



UNITED STATES MARINE CORPS
MARINE AIR GROUND TASK FORCE TRAINING COMMAND
MARINE CORPS AIR GROUND COMBAT CENTER
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CCO 4100.3D

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APR 04 2005

COMBAT CENTER ORDER 4100.3D

From: Commanding General, Marine Air Ground Task Force Training Command,
Marine Corps Air Ground Combat Center

To: Distribution List

Subj: UTILITIES CONSERVATION

Ref: (a) MCO P11000.9C

Encl: (1) Composition of the Combat Center Utility Conservation and
Appraisal Board (UCAB)
(2) Water Conservation
(3) Reports and Check Lists
(4) Building Temperature Settings
(5) Energy Conservation Plan

1. Situation

a. General. The problem of providing adequate utility services at this activity is becoming more difficult due to the limited availability of funds, resources and personnel; compounded by continually soaring utility rates and a growing base population. The establishment of an aggressive, effective utilities conservation program to prevent waste cannot be over emphasized. Our objective is to conserve energy while maintaining operational readiness. The policy of "no growth" above FY 1988 energy consumption levels has been established as the Marine Corps energy conservation goal. The reference requires a 20 percent reduction in energy consumption of existing federal buildings by FY 2000, a 30 percent reduction by FY 2005, and a 35 percent reduction by 2010, based on FY 1985 consumption levels.

b. Water. Water is a scarce and valuable commodity in the Mojave Desert. Here at the Combat Center we are fortunate to have our own water supply. This water supply is not inexhaustible and natural replenishment is minimal to nonexistent. The expense of pumping water is only a small part of the need to conserve. The ever-growing population of the Combat Center puts an increased strain on MCAGCC's water supply. The prime contributors to excessive water consumption are lawn watering and evaporative cooling. Strict adherence to watering hours and other conservation measures are a must in this desert environment.

c. Electricity. The cost of procuring electrical power continues to soar. The Combat Center has spent an average of \$7,700,000.00 annually over the past three years for electricity. Adherence to the guidelines of this Order will offer immediate energy and dollar savings. For example, according to the Federal Energy Administration, raising the thermostat from 72 to 78 degrees Fahrenheit on a 100 degrees Fahrenheit day can save 30 percent on energy expended for air conditioning. A dirty air filter or coil can reduce the efficiency of a cooling system by 25 percent or more. The efficient use of electrical energy must become everyone's concern.

d. Natural Gas. A large number of heating systems on the base are supplied with high temperature hot water that is generated by a central heat plant. Family housing units are also heated with natural gas. The reference stipulates that heating temperatures will be set at 65 to 68 degrees Fahrenheit in living/working areas. By adjusting temperatures accordingly we can reduce natural gas consumption significantly.

2. Cancellation. CCO 4100.3C.

3. Mission. To establish the Combat Center Utilities Conservation and Appraisal Board and utilities conservation requirements and procedures for Marine Air Ground Task Force Training Command (MAGFTC), Marine Corps Air Ground Combat Center (MCAGCC), Twentynine Palms, California.

4. Execution

a. Commander's Intent. Commanding Officers, Directors, and Officers-in-Charge will ensure compliance and issue amplifying instructions as appropriate.

b. Concept of Operations. Diligence and fiscal prudence will be used in managing utilities conservation.

c. Utilities Conservation and Appraisal Board

(1) Purpose and Duties. The UCAB is responsible for planning and pursuing a progressive utilities conservation program. The UCAB will ensure that targets are established and utilized in the implementation of conservation survey recommendations. The UCAB will prepare utility conservation instructions, notices, posters, bulletins, etc., as required by prevailing conditions.

(2) Membership. Membership of the UCAB shall consist of the Director, Installation and Logistics, or a representative, and all others as noted within enclosure (1).

(3) Meetings. The UCAB will meet quarterly or as required. Minutes of the meetings and recommendations will be provided to the Commanding General for review.

d. Director, Installation and Logistics

(1) Issue warning letters to those housing occupants and tenant activities that have violated the warning provisions of enclosure (2) twice.

