



DEPARTMENT OF THE NAVY
COMMANDER SINGAPORE AREA COORDINATOR
FPO AP 96534-2100

SACINST 4100.1
N4

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SINGAPORE AREA COORDINATOR INSTRUCTION 4100.1

From: Commander, Singapore Area Coordinator

Subj: ENERGY CONSERVATION

Ref: (a) OPNAVINST 4100.5D
(b) Executive Order 13123
(c) 10 CFR Part 435

Encl: (1) Energy Management Guidelines

1. Purpose. To provide policies and procedures for the implementation of energy conservation actions required by all departments and tenant commands of Singapore Area Coordinator (SAC). This instruction will also describe energy conservation support available to SAC Public Works Department's (PWD) customers to help them achieve their energy conservation goals.

2. Cancellation: NAVREGCONTENINST 4100.1

3. Scope. This instruction applies to all departments and tenant commands of Singapore Area Coordinator.

4. Discussion

a. The need for effective energy management has been established by the rapidly increasing prices for energy commodities and by the decreasing availability of conventional energy resources. Reference (a) recognized the importance of energy management to the Navy and established specific energy conservation goals and assigned responsibilities for insuring these goals are met.

b. Reference (a), signed by the President on January 24, 2007, directs commands to reduce their FY03 MBTU/KSF level by 3 percent (3%) a year or 30 percent (30%) by 2015 (compared to 2% per year and 20% overall from EAct 2005)

5. Policy. We must minimize energy consumption wherever possible without adversely affecting mission requirements, building materials or systems, or the quality of life of personnel living in the facility. This commitment must be fostered throughout each Command so every employee is aware of the current energy situation

and is given an opportunity to contribute to our success in achieving these energy reduction goals.

a. Comfort Cooling. Administrative Spaces - The minimum thermostat setting for cooling is no lower than 74°F (23.3°C). During unoccupied hours, cooling systems shall be secured when practicable.

b. Hot Water Temperatures. For other than special purposes (laundries, galleys, etc.), hot water temperatures shall not exceed 105°F (40.6°C).

c. Interior Lighting. Administrative Areas - Overhead lighting shall be 50 foot-candles at workstations, 30 foot-candles in work areas and 10 foot-candles in passageways. During unoccupied hours lighting systems will be secured. Minimize the use of incandescent lighting. High efficiency fluorescent and other high efficiency lighting systems shall be used to the maximum extent possible.

d. Exterior Lighting. Maximize the use of high efficiency equipment such as high-pressure sodium lighting. Exterior lighting shall be turned off when not required, utilize automatic controls such as photocells and time clocks.

e. Ventilating, and Air Conditioning Systems (HVAC). Operate and maintain HVAC to minimize energy usage with particular attention paid to calibration and adjustment of controls, reduction of damper air leakage and efficient operation of chilled water systems.

f. Weatherization. All buildings shall be weatherized as appropriate for facility type, use and location.

g. Portable Heaters. Portable heaters will not be authorized except under specific circumstances authorized by the Public Works Officer (PWO).

h. Office Information Technology (IT) Equipment. Practice energy efficient computing by implementing the following measures:

(1) Whenever technically feasible, enable all network connected devices to automatically enter a low power state when not in continuous operation during normal working hours. A standard set of Monitor Power Management (MPM) and Computer Power Management (CPM) settings will be pushed via Group Policies to all network connected workstations

(2) OneNet-controlled users will keep all network connected computers which require security configuration updates

powered on 24/7 and power off monitors, speakers and all other non-network peripherals connected to each individual computer at the end of the duty day and during periods of extended absences.

(3) All new office equipment purchases meet energy efficiency criteria as defined by the U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE).

a. New Work or tenant Growth. All new work must achieve a net electricity reduction of ten percent (10%) from the baseline prior to work being started. If the ten percent (10%) reduction cannot be achieved within the project scope, then energy offsets elsewhere must be implemented at customer's cost to achieve the net overall reduction of 10%.

