actively in the Command Energy Council (CEC) and coordinates awareness activities for the organization.

(2) Appoint an energy coordinator to represent each major subordinate command (MSC), tenant, and assigned unit for representation to the CEC.

(3) Use the comprehensive energy plan as a management and planning tool.

(4) Develop contingency plans for reduced energy supply.

(5) Ensure that the Checklist for Conservation of Utilities (Appendix B) is implemented.

(6) Establish an "energy telephone hot line" where practical.

(7) Ensure that energy goals are met.

(8) Develop an incentive awards program and promote the Army Suggestion Program.

(9) Provide energy information, as needed.

(10) Perform other energy conservation actions as directed.

d. Unit commanders will designate an energy officer and an alternate that are on current orders. Orders will be filed within the unit.

e. All commanders responsible for buildings will:

(1) Submit to responsible unit commanders (update at least semiannually) a list of Building Energy Monitors for each building and addresses where reports should be sent for each Garrison or installation. The building energy monitor will normally be an occupant or operator of that building.

(2) Assure that the Checklist for Conservation of Utilities (Appendix B) is provided to building monitors with sufficient training to implement the checklist.

f. Building energy monitors will ensure that the requirements of Chapter II, Paragraph 11, of this regulation are met, and the checklists for conservation of utilities (Appendix B) is followed.

1-5. Energy Management Goals

a. Facilities energy management goals from Headquarters, Department of the Army (HQDA) are as follows:

(1) Reduce facility energy use in terms of British Thermal Units (BTU) per square foot, by 30 percent during fiscal year (FY06-15) from the FY03 facility energy consumption baseline.

(2) Increase use of renewable energy to meet the goals of using not less than: 3 percent of renewable energy in FY07-FY09; 5 percent of renewable energy in FY10-FY12; and 7.5 percent of renewable energy in FY13 and thereafter.

(3) Increase the use of natural gas as an alternative to electricity and fuel oil.

(4) Designate showcase buildings with the best energy and water efficient technologies.

(5) Construct water and energy efficient buildings utilizing products in the top 25 percent of their class for efficiency, whenever cost effective and reduce the garrison's total water consumption by 2 percent per year beginning FY08 relative to the garrison's FY07 usage baseline with a goal of 16 percent reduction by FY15.

Chapter 2 Energy Management Procedures

2-1. Policies

a. The purpose of this program is to focus on efficient use of energy, to eliminate waste while maintaining mission readiness, training, and quality of life in meeting energy goals.

b. The following means are to be used to implement energy and water conservation:

(1) Energy Savings Performance Contracts (ESPC).

(2) Utility Energy Services Contracts (UESC).

(3) Energy Conservation Investment Program (ECIP).

(4) Energy Engineering Analysis Program (EEAP).

(5) Energy Conservation and Management Program.

(6) Product Improvement Program.

(7) Quick Return on Investment Program.

(8) Productivity Enhancing Capital Investment Program.

(9) Labor Saving Capital Investment Program.

(10) Operation and Maintenance, Army.

c. IMKO-PWD recognizes that differences exist at installations based on local needs, supply, availability, and types of energy required. As policy, when increased needs are foreseen, they will

be reported through the IMCOM-K, Public Works Division (IMKO-PWD-O).

d. Sensible use of energy is every individual's responsibility. Commanders must actively drive the command program, and emphasize the importance of individual contributions to the national effort. Energy is best managed by a combination of many little actions and the concerted efforts of all.

e. Generally, there are three methods of reducing energy consumption. They are:

- (1) Eliminate waste.
- (2) Increase the efficiency of energy consuming devices.
- (3) Conserve energy use where possible.

f. The most energy-efficient devices and equipment are mandatory for use unless life cycle cost analysis indicates otherwise.

2-2. Energy Management

a. Facilities energy goals.

(1) Guidance given by HQDA indicates that facilities energy goals for FY06-15 will be on a square foot basis, with FY03 usage serving as the new IMCOM-K baseline. Korea Region consumption for FY03 was 4,456 trillion BTU with a building floor space of 33.70 million square feet. Based on FY03 consumption, IMCOM-K must achieve a 30 percent reduction by FY15 starting FY06.

Table 2-1
Facilities Energy Goals

<u>Location</u>	<u>Y03 Baseline (MBTU/KSF)</u>	<u>FY08 Energy Goals (MBTU/KSF)</u>
IMCOM-K	132.21	117.90
Garrison Red Cloud	145.32	129.60
Garrison Yongsan	135.50	120.84
Garrison Humphreys	130.42	116.31
Garrison Daegu	99.70	88.91

(2) IMCOM-K facilities energy allocations are as follow: Garrison Red Cloud (DPW, Uijongbu and Camp Casey), Garrison Yongsan (DPW, Garrison Yongsan), Garrison Humphreys (DPW, Camp Humphreys) and Garrison Daegu (DPW, Daegu). Procedures for all other installations will remain unchanged. Garrison Commanders will receive goals and are responsible for energy management.

(3) Beginning in FY08, Annual Garrison goals are as follows:

(a) For Garrisons that consumed less than their previous year's goal, the new Garrison goal is 50 percent of the difference of their previous year consumption and the previous year goal,

added to their previous year consumption, but not to exceed a 3 percent straight line reduction from the Garrison's FY03 baseline.

(b) For Garrisons that consumed more than their previous year's goal, the new Garrison goal is a 3 percent straight line reduction from the Garrison's FY03 baseline.

(c) Annual iterations of this process bring future goals in line with actual consumptions not adequately addressed in the FY03 baseline establishment.

(d) Garrisons will not receive square footage credit in their consumption amounts for installations/sites that close within the fiscal year.

(4) Goals determined by using this method will be provided annually by command guidance.

b. Review. Garrison commanders will review monthly energy consumption. If cumulative (year to date) consumption exceeds allocation by more than 5 percent for 2 consecutive months, the Director, IMCOM-K, will investigate whether the excess is due to heating fuel, electricity, or both. After a determination is made, the Director, IMCOM-K, will notify the commander by letter, and will require a written plan detailing procedures the command will follow to reduce consumption of that energy form that is causing the excess.

c. Policies pertaining to lighting, humidity, heating, and cooling in this regulation do not apply to Army Medical Department (AMED) facilities other than administrative areas, storage areas, rest rooms, and utility areas.

2-3. Heating Policy

a. This policy applies to Department of Defense (DOD), MSCs, and tenant facilities, commercial and contractor facilities, and privately owned equipment on IMCOM-K installations.

b. Each DPW will determine the heating season for their facilities as follows; any changes will be by memorandum before the start of the annual heating season):

(1) For family and unaccompanied personnel housing, heating systems may be placed into winter operation when the daily low outdoor temperature falls below 55°F for 3 of 5 consecutive days in the first quarter of the FY. Heating systems will be shut down for summer when the daily low outdoor temperature is above 55°F for 3 of 5 consecutive days in the third quarter of the FY.

(2) For all other facilities, heating systems may be placed into winter operation when the average outdoor temperature (using hourly readings from 0600-2200) falls below 60°F for 3 of 5 consecutive days in the first quarter of the FY. Heating systems will be shut down for the summer when the average outdoor temperature is above 60°F for 3 of 5 consecutive days in the third quarter of the FY.

c. The following are exempt from seasonal heating restriction on approval of the authority listed:

Table 2-2
Approval of Authority for Exempt from Seasonal Heating Restriction

<u>TYPE FACILITY</u>	<u>APPROVAL AUTHORITY</u>
Health care facilities (not exempted above)	Commander, 18 th MEDCOM
Morale, welfare and recreational facilities, day care centers, elementary schools (through 6th grade)	Garrison Commander
Hilltop installations	Site commander/noncommissioned officer in charge
Technical operations and special equipment	DPW
Family housing (medical necessity certified by physician)	Garrison Commander

d. Except for those facilities listed in subparagraph 8.c above, requests for exception to policy will be considered on a case-by-case basis and will be forwarded with the Garrison Commander's recommendation to the IMCOM-K, Public Works Division (IMKO-PWD-O), Unit #15742, APO AP 96205-5742.

e. Installation commanders will maintain a file on facilities, buildings, and rooms (within shared use buildings or facilities) that fall within the exception category.

f. Heating temperature policy is as follows:

(1) During the heating season, temperatures in occupied facilities will be maintained in the range of 72 °F plus or minus 2°F during working hours and heating setback temperatures during unoccupied times shall be set at 55°F plus or minus 5°F.