(2) Upon a third violation, review the housing occupant's eligibility to retain quarters and possibly terminate the sponsor's assignment.

e. Facilities Maintenance Officer. Designated as the Utilities Conservation Officer. Report violations of the provisions of enclosure (2) to the Combat Center Housing Office.

(1) The Utilities Conservation Officer, or representative, will conduct random energy conservation inspections using the forms contained in enclosure (3). Building/area supervisors, OIC's or SNCOIC's will receive copies of these inspections.

(2) Unit Commanders, Branch Heads and/or Section Heads will be notified of repeat violations.

f. Family Housing Manager

(1) Ensure that extracts of this Order are provided to each sponsor and/or family residing in government quarters.

(2) Ensure that watering of lawns and washing of privately owned vehicles (POVs) are in compliance with times set forth in enclosure (2).

(3) Ensure that tenants maximize water conservation by watering in such a manner as to prevent run-off on sidewalks and gutters.

(4) Issue family housing citations to those occupants who violate this Order.

(5) Notify the Director, Installation and Logistics, of occupants who violate this Order more than once.

g. Provost Marshal's Office. In the conduct of routine patrols, report violations of this order to the Combat Center Housing Manager or Facilities Maintenance Officer as appropriate.

h. Unit Commanders/OICs/Section Heads

(1) Ensure the widest dissemination of the contents of this Order.

(2) Enforce the provisions of enclosures (2), (4), and (5).

i. Branch and Section Supervisors/OICs/SNCOICs are designated as building/area energy monitors. These individuals will:

(1) Ensure that all building/area occupants are instructed in the conservation of energy.

(2) Conduct inspections and continually monitor their assigned building/area to ensure compliance with the applicable portions of the Energy Conservation Inspection Checklist at enclosure (3). Inspections will be conducted at least monthly during duty hours or, when applicable, after duty hours. Inspection forms will be retained for 12 months. In addition, daily surveys of assigned building/area will be conducted to observe and correct any obvious energy conservation deficiencies.

(3) Notify individuals within their building/area of energy conservation violations and ensure that corrective action is taken.

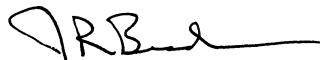
j. MAGTFTC, MCAGCC Inspector. During the course of Combat Center inspections, the MAGTFTC, MCAGCC Inspector will ensure compliance with the enclosures and inform the respective unit commanders of all violations requiring corrective action.

5. Administration and Logistics. Distribution Statement A-1 directives issued by the Commanding General are distributed via e-mail. This Order can be viewed at <http://www.29palms.usmc.mil/manpower/adj>.

CCO 4100.3D

6. Command and Signal

- a. Signal. This Order is effective the date signed.
- b. Command. This Order is applicable to the Marine Corps Total Force.



J. R. BRADEN
Chief of Staff

DISTRIBUTION: A-1

Composition of the Combat Center Utility
Conservation and Appraisal Board (UCAB)

1. Per the reference, the Combat Center UCAB shall consist of representatives from the following units/sections:

Head, Facilities Maintenance Division	Chairperson
Maintenance Branch	Member
Engineering Branch	Member
Family Housing Officer	Member
Southwest Region Fleet Transportation	Member
Comptroller Directorate	Member
Inspector Division	Member
Facilities Maintenance Energy Manager	Advisor

2. Directors/Commanding Officers or designated representatives from the following units/sections shall be available as on-call task group members of the UCAB:

Operations and Training Directorate
 Manpower Directorate
 Communications and Data Directorate
 Marine Corps Community Services
 Business Management Directorate
 Headquarters Battalion
 Marine Corps Communication-Electronics School
 Combat Service Support Group 1
 Marine Wing Support Squadron 374
 7th Marines

Water Conservation

1. Lawns

a. Prior to planting grass, a request must be submitted to the Energy Manager and approved by the UCAB.

b. The objective is to apply an adequate amount of water to ensure healthy lawns and plants. Run-off, over watering, and excessive evaporation must be avoided. With a common sense approach, water can be conserved and lawns kept green.

c. In mixed planting, the best solution is a combination of several light waterings for the lawn with less frequent heavy watering for deeper-rooted trees and shrubs, all properly timed. In no case is daily watering needed for established lawns.

d. On vigorous and well-fertilized lawns, watering may be withheld until the first wilting symptoms appear. Brown spots may develop in nitrogen deficient lawns before wilting occurs. Heavy watering is often misused as a corrective effort when actually fertilization is needed. If Bermuda grass is watered sparingly it will turn yellow and go dormant, but not die.

e. For additional information or specific questions contact the Facilities Management Division, Family Housing Office, or a local nursery.