6. Energy Conservation Programs and Policies. The PWO is responsible for conducting the facility energy conservation program. Additionally, the PWO will review and recommend to the SAC, actions required to comply with references (a) and (b).

7. Energy Conservation Improvement Report. All personnel are encouraged to suggest energy conservation improvement items to designated energy conservation coordinators. If appropriate, the coordinator will submit a written Energy Conservation Improvement Report to the PWO outlining the improvement idea.

8. Responsibilities and Actions.

a. Dissemination of energy conservation measures. Commanding Officers, Officers in Charge, and Department Heads shall:

(1) Ensure that all personnel comply with the guidelines of enclosure (1). Requests for exemptions shall be approved by the PWO.

(2) Appoint by memorandum, with a copy to the PWO, a department or activity Energy Monitor within their command.

(3) Ensure that Energy Monitors attend quarterly energy conservation information/training sessions and disseminate information to command's personnel.

(4) The SAC PWO will appoint a Facility Energy Manager to lead the Energy Management Committee comprising of tenant Energy Monitors which will assist the Facility Energy Manager in implementing the installation energy management program. Committee members will strive to achieve all energy conservation goals by completing the actions specified in enclosure (1).

b. Facility Energy Manager

(1) Coordinates the actions of enclosure (1) and sets goals and objectives to the Environmental Management System.

(2) Monitors the progress of implementing enclosure (1).

(3) Develops guidance and training assistance for the energy monitors.

(4) Stresses energy efficient ideas through the incentive awards and other similar programs.

c. Energy Monitors

(1) Ensure that all personnel help conserve energy by carrying out the duties listed in Appendix 2 of enclosure (1).

d. All Personnel. Practice energy conservation in their daily routines and support all directed energy conservation programs.



P. J. Foster
Deputy

Distribution:

I & II

TABLE OF CONTENTS
Energy Management Guidelines

<u>INDENTIFICATION</u>	<u>PAGE</u>
1. SUMMARY	1
2. OBJECTIVES	1
3. ENERGY PROGRAM AND REQUIRED ACTIONS	1
A. Utilities Cost Reduction	1
1. Energy Metering Effectiveness	1
2. Utilities Efficiency Improvement	1
B. Customer Support	3
1. DUERS Consumption/Square Foot Update	3
2. Energy Management Support to Tenant Activities	3
C. PWD Program	4
1. PW Energy Monitor Effectiveness	4
2. Energy Conservation Projects	5
3. Energy Conservation Publicity	5
4. ELECTRIC POWER CONSERVATION GUIDELINES	5
5. WATER CONSERVATION CHECKLIST	6
6. ALLOWABLE ROOM TEMPERATURES CHECK LIST	7
APPENDIX 1. REQUIRED REPORTS	8
APPENDIX 2. DUTIES OF THE ENERGY MONITORS	9
APPENDIX 3. ENERGY AUDIT CHECKLIST	11

LIST OF TABLES

Building 11
Lighting 12
Cooling 13
Miscellaneous 14

1. Summary. The concept of the NRCS Singapore's Energy Management Plan (EMP) is to continually support the Navy's efforts to implement programs aimed at effectively using energy resources.

2. Objectives. The overall objectives of the EMP are as follows:

- a. Maintain readiness, productivity, and quality of life.
- b. Provide energy resources in their most cost effective and practical manner.
- c. Provide the latest technical, engineering, and management support in the area of energy conservation to all customer activities.
- d. Promote and maintain appropriate procedures to implement an effective water conservation program.

3. Energy Program and Required Actions

- a. Utilities Cost Reduction
 - (1) Energy Metering Effectiveness
 - (a) Improvement Goal is to review existing and planned utilities systems metering. Determine adequacy of both systems for billing purposes and energy management.
 - (b) Actions required.
 - 1. Identify additional metering required, along with funding source and responsibility.
 - 2. Review utilities systems under all schemes of operation to ensure their proper metering so the appropriate activity receives the cost or benefit.
 - (2) Utilities Efficiency Improvement
 - (a) Improvement Goal is to reduce SAC electrical consumption through low-cost, common sense actions.
 - (b) Actions required.

