



O. Beach
EPCW

MARINE CORPS EXCHANGE 0131
MARINE CORPS BASE
CAMP LEJEUNE, NC 28542-5003

IN REPLY REFER TO:

Ex0 11300.1C
MCEX-4
15 Apr 87

EXCHANGE ORDER 11300.1C

From: Marine Corps Exchange Officer
To: Distribution List

Subj: Energy Conservation

Encl: (1) Guidelines for Energy Conservation

1. Purpose. To provide guidance concerning energy conservation.
2. Cancellation. Ex0 11300.1B
3. General

a. The continuous rise in the cost of utilities is of major concern. All Exchange employees must exercise every possible initiative to conserve energy not only because of the Federal Government's energy conservation policy, but the pure economics of energy conservation and its effect on net profit.

b. The Exchange paid almost one million dollars (\$965,950) for utilities in 1986.

c. The enclosure contains guidelines concerning energy conservation which when properly implemented by each manager/supervisor will result in meeting the Federal Government's energy conservation policy and a reduction in the operating expenses of the Exchange.

4. Action

a. Managers/Supervisors. As applicable, implement the energy conservation measures set forth in the enclosure.

b. Exchange Chief. Cause Exchange Inspectors to inspect and ascertain compliance with this Order.

D. ROBINSON JR.

DISTRIBUTION: "A"

Copy to: AFGE, Local 2065, P. O. Box 251, Jacksonville, NC 28540
Internal Audit Team #2, Box 136, Tarawa Terrace, NC 28543



GUIDELINES FOR ENERGY CONSERVATION

The following guidelines, as applicable, are provided to utilize the minimum amount of energy without impairing patron service or comfort.

1. LIGHTING

- a. When replacing fluorescent tubes consider the use of 35 watt saver tubes instead of the standard 40 watt tube.
- b. Fluorescent tubes with blackened ends will be replaced with new tubes. They are operating at a greatly reduced efficiency but are still consuming the rated electrical power.
- c. Use only those lights in the immediate work area that are essential to a particular endeavor. All other lights should be turned off unless they are required for safety or security reasons.
- d. Fluorescent lights should not be turned off during periods of non-use of less than one hour since any energy savings would be offset by decreased tube life.
- e. Turn off decorative lights at close of business (often overlooked).
- f. Secure portions of seating areas when not required, and extinguish or reduce lighting.
- g. Light only the sections being cleaned by janitorial crews instead of the entire area.
- h. Extinguish night lights, security lights in safe area, etc., during daylight hours.
- i. Remove unnecessary lamps and disconnect ballasts, if applicable.
- j. Color-code light control panels and switches according to a predetermined schedule showing when lights should be turned on and off.
- k. Add additional switch when one switch controls both necessary and unnecessary lighting, if practicable.
- l. A lighting schedule should be developed to assure that only lights required for routine tasks are left on during the course of daily operations (e.g., when no customers are in the store all lights in the sales area need not be turned on). Activity employees should be assigned responsibility to turn lights on and off.
- m. Exterior lights (e.g., in parking lots, service stations, entrance ways and illuminated signs) will be used only during operating hours after dusk or before dawn.

n. Where rooms are adequately illuminated by natural light, supplemental lights will be turned off. Service/filling stations are especially good candidates for this consideration.

2. HEATING, VENTILATING, AND AIR CONDITIONING

a. Heating or cooling of buildings and rooms not frequently occupied by people (e.g., storage areas and empty rooms) should be limited to what is needed to prevent damage to merchandise or equipment which must be maintained at certain temperature.

b. Supplemental heating devices (e.g., portable space heaters) should not be used in exchange facilities.

c. Air-cooled motors and compressors, fans, and condensing coils should be provided with adequate ventilation. Condensing coils, vents, and screens serving air-cooled equipment should be cleaned at least once each month, or more frequently if required. Dirty condensing coils, vents, and screens restrict air flow, increase consumption of energy and reduce efficiency.

d. Turn off fly fans, air curtains and exhaust fans when securing.

e. Install fly fans and air curtains so they will go on and off as the applicable doors are opened and closed.

f. Air curtains should be considered for doors that must remain open for extended periods of time and where warranted due to weather conditions. (Dock seals and bumper-type seals should be considered first.)

g. Don't block heating vents or air-conditioning return ducts with furniture, draperies, or merchandise.

h. Draw or partially close blinds, shades, and draperies on sunny side of buildings in order to reduce cooling loads. Draperies should be closed unless required to be open for lighting, safety, or security reasons.

i. Do not heat or cool closed-off-dining rooms or storage areas to normal temperatures. Turn thermostats up or down as appropriate for these areas.

j. When weather stripping of windows and doors, or correction of other insulation or heating deficiencies is needed, requests for such work should be submitted to the Exchange Maintenance Section for accomplishment. Particular attention should be given to a temporary buildings.

k. The thermometer diagram which follows (Attachment A) graphically illustrates the percentage of energy saved or wasted by setting thermostats above or below normal settings.