2. Trees

a. All trees should be watered deep to prevent roots growing near the surface and ruining the lawn. The shallow roots make a tree susceptible to being blown over by high winds. Trees and shrubs that are improperly watered often become yellowish green, brown tipped, or partly defoliated. Frequent light irrigation can cause twig dieback of trees and shrubs growing in lawns.

b. Different methods may be employed for younger trees and shrubs, use a watering well consisting of a six-inch high berm about 24 inches from the tree trunk. This will hold the water around the base of the tree and allow it to soak into the root zone. As a general rule, apply about six gallons of water per foot of height. Apply the water slowly to allow it to soak in. Watering may be needed three or more times per week in hot weather and monthly or bi-weekly in winter. Watering mature trees should be accomplished every 30 days using approximately five gallons of water applied slowly near the base of the trunk to allow it to soak into the ground.

3. Watering Hours

a. April through May. Up to five times weekly, not to exceed one hour per day, before 0800 or after 1800.

b. June through September. Up to seven times weekly, not to exceed one hour per day, before 0800 or after 1800.

c. October through March. Up to two times weekly, not to exceed one hour per day, before 0800 or after 1800.

d. Watering During Heat of Day. Never water during the heat of the day as some of the water will evaporate and plants tend to wilt.

e. Hand Watering and POV Washing. Permitted during watering hours only and should not exceed 30 minutes.

f. Tactical and Commercial Vehicles. The tactical vehicle wash rack (building 1944) is available for washing tactical and commercial vehicles. This facility recycles water, and does not use water from the Surprise Springs aquifer. Contact GMED for liaison, extension 7317/7302.

4. Rules for Watering

a. Washing of driveways and walkways prohibited.

b. Do not leave a sprinkler in one place long enough to cause run-off onto street or sidewalk.

c. Use self-closing nozzles on hoses.

5. Additional Conservation Measures

a. Close water tap when not in use.

b. Do not run water at a rate exceeding immediate requirements.

c. Do not hold down the handle of automatic flushing valves on plumbing fixtures.

d. Operate fountains only when actually drinking.

e. Shut off leaking fixtures, if possible, pending repairs.

f. Take short showers instead of baths. Normally a bath will use 10 gallons more than a short shower.

g. Turn off the faucet while shaving or brushing teeth.

h. Accumulate a full load of clothes or dishes before washing them.

i. Keep a water bottle in the refrigerator rather than running the tap to cool drinking water each time.

Reports and Check Lists

Inspection Report

Inspection Checklist - Building/Area Monitor Inspection Date: _____

Building/Area No: _____ Organization: _____

Name of Building/Area Monitor: _____ Telephone: _____

- 1. Are weekly inspections being completed, including the corrective action taken and the checklist on file for one year? YES / NO
- 2. Are authorized temperature limits for both day and night posted in buildings? YES / NO
- 3. Are air conditioning systems operated off an outdoor air thermostat? YES / NO
- 4. Are heating/cooling registers closed off in rooms not being used? YES / NO
- 5. Are portable electric heaters or cooling fans being used without permission from the Utilities Conservation and Appraisal Board? YES / NO
- 6. Are lights off in unoccupied areas? YES / NO
- 7. Have requests for repairs been made for energy conservation purposes? YES / NO
- 8. Are exhaust fans operating simultaneously with refrigerated air units? YES / NO
- 9. Are all doors closed during heating/cooling, except for times of entry and exit? ... YES / NO
- 10. Are air coolers shut off one-half hour before the close of business during cooling months? YES / NO
- 11. Are thermostats set at 55 degrees during non-working hours during heating months? . YES / NO
- 12. Are water faucets shut off when not in use? YES / NO
- 13. Do all washbasins, sinks, and wash trays have stoppers? YES / NO
- 14. Are there leaking faucets or fixtures? Have work requests been submitted? YES / NO
- 15. Is there excess spillage of water from lawn irrigation? YES / NO