Enclosure (1)

1. Turnoff lights after work (for all Departments).
2. Properly adjust thermostats and other controls (for all Departments).
3. Properly repair, maintain the cooling systems (for all Departments).
4. Insulate window cracks to prevent cooling loss (for all Departments).
5. Report energy waste/abuse to the PWO or Energy Monitors (for all Departments).
6. Appoint, training building energy monitors (for all Departments).
7. Consider replacing low-efficiency lamps with high-efficiency lamps (for all Departments).
8. Reduce energy consumption by changing fixtures and disconnecting non-essential lamps (for all Departments).
9. Interior Lighting. Apply applicable standards of lighting intensities to existing lighting. During occupied hours, overhead lighting should be 50 foot-candles at work stations, 30 foot-candles in work areas, and 10 foot-candles in passageways. During unoccupied hours, all possible lighting should be secured. The use of incandescent lighting should be minimized (for all Departments).
10. Exterior lighting. To the maximum extent practical, use high efficiency equipment such as high pressure sodium lighting. Exterior lighting shall be turned off except when essential for safety and security purposes, making use of automatic controls such as photocells and time clocks (for all Departments).
11. Cooling occupied general office spaces shall be cooled to no lower than 74 ° F (23.3° C). During unoccupied hours, cooling systems shall be secured as appropriate (for all Departments).

Enclosure (1)

12. Domestic Hot Water Temperatures - For special purposes (laundries, galleys, etc.), hot water temperature shall meet applicable operational requirements while minimizing energy consumption (for all Departments). Water shall be heated to no more than 105°F (40.6°C)

b. Customer Support

(1) DUERS Consumption/Square Foot Update

(a).Improvement Goal is to maintain as accurately as possible the conservation comparison with the 2003 baseline.

(b) Actions required

1. Verify the FY03 baseline and correct if necessary (for Public Works Department).

2. Obtain the activity's current square footage (for Public Works Department).

3. Obtain increases/decreases in activity square footage on a continuing basis (for Public Works Department).

4. Maintain the activity's current consumption and square footage for accurate comparison to FY 2003 baseline (for Public Works Department).

5. Routinely inform activities of their energy conservation progress (for Public Works Department).

(c) Performance Goal is to ensure accurate monthly consumption per square foot totals are maintained.

(2) Energy Management Support to Tenant Activities.

(a) Improvement Goal - Provide timely, innovative technical assistance to all customer activities in the area of energy management.

(b) Actions required.

1. Publish energy saving tips monthly in Merlion newsletter (for Public Works Department).

Enclosure (1)

2. Provide priority response to energy related work request (for Public Works Department).

3. Provide program development assistance to activity level energy management programs (for Public Works Department).

4. Provide energy management data and interpretation assistance on a requested basis (for Public Works Department).

5. Provide energy audits on a requested basis (for Public Works Department).

6. Provide training and education programs if requested. This includes the dissemination of instructions on correct practices, design and other newly developed techniques for saving energy (for Public Works Department).

c. PWD Program

(1) PW Energy Monitor Effectiveness.

(a) Improvement Goal - Obtain the maximum effectiveness from the Energy Conservation Monitor Program.

(b) Actions required.

1. Continued support will be given to the PW Energy Monitor Program. An energy monitor will be selected and shall be the responsibility of the department/office head to ensure that the assigned monitors execute their duties as specified in Appendix 2 (for all Departments).

2. Hold quarterly energy monitor meetings to ensure continued awareness and to discuss energy saving possibilities (for Public Works Department).

3. Assist Building Energy Monitors by providing them with an energy checklist as listed in Appendix (3) (for all Departments).

(c) Performance Goal.

Enclosure (1)

1. Hold Energy Monitor meetings at least once per quarter at the department head level.

(2) Energy Conservation Projects.

(a) Improvement Goal - Insure that PW facilities and equipment use energy as efficiently as possible.

(b) Actions required.

