DEPARTMENT OF THE ARMY

Maneuver Center of Excellence

Fort Benning, GA

Building Energy Monitor/Conservation Officer Handbook

Adapted from the publication, Department of the Army: Building Energy Conservation Officer's Handbook

of the

US Army Logistics Integration Agency 54 M Avenue, Suite 4 New Cumberland, Pennsylvania 17070-5007 DSN 977-6711 – (717) 770 6711

in cooperation with the

US Army Center for Public Works ATTN: CECPW-EM 7701 Telegraph Road Alexandria, Virginia 22315-3862 DSN 656-6111 – (703) 806-6111

and

HQDA Office of the Assistant Chief of Staff for Installation Management ATTN: DAIM-FDF-U 7701 Telegraph Road Alexandria, Virginia 22315-3800 DSN 328-7001 – (703) 428-7001

Mark J. Fincher, Installation Energy Manager *(706)545-0922* ***and***
Robert W. Chaplin, Resource Efficiency Manager *(706)545-1640*
Fort Benning, Georgia

Fort Benning, GA
Building
Energy Monitor/Conservation Officer's Handbook

DEPARTMENT OF THE ARMY

INTRODUCTION

Energy Management makes good sense. It's good for the Army, the Nation, and believe it or not, even you! By managing our energy we can cut our energy waste and redirect our energy use to our increased comfort, productivity, and dollar savings.

Over the last several years, the Department of the Army and the Department of Defense have developed energy conservation programs aimed at improving the energy efficiency of buildings.

However, energy conservation retrofits and better design are only part of the answer. Energy efficiency through education, awareness, and involvement is the key to a successful energy management program. Energy management needs support at all levels, from the Building Energy Conservation Officer (BECO) to the Commander.

The purpose of this handbook is to explain to you the various energy consuming components of buildings, how they interact with each other, and various ways that energy can be saved during the course of the operation of facilities.

By managing energy resources many Army installations have been able to fund quality of life projects with the dollars saved as a result of saving energy.

Also, keep in mind that energy management excellence is rewarded through the Secretary of the Army Energy Conservation Awards and the Federal Energy and Water Management Awards programs. These programs recognize both individuals and organizations who do things which make good energy sense. Check Army Regulation 11-27 to see how you can apply. Visit our website http://lia.army.mil/

Be smart and conserve with comfort and **common sense!**

The Strategic Energy Security Goals (ESGs) of the Army's Energy Security and Implementation Strategy

1. Reduced energy consumption
2. Increased energy efficiency across platforms and facilities
3. Increased use of new renewable and alternative
4. Assured access to sufficient energy supplies
5. Reduced adverse impacts on the environment

Army Energy Security Vision

An effective and innovative Army energy posture, which enhances and ensures mission success and quality of life for our Soldiers, Civilians and their Families through Leadership, Partnership, and Ownership, and also serves as a model for the nation.

Army Energy Security Mission

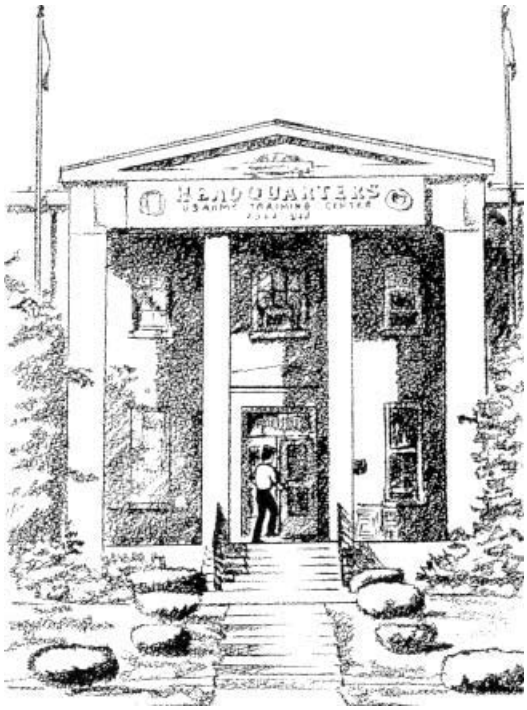
Make energy a consideration for all Army activities to reduce demand, increase efficiency, seek alternative sources, and create a culture of energy accountability while sustaining or enhancing operational capabilities.

The core characteristics defining the energy security necessary for the full range of Army missions

1. **Surety** – Preventing loss of access to power & fuel sources
2. **Supply** – Accessing alternative & renewable energy sources available on installations
3. **Sufficiency** – Providing adequate power for critical missions
4. **Survivability** – Ensuring resilience in energy systems
5. **Sustainability** – Promoting support for the Army's mission, its community, and the environment.

Table of Contents

INTRODUCTION 4
The Strategic Energy Security Goals (ESGs) of the Army's Energy Security and Implementation Strategy . 5
Army Energy Security Vision 5
Army Energy Security Mission 5
The core characteristics defining the energy security necessary for the full range of Army missions 5
CHAPTER 1 THE BUILDING ENERGY CONSERVATION OFFICER 7
RESPONSIBILITIES 7
ENERGY CONSERVATION OPPORTUNITIES 8
HOW TO CARRY OUT YOUR RESPONSIBILITIES 9
CHAPTER 2 INFILTRATION 10
CHAPTER 3 VENTILATION 13
CHAPTER 4 WATER 15
CHAPTER 5 HEATING 17
CHAPTER 6 COOLING 20
CHAPTER 7 LIGHTING 22
CHAPTER 8 SPECIALITY BUILDINGS 25
Laundry 25
Computer Facilities 26
Kitchens and Other Similar Facilities 27
CHAPTER 9 BUILDING ENERGY MONITOR CHECKLIST 28
APPENDIX 33
Federal and Army Energy Regulations 33



CHAPTER 1 THE BUILDING ENERGY CONSERVATION OFFICER

You serve a vital role; you are, so to speak, on the firing line. You are in those facilities that need to be monitored and checked on a regular basis.