(2) Temperatures in warehouses and similar active working spaces, like maintenance bays, will be at 60 degrees Fahrenheit plus or minus 5°F during occupancy and 45°F plus or minus 5°F during unoccupied periods. Warehouses will not be heated if they are usually devoid of human activity and if freezing and condensation are not issues. Heat may be provided in administrative offices of warehouses and similar active working spaces.

(3) Space temperatures for medical and medical research facilities will comply with the above standards unless exempted by UFC 4-510-01.

(4) Museum activities recognized by the Center of Military History will maintain heating and cooling in accordance with AR 870-20.

g. Storage facilities, warehouses, and similar facilities that are normally unoccupied, and where freezing is not a concern, are not authorized heat.

h. No facilities are authorized heat when the areas do not meet the criteria in subparagraph 8.b (excluding exceptions in subparagraph 8.c).

- i. Keep windows, exit doors, and vestibule doors closed during the heating season.
- j. Ventilation of buildings during the heating season will be limited to that necessary for the health of occupants and may be approved by the supervisor or senior occupant. Such ventilation may include the temporary loosening of plastic storm window sheeting on windows. Heating systems in which the heat cannot be controlled will be promptly reported to the DPW for repair. Ventilation will be used exclusively during the season when heating or air conditioning is not authorized or required.
- k. Installation activities will be consolidated into the minimum number of facilities essential to accomplish the mission.
- l. Eliminate the use or improve the heating efficiency of temporary buildings as they are characteristically energy inefficient in their use of energy.
- m. All domestic water heaters will be set to deliver heated water to the user at temperatures not to exceed those specified in AR 420-1, Chapter 22-12.b.(3). Heated water is authorized, but not required, in all latrines. Heated water is unauthorized in administrative areas except for technical processes requiring heated water that are approved by the Installation Commander.
- n. Electrical resistance heating costs in Korea are approximately twice as much as fuel oil or gas heating. Therefore, the use of portable electric heaters is not authorized in Army facilities, including offices, housing and billeting facilities, except where there is a direct benefit in energy or dollar savings, to meet temporary technical or medical requirements. Submit requests for exception to policy to the DPW, who will only authorize the request if the primary heating source cannot maintain temperatures authorized in subparagraph 8.f. Each heater must be approved by the DPW for a specific length of time. Individuals violating this chapter are subject to disciplinary action IAW other established procedures.
- o. Retail outlets will post the following signs at all electric space heater displays: NOTICE - USE OF ELECTRIC SPACE HEATERS ON ARMY INSTALLATIONS IS PROHIBITED BY AK REG 420-1.22 SUBPARAGRAPH 8.n.
- p. The following types of heating are unauthorized:
 - (1) Air-source heat pumps, except as approved by the DPW.
 - (2) Unvented kerosene, and gasoline heaters.
- q. Heating and air conditioning for lobbies will be limited as much as possible.
- r. The purpose of a vestibule is to minimize loss of heated or cooled air from a building by having not more than one of its doors open at any one time. Heating or cooling of vestibules is therefore unnecessary and unauthorized. Existing heaters, radiators, and fan-coil units located in vestibules and stairwells will be removed.
- s. Do not use electric stoves and ovens for heating instead of using the authorized building heat source. Do not use privately owned appliances that do not meet ENERGY STAR requirements in government facilities.

2-4. Lighting Policy

a. Generally, the most energy-efficient type of lighting suitable for the application will be used. New and replacement lighting fixtures will be specified to be of a high-power factor and impact resistant (vandal proof) where those options are available.

b. Existing lighting systems that have illumination exceeding authorized levels will have their lighting levels reduced to authorized levels.

c. Lights will be turned off when they are not needed.

d. Exceptions to policy may be granted by the IMCOM-K, Public Works Division (IMKO-PWD) on a case-by-case basis.

e. Outdoor lighting that is not required for mission, safety, or security purposes will be disconnected. Incandescent and mercury vapor lighting will not be used for new security, safety, street, or general installation lighting. All existing incandescent and mercury vapor security, safety, street, and general installation lighting that is deemed necessary will be programmed for replacement. Where color rendering is unimportant, low pressure sodium (LPS) lighting will be used. Where color rendering is required, high pressure sodium (HPS) lighting will be used. Security lighting will be in accordance with (IAW) AR 190-11 and FM 3-19.30, chapter 6. Illumination level for general installation lighting will be 0.2 foot-candle.

(1) Replacement LPS lamp wattages (for equivalent lumens) are as follows:

Table 2-3
Replacement LPS Lamp Wattage

<u>Existing Incandescent</u>	<u>Existing Mercury</u>	<u>Replacement LPS</u>
100W	50W	18W
150W	100W	35W
300W	175W	55W
500W	250W	90W
1000W	400W	135W
1500W	700W	180W

(2) Illumination level for other types of lighting will be established by engineering analysis. Where it is uneconomical or impractical to use sodium lighting, exception to policy may be granted by the IMCOM-K, Public Works Division (IMKO-PWD) on a case-by-case basis. Foliage that obstructs light distribution will be kept trimmed. Security, safety, street, and general installation lights will be turned on one-half hour after sunset and off no later than (NLT) one-half hour before sunrise, or will be controlled by photocell.

f. All interior building lights will be turned off when a building is unoccupied, except for the following:

(1) Lights that illuminate safes in money-handling activities.

(2) Lights that illuminate security containers with classified or sensitive information.

g. A maximum of one exterior lighting fixture with one light bulb is authorized over building entrances as follows: Existing incandescent fixtures that are authorized will be replaced by 13-watt maximum twin-tube (PL, Mod-U-Line, and Dulux) fluorescent fixtures. Until they are replaced, they are authorized no larger than 40-watt light bulbs.

(1) Each utilized entrance of family and unaccompanied personnel living quarters will have one of the following:

(a) Fifteen-minute timer switches without a "hold on" position will be installed on all such entrance lights to single living units. Such lighting will be turned off except while persons are arriving or departing.

(b) Photocells will be installed on all such entrance lights to multiple living units. Such lighting will be turned off at bedtime.

(2) In nonresidential building entrances that are normally used at night, the last person to leave the building will turn off these lights.

(3) Exterior lighting fixtures will be removed from over all building doors that are not normally used at night, except for lighting fixtures over the doors of buildings housing arms, weapons, ammunition, explosives, or vehicles and aircraft that have weapons stored on board. Photocells will be installed where suitable.

(4) Utility room entrances are not authorized exterior lighting fixtures. Any such existing fixtures will be removed.

h. Other than entrance lighting authorized in subparagraph 9.g above, lights on exterior building walls are unauthorized except when approved by the Installation Commander.

i. Incandescent light bulbs greater than 100 watts are unauthorized. Where greater lighting levels are needed, a more efficient type of lighting (LPS, HPS, metal halide, or fluorescent) will be used. Screw-in type fluorescent and metal halide lights will be used instead of incandescent light bulbs where suitable, including family and unaccompanied personnel living quarters. These screw-in light fixtures will be hand-receipted to the occupants.

j. Standard lighting fixture for construction, renovation, repair, and modular office furniture is the T-8 lamp with instant start electronic ballast or the T-5 lamp. Use day-lighting and occupancy controls when determined to be cost effective. Use Illuminating Engineer Society of America (IESNA) standards of lighting as a standard for reimbursable tenants occupying Army areas and facilities.

k. Remove existing fluorescent lighting fixtures to achieve reduced lighting levels. General illumination will be designed to provide only the 30 foot-candle requirement for work areas. Where required, the 50 foot-candle illumination level for workstations will be provided by desk lamps. Hallways that are over-lighted (more than 10 foot-candles) with F40 2-lamp fixtures will have one lamp removed and the corresponding ballast disconnected. In administrative and other areas where multiple fixtures are controlled by a single wall switch, pull-chain switches will be installed on individual fixtures where such installation would result in energy conservation. Where the ambient

temperature is 60°F or greater, energy-saving lamps (34-watt) will be used instead of 40-watt lamps. Energy saving electronic ballasts will be used instead of standard ballasts. Lights will be turned off when not being used.