REMARKS:

Building/Area Monitor: _____ Date: _____

Signature

Inspector: _____ Date: _____

Signature

Heating Season

- 1. Are authorized temperature limits for both day and night posted in building? YES / NO
- 2. Are thermostats set at 68 degrees? YES / NO
- 3. Are heating units for clubs, theaters, exchanges, and similar community-type activities used only during occupied hours? Are temperatures set back during non-occupied hours? YES / NO
- 4. Are all large doors closed during the heating season? YES / NO
- 5. Are windows closed during the heating season? YES / NO
- 6. Are heating registers closed off in rooms not being used? YES / NO
- 7. Is outdoor lighting turned off during daylight hours and non-use nighttime? YES / NO
- 8. Are lights kept off in unoccupied areas? YES / NO
- 9. Are electrical converters operating when output is not being used? YES / NO
- 10. Are portable heaters in use without authorization? YES / NO
- 11. Are all unnecessary exterior lights off? YES / NO
- 12. Have requests for repairs that are beyond the capability of self-help been made? ... YES / NO

Cooling Season

- 1. Are authorized temperature limits for both day and night posted in building? YES / NO
- 2. Are cooling systems for clubs, theaters, exchanges, and similar community-type activities limited to hours of occupancy? YES / NO
- 3. Are all large doors closed during cooling of the building? YES / NO
- 4. Are windows closed when air conditioners are running? YES / NO
- 5. Are some windows slightly opened to assist evaporative cooling? YES / NO
- 6. Are cooling registers closed off in rooms not being used? YES / NO
- 7. Are all unnecessary exterior lights off? YES / NO
- 8. Are lights kept off in unoccupied areas? YES / NO
- 9. Are electrical converters operating when output is not being used? YES / NO
- 10. Are air conditioners and cooling systems operating only after 0900? YES / NO
- 11. Are cooling systems being shut off one-half hour before close of business? YES / NO
- 12. Have requests for repairs been made that are beyond the capability of self help? .. YES / NO

Building/Area Monitor: _____ Date: _____
Signature

Inspector: _____ Date: _____
Signature

Energy Conservation Violation Notice

Building Number: . _____

Person Responsible: _____

Organization (If applicable): _____

1. Reference MAGTF/TC, MCAGCC ORDER 4100.3D, Utilities Conservation.
2. The following energy conservation violation(s) was (were) noted at _____ (time), on _____ (date):

VIOLATIONS: _____

3. A copy of this notice will be routed through command channels if this is the third notice.

Energy Conservation Inspector

Building Temperature Settings

<u>Type of Structure</u>	<u>Maximum Temp Setting (Heating Season)</u>	<u>Minimum Temp Setting (Cooling Season)</u>
Administrative	68	75
Chapels	68	75
Child Care	70	75
Clubs	68	78
Commissary	68	75
Medical/Dental		
Admin Areas	68	75
Exam/Treatment Rooms	70	75
Ward	68	75
Exchanges	65	75
Industrial		
General	60	80
Offices	68	75
Paint Shops	65	78
Billeting		
BEQs/BOQs	68	75
Family Housing	68	75
Recreation		
Bowling Facility	68	78
Dressing/Locker Rooms	68	78
Gymnasiums	65	78
Hobby Shops	65	78
Libraries	68	75
Recreation Rooms	68	78
Theatre	68	78
Storage/Warehousing		
Admin Areas	68	75
General Storage Areas	60	80
Heads	68	78
Issue Points	65	78
Subsistence		
Galley	60	80
Mess Deck	68	78
Scullery	60	80