If you are in a building which has been modified to be more energy efficient, it is important to insure that people in the building are educated on how the building operates to provide comfort and improved efficiency.

If your building has not yet been modified, you need to look for those things which help make the building operate as efficiently and comfortably as possible.

RESPONSIBILITIES

Your primary responsibility is to help the Installation Energy Manager achieve the objective of an energy efficient installation without an adverse impact on the mission or quality of life. You need to work with the Energy Manager to help focus your efforts toward a common goal. A team effort will yield far more benefits than individual action.

When initially appointed, you should discuss your duties with the appointing officer and the

Energy Manager. This can be done either one on one or in team building meetings. Transferring ideas is a great way to find solutions to common problems.

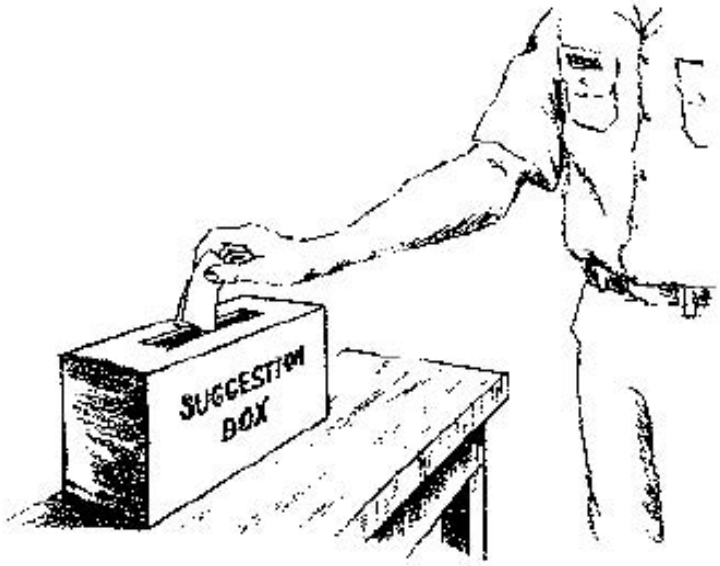
Some of your responsibilities may include:

- Serving as building's point of contact.
- Calling in work orders for low cost maintenance and energy conservation opportunities (ECO's).
- Monitoring the operation of your building.
- Recommending energy saving changes to your building's operating procedures
- Meeting with your Energy Manager.
- Reporting problems with the building's heating and cooling systems.
- Incorporating water management into your conservation plan.

Checklists can help you spot potential energy saving opportunities. Suggested items are shown in Chapter 9.

ENERGY CONSERVATION OPPORTUNITIES

If you find an energy conservation opportunity (ECO), you should discuss it with the Energy Manager, who may in turn want to talk with the engineering staff. Or you could submit your idea through the incentive awards office in the form of a suggestion. If the ECO is technically sound, you might be requested to prepare and submit a work order. If the idea requires a capital investment or is applicable to a broad range of buildings, the Energy Manager may want to prepare project documentation to obtain funds through one of various special funding programs. The checklists and concepts in this handbook will help you get some



HOW TO CARRY OUT YOUR RESPONSIBILITIES

To do your job, you will need to know something about the water-and energy-consuming components of a building and how they can work more efficiently. This handbook helps you understand energy conservation and the types of things that you can recognize which will stop energy waste.

CHAPTER 2 INFILTRATION

Heat is mainly lost during the heating season or gained during the cooling season by conduction and infiltration. Heat lost or gained by conduction passes directly through the building materials which make up your walls, windows, doors, ceilings, roofs, and floors.

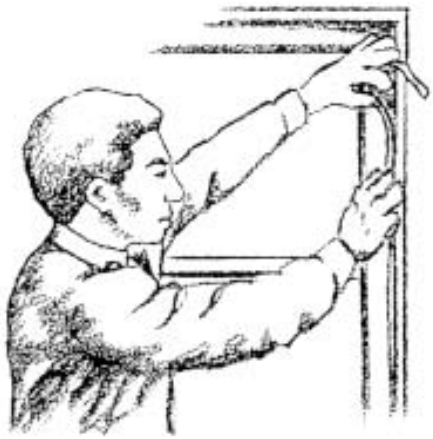
Infiltration is heat lost or gained due to outside air entering a building through cracks around windows, doors and through the outside shell of the structure. Not only does it cause discomfort to building occupants; it is a major contributor to unnecessary heating and cooling costs and energy losses.

During the heating season, infiltration contributes to heat loss because cold infiltrated air displaces warm air and must be heated to maintain desired comfort conditions. During the cooling season, infiltration contributes to heat gain because the warmer infiltrated air must be cooled and dehumidified to maintain desired comfort conditions.

The following suggestions will help reduce the rate of infiltration into your building and the associated energy use:

- Make sure that all doors are closed, especially during the heating and cooling seasons. Sometimes signs help to remind occupants to close doors.