l. In the past, repeatedly turning fluorescent lights on and off reduced bulb life drastically. Since electricity was inexpensive, turning lights off when leaving a room for periods of up to half an hour was not cost effective. This is no longer true. Because of advances in fluorescent lamps, and current high electrical costs, it is now cost effective to turn lights off whenever leaving a room for any period of time. This is true of both fluorescent and incandescent lights. The IMCOM-K policy, therefore, is that lights will be turned off whenever leaving a room or area.

m. Use HPS lighting on three-phase to minimize stroboscopic effect for gymnasiums, field houses, and large sports fields (football, soccer, etc.). Use a single phase phosphor-coated metal halide system for smaller sports fields (tennis courts, all purpose courts, etc.). Use fluorescent lighting for handball and squash courts. Turn off lighting when it is not used. Use timer switches where suitable.

n. When selecting colors for interior surfaces, select light shades of color for walls and ceilings in order to increase reflectance of available light. Floors should be as light as practical in order to increase light reflectance. Required light reflectance is:

- (1) Ceilings and lighting fixture reflector surfaces, white, 87 percent.
- (2) Interior wall, door, and trim surfaces, white and pastels, 50 percent.
- (3) Floors, medium and light colors, 30 percent.

o. Obtain subdued atmosphere by using fewer or lower wattage lighting fixtures or dimmers instead of painting interior surfaces dark colors.

p. Disconnect vending machine header lights, product display lights, and their ballasts. This does not apply to indicator lights. Where possible, locate vending machines where there is sufficient ambient light to illuminate the product. Where there is insufficient light, the Installation Commander may authorize use of product display lights.

q. The Garrison Commander must authorize all outdoor decorative lighting, sign lighting, and facade lighting.

r. For gate guardhouses, interior lighting will be fluorescent, and exterior floodlights will be High Pressure Sodium (HPS).

s. Drapes are not authorized in stairwell windows where their presence would necessitate daytime use of electric lighting instead of daylight.

t. When a single linear fluorescent fixture lights a rectangular room, orient the fixture so that its long axis is perpendicular to the long axis of the room. This results in the best lighting uniformity. Similarly, when linear fluorescent fixtures light a hallway, orient each fixture so that its long axis is perpendicular to the length of the hallway.

u. Low Pressure Sodium (LPS) lighting or any other non-white lighting will not be used in maintenance buildings or hangars.

2-5. Air-Conditioning Policy

a. This policy applies to DOD, MSC, and tenant facilities; commercial and contractor facilities; and privately owned equipment on IMCOM-K installations/sites.

b. Each DPW will determine the air-conditioning season for their installations/sites as follows:

(1) The air-conditioning season is based on an effective temperature of 85°F. This is a combination of temperature and relative humidity (RH) that results in personal comfort equal to that of 85°F at 50 percent RH. Maximum daily outdoor temperature (MDOT) and percent RH will be used to determine effective temperature. An effective temperature of 85°F is obtained by any of the following MDOT and RH combinations:

**Table 2-4
Combination of Temperature and Relative Humidity (RH)**

MDOT (°F)	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
RH (%)	100	92	83	74	66	58	50	43	36	29	23	18	12	6	1

(2) The air-conditioning season for each area will begin when 4 of 5 consecutive days have an effective temperature of 85°F or higher. If air-conditioning is turned on before 1 July, it will be turned off when 4 of 5 consecutive days have an effective temperature of less than 85°F. Air-conditioning turned on after 1 July may remain on until the end of the cooling season.

(3) The air-conditioning season ends on or after 31 August when 4 of 5 consecutive days have an effective temperature of less than 85°F.

(4) The MDOT and RH data will be determined locally.

(5) To maximize unit efficiency, Commanders will ensure that all air-conditioning equipment is efficiency tested and serviced before the season.

(6) The above procedures govern when air-conditioning is permitted. Commanders should exercise sound management and use it only when necessary.

c. Air-conditioning will be authorized only IAW AR 420-1.22.

d. Whenever mechanical cooling is authorized, cooling season temperatures for occupied working and living spaces shall be maintained in the range of 74°F plus or minus 2°F . Cooling set-up temperatures during unoccupied times shall be 85°F plus or minus 5°F. Space temperature for medical and medical research operations will comply with these standards except where the mission or DOD standards require otherwise. Do not operate air-conditioning equipment when the indoor temperature is 78°F or lower or when natural or mechanical ventilation maintains an indoor temperature at 78°F or lower. During these periods, the operation of only the air handling unit (supply air fan portion of the air-conditioning equipment) for air recirculation and ventilation is authorized.

e. Exceptions to policy.

(1) The Garrison Commander is the approver of all exceptions to the air conditioning policy in this regulation.

(2) Garrison Commanders will ask for a medical certificate certified by a physician for air-conditioning required by housing occupants for medical reasons.

(3) Medical and dental facilities are excluded from the above cooling season policy (see subpara 10b). Such facilities will comply with the temperature guidelines in applicable regulations.

(4) Technical or other operational facilities using technical or special equipment, which the manufacturer states must be operated under temperature and humidity conditions that can be achieved only by air-conditioning, are excluded from the cooling season policy.

(5) Operational facilities or areas within a facility that are windowless and lack adequate ventilation to maintain the health of the occupants may be air-conditioned. These facilities and areas will be kept closed off from non air-conditioned areas at all times when the air-conditioning equipment is in use. These facilities include sensitive compartmented information facilities.

(6) Refrigerated food storage facilities.

f. Applications for exceptions listed in subparagraph 10.e above, will be sent through the DPW for review and recommendations, and then to the Garrison Commander for approval.

g. Requests for exception to policy for facilities not listed in subparagraph 10.e above, will be considered on a case-by-case basis. Requests will be sent through the DPW for review and recommendations, and then to the Garrison Commander for approval.

h. Installation Commanders will maintain a file on all facilities, buildings, and rooms (within buildings or facilities) which fall within the exception category.

i. Only DPWs are authorized to order appropriated fund window air conditioners for personal comfort. Nonappropriated funds must obtain approval of the DPW before initiating procurement action for window air conditioners.

j. Window air-conditioners (AC) for all new installations in IMCOM-K facilities will meet the following minimum Energy Efficiency Ratings (EER). (See Table 10-2 on the next page.)

k. Previously installed window air conditioners that do not meet the minimum required EER for a new installation will be allowed to remain in use under the following conditions:

(1) Units that are removed will not be reinstalled in another facility.

(2) Unrepairable units that are replaced will be replaced by units which meet the minimum required EER for a new installation.

(3) Installed units will be removed by the vacating owner. Ownership will not be transferred to the new occupant. Potential buyers will be informed that these units are unauthorized for use on IMCOM-K installations.

Table 2-5
Minimum Energy Efficiency Rating (EER) of Window Air-Conditioners

<u>Air Conditioner Type/Capacity</u>	<u>EER (Minimum)</u>
With louvers; < 20,000 Btu/hr	10.7 or more
With louvers; ≥ 20,000 Btu/hr	9.4 or more
Without louvers; < 8,000 Btu/hr	9.9 or more
Without louvers; ≥ 8,000 Btu/hr	9.4 or more

Note: The latest FEMP guidance on air conditioners will be the sole determination of acceptability. The EER, expressed in BTUs per watt-hour, is the quotient of the cooling capacity of the unit in BTUs per hour divided by its electrical input power in watts. Window ACs have side louvers for increased condenser cooling. Through-the-wall ACs have no side louvers.

l. Window air-conditioners must be installed properly so that the air intake louvers for the condenser section are not blocked. Failure to do this would result in either extremely inefficient operation or an inability to cool. Additionally, window units will be tilted according to manufacturers' instructions for proper drainage (the condenser section lower than evaporator section).

m. Packaged air-conditioning systems of will have a minimum EER as follow:

Table 2-6
Minimum Energy Efficiency Rating (EER) of Packaged Air-Conditioner

<u>Air Conditioner Type/Capacity</u>	<u>EER (Minimum)</u>
< 65 MBtu/hr	12.0 SEER
65 – 135 Mbtu/hr	11.0 EER
>135 – 240 MBtu/hr	10.8 EER

Note: The Seasonal Energy Efficiency Ratio (SEER) is similar to Energy Savings Performance Contract (EER) but weighs performance at different peak and offpeak conditions during the cooling season. The latest Federal Energy Management Program (FEMP) guidance on air conditioners will be the sole determination of acceptability.