Energy Conservation Plan

1. Policy

a. Lighting. Energy consumed for lighting shall be reduced by removing non-essential lamps, and by applying non-uniform lighting levels to existing lighting systems. Change to a lower wattage lamp whenever possible. Replace incandescent lamps with compact fluorescent lamps having a comparable number of lumens (see figure 1). For example, a nine watt compact fluorescent bulb will produce illumination equal to a 60 watt incandescent bulb with considerable energy savings. Remove unnecessary lamps in rooms where all lights operate on one switch. The simplest and most efficient way to reduce the amount of lighting is to remove some of the lamps. This is particularly true where you have rows of ceiling lights. When removing two fluorescent lamps in a four-foot fixture as a permanent lighting reduction, (as an example in a four lamp fixture) the ballast should also be disconnected. Ballasts consume a constant 3-4 watt load if left connected. This could add up if de-lamping several fixtures. Lights will be turned off if room is to be vacated for 15 minutes or more. After hours and exterior lighting shall be eliminated except where it is essential for safety, security or recreational purposes. All inefficient High Intensity Discharge (HID) exterior lighting, such as Mercury Vapor should be eliminated or replaced. Where a high degree of color rendering is not required, only High Pressure Sodium Fixtures should be installed for safety and security reasons. See figure 1. Contact the Facilities Maintenance Branch for assistance in determining proper lighting application and levels.

Figure 1

Light Source Efficiencies

Approximate Lumens Per Watt

Incandescent	9-24
Fluorescent	65-90
Mercury Vapor	34-53
Metal Halide	67-117
High Pressure Sodium	55-126
Low Pressure Sodium	73-129
	(monochromatic light source)

b. Heating and Cooling. Energy consumed for heating and cooling shall be reduced. During the heating season, temperature control devices shall be set to maintain 65-68 degrees Fahrenheit range depending on the type of occupancy and activity in the space. During the cooling season, increasing the thermostat setting from 72 to 78 degrees Fahrenheit can reduce energy consumption by 30 percent for refrigerated air conditioning. Doors and windows must remain closed while refrigerated air conditioning is in operation. Keeping window coverings closed during sun exposed side of the building will help to reduce heat gain and cooling load to the building envelope. Unlike refrigerated air conditioning, which cools inside air, evaporative coolers cool the inside air stream by displacing heat from the outside air. Cooling depends on the warm, inside airflow being replaced. Therefore, in areas using sensible cooling (evaporative coolers), windows will have to be open slightly to increase the efficiency of these systems. Some buildings that are designed for evaporative cooling use a return duct to

exhaust the warm air being replaced by the evaporative cooler. In this case, make sure windows and doors are kept closed. Prudent use of air conditioning must be maintained so that the installation does not exceed its energy goal as established by the Department of Defense.

c. Additional Air Conditioning Units. Requests for additional air conditioning units must be submitted to the Energy Manager and approved by the UCAB prior to purchase and installation.

d. Threshold Heaters, Portable Heaters, and Portable Cooling Devices. Are prohibited.

e. Exceptions. Exceptions to the policies prescribed in this enclosure may be necessary for protection and operation of certain specialized equipment such as computers or such areas as the Naval Hospital. Such exceptions may be granted by the UCAB after consulting with appropriate technical personnel of the unit requesting the exception and the presentation of necessary supporting evidence.

2. Required Actions

a. Electricity.

(1) Outdoor lighting which is not required for mission, safety or security purposes will be discontinued. This is being reviewed on a continuing basis, and any unnecessary lighting will be turned off or disconnected.

(2) Electrical converters (400 hertz) will not be operated when output is not being used.

(3) General interior lighting levels will be limited to 50 foot-candles at workstations, 30 foot-candles in work areas, and 10 foot-candles in non-work areas. Contact the Facilities Maintenance Branch for assistance in determining adequate lighting levels.

(4) Computers, fans, coffee makers, and all other appliances and electricity-consuming devices will be energy star compliant and will be turned off at the end of the workday or during the day when no longer needed for use. All new copiers must have a power saver switch on them that will automatically put them in the power saver mode.

b. Heating. The temperatures (degrees Fahrenheit) listed in enclosure (4) are the maximum temperatures allowed during the heating season.