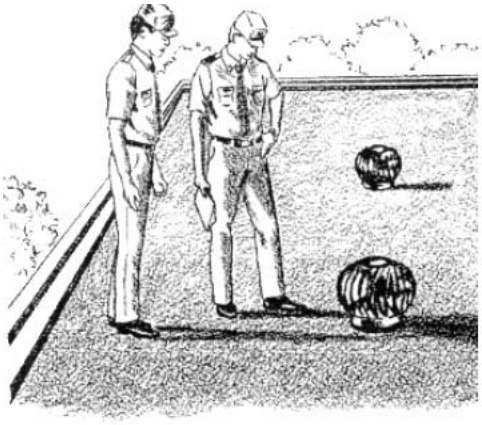
- Make sure that all windows remain closed during the heating and cooling seasons.
- If your building has any unheated rooms or areas, keep doors closed to prevent infiltration to conditioned spaces.
- If your building does not have dock curtains for unloading, initiate a work order for their installation.
- You should periodically check the weatherstripping and caulking. If it is old and dried or peeling, be sure to submit a work order for repairs.
- Inspect for air leakage in and around electrical outlets. Rubber inserts are generally available through self-help to seal any leaky outlets.
- If you notice that there was never any weatherstripping or caulking, suggest that it be installed. Some caulking and weather-stripping are self-help. Check with the Director of Public Works (DPW).

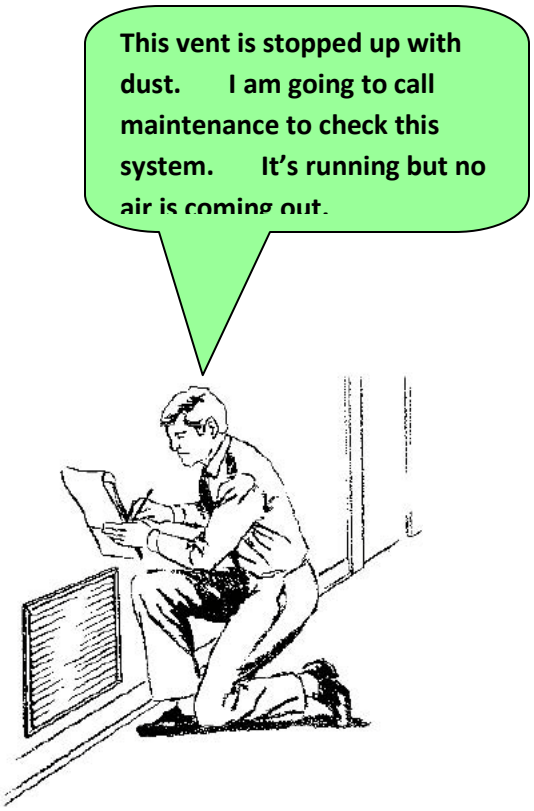


- If the building is drafty, check to see if there is insulation in the attic (if there is one), walls and under the floors if it is above grade. Report your findings to the Installation Energy Manager.
- If you see cracked or missing windows, be sure to submit a work order for their immediate repair.
- If your building has a significant amount of traffic, a vestibule or revolving door might be installed to reduce infiltration.
- You may notice cracks or openings in the outside of the building, such as the joint where the foundation meets the siding or wherever exterior walls are penetrated by pipes, ducts and conduits. Such openings are candidates for caulking.
- If your building has many entrances suggest closing some off – if the fire laws would permit.

- If your building has window air conditioners, make sure that they are covered and vents are closed during the heating seasons or have them removed whenever possible.

- If people continuously leave their windows open during the heating or cooling season, then this is an indication that the heating or cooling control system may be broken and needs repair by the DPW.





CHAPTER 3 VENTILATION

Ventilation has a significant impact on a building's total energy consumption. Each unit of air brought into your facility must be heated or cooled and, in some cases, humidified or dehumidified. If excess air, beyond that required for the comfort and safety of your building's occupants, is brought in, a considerable waste of energy is inevitable.

Energy savings arise from reducing ventilation rates and/or shutting off the ventilation system when it is not needed. However, you must take some care in looking at these energy conservation opportunities. Check with the Energy Manager to assure that complete analyses are done and building code requirements are met.

The following ideas will assist you in seeking savings due to excess ventilation:

- Suggest that ventilation units operate only as needed. Consider shutting them off to any area that will remain unoccupied.

- As you walk through your building, periodically inspect the condition and operation

of outside air dampers. Faulty operation or bad fit causes loss of heated or cooled air.

- If practical, suggest to the Energy Manager or DPW that the ventilation system be turned off completely during spring and fall months when most occupants will want to use the windows anyway.

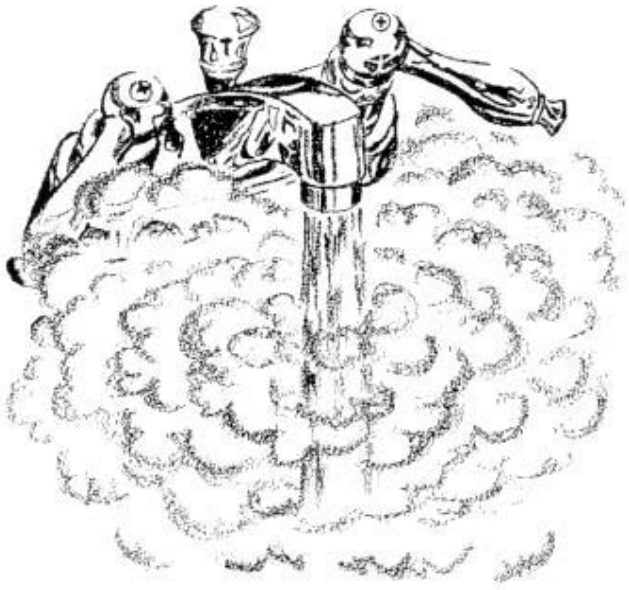
- If you have some rooms in your building that have special ventilation requirements, recommend that time clocks be installed on these systems. This will assure that they are turned off when not in use and yield considerable energy savings.