2-6. The Emergency Building Temperature and Hot Water Restriction Program

This program sets strict limits on heating, cooling, and domestic hot water temperatures.

- a. This program applies to all occupied, heated, or cooled buildings except for the following:
 - (1) Family and guest housing.
 - (2) Hotels and other lodging facilities other than bachelor and transient housing.
 - (3) Hospitals and other health care facilities.

(4) Elementary schools, nursery schools, and day care centers.

b. Temperature limits.

(1) Building Energy Monitors will ensure that temperature limits are complied with.

(2) DPW representatives will check air and water temperatures and will adjust thermostats as required (see subparagraph 11.c below).

(3) All occupants and operators of buildings covered by this program will comply with the temperature limits in subparagraph 11.c below. Personnel tampering with thermostats to give deliberately false readings are misusing government property and are subject to disciplinary action under the appropriate regulation.

c. Program requirements.

(1) Air temperature limits are no higher than 70°F in winter and no lower than 78°F in summer for building interiors. Temperature is in compliance if the thermostat is set on an authorized temperature, or if the temperature in any selected room controlled by the thermostat complies with the 70°F heating or 78°F cooling criteria (measured in the center of the room at desktop height).

(2) Water temperatures for other than automatic dishwashing or sterilization will be no higher than 110°F. Temperatures will be measured:

(a) In the hot water line.

(b) At the tank temperature point.

(c) At the tap nearest to the tank discharge point.

d. Program exemptions. Exemptions may be obtained for buildings under the following circumstances:

(1) Special equipment (for example, computer equipment) that require conditions other than the winter and summer limits for proper operation may be provided additional cooling or heating to meet those special conditions in the portion of the building occupied by the equipment. If the building is served by a single master temperature control, the exemption may extend beyond the equipment area to include the entire area controlled by the temperature control. In such instances, equipment literature will be maintained and available for inspection specifying environmental (temperature and humidity) conditions necessary for proper operation of such special equipment.

(2) Special exemptions for circumstances not covered by this paragraph may be granted by DA under conditions of special hardship. Applications must be in writing to HQDA through the Director, IMCOM-K, Public Works (IMKO-PWD).

e. Inspections. During the course of each command, administrative, inspector general, or other appropriate inspection, the inspecting officer will inspect buildings for compliance with this

regulation.

f. Additional information. Information on this program and how to comply with it may be obtained by calling the IMCOM-K, Public Works (IMKO-PWD).

2-7. Other Directed Energy Conservation Actions

a. General. Per DODI 4170.11, all sustainable building design will comply with ASHRAE and UFC 3-400-1.

b. Electricity. Electrical rates in Korea are among the highest in the world. Therefore, every effort must be made to eliminate waste and to obtain the most energy-efficient electrical equipment available. The following specific actions are directed:

(1) General purpose office equipment, copiers, printing devices, faxes, all-in-one devices, and similar equipment shall be turned off at the end of each business day. Computer monitors, and peripheral devices such as speakers, scanners, and external drives, shall be turned off when not in use and/or at the end of each business day. Computer and peripheral devices used in conference rooms, video teleconferencing, and kiosks environments shall be turned off when not in use. Computers and peripheral devices shall be turned off when not in use for any extended periods of absence such as vacations or holidays

(2) All purchased computers, monitors, printers, appliances, and heating, ventilation and air conditioning (HVAC) equipment will be ENERGY STAR rated for any new or replacement application or meet all ENERGY STAR criteria in its respective type/class of equipment. Do not use electric stoves and ovens for heating instead of using the authorized building heat source. Do not use privately owned appliances that do not meet ENERGY STAR requirements in government facilities.

(3) The central processing unit (CPU) for computers, desktop units, and personal computers can remain on for Information Technology purposes only when the computer is configured for energy saving features such as standby or low energy modes during periods of operator absence and the energy saving features will be set to activate after more than a 30-minute period of inactivity.

(4) Use of this exception to remain on by use of standby or low energy modes are authorized only when the computer meets ENERGY STAR compliance and consumes 20 watts or less of energy while in that mode.

(5) An exception to leaving non-compliant CPUs on for short periods of after-duty-hours is authorized by IT authority when a specified start and stop date and applicable times for the CPUs to remain on is stated. The specific impacted computers will be listed with the start/stop date announcement. Start/stop dates and announcements intended to defeat the intent of turning off of the non-compliant CPUs when not in use are prohibited.

(6) Avoid excessive use of electrical appliances. Approval by DPW is required for use of window air conditioners and for other electrical appliances that exceed 10 amps or 1200 watts. An employee of the DPW electrical shop will inspect circuits used for these appliances and verify that all window air-conditioners planned for installation comply with EER requirements of subparagraph 10.j.

(7) Do not repair defective, non-reparable, low-efficiency transformers, but instead, replaced them with high-efficiency transformers.

(8) New and replacement motors, transformers, water coolers, and all other energy-consuming equipment will be specified to be high-efficiency and high-power factor. Replacement-in-kind is not authorized unless there is technical proof that it is the best method. A system approach will be used to determine the entire plant or system configuration that will result in the most efficient and economical operation. Transformers will be specified to be the lowest temperature rise available. Power factor correction (either capacitors or electronic power factor controllers) will be incorporated for motors. Target power factor for each installation will be 95 percent.

(9) Defrost manual defrost refrigerators, refrigerator-freezers, and freezers when the frost thickness exceeds ¼-inch. Use chest freezers instead of upright freezers, as they are inherently more efficient.

(10) Install fifteen-minute (or less) timer switches without a “hold on” position or motion detectors on lighting and exhaust fan circuits in all latrines and storerooms. For safety reasons, snap switches are required for rooms without windows.

(11) Two-hour timer switches without a “hold on” position will be installed on lighting circuits in all utility rooms.

(12) All new exit signs will be of the self-luminous (tritium-powered) or electro-luminescent type. Existing exit signs of other types will be replaced by the electro-luminescent type through attrition. Until they are replaced, existing incandescent exit signs are authorized only 6-watt light bulbs.

(13) Requisitions of new wall clocks will be for the battery-operated type only.

(14) Dishwashers, clothes washers, and clothes dryers will not be operated on less than a full load.

(15) Effective the date of this regulation, all appliance procurement (to include: clothes washers, clothes dryers, ranges, ovens, refrigerators, dishwashers, and freezers) will be for ENERGY STAR certified appliances. Army Air Force Exchange Services (AAFES) and Quartermaster central laundry plants, not laundry mats, are exempt from this requirement. Any exception to ENERGY STAR appliance procurement will be approved by IMKO-PWD-O, prior to funds being sent to the procurement activity. Requests for exception will list the annual energy usage of the appliance, capacity of the appliance, type of appliance, and detail its energy saving capabilities in comparison to existing ENERGY STAR standards for the appliance.

(16) DPW will install water, gas, and electrical meters on all reimbursable customer facilities and the customers will reimburse the Army for meter installation.

(17) AAFES and Morale, Welfare and Recreation Club Managers will ensure that video games, pinball machines, and slot machines are turned off at closing time. Also, to encourage energy conservation, bilingual signs, which read as follows, will be posted at video game, pinball machine, and slot machine locations: “SAVE ENERGY – TURN OFF MACHINE WHEN FINISHED PLAYING.”

c. Humidity control. The sensible heat factor for living quarters in Korea is greater than 0.65. Therefore, closet dehumidifiers (heaters) in personnel living spaces are unauthorized. Existing closet heaters will be removed from all personnel living spaces.

d. Water Conservation.

(1) Executive Order 13423 requires Federal agencies to reduce water consumption by 2 percent per year beginning FY08 relative to the FY07 usage baseline with a goal of 16 percent reduction by FY15.