1. Identify and analyze existing facilities for energy savings projects (for Public Works Department).

2. Provide energy audits on a requested basis (for Public Works Department).

3. Submit service calls to repair energy wasting problems such as leaky faucets or inadequate lighting controls (for all Departments).

(c) Performance Goal.

1. Submit service calls within one day of identifying the energy wasting problem.

(3) Energy Conservation Publicity.

(a) Improvement Goal - Achieve 100 % employee awareness and participation in NRC Singapore's energy conservation efforts through a continuous publicity program.

(b) Actions required - Promote energy conservation awareness and participation through articles in the Merlion newsletter.

(c) Performance Goal - Publish at least one energy conservation related article quarterly in the Merlion newsletter.

4. Electric Power Conservation Guidelines

a. Prevent wasting electricity by securing unneeded lights and perimeter security lighting (consistent with security and safety). Secure all office, warehouse, and shop lighting during lunch periods. During bright daylight hours or when not in

Enclosure (1)

actual use, secure all lights in heads, showers, washrooms and work areas.

b. Assure lamp sizes are not larger than the authorized wattage standard, and that such lighting fixtures are essential to produce required illumination.

c. Ensure that street, area and flood lighting is reduced to the lowest practical level (consistent with security and safety).

d. Monitor athletic field and other outdoor flood lighting to ensure use only when required.

e. Ensure that high wattage heavy power consuming appliances such as electric fans, heaters, air conditioners and other authorized appliances are turned on only when required. Keep refrigerator and freezer doors closed as much as possible.

f. Air conditioning units will not be installed in any office without approval of the PWO. PWO will send a representative to investigate the need for the equipment. The request will be reviewed by the PWO and the requester will be notified of the findings.

g. Set temperature controls to maintain a minimum of 74°F. When air conditioners are in use, all windows and doors are to be closed. Keep air conditioning filters clean.

h. Report waste of power in shops and office areas immediately to the PWD. Avoid starting machinery and using working lights too long before or after actual productive working hours.

i. Turn off all personal computers at the end of the working day.

5. Water Conservation Check List

a. Secure valves when finished. Do not let water run if not actually in use.

b. Self-closing nozzles are required for all water hoses.

c. When using water do not open the valve more than necessary for desired pressure. Excessive pressure is wasteful.

Enclosure (1)

d. When closing water valves, turn handles only enough to stop water flow. Undue tightness tends to wear out washers and increase valve leaks.

e. Install self-closing faucets and valves at major points of use.

f. Eliminate use of continuous flushing fixtures. Use an intermittent automatic flush tank or individual flushing devices.

g. Adjust flush-type valves and tank supplies for minimum flow to accomplish adequate flushing.

h. All constant flow drinking fountains should be replaced with self-closing ones.

i. Study all industrial uses to ensure maximum conservation.

6. Allowable Room Temperatures Check List

Minimum Degrees Fahrenheit

Type/Structure	(Summer Temp.)
Industrial Shops	Note 1
Storerooms	Note 1
Classrooms/Meeting rooms	74
Offices	74
Lounges	74
Warehouses	Note 1
Mess Halls/Cafeterias	74
Recreational Spaces	74
Pump Houses	Note 1
Locker rooms	74
Gate or Guard Houses	Note 1
Garages	Note 1
Heads & Showers Rooms	74
Laundry	Note 1
NEX	72
MAS	72

Enclosure (1)

APPENDIX 1
REQUIRED REPORTS

The following reports are necessary to monitor the progress of the Singapore Area Coordinator Energy Management Plan.