- Ask the Energy Manager to investigate the possibility of installing time clocks or motion detecting sensors in common use areas such as toilets so that the fans and lights there are not energized all the time.

- Talk with the folks at DPW or the Energy Manager to learn how dampers on heating and cooling systems should be set for a particular season.

- Check crawl space ventilators to assure they're open in the summer and closed in the winter.

NOTE: If odors or other symptoms of poor ventilation become apparent, bring them to the attention of the DPW.



CHAPTER 4 WATER

Hot water generation and its consumption often account for up to 10% of a building's energy use, more if your building has a dining facility, cafeteria, or laundry. There are many opportunities for saving energy here, but most will require the installation of new equipment. This work should be done together with your Energy Manager and DPW.

Usually hot water is supplied at a temperature that is too hot to be used directly. Cold water must be mixed with it at the tap. Here then are some possible energy savings:

- Check with the Energy Manager to see if you can get the hot water temperature for domestic, administrative, or general cleaning use reduced to about 95^{o} F. Sometimes boosters can be installed where the temperature must be higher -– for dishes, laundries, etc.

There are many benefits to be gained from reducing the quantity of water used: energy savings, of course, but also decreased treatment costs and lower usage payments.

- You may want to suggest that self-closing faucets be installed on hot water taps.
- Look into the possibility of installing spray-type faucets with flow restrictors -– this is especially good in showers.

- Check toilets for leaks. Add 12 drops of food coloring to the tank. If color appears in the bowl 15 minutes later, the unit is leaking.

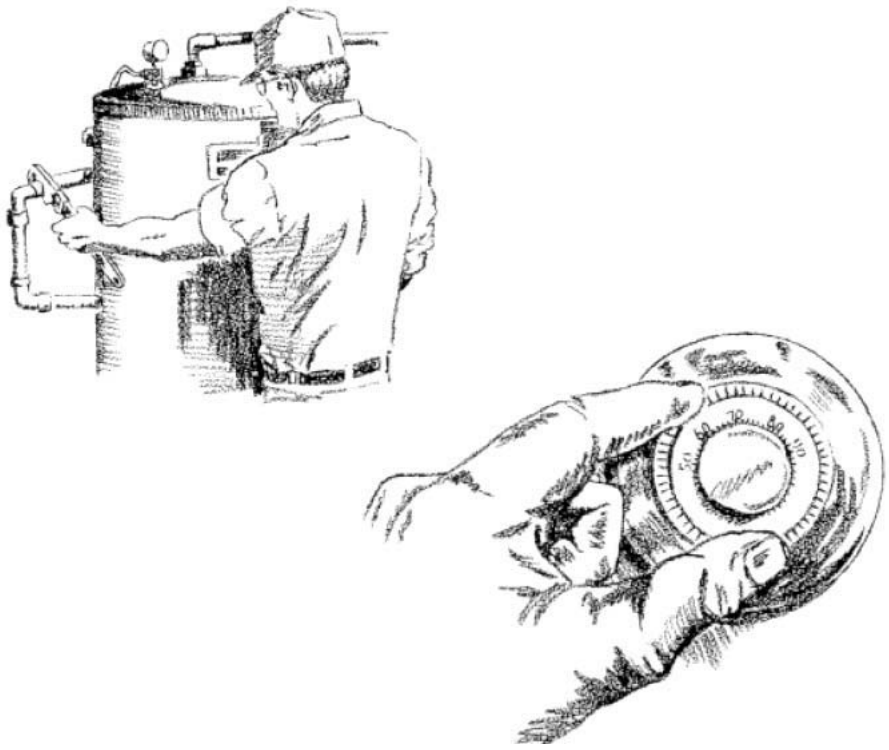
- Install toilet displacement devices to save thousands of gallons per year, or five to seven gallons per flush. Place one to three weighted plastic jugs in the tank, making sure the jugs don't interfere with the flushing mechanism or suitable flow. Or use a toilet dam to save one or two gallons per flush. Don't use bricks; they can chip and foul the flushing mechanism.

You can improve the efficiency of the overall water systems by:

- Inspecting and then having insulation repaired on hot water piping and tanks.

- Repairing all leaks, including those at the faucet.

- Shutting off hot water pumps when the building is unoccupied.



CHAPTER 5 HEATING

It is in the heating and cooling systems that most of your building's energy savings can arise. Much of these savings are often developed at the central plant on your installation.

However, there are many operational items that you should keep in mind: your building is a unique combination of systems – heating, cooling, and ventilating. Therefore the suggestions that follow should be considered as guidelines only, and any major changes must be cleared with the Energy Manager.

Energy expended to heat your building to comfort level conditions when it is unoccupied -– which, actually, may be most of the time – is wasted. Save energy by setting back the temperature during these times. Use the following table as a rough guideline for recommending these setbacks: With these figures as guides, consider the following:

	Winter		Summer	
Type of Room	Occupied Hours Temperature	Unoccupied Hours Temperature	Occupied Hours Temperature	Unoccupied Hours Temperature
Office Space	65-72º	55º	74-79º	89º
Corridors	65-70º	52º	74-79º	89º
Dead Storage	50º	50º	74º	74º
Cafeterias	65-70º	50º	74-79º	89º
Mechanical Rooms	55º	50º	74º	74º
Vehicle Maintenance	65-70º	45º	74-79º	89º
Occupied Storage Areas	65-70º	50º	74-79º	89º
Auditorium	65-70º	50º	74-79º	89º
Computer Rooms	65-70º	As required	74-79º	As required
Toilet Rooms	65-70	55º	74-79º	89º
Garages	Do not heat	Do not heat	Do not cool	Do not cool

- Suggest that radiators or heaters registers be shut off completely in vestibules, corridors, stairwells and lobbies.