(2) 40 percent of all installations are to implement four water efficiency Best Management Practices (BMP) by 31 Dec 06, 75 percent by 31 Dec 08, and 100 percent by 31 Dec 10, per IMCOM Army Water Conservation Management Policy. IMCOM-K Operational Order (OPORD 06-52), 3 Jan 06, provides compliance guidance to the DPWs.

- (a) BMP # 1 - Public Information and Education Programs
- (b) BMP # 2 - Distribution System Audits, Leak Detection & Repair
- (c) BMP # 3 - Water Efficient Landscape
- (d) BMP # 4 - Toilets and Urinals
- (e) BMP # 5 - Faucets and Showerheads
- (f) BMP # 6 - Boiler/Steam Systems
- (g) BMP # 7 - Single-Pass Cooling Systems
- (h) BMP # 8 - Cooling Tower Systems
- (i) BMP # 9 - Miscellaneous High Water-Using Processes
- (j) BMP #10 - Water Reuse and Recycling

(3) Garrisons/installation BMP selection is as follows:

**Table 2-7
Garrison/Installation Best Management Practice Number.**

Garrison/DPW	Best Management Practice Number										FY07 Remark
	1	2	3	4	5	6	7	8	9	10	
Garrison Red Cloud											
DPW, Uijongbu	X	X		X	X						4 BMPs
DPW, Camp Casey	X	X		X	X						4 BMPs
Garrison Yongsan											
DPW, Yongsan	X			X	X	X					4 BMPs
Garrison Humphreys											
DPW, Cp Humphreys	X	X	X	X							4 BMPs
Sub-DPW, Cp Long	X	X		X	X						4 BMPs
Garrison Daegu											
DPW, Daegu	X	X		X	X						4 BMPs
Sub-DPW, Cp Carroll	X	X				X				X	4 BMPs

(4) Cold water detergents are as effective as hot water detergents for normal situations. The use of cold water for washing clothes is encouraged.

(5) Restricted flow shower heads that reduce water flow to not more than 2.5 gallons per minute and that have a push-button cutoff valve (for soaping up) are encouraged for use on all showers.

(6) Oil fired water heaters, or heat pump type water heaters that have an average coefficient of performance of 2.5 or greater as determined by engineering analysis, will be used for all new and replacement water heaters except where economic analysis indicates otherwise.

e. All new and replacement windows on heated buildings will be, at a minimum, sealed double pan glass or nonultraviolet-degradable plastic with dehydrated space between the panes.

f. Insulation.

(1) For renovation and new construction of buildings and structures requiring internal temperature control, insulation will be provided in the building elements to meet the maximum heat transmission "U" factors specified in current ASHRAE and UFC 3-400-1. The IMCOM-K, Public Works Division, in coordination with the unit or Installation Commander, will ensure that contracts for renovation and new construction include all insulation requirements.

(2) Perimeter insulation will be installed on all existing buildings that have concrete floor slab-on-grade construction.

(3) Additional insulation will be added to water heater tanks to produce a minimum total insulation thickness of 3.5 inches. External controls and nameplates will be left exposed. Access doors will be insulated in such a manner that they can still be opened.

(4) Hot water pipes will be insulated IAW Federal Standard Technical Specifications for Miscellaneous Projects, Korea.

g. Thermostats. Heating and cooling thermostats will be protected against tampering by unauthorized personnel.

h. Because of its explosive nature, liquefied petroleum gas (LPG) will not be used unless it meets DPW criteria. Liquefied natural gas (LNG) is authorized for use.

i. Energy Savings Performance Contract (ESPC). Garrison Commanders will implement ESPCs initiatives to investigate the possibility of savings from Energy Saving Measures (ESM) at their installations. ESPCs are contracts that leverage private sector investment by Energy Services Companies (ESCOs) to help reduce the government's energy costs and meet federal energy goals. Every garrison should identify and pursue at least one ESPC project in FY08, where economically feasible. Part of the garrison's overall scorecard for meeting energy and water conservation goals will be measured by the number of energy conservation projects identified and initiated.

j. Energy Conservation Investment Program (ECIP). ECIP is a special Military Construction (MILCON) funded program to provide new energy efficient systems or to improve the energy efficiency of existing systems. Funds designated for the ECIP are budgeted by DoD and do not compete with the Military Construction Army (MCA) program for resources. The ECIP MILCON program has a separate project submission and execution requirement. All garrisons should submit at least one ECIP project annually.

2-8. Asset Control Of Petroleum Products

a. The increasing scarcity of petroleum fuels and extremely high local market prices make this commodity highly susceptible to illegal diversion and theft. Everyone involved in the requisitioning, receipt, storage, issue, and accounting for petroleum fuels should be thoroughly familiar with this portion of the regulation.

b. Managers at every level will review current management and asset control procedures to ensure that adequate safeguards are established and that fuel inventories and consumption are closely monitored.

c. Personnel responsible for control of petroleum fuels should be aware of the following specific problem areas and take corrective actions:

(1) Falsification of documents used to record issues of fuels to installations and as a basis of payment to contractors.

(2) Receipt documents lost or destroyed and quantities received not posted to stock records. Procedures for accounting for allowable losses are in AR 710-2.

(3) Fuel vehicles illegally modified to add false bottoms, bypasses on pumping systems, secret storage compartments, and other methods to divert fuel from its intended use. The use of commercial tank trucks in support of military operations greatly compounds this problem.

(4) Verification of deliveries made by unauthorized personnel and by personnel who were not actually present when the vehicles were off-loaded.

(5) Unauthorized personnel ordering and receipting for fuel deliveries to military installations by commercial contractors.

(6) Differences in fuels received versus fuels shipped not reconciled; unit audit trails not maintained.

(7) Seals on valves, hatch covers, and containers not checked to ensure they are intact when received.

(8) Inventory reports, reimbursable documents, and other required reports not submitted accurately or on a timely basis.

(9) Incorrect gauge readings entered on accounting documents or amounts estimated and in some cases omitted. Meters should be used for recording quantities issued or received whenever possible. Meters should be calibrated the manufacturer's technical literature.

(10) Failure to monitor fuel consumption at the unit or consumer level (for example, vehicles that reflect unusually high fuel consumption in relation to miles driven, and generators that reflect high fuel consumption in relation to hours operated).

(11) Failure to control waste oil and lubricants.

(12) Delivery to off-post sites after dark.

d. The above specific weaknesses should be used as items of special interest during audits and inspections within each command.

e. Because of the proliferation of various sizes of tanks used for heating fuel throughout the command, additional precautions should be taken to prevent theft and diversion of products. In addition to those actions mentioned above, the following actions should be ensured:

(1) Pumps and storage tank outlets are locked when not in use.

(2) Fuel monitors are assigned to escort, inspect tank truck seals and content, and verify deliveries.

(3) Signature cards are maintained so only authorized personnel can pick up and deliver fuel.

(4) Secure or seal partially loaded tank trucks or railcars parked for subsequent delivery or off-load.

(5) Conduct unannounced inventory and inspection of fuel storage, delivery trucks, and auditable documents.

(6) Consolidate tanks and use a standard size (for example, replace four 275-gallon tanks with one 1,000-gallon tank) where possible.

(7) As contracting officer's representative, DPW responsibilities with respect to preventing pilferage are in USFK Reg 703-1.

2-9. Contingency Plan For Reduced Supply Of Energy Resources

a. All elements of the command will develop contingency plans in anticipation of potential severe reduction or unpredictable interruption of energy sources, and include these plans in the IMCOM-K Army Energy Security Plan.

b. Priorities should be established to phase down facilities, equipment, and operations to meet minimum essential requirements. Plans should encompass all forms of energy including petroleum fuel, LNG, and electricity used in installation support and mobile equipment operations. Priorities should be established based on the local situation. Consideration should be given to safety of operations; medical, security, health, and welfare status of personnel; and operational readiness. Commanders should identify those administrative and operational requirements that should be reduced or suspended. In addition, commanders should be aware of local community energy problems and consider these when developing contingency plans.

c. The following guidance should be considered in formulating contingency plans:

(1) Keep plans as simple and flexible as possible.

(2) Specify type(s) of energy source consumed in the production of heat (i.e., electrical, fuel oil, LNG, or combinations as may apply).

(3) State capability to divert to other energy sources (such as from fuel oil to coal, fuel oil to LNG, LNG to electric space heaters, and so forth).