	<u>Frequency</u>	<u>Responsible Department</u>
PW In-House Electrical Consumption (Graph)	Monthly	Public Works
PW DUERS Consumption (Graph)	Monthly	Public Works
Monthly Consumption Report	Monthly	Public Works
PW Major Maintenance Projects in Support of Energy Conservation for Utilities	Bi-annually	Public Works
PW In House Energy Conservation Projects	Bi-annually	Public Works

Enclosure (1)

APPENDIX 2

DUTIES OF THE ENERGY MONITORS

1. Read and understand Singapore Area Coordinator Instruction 4100.1. Become familiar with the conservation program and the various methods of reducing utilities consumption. Seek additional guidance from the energy conservation coordinator in your department and/or the Public Works Officer.
2. Help promote a positive attitude toward the energy conservation program among all personnel assigned to your area.
3. Continuously insure that all work area personnel help conserve energy and eliminate waste by:
 - a. Securing office equipment when not in use, unless proper operating procedures indicate otherwise.
 - b. Turning off lights that are not required in offices, shops, warehouses, and hallways, particularly during lunch periods and non-working hours.
 - c. Setting air-conditioning thermostats so that work areas are not cooled below 74° F. This may require a thermometer and a trial and error process. Contact the Engineering Department if assistance is required.
 - d. Insuring doors and windows of air-conditioned spaces are kept closed.
 - e. Running water only when necessary.
 - f. Using cold water instead of hot water whenever possible.
4. At the end of every working day:
 - a. Secure all lights except for the minimal security lighting specified by the department head.
5. Encourage co-workers to help develop new ways to conserve energy; submit any suggestions to the supervisor for action.

Enclosure (1)

Report all defective lights, piping, and air conditioners to the Public Works Officer.

6. Report repeated violators and violations to the supervisor.

APPENDIX 3

ENERGY AUDIT CHECKLIST

NAVY REGION CENTER, SINGAPORE PUBLIC WORKS DEPARTMENT
 BUILDING ENERGY MONITOR
 ENERGY AUDIT CHECKLIST

Building Number: _____

Energy Monitor: _____

Code/Shop: _____

Telephone: _____

BUILDING

Note: Give building and room number

ITEM	CHECK POINT	YES	NO	CORRECTIVE ACTION
1.	Are windows/doors broken?			
2.	Are exterior doors misaligned?			
3.	Are caulking around windows, and exterior joints cracked?			
4.	Are weather stripping around windows and doors defective or missing?			

LIGHTING

ITEM	CHECK POINT	YES	NO	CORRECTIVE ACTION
1.	Is exterior lighting off during the day?			
2.	Is lighting only used when needed for cleaning?			
3.	Do janitorial services use only lights actually needed for cleaning?			
4.	Have all areas been evaluated for lighting fixture deactivation?			
5.	Have lighting levels been evaluated to ensure Navy standards are met?			
6.	Is lighting on backshifts and weekends used only when needed and have personnel been instructed on the use of this lighting?			
7.	Is 70 % of your high bay lighting being shut off during lunch break?			
8.	What percent of lights are being shut off on swing shift ___% and grave shift ___%?			

Enclosure (1)

COOLING

ITEM	CHECK POINT	YES	NO	CORRECTIVE ACTION
1.	Is air conditioning (A/C) set 74° F and shutdown during unoccupied hours?			
2.	Has each A/C system been approved by installation code for used in the building?			
3.	Are there exterior steam losses?			
4.	Are hot water piping insulated (interior and exterior piping)? Inspection should include identifying damaged insulation.			
5.	In air conditioned spaces, are the doors and windows closed when the A/C is on?			
6.	Are the exhaust ventilation systems only run when needed?			
7.	Are restroom exhaust fans shut off during unoccupied hours?			

Enclosure (1)

MISCELLANEOUS

ITEM	CHECK POINT	YES	NO	CORRECTIVE ACTION
1.	Is domestic hot water at the lowest possible set-point?			
2.	Are there any leaking faucets?			
3.	Are compressed air leaks kept to a minimum? Hand tools and hoses should be disconnected during periods of non-use.			
4.	Is welding & associated equipment shutoff when not needed?			
5.	Do you receive utility usage and cost reports for your building? Do you manage the data?			
6.	Does this check point list accurately summarize all energy used within your facility?			
7.	Are Energy Awareness materials displayed throughout the building?			
8.	Are microcomputers, copy machines, etc. being shut off at the end of the work day?			

COMMENTS: _____

ENERGY MONITOR'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

Enclosure (1)