(1) In those buildings which allow occupants to control the heating, temperatures will be reduced during periods of non-occupancy (overnight, weekends, and holidays) to 55 degrees Fahrenheit or lowest thermostat setting if the thermostat cannot be reduced to 55 degrees Fahrenheit. The amount of time it takes to warm buildings up is minimal compared to the energy saved.

(2) Ventilation of buildings during heating periods will be limited to that necessary for health of occupants.

(3) Heat will not be provided when the outdoor temperature exceeds 60 degrees Fahrenheit. For buildings not on the high temperature hot water distribution system, heaters will not be placed into winter operation until the outdoor temperature falls below 60 degrees Fahrenheit between 0600 and 2200 for three consecutive days.

(4) Unused spaces will not be heated; close off registers or air ducts to spaces not being used. Contact the Facilities Maintenance Branch if a building is to be unoccupied for one week or longer (deployments, field exercises, etc.).

(5) Large doors in warehouses and shops will not be left open while areas are being heated.

c. Cooling. The temperatures (degrees Fahrenheit) listed in enclosure (4) are the minimum temperatures allowed during the cooling season.

(1) In all cases, air conditioners and cooling systems will not be operated before 0900 or after 2200, except when an exception to this policy is requested in writing and approved by this headquarters.

(2) Air conditioners and evaporative coolers will not be turned on unless the temperature is higher than 75 degrees Fahrenheit inside or 75 degrees Fahrenheit outside.

(3) Unused spaces will not be cooled; close off registers of rooms not being used. Contact Facilities Maintenance Branch if a building is to be unoccupied for one week or longer (deployments, field exercises, etc.).

(4) Do not leave large doors open in warehouses and shops while cooling the area.

(5) Shut off air conditioners one-half hour before the close of business. As with heating, the cool down time in the morning is minimal compared to energy savings.

(6) Use only the blower to purge warm air from buildings in the morning before turning on.

3. Additional Conservation Measures

a. Keep windows and doors shut and close drapes and blinds at the end of the workday.

b. Check weather stripping around windows, doors, and window air coolers. Request to have it installed or replaced if necessary.

c. Do not put furniture or equipment in front of return air intake that will obstruct airflow to furnaces and air conditioning units in the building.

d. All areas requiring higher temperatures, such as paint shops, should schedule their operations to take maximum advantage of warm weather and highest daytime temperature during cold weather.

e. Request that exterior door closers be adjusted to ensure doors close tightly.

f. Request through Facilities Maintenance that air filters be cleaned or replaced if there is reduced airflow.

g. Do not use hot water if warm or cool water will do. Next to heating and cooling equipment, the water heater is the most expensive appliance to operate.

h. Turn off lights in all facilities when not in use.

i. Deactivate lighting fixtures in place to achieve mandatory reduced lighting levels. Fixtures need not be removed, but must be tagged to prevent maintenance crews from reconnecting. Install phantom tubes on rapid-start fluorescent fixtures to reduce light densities. If the lamps are removed as a permanent light reduction on F32T8 (4-foot bi-pin lamps), then the ballast should also be disconnected by a qualified electrician.

j. Limit use of equipment and appliances to the minimum essential. Turn off/disconnect energy consuming appliances when not in use.

k. Use minimum wattage light bulbs consistent with safety and work requirements. When possible substitute fluorescent equivalent lumen output lamps to replace standard medium base incandescent lamps of a higher wattage.

l. Light is energy; use or reject solar heating as required. Open blinds and curtains during the heating months to allow the sun to assist in heating requirements. Similarly, close blinds and curtains during the summer months to prevent solar heat gain to air-conditioned space.

m. Use the energy saver switch on refrigerators. This switches off a device for a small heating element that reduces condensation around refrigerator and freezer doors and is typically not required in the desert environment. Similarly, the drying heat element on automatic dishwashers is typically not required in a low humidity environment.

n. After-hours classes held in Base sponsored buildings for private colleges in support of Marines will submit a list of buildings and rooms being used to the Energy Manager. Every effort will be made to use as few buildings as possible to limit energy usage.