(4) Identify available fuel storage capacities, including active and inactive real property fuel tanks; and TDA (Table of Distribution and Allowances), CTA (Common Table of Allowance), and MTOE (Modification Table of Organization and Equipment) fuel oil tanks and equipment bladders.

d. IMCOM-K OPORD 06-30, Energy Security Plan Updates, requires each installation to develop an energy security plan to include a list of generators. OPORD 06-117 requires each installation to identify its utility nodes, and maintain a critical facility priority list. Installation Water Vulnerability Plans contain the terrorist threat against potable water services. Installations are to use these plans to develop an installation specific plan for energy and water supply in contingency.

2-10. Energy Audits

a. Per DA guidance, all installations are to conduct an energy audit of all facilities every ten years. IMCOM-K guidance is to conduct an energy audit of 10 percent of facility areas every year. Energy audit equipment is available for loan from IMKO-PWD-O.

b. Energy surveys by ESPC contractors (ESCOs) count as an energy audit.

c. HQ IMCOM centrally funds two means for energy audits, through the Energy Awareness and Conservation Assessment (EACA) and Energy Engineering and Analysis Program (EEAP). HQ IMCOM makes annual EACA and EEAP data calls for which the Garrisons shall coordinate their requirements through IMCOM-K PWD.

2-11. Facility Design, Repair, and Construction

a. Comply with Leadership in Energy & Environmental Design (LEED), Green Building Rating System for New Construction and Major Renovations, Version 2.1., for all new construction, and all major renovations where the repair to replacement cost exceeds 50 percent, where the gross floor area exceeds 1,500 gross square feet.

b. Provide Utilities Monitoring Control System (UMCS) communications wiring to all major HVAC components within or adjacent to a facility and also include UMCS monitoring equipment with connections to the post-wide central UMCS monitoring station for all new construction, and all major renovations where the repair to replacement cost exceeds 50 percent, where the gross floor area exceeds 1,500 gross square feet.

c. Install automatic electrical, water, and gas meters on all new construction, and all major renovations where the repair to replacement cost exceeds 50 percent and the gross floor area exceeds 1,500 gross square feet.

Chapter 3 Committee and Reports

3-1. Command Energy Council

a. The Garrison level council is the means by which new material and command policies, objectives, programs, and events are discussed and disseminated to installations, directorates, staff offices, units, and activities. It also provides a means of showing top management commitment and continuing efforts in energy management as well as adding to personnel awareness.

b. Commanding officers, directors, and managers or chiefs, as appropriate, will appoint energy officers or coordinators in major functional areas to provide implementation and feedback of the facilities and mobility energy management program. Chiefs or managers of activities and units that are not members of the council will appoint an energy officer to coordinate the activity or unit energy management efforts. Designee names with telephone number, organization, and position will be submitted to the Installation Commander or MSC's energy officer NLT 15 days after change occurs. Energy officers or coordinators appointed will be supervisory personnel.

3-2. Monthly Energy Consumption Reports

Monthly consumption reports for mobility fuel, heating fuel, and electricity are required to enable review of energy consumption versus the established goals. Format and submission deadlines will be as follows:

a. Heating Fuel and Electricity. (CHANGE TO AEWRS) Each DPW will provide a Monthly Heating Fuel and Electricity Consumption Report by telephone, NLT 3 working days after the end of the reported month, to the IMCOM-K, Public Works Division (IMKO-PWD-O) (DSN 315-724-8868). These telephonic reports will be confirmed by a written report (Monthly Heating Fuel and Electricity Consumption Report) to arrive at the IMCOM-K, Public Works Division (IMKO-PWD-O), Unit #15742, APO AP 96205-5742, NLT the tenth of the month following the reported month. Format of the written report will be as indicated in Appendix D.

b. Garrisons which provide support to Army units at non-Army locations, such as Air Defense Artillery (ADA) personnel at Suwon AB, Kunsan AB or Kwangju AB, will provide a quarterly heating fuel, electricity, water, sewer, and any other utility consumption to the IMCOM-K, Public Works Division (IMKO-PWD-O) (DSN 315-724-5069), NLT 3 working days after the end of the reported quarter. This information will be used to determine utility funding distribution schemes.

3-3. Energy Conservation Labels And Posters

Energy conservation labels and posters may be obtained from the U.S. Army Printing and Publication Center.

3-4. Energy Management Awards Program

a. The IMCOM-K's energy management awards program generates command and individual interest by showing members that energy savings produce tangible results. The specific criteria for each of the awards listed below will be established by the CEC Energy Awards Working Group.

(1) Facilities Energy Management Awards are in October following the end of the fiscal year (FY). This award is based on the highest score with points 1-8 assigned in ranking order to

each location for the following factors as follows:

Table 3-1
Award Factors

<u>Award Factor</u>	<u>Score Percentage</u>
Installations ranking on how it met its facilities energy target for the FY	25%
Timely submission of Army Energy Report Narratives	10%
Percentage of the Garrison BTUs saved due to awarded energy projects in the FY vs. the IMCOM-K BTUs saved due to awarded energy projects in the FY	25%
Secretary of the Army and/or Federal Energy Management Award submission	25%
Publicity	15%

(2) The four IMCOM-K Garrisons will compete for the IMCOM-K award. Each Garrison may enter two entities (Garrison, installation, or site) for the IMCOM-K Annual Facilities Energy Award.

(3) The winner of the IMCOM-K Annual Facilities Award wins \$5,000 of SAG 132 funding to be used on facility energy conservation upgrades and one week of leave for the responsible Garrison/installation/site energy manager.

(4) Individual award. These awards, as listed below, will be made to individuals, military and civilian, per submittals to IMKO-PWD-O in the first week of the FY, in recognition of outstanding individual contributions to the local or command energy management program.

Table 3-2
Individual Award

<u>Category</u>	<u>Award</u>
Soldier	Certificate
Korean Augmentation to the United States Army	Certificate
DOD Civilian	Certificate
Korean National Civilian	Certificate

Note: This competition will be conducted at unit installation level, the names of the winners are to be forwarded to IMKO-PWD-O for region-level competition. Consideration also will be given to monetary awards through the Army Suggestion Award Program for contributions that produce significant cost savings. Outstanding achievements in energy management may serve as justification for Special Act or Service Awards.

b. Secretary of the Army Energy Conservation and Water Management Awards. Each year, normally in January, ACSIM requests nominees for the subject award program. IMKO-PWD-O will issue an OPORD for the submittal of Garrison nomination packages, to include the required format of any nomination. The Secretary recognizes annually, outstanding energy and water management programs. Winners of the Army competition are then able to nominate themselves for the Department of Defense Competition and the Department of Energy Competition. Guidance for all these award programs is issued by ACSIM and IMCOM HQ each FY.

Appendix A References

Section I. Required Publications

AR 25-1, Army Knowledge Management and Information Technology

AR 190-11, Physical Security of Arms, Ammunition, and Explosives

AR 420-1, Army Facilities Management

AR 710-2, Supply Policy Below the National Level

USFK Reg 703-1, Bulk Petroleum Management

IMCOM-K OPORD 06-30, Energy Security Plan Updates

IMCOM-K OPORD 06-52, Army Water Conservation Management Plan Update,

Department of Defense Instruction 4170.11, Installation Energy Management

Memorandum, Office of the Under Secretary of Defense, SUBJECT: Installation Energy Goals.

Memorandum, ASAIL&E, 5 Jan 06, SUBJECT: Sustainable Design and Development Policy Update – Spirit to LEED Transition.

Unified Facilities Criteria, Design, Energy Conservation 5 July 02.

Memorandum, DAIM-ZA, 2 Dec 05, SUBJECT: Installations and Sites Policy Memorandum.

Memorandum, DAIM-IL&E, 27 Dec 05, SUBJECT: Interim Guidance – Army Energy Conservation.

Section II, Related Publications

AR 20-1, Inspector General Activities and Procedures

DA Pam 710-2-1, Using Unit Supply System (Manual Procedures)

Appendix B

Checklist for Conservation Of Utilities

Energy monitors may reproduce this checklist fully or in part.