1. Entrance doors should be kept closed (when not in use) to minimize load on heating and cooling systems.

m. Turn off heating/cooling systems one hour before closing and turn on one hour prior to opening facilities for business when it is economical to do so.

n. Quantities of outside air being introduced into facilities through the HVAC system for ventilation or vent hood make-up purposes should be checked periodically. The Maintenance Section should be requested to conduct tests on an annual basis. Quantities of ventilation air should be in accordance with the HVAC design. A proper air balance in the facility should be maintained in order to minimize dust and insect intrusion.

3. FOOD PREPARATION EQUIPMENT

a. On solid-top ranges, a 10 to 15 minutes preheat period will bring the surface up to cooking temperature; any additional preheating wastes fuel.

b. Solid-top ranges require flush contact with the utensil - use flat-bottom utensils - pans with dented bottoms waste energy. Any shape of pot or pan may be used on an open flame because the gas flame tailors itself to the shape of the utensil.

c. Reduce fryer temperature during slow periods. If more than one unit is available, secure others completely when not required.

d. Reduce griddle temperatures when not being used. During slow periods, turn off unnecessary burners.

e. Lower the holding temperatures of coffee urn overnight (water jacket).

f. Assure the thermostats on equipment are accurate to prevent use of higher temperatures than desired.

g. Do not energize ranges, ovens, griddles, and fryers early in morning if not required.

h. Do not turn on the steam table too far in advance of serving period, and do not use more water than the manufacturer specifies.

i. Do not pre-heat ovens.

j. Cover pots with lids to retain heat and decrease cooking time.

k. Schedule cooking times to use ovens to capacity.

- l. Cut off short-order equipment and exhaust system during slow periods - use a microwave oven instead to heat hot dogs, prepared hamburgers, etc.
- m. Turn off bun warmers at closing, as well as any other non-required equipment.
- n. Rely more on oven thermostats instead of frequently opening doors to check food (every second the door is opened lowers the temperature 10°F on the average).
- o. Do not load deep fry baskets to more than 2/3 capacity - crowded food takes longer to cook.
- p. Filter fat in deep fryers frequently to remove burned food particles. Build-up of particles on coils requires more energy to maintain temperature.
- q. Keep blades of meat slicers sharp to prevent over-usage.
- r. Use steamer when possible instead of range-top cooking or boiling as cooking times are much shorter.
- s. For flame control on open ranges, regulate burners so that flame tips just touch utensil bottoms. On solid-top ranges, vary the heat for different sections. It is seldom necessary to keep the entire cooking surface at peak heat.
- t. Never overheat griddles in the interest of speed. Use the thermostat.
- u. Use deep-fat fryers rather than frying on a range top.
- v. Defective gas and electrical equipment should be repaired immediately.
- w. Precooked products should be purchased when this is economically sound and quality can be maintained.
- x. Use thermo-pins (or equipment) when roasting to reduce cooking time.
- y. Exhaust fans should be shut off when not required.
- z. Dry storage products should be purchased in lieu of frozen or chilled products where feasible.

4. REFRIGERATED STORAGE EQUIPMENT

a. Wherever possible, consolidate refrigeration and freezer space and locate it away from heat-producing equipment. Disconnect unnecessary or unused refrigeration equipment and report it as excess or dispose of it properly.

b. Keep refrigeration and freezer coils clean. Defrost when build-up exceeds one quarter of an inch.

c. Post signs reminding personnel to keep refrigerator/freezer doors closed.

d. Inspect refrigerator/freezer door gaskets to assure they are in good condition. Replace when required.

e. Assure that all pans are kept in the sandwich-making unit wells to prevent heat gain into the unit itself; keep cover closed whenever practicable.

f. Keep lights off in walk-in reefers when not occupied by personnel.

g. Replace worn gaskets on reefers.

h. Remove frost in excess of 3/16" from equipment.

i. Clearly label items stored in reefers. Place those frequently used near the front to reduce the time that doors are open.

5. DISWASHING EQUIPMENT

a. Fill the dish racks to capacity. The same amount of energy is used whether or not the racks are full.

b. Locate hot water boosters within 5 feet of a dishwashing machine to avoid heat loss in the pipes.

c. Dishwashing equipment should be turned off when it is not scheduled for use for an extended period.

d. Reduce temperature settings for water heaters, except for dishwasher supply.

6. WATER USAGE

a. Water should not be left running when not needed. Leaky water faucets should be repaired immediately upon detection. (A slow drip can waste about 15 gallons of water per day. Leaky hot water faucets also waste the gas or electricity used to heat the water).

- b. Repair dripping faucets.
- c. Do not permit water to run in sinks when not required.
- d. Control flow of water in ice cream dipper wells (minimize).
- e. Place "save water" signs wherever water is used.
- f. Do not hose down galleys - use buckets and swabs.