- If your building does not have thermostats that are capable of night setback, tell the Energy Manager and have them installed.

- If your building is used after-hours, recommend that areas occupied be very limited to assure that you do not heat the entire building unnecessarily.

- Make sure that the thermostats in your building are tamper-proof. Recommend installing cover locks, if necessary.

- During particularly cold weather, encourage your building's occupants to wear warm clothing.

- When adjusting temperature settings be careful and use your common sense.

The outside conditions can often cause considerable energy loss due to heat escaping through windows and exterior walls. A few simple ideas are:

- If the winter sun is shining on a window, take advantage of it and use it to partially heat the room.

- On the other hand, when the winter sun does not shine on windows, recommend that the occupants draw the drapes, shades or blinds to help insulate the room.

- Periodically check to see that windows are tightly closed in winter. Open windows are generally a sign that the building is overheated. Call the DPW to investigate.

- Refer to the section on infiltration to look into weather-stripping and caulking.

- If your building's occupants complain about cold areas, suggest that they rearrange their rooms to place desks away from exterior walls and windows that may cause drafts.

- Keep the windows clean to permit maximum sunlight transmission during the winter.

- As you look at the outside of your building, check to see that the foliage is trimmed, especially around the southern, eastern and western walls.

Other means to improve the energy efficiency of your installation often arise from opportunities at the central boiler or power plant. There are some things that you, however, as the Building Energy Conservation Officer, can do to help here:

- If you notice any steam or hot water leaking from the heating system, immediately inform the Energy Manager. Such leaks can mean substantial energy losses. Did you know that a leak from a 3/4 inch pipe which blows steam around costs approximately $50,000 annually?

- Check around the radiators of your building; if there are any leaks be sure to report them. But be careful here, the steam escaping can be very, very hot.

- The steam system needs insulation. If you see any insulation missing or in poor repair, submit a work order.

CHAPTER 6 COOLING

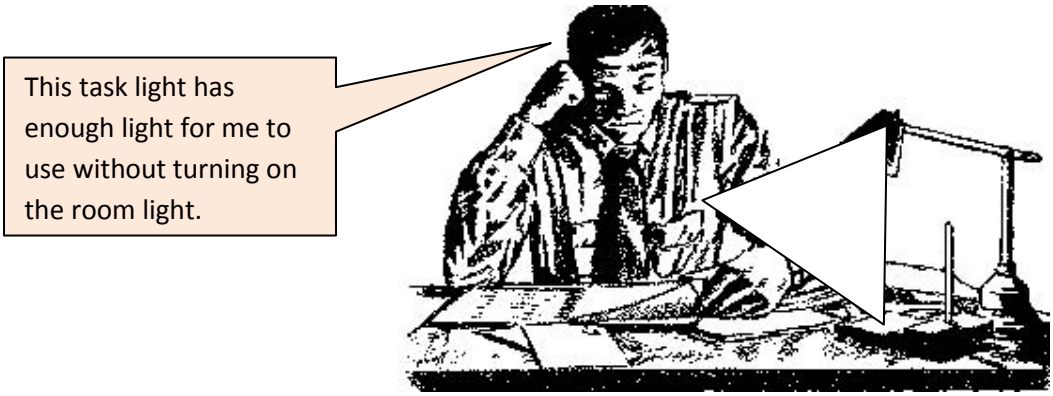
Improvements to the cooling system and its operation can save significant amounts of energy. As may be imagined, many of the items that work well for conserving energy in the heating system can also work well for the cooling system.

You should control the operational hours of the cooling while providing the comfort that your building's occupants need. To do this most effectively you need to know something about recommended cooling temperatures. These guidelines are: As with the heating, these temperatures and humidities can provide reasonable guidelines for you as you periodically inspect the building. Other ideas for energy conservation are:

OCCUPIED PERIODS		
Type of Area	Minimum Temperature	Minimum Humidity
Offices	76-80º F	55%
Cafeterias	76-80 º	55
Auditoriums	76-80 º	50
Computer rooms	76-80 º	as needed
Toilet rooms	80 º	uncontrolled
Storage, equipment Rooms	Unconditioned	Uncontrolled

- Make sure the air conditioning systems do not run all night or during days when the building is unoccupied.
- If possible, try to use outdoor air for cooling. This means being sure that the windows are operable.
- If cool outdoor air is available, consider cooling the building during the night and early morning hours using only the outside air – mechanical A/C off.
- During the cooling season, windows can work against you. In hot weather, adjust the blinds, drapes or shades to prevent sunlight from heating the building.

- If drapes, shades or blinds are not available in your building, check with the Energy Manager about having some installed.
- Be particularly careful with a skylight, if your building has one. Treat it as you would a window.
- Ask occupants of your building to turn off air conditioning systems if they plan to be out of their office for a considerable period of time.
- As in the heating system, check for leaks and faulty maintenance.
- Keep foliage and plants out of air intakes and air exhausts.
- Schedule clothes washing and drying in cool morning hours which also reduces installation electrical demand contribution.
- Make sure that thermostats are in working order.



CHAPTER 7 LIGHTING

Electrical lighting is a major energy consumer on Army installations. This is partially due to the fact that many of our existing buildings were designed without knowledge about final space use and without the benefit of recent developments in high efficiency lighting systems. In many rooms, lighting system modifications offer great opportunities to save.

There are many possible ways to save on lighting energy. It is especially important for you to recognize that major alterations to the lighting system can have impacts on the building heating and cooling system.