B-1. Administrative

- a. Are orders designating energy conservation officer kept current and on file?
- b. Does the activity have an adequate standing operating procedure for conservation of utilities?
- c. Are conservation regulations and DA posters posted on bulletin boards?
- d. Are DA posters posted throughout barracks, dining facilities, motor pools, offices, and so forth?
- e. Are conservation instructions explained in self-help and command information classes?
- f. Does the activity energy conservation officer conduct an inspection at least once weekly to ensure compliance with published directives and good conservation practices?
- g. Does the activity energy conservation officer make information reports to the commander, director, or office chief as to irregularities noted and corrective actions taken?

B-2. Personnel awareness

- a. Does the individual know who the energy conservation officer is?
- b. Is the individual generally familiar with energy conservation policies of the command?
- c. Does the individual know what the command's energy conservation goal for this fiscal year is?
- d. Has the unit or activity established an energy conservation council or group to promote the command's program?
- e. Are energy conservation stickers displayed on or near light switches?

B-3. Electricity

- a. Are interior lights restricted to hours of active use in:
 - (1) Intermittently used work spaces?
 - (2) Rooms in housing?
 - (3) Latrines?
 - (4) Offices, classrooms, dayrooms, halls, entries, and stairways?
- b. Have additional light switches and/or pull chains/timers been requested and installed to increase flexibility of lighting use in offices?

- c. Are there any timers used to control lights or other electrical devices?
- d. Are the following exterior lights turned off during daylight hours and when not otherwise needed?
 - (1) Security lights and area lights.
 - (2) Parking lot lights, sports field lights, and porch and entrance lights.
- e. When incandescent lighting exists, are proper wattage bulbs used in the following areas?

Table B-1
Proper Wattage with Lighting

<u>Area</u>	<u>Proper Wattage</u>
Maintenance shops	100
Entry lights	25 to 40
Squad rooms	60 to 100
Noncommissioned Officer rooms	60 to 100
Heater and boiler rooms	25 to 100
Toilets and washrooms	60
Shower rooms, halls, and stairwells	25 to 60
Dining facilities	100
Kitchens	100
Storerooms (kitchen)	20 to 100
Administrative areas	100

- f. Are proper lighting levels (measured or maintained)?

Table B-2
Proper Lighting Levels

Workstations	50 Footcandles
Work areas	30 Footcandles
Non-work areas	10 Footcandles

- g. Do instructions for unit officer of the day or charge of quarters provide for a utilities conservation inspection?
- h. Are lamps, fixtures, and windows kept clean?
- i. Are window shades and venetian blinds adjusted to provide maximum outside light consistent with their basic purpose of controlling daylight glare?
- j. Are the following appliances turned off when not in use?
 - (1) Fans, heaters, evaporative coolers, and air conditioners.
 - (2) Lights, typewriters, and office equipment when away from desk or office.
 - (3) Televisions, radios, ranges, and cookers.

k. Are individual coffee pots being used when large centralized pots would be more energy efficient?

l. Are air conditioners used only when inside temperature is above 78°F?

m. Are doors and windows kept closed when air-conditioning is on?

n. Are vending machines that contain nonperishable goods unplugged at night?

B-4. Water conservation

a. Are there any water leaks?

b. Are showers and wash basins being used for any purpose other than intended? (Is the houseboy or maid using these for washing laundry, and so forth?)

c. Are water faucets in unit areas functioning properly, and can they be completely turned off?

d. Is the houseboy or maid running water continuously to wash laundry and dishes?

e. Are handles on drinking fountains tied or held open permitting water to run continuously?

f. Are streets and walks within unit area being wet down for dust control?

g. Do unit using wash-racks maintain adequate control to ensure that:

(1) Hoses are provided with automatic shutoff nozzles?

(2) Pressure pumps are operated only while wash-rack is being used?

(3) Water consumed in washing vehicles is held to a minimum and water is turned off when not actually in use?

(4) Nozzles, hoses, and valves are properly maintained?

(5) Faucets are turned off after use?

(6) Hoses at wash-racks are turned off when not in use?

(7) Water conservation stickers are displayed on or near water faucets?

h. Is lawn irrigation confined to specified time periods?

i. Are sprinklers moved frequently to prevent overflow to the street?

j. Are privately owned vehicles being washed with hoses instead of buckets?

B-5. Hot water

a. Are hot water faucets permitted to run or drip constantly?

b. Are water temperatures in excess of those authorized (140°F for input to booster heaters that supply water for sterilization and dishwashing; 105°F at the outlets in latrines with showers and tubs)?

c. Are hot water lines insulated?

d. Are water heater thermostats protected against tampering?

B-6. Air-conditioning

a. Are the requirements for inside room temperature and humidity for the facility met?

b. Is the air-conditioning system operating only during the authorized period?

c. Are cooling temperatures maintained according to Chapter II, Paragraph 10 of this regulation?

d. Is cooled air supplied to unoccupied space?

e. Has insulation been provided over all chilled water lines and ducts?

f. Are windows and doors closed when air-conditioning units are operating?

g. Is ventilation and introduction of outside air to air-conditioned space maintained to a minimum?

h. Is positive pressure maintained within the air-conditioned space? (Check by cracking a door and observe air flow using a small amount of smoke.)

i. Are the air filters periodically inspected and changed or cleaned? (No more than a light covering of dust should be present.)

j. Are unauthorized window air conditioners being used?

B-7. Heating

a. Are heating fuel allocations to units or Garrisons delivered according to proper procedures?

b. Are heating temperatures maintained IAW paragraph 8 of this regulation during working and nonworking hours?

c. Are heating systems, valves, and controls operating properly to maintain authorized temperatures?

d. Has weather stripping for doors, windows, and storm windows (permanent or temporary plastic sheeting) been provided?

e. Has pipe insulation been provided over all steam and hot water lines?

f. Is heat being provided to unoccupied areas or above authorized temperatures?

g. Does the heating system have operating thermostats, and are they protected from tampering?

h. Are unauthorized electric space heaters being used in violation of this regulation?

i. Is heat shut off during periods other than the heating season in compliance with this regulation?

B-8. Family housing and barracks

a. Limit temperatures to no higher than 70°F for heating and no lower than 78°F for cooling.

b. Turn off or restrict use of exterior lighting for porches, patios, and entrances.

c. Turn off or curtail the use of decorative lighting inside and outside of dwelling units.

d. Eliminate the use of portable electric heaters.

e. Reduce to 140°F the thermostat setting of water heaters that supply dishwashers.

f. Operate drapes, venetian blinds, and shades to allow entry of sunlight in the heating season and shading during the cooling season.

g. Close doors and registers to unused rooms, upper floors especially.

h. Turn off air-conditioning systems, reduce heating, and close windows in unoccupied quarters. Care should be taken to ensure that heating systems are not completely shut down in areas where water lines are subject to freezing.

i. Operate dishwashers, clothes washers, and clothes dryers only when necessary (that is, delay until fully loaded).

j. Use clotheslines instead of mechanical dryers.

k. Whenever feasible, use heat producing appliances during cooler periods of the day.

l. Use the lowest wattage lamp consistent with the needs. Turn off lights in unoccupied rooms.

m. Turn off appliances when not required.

n. Operate kitchen exhaust fans to reduce cooling needs imposed by cooking appliances.

o. Vent clothes dryers to the outside.

p. Use care in sizing of window air conditioners. Select the model with the highest EER for the cooling capacity required.

q. Change or clean furnace and air conditioner filters monthly when in use. Do not obstruct duct outlet registers with furniture, drapes, or rugs.

- r. Turn off cooling and heating equipment on mild days.
- s. Use cold water to wash clothes whenever feasible.
- t. Plan meal preparation to minimize use of surface range and oven.
- u. Lower heating thermostats to 55°F at bedtime.
- v. Assure that dampers are closed when fireplace is not in use.
- w. Self-cleaning ovens use large amounts of energy and should be used sparingly. Consider cleaning with a commercial degreasing agent.
- x. Defrost refrigerator whenever frost exceeds 1/4 inch. Frost decreases efficiency.

Appendix C

Energy Conservation Actions

The following are some measures and techniques of achieving energy conservation. These actions are not all-inclusive and should be taken in consideration of other applicable regulations and directives.