7. ENERGY REDUCTION FOR FOOD PREP AND EXCHANGE RESALE ACTIVITIES

- a. Turn off refrigeration for cutting rooms, prep rooms, and some display fixtures, such as meat cases, when not in use. Put all food products in coolers where possible.
- b. Keep return grilles of fixtures clear of stacked products, otherwise refrigerated air will flow into aisles.
- c. As customers shop from fixtures throughout the day, repack product displays and keep them below load lines.
- d. With multi-shelf fixtures, follow the recommendations of manufacturers in regard to shelf position and size to prevent increased refrigeration loads.
- e. Do not permit refrigerated products to stand in the aisles, on docks, or any place where they will warm up, and create an additional refrigeration load when the products are placed in fixtures.
- f. Avoid setting controls (pressure and temperature) any lower than necessary. Too often, a freezer may be operating at -30°F air temperature when most often a -10°F or higher is all that is necessary.
- g. Keep products below clearly marked load lines. An overload display case decreases product quality and increases energy use as much as 10 to 20% for each fixture.
- h. Avoid prolonged opening of walk-in box, cooler and freezer doors. Walk-in boxes should be provided with double swing interior door seals or "streamers."
- i. Reduce or turn off entirely the internal shelf lights to reduce both refrigeration requirements and the lighting load.
- j. Automatically shut off all prep rooms at night and weekends. Set up for automatic start-up when required.

A. ENERGY REDUCTION IN CONJUNCTION WITH RENOVATION/ALTERATION PROJECTS

- a. Walls and top floor ceilings will be insulated to a minimum depth of six inches. Vapor barriers will be installed to prevent air leaks and moisture migration.
- b. Double-glazed windows should be considered in lieu of storm windows to reduce size and load of air-conditioning units.
- c. Provides air locks to prevent the escape of heated/cooled air at main entrance/exit points of facilities. Use dock shelters on warehouse doors to reduce heat loss when the doors are required to remain open.
- d. Use the economy air cycle based on temperature difference from outside air to reduce running time loads on air-conditioning equipment.
- e. Use an outside temperature-sensing unit to modulate hot water heating systems by increasing water temperatures as outside air drops and decreasing water temperature as outside air rises.
- f. Replace cracked or broken windows at once to eliminate heat gain or heat loss.
- g. Assure that there are door checks in good working order and keep all exterior doors closed.
- h. Provide a positive shut-off heating system when outside air temperature reaches 65°F. Provide positive shut-off of the air-conditioning system when outside air temperatures drop to 60°F and an economizer cycle is provided.
- i. Limit electrical input for air-conditioning equipment less than 60,000 BTUH to no less than 7.5 BTUH per watt input.
- j. Limit electrical input to 4,500 watts for electric hot water heaters of 80 gallons or less capacity.
- k. Use self-closing flushometers on sink faucets and urinals in customer restrooms.
- l. Use combination hot/cold water faucets on sinks in all facilities.
- m. Consider air-cooled light fixtures in high intensity areas to remove generated heat. Give consideration to using this heat elsewhere in the building rather than simply exhausting it.

- n. Consider the uses of higher voltage lighting systems in larger buildings (480/277 volt systems) to reduce wire sizes and to provide longer lamp life.
- o. Use programmed control through clocks or other systems for night, weekend, and holiday temperature set back (or cut-off) to reduce air-conditioning loads. At locations where supervisory control units are installed or are being installed, consider connecting new facilities to that control system.
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- p. Consider providing reduced amounts of outside air since most ventilation air supplies are excessive.
- q. Consider using built-up water-to-air heat pumps in larger buildings.
- r. Consider the heat pump principle in winter to transfer excess heat from windowless interior space to perimeter space or to cool high heat-gain areas such as Electronic Data Processing space in winter and use waste heat in exterior offices.
- s. Use refrigerated display equipment with glass doors in lieu of air screen type.
- t. Consider the use of attic exhaust fans where economically feasible.
- u. Review the source of energy selected for heating large facilities. Alternate sources may now be more abundant/economical than the source originally chosen.
- v. Where possible, main entrance doors shall be provided with vestibules or double set of main entrance doors to prevent heat loss or gain to the interior building environment. Installed vestibules shall meet fire/safety standards.
- w. Adjustable metal awnings should be installed on windows that face the afternoon sun to reduce solar heat during the cooling seasons and retracted during the heating season to provide solar radiation.

GUIDELINES FOR ENERGY REDUCTION

RELATIONSHIP OF TEMPERATURE SETTINGS
TO ENERGY CONSUMPTION

COOLING

Consumption of energy when room temperatures are maintained above and below normal setting (76 degrees)

HEATING

Consumption of energy when temperatures are maintained above and below normal setting (72 degrees)