Before making suggestions, you must recognize that lighting is a system. Its many elements are interrelated. While energy can be conserved by properly implementing the suggestions offered below, these actions should be taken only after you look into the effects on the entire system.

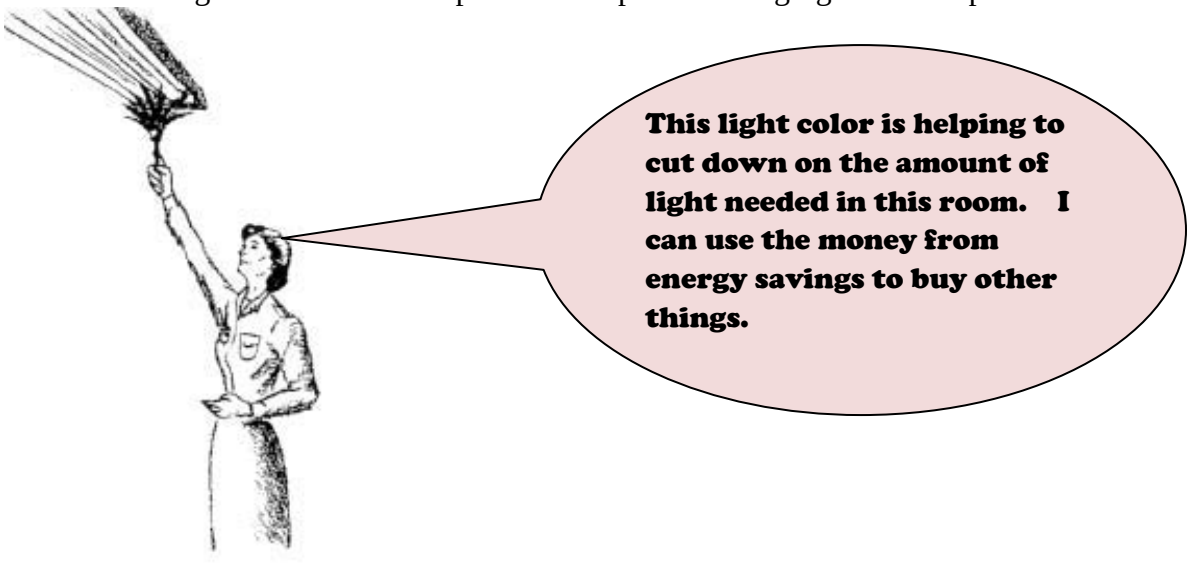
It is always better to turn off a light when it is not needed -– even for a short period of time. A policy of "Use when needed, otherwise shut them off," works best. To help execute this policy you may want to consider the following:

- Mark all switches so that occupants will remember to turn off the lights
- Suggest to all building personnel that lights should be out if not needed in storage rooms, vending machines, meeting rooms, bulletin boards, unassigned areas.
- Make sure that building lights are turned off when the facility is unoccupied except those, of course, needed for security.

Another major area for possible lighting savings comes from improving the effectiveness of existing lighting. Most of these savings, as you will see, arise from proper building maintenance.

- Lighting fixtures, especially around fluorescent lamps, should be kept clean.

- Interior building walls should be kept clean and painted using light colored paint.



- If your building is undergoing renovation, suggest to the Energy Manager that the walls and floors be decorated with light colors to improve the reflected light.

- If your building has many high partitions, you might look in to the potential for lowering them and "sharing" the light among the occupants.

If possible in your building, suggest to the occupants that they make maximum use of daylight for their lighting. Appropriate use of this source will save electrical energy, decrease the heating requirements and generally not increase the building cooling load.

- To use the daylight, be sure windows and skylights, if any, are clean and cleared.

- Check blinds, drapes, and shades – open them to improve the use of daylight, but don't forget how this may affect the cooling system.

- Turn off fluorescent lamps when not needed. Forget the myth that it takes more energy to re-light a fluorescent lamp than to let them burn. Treat them like any other light, turn them off when not needed.

- Just removing tubes from a fluorescent lamp does not stop the lamp from using electricity. The ballast, a small transformer that provides the high voltage necessary to strike the tube, needs to be disconnected by the DPW. (This may vary if you live outside the continental United States, so check with your Energy Manager.)

The lighting suggestions that follow require the assistance of your Energy Manager to help with a survey and the detailed calculations that may be needed. When considering these suggestions, don't forget your common sense.

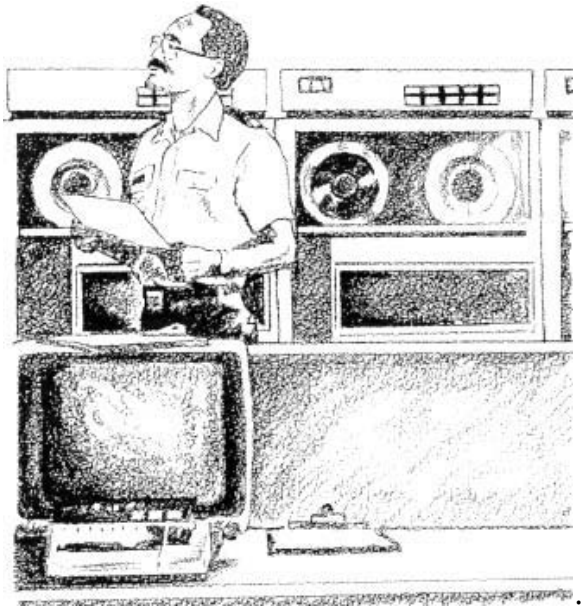
- Lamps in corridors may be eliminated without a significant reduction in lighting levels.

- In many areas of a building, storage or corridors, for example, the existing lights can be replaced with those having smaller wattage.