C-1. Electricity, heating, and air-conditioning

- a. Replace incandescent lighting with fluorescent lighting when such action will save operating costs. In addition, in work areas where the light source is greater than 15 feet from the area of work, consideration should be given to installing high pressure sodium lamps.
- b. Where feasible, install automatic door closers on exit and vestibule doors to heated or cooled spaces.
- c. Provide exhaust ventilation for heat producing equipment to reduce or eliminate air-conditioning load.
- d. Schedule athletic events for daylight hours whenever weather conditions permit.
- e. Use time clocks or photoelectric cells to turn off area lighting, street lighting, and so forth.
- f. Use clotheslines instead of clothes dryers whenever possible.
- g. Use minimum wattage light bulbs consistent with safety and health.
- h. Disconnect electrical power to water coolers during winter.
- i. Periodically clean reflector surfaces of lighting fixtures to maximize lighting efficiency.
- j. Install weather stripping around doors, windows, window air conditioners, and all other openings to the outside. Do not block the condenser air intake louvers of window air conditioners, as this seriously reduces their efficiency.
- k. Install storm doors and thermo-pane windows.
- l. Install vestibules and revolving doors at building entrances.
- m. Improve insulation level of older buildings by adding blanket, loose-fill, or foamed-in-place insulation where possible with in-house forces or self-help.
- n. Clean or replace filters in heating system at least once a month during heating season. Do not obstruct air intake to furnaces or cold air registers in buildings.
- o. Ensure that all buildings are equipped with thermostats that have an automatic light setback, where the heating system lends itself to that type of control, whenever economically justified.

p. Ensure that all activities requiring special processes with elevated temperatures, such as paint shops, schedule their operations to take maximum advantage of warm weather and highest daytime temperatures during cold weather.

q. Ensure that central heating plants are examined for proper maintenance and repair. Boiler controls should be checked to ensure proper operation. Operations should be carefully controlled to avoid using boilers at low loads, which results in reduced efficiency.

r. Ensure that heat transmission and distribution lines are checked and all leaks, poor drainage conditions, and defective insulation are corrected. Faulty or inoperative radiators or distribution line valves should be promptly replaced. All possible condensation should be returned to the same system.

s. Ensure that heating plant operating logs are frequently inspected for areas in need of corrective action, such as high flue temperature readings, low carbon dioxide readings, excessive raw water makeup, excessive condensate return temperature, low condensate return pH value, and high dissolved solids content in boiler water.

t. Ensure that openings such as attic vents and under-floor access doors are closed.

u. Ensure that exterior door closers are adjusted to provide tight door closure.

v. Ensure that unused fireplace flues are closed.

w. Do not heat an entire building at night for one or two duty personnel. Draw and use an DPW authorized portable heater or request that DPW install fixed heaters.

x. Do not leave water running continuously when doing laundry by hand.

y. Increase efficiency of water heaters by insulating and by draining out sediment at least every 3 months.

z. Do not use hot water if warm or cool water will suffice. The water heater is one of the most expensive appliances to operate.

aa. When possible, operate washing machines with full loads.

ab. Take showers instead of baths, since normally less water is consumed in taking a shower than a bath.

ac. Use waste heat recovery systems whenever economically feasible.

ad. Within buildings, close off rooms and areas not used.

ae. Consider installation of drop ceilings to reduce heated and cooled space.

af. Utilize preset and tamperproof thermostats that are installed as automatic overrides in the duct work.

ag. Utilize self-help to maximum extent to achieve energy conservation.

- ah. Install electrical as a method of pinpointing high consumption areas by unit or activity.
- ai. Use fans to disperse warm air at the ceilings.
- aj. Use demand (tankless) water heaters, solar water heaters, and air-to-air heat exchangers where suitable.
- ak. Where appropriate, use day-lighting (windows and skylights) instead of electric lights.
 - al. Use solar film where suitable. High personnel contact areas are unsuitable due to scratching and peeling.
 - am. Unplug water coolers at night, after duty hours, on weekends and holidays, and during winter.

C-2. Water

It takes electrical energy to pump water. Therefore, the following conservation actions should be taken:

- a. Irrigation or sprinkling of lawns, golf courses, and similar areas will be permitted only if water supply is adequate to provide for troop health and welfare needs. The quantity and frequency of such irrigation and sprinkling will be carefully controlled.
- b. Water should not be used for sewer flushing except when necessary for proper maintenance and operation of the sewer system.
- c. Urinals should be provided with self-closing valves. Flush valves and flush tanks should be adjusted and maintained to use only that water necessary for proper operation. Flow control valves should be used in shower fixtures.
- d. Hose connections at vehicle wash-racks should be equipped with automatic shutoff valves.
- e. Water leak surveys of the water distribution system should be made periodically and whenever an unaccountable increase in water consumption occurs.
- f. Water transported in tankers or trailers will not be utilized for vehicle washing.
- g. In facilities other than eating facilities, install self-closing faucets on all sinks except service sinks (janitors' sinks)

Appendix D

Sample Format for Monthly Heating Fuel and Electricity Consumption Report

(Letterhead of DPW Submitting the Report)

OFFICE SYMBOL

DATE

MEMORANDUM FOR IMCOM-K, Public Works Division (IMKO-PWD-O), Unit #15742,
APO AP 96205-5742

SUBJECT: Monthly Heating Fuel and Electricity Consumption Report

1. Subject report for the month of Jan 08 is provided as follows:

2. Heating fuel (gallons).

	Heating and Cooking	Generator
a. Monthly consumption (list installations)		
Total	<u>60,000</u>	
b. Organization/unit issued (list units)		
Total	<u>60,000</u>	
c. Issues to reimbursable customers (list unit(s) supported)	<u>ROK Army</u>	
Total	<u>1,500</u>	<u>550</u>
d. Allocation data.		
(1) Quarter allocation	<u>208,000</u>	
(2) Increase/decrease allocation	<u>-30,000</u>	
(3) Total consumption to date	60,000	
(4) Allocation balance	<u>148,000</u>	

3. Electricity (kilowatt hours).

a. Monthly consumption (list installation)	<u>3,636,988</u>	
b. Reimbursable customer (list organization supported)		<u>3,869</u>

OFFICE SYMBOL
SUBJECT: Monthly Heating Fuel and Electricity Consumption Report

c. Goal data

(1) Quarterly goals 10,059,000

(2) Total consumption to date 3,636,988

(3) Cumulative balance 6,422,012

FOR THE COMMANDER

(Signature Block)

SAMPLE

Glossary

Section I Abbreviations

AC	Air Conditioner
ACSIM	Assistant Chief of Staff for Installation Management
ASHRAE	Air Conditioning Engineers
BTU	British thermal units
CEC	Command Energy Council
DA	Department of the Army
DOD	Department of Defense
DPW	Director of Public Works
ECIP	Energy Conservation Investment Program
EER	Energy Efficiency Rating
ESPC	Energy Savings Performance Contract
FY	Fiscal Year
HPS	high pressure sodium
HQDA	Headquarters Department of the Army
HVAC	heating, ventilation and air conditioning
IMCOM-K	Installation Management Command-Korea
IAW	in accordance with
LNG	liquefied natural gas
LPS	low pressure sodium
MACOM	major army command
MDOT	maximum daily outdoor temperature
MSC	major subordinate command
NLT	no later than

OPORD	operational order
RH	relative humidity
ROK	Republic of Korea
UFC	United Facilities Criteria
UMCS	Utilities Monitoring Control System
U.S.	United States (of America)

Section II

Terms

Domestic hot water. Heated water used for hand washing, showers, and bathtubs. This does not apply to water used for dishwashing or sterilization.

Energy. This term encompasses all forms of energy including petroleum fuel, LNG, electricity, and steam used in installation support and mobile equipment operations.

Garrison. As used in this regulation, the term Garrison refers to United States Army Garrison (USAG) Red Cloud (USAG-R), USAG-Yongsan (USAG-Y), USAG Humphreys (USAG-H), and USAG Daegu (USAG-D).

Heating fuels. Fuels for heating (KDR), cooking (natural gas).

Installation. As used in this regulation, the terms installation refers to Camps Stanley, Casey, Humphreys, Henry, and Yongsan Garrison

Sites. All other camps and posts not listed above as installations.