- There are many high efficiency lamps available for use. Suggest that these replace the ones that burn out.

- Suggest to building occupants that they use “task” lighting rather than overall room illumination.

- Suggest to the DPW the installation of fluorescent lighting intensity controllers to take advantage of daylighting.



CHAPTER 8 SPECIALITY BUILDINGS

There are many special buildings in the Army inventory which have unique needs and requirements. These include laundries, computer facilities, kitchen, etc. The energy conservation techniques suggested in the preceding sections will, of course, work in these buildings, but some specialized techniques and things to look for are necessary. We discuss some of them in this section.

Laundry

The laundry is obviously a major consumer of hot water for washing and hot air for drying. There are many opportunities for energy conservation but most will require detailed assistance from the Energy Manager. If these ideas look feasible to you, be sure to suggest them to the Energy Manager so that appropriate analyses can be carried out.

- Combine operations to reduce the number of washers.
- Many laundries have installed heat recovery devices. While these devices have a high capital cost, it is often recaptured with the savings in energy.
- Suggest that the laundry use cold water detergents and keep the temperature down to 65^{o} – 70^{o}.

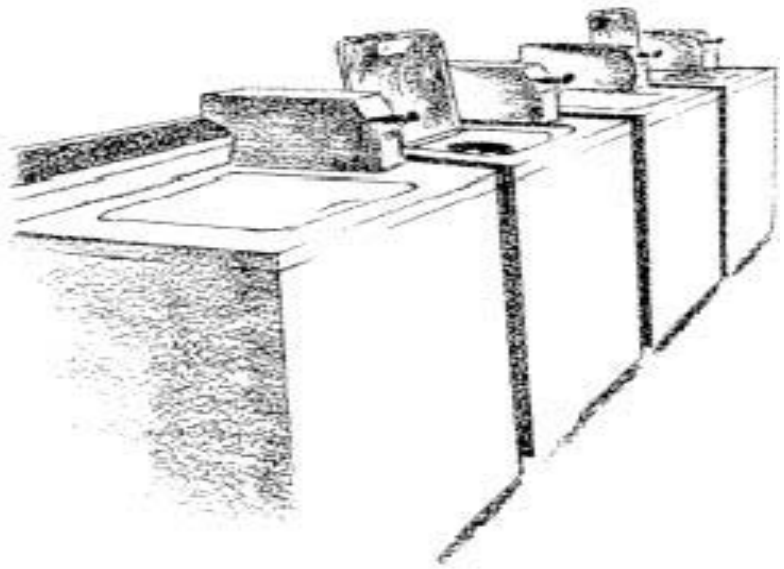
- Be sure that water filters are cleaned regularly. Keep the basket and the working parts of the washer clean for maximum efficiency.

- Suggest that clothes be sorted according to type and run washers on the minimum cycle necessary for clothing to become clean. Set timers appropriately.

- Suggest that lint screens and exhaust blowers be cleaned at least twice each day.

- Consider using ironing instead of drying whenever possible, as it is more energy and labor-efficient. Use the extractor cycle and, if needed, partial drying before ironing.

- Ironers only when actually in use.



Computer Facilities

Computers often need very particular environmental conditions for their efficient operation. However, these are often not followed completely. Doing so can save energy for the installation.

- You and the Energy Manager may want to investigate the manufacturer recommendations for temperature levels and humidity requirements and see if they are followed.

- Suggest that lighting levels be reduced to those recommended by the manufacturer.

- As in the laundry, heat recovery may be possible.

- Don't confuse main frame computers with personal computers. Each have different operating requirements. Turn off personal computers when not in use; it won't hurt them.

Kitchens and Other Similar Facilities

These types of facilities, located throughout the base, are major consumers of energy. Whether they are in the Post Exchange or the Officer's Club, savings can often be developed. Again, analyses will often be required; check with the Energy Manager.

- Suggest the reduction or possible elimination of humidification.
- Exhaust fans serving kitchens are often interlocked with outside air fans or dampers. Be sure the staff shuts down the entire system when not needed.
- Recommend concentrating smoking areas together to reduce ventilation needs.
- Dishwashers are major consumers of hot water. Often the hot water delivery temperature is set for this equipment. Recommend that the overall temperature be dropped and then use a booster if necessary for dishwashing.
- In kitchens, suggest that the serving and cooking staff avoid keeping infrared food warming lamps on when no food is being kept warm.

CHAPTER 9 BUILDING ENERGY MONITOR CHECKLIST

In the pages that follow we provide checklists for the various areas discussed in the preceding sections.

The Building Energy Conservation Officer should go through the building on a regular basis and review these checklist items making notations as appropriate. These notations should be reviewed with the Energy Manager to insure that these items are addressed.

Checklist Item	Location/Remarks
HEATING AND COOLING	
a. Unused areas and rooms not closed off.	
b. Air conditioners left running after normal hours.	
c. Air conditioning or heating vents obstructed.	
d. Exterior doors left open.	
e. Windows left open.	
f. Radiators on in stairwells and vestibules.	
g. Window air conditioners not covered	
during the heating season.	
h. Plants and foliage blocking air intakes	
and exhausts.	
i. Visible steam leaks.	
j. Thermostat damaged, improperly set,	
or out of calibration.	
k. Fireplace damper open when not in use.	
l. Radiators are dirty.	
m. Air filters need replacing.	
n. Insulation missing on pipes.	
LIGHTING	
a. Lights left on in unoccupied area. Occupancy sensors are used where possible.	
b. Lights in use when daylight is sufficient.	
c. Exterior lights on in daytime.	
d. Light levels too high in corridor, stairwells, etc.	
e. Dirt on the surfaces of lamps and/or light reflecting or diffusing surfaces of fixtures.	
f. Lighting in work area exceeds requirements for task (refer to guidelines).	
g. Light bulbs with excessive wattage in use.	
h. Fluorescent lights have been improperly delamped (e.g. ballast is still connected).	
i. Lights over stacks of supplies or equipment.	
j. No incandescant bulbs are used other than those approved by Energy Manager for special purposes.	
k. Excessive exterior illumination.	
l. Walls and/or windows are dirty.	
OTHER ELECTRICAL	
a. Equipment left running when not in use (air compressors).	
b. Personal heaters, coffee pots, refrigerators and other personal appliances in use.	
c. Elevator fan in use.	
d. Vending machines on during the weekend where food spoilage is not a problem.	

WATER	
a. Leaking faucets.	
b. Hot water pipe insulation is missing or damaged.	
c. Hot water outlet temperature in excess of 95°F.	
d. Hot water delivery to non-critical areas.	
e. Steam/water leak in pipes.	
f. Domestic hot water being circulated during unoccupied hours.	
e. Hot water tank is not insulated or insulation is damaged.	
f. Partial load in dish or clothes washers.	
g. Toilets leaking.	
j. Toilets could accommodate tank displacement devices.	
k. Install low-flow shower-heads.	
l. Install aerated faucets.	
REFRIGERATION	
a. Refrigeration unit in drinking fountain is in use past the end of normal building hours or during winter months.	
b. Gaskets around refrigerator doors are not tight.	
c. Refrigerator needs Defrosting.	
d. There is approximately 1 cubic foot of refrigeration per person. All refrigerators are less than 10 years old and are energy star compliant.	
BUILDING	
a. Broken windows/doors.	
b. Defective fireplace damper.	
c. Misaligned exterior door.	
d. Cracked caulking around windows, doors and exterior joints.	
e. Defective or missing Weather stripping around windows and doors.	
f. Shades/curtains are missing on windows.	
g. Outside air intake damper does not close tight.	
h. Exhaust air outlet(s) with no damper(s).	

NOTES

A revised publication of the

US Army Logistics Integration Agency 54 M Avenue, Suite 4 New Cumberland, Pennsylvania 17070-5007 DSN 977-6711 – (717) 770-6711

in cooperation with the

US Army Center for Public Works ATTN: CECPW-EM 7701 Telegraph Road Alexandria, Virginia 22315-3862 DSN 656-6111 – (703) 806-6111

And

HQDA Office of the Assistant Chief of Staff for Installation Management ATTN: DAIM-FDF-U 7701 Telegraph Road Alexandria, Virginia 22315-3800 DSN 328-7001 – (703) 428-7001

APPENDIX

Federal and Army Energy Regulations

1. **EPACT2005 (Energy Policy Act of 2005)**
2. **Executive Order 13423 (March 9, 2007)**
3. **Army Regulations 420-1**
4. **USAIC 11-27 (United States Army Infantry Center 11-27)**
5. **Code of Federal Regulations**
    a. **10 CFR 434**
    b. **10 CFR 435**
    c. **10 CFR 436**
    d. **41 CFR**
6. **EISA07 (Energy Independence and Security Act of 2007)**
7. **Executive Order 13514 (October 8, 2009)**

DEPARTMENT OF THE ARMY
GARRISON COMMAND
Department of Emergency Services
Building 214 Barron Ave
Fort Benning, Georgia 31905

REPLY TO ATTENTION OF

BEN-DES-FIRE 7 June 2008

MEMORANDUM FOR RECORD ATTN: Fort Benning Fire Prevention
Building 214 Fort Benning, GA 31905

SUBJECT: Portable Electrical Space Heater

1. Request use of heater :(Unit Name) Fort Benning, Georgia 31905

2. Supervisor: Individual is responsible for operation, maintenance, and damages of electrical heaters. Portable electronic heaters will **NOT** be left unattended when in use and is for temporary use only.

   Name
   Section
   Phone Number

3. Fire Hazard and warnings:

   a. Before using heater read and follow all manufacturers' instructions.

   b. Keep heaters in a safe working condition in accordance with Manufacturers' instructions.

   c. Never use a deflective heater. Ensure cords never run under rugs, carpet, or furniture.

   d. Keep heaters away from water and check for frayed wires.

   e. Portable electric heaters should be fail-safe type, which are equipped with an automatic tip over shut off switch.

   f. Must have 36 inches of clearance all the way around the heater. Heaters **WILL** not be placed under any desk at any time.

   g. Point of contact for this action is (Insert name) at 555-555-5555 and the undersigned at 555-555-5555

Smith, John CPT
Commanding

Send Copy to Fire Inspector and to Energy Manager

SAMPLE LETTER

Portable 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 outlined above. 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 can not 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. Use of personal supplemental heating or mechanical cooling devices must have supervisor written approval and must only be used when the area is occupied.

-Army Regulation 420-1 22-12b(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. 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.

- **Army Regulation 420-1 22-12c(4)**

Procure Energy Efficient Products

(1) REQUIREMENT.—To meet the requirements of an agency for an energy consuming product, the head of the agency shall, except as provided in paragraph (2), procure—

(A) an Energy Star product; or

(B) a FEMP designated product.

(2) EXCEPTIONS.—The head of an agency is not required to procure an Energy Star product or FEMP designated product under paragraph (1) if the head of the agency finds in writing that—

(A) an Energy Star product or FEMP designated product is not cost-effective over the life of the product taking energy cost savings into account; or

(B) no Energy Star product or FEMP designated product is reasonably available

-Energy Policy Act 2005 Sec. 104a