



DEPARTMENT OF THE NAVY

NAVAL SUBMARINE BASE, BANGOR

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SUBASEBANGORINST 4100.1C

N8

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SUBASE BANGOR INSTRUCTION 4100.1C

Subj: IMPLEMENTATION OF CHIEF OF NAVAL OPERATIONS (CNO) ENERGY
MANAGEMENT POLICY

Ref: (a) OPNAVINST 4100.5D
(b) CINCPACFLTINST 4100.1C
(c) NAVFACINST 4100.8A
(d) SUBASEBANGORINST 11100.5F
(e) SUBASEBANGORINST 7400.3A
(f) DOD memo of 3 Feb 93

Encl: (1) SUBASE Bangor Energy Program Management Responsibilities
(2) Energy Efficiency Measures

1. Purpose. To implement Naval Submarine Base (SUBASE), Bangor energy management program as set forth in references (a) through (c) within SUBASE Bangor, its reimbursable customers, tenant commands, and Base Operating Services Contractor (BOSC).
2. Cancellation. SUBASEBANGORINST 4100.1B. Extensive changes have been made to this directive; therefore, it should be read in its entirety.
3. Background. Faced with energy costs for the SUBASE Bangor Complex exceeding eight million dollars and decreasing operating funds, the CNO has mandated use of all available means to reduce our energy costs through increased efficiency. Effective support from all levels in the command can achieve significant energy reductions while enhancing operational readiness and avoiding unnecessary energy costs.
4. Policy. The policy of SUBASE Bangor is to use only that quantity of energy necessary for the effective performance of its mission. Increased efficiency will enhance military readiness, sustainability, and Quality of Life.

a. Enclosure (1) defines the responsibilities for implementing the SUBASE Bangor Energy Management Program.

b. The Energy Efficiency Committee (EEC) shall be the Command's committee which shall establish, review, and update SUBASE Bangor energy policy. Membership will be established by the Chairperson and will consist of those personnel who are involved with current subject matter. The EEC will meet quarterly. Specific functions of the EEC include:

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(1) Support SUBASE Bangor's effort in meeting the goals and objectives of this instruction.

(2) Support an effective SUBASE Bangor (including tenant command participation) Energy Awareness Campaign which increases energy awareness and reduces energy use.

5. Scope. This instruction applies to SUBASE Bangor, the BOSC, and reimbursable customers. Tenant commands are to either develop and maintain their own instruction meeting the requirements of reference (a), or comply with this instruction.

6. Objectives. Per reference (a), SUBASE Bangor's energy objectives are:

a. Improve fleet readiness and sustainability and reduce costs through the application of more energy efficient facilities and systems throughout SUBASE Bangor.

b. Substitute, where practical and cost effective, more abundant or renewable energy sources for petroleum or carbon based fossil fuels.

c. Participate in demand side management and conservation programs that are offered by utility companies which includes the acceptance, retention, and use, without further appropriation, of any technical service, equipment (installed or not installed), or financial incentive available from a gas or electric utility.

d. Obtain reliable utility supplies at the lowest cost through centralized acquisitions.

e. Streamline procedures and participate in Energy Savings Performance Contracts.

f. Ensure that SUBASE Bangor provides energy efficient replacement components to ensure the integrity of energy conscious maintenance.

g. Ensure SUBASE Bangor personnel who are responsible for the design, installation, operation, and maintenance of energy using systems are trained to provide the most efficient results.

h. Where practical, based on the best life cycle costing, include energy-efficient improvements in all projects including construction, repair, maintenance, and rehabilitation.

i. Ensure energy efficiency and fuel flexibility are taken into account in the design and acquisition of new facilities and equipment. Ensure approving modifications or repairs on existing systems impact on energy consumption balanced against other requirements including mission, vulnerability, environmental impacts, Quality of Life, and life cycle cost.

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j. Within available funding, identify and execute, by the year 2005, all shore facilities energy and water conservation projects with a payback period of less than 10 years.

k. Properly train SUBASE Bangor energy managers.

7. Goals. Per reference (a), the below goals shall be exceeded where feasible and cost-effective. All goals are to be measurable and disseminated command wide.

a. Facilities

(1) Existing Buildings. Reduce energy consumption (MBTU per thousand gross square feet) by 30 percent by the end of FY05 compared to the FY85 baseline.

(2) New Buildings. Reduce the estimated annual design energy usage by one percent per year. Ensure design and construction of buildings for federal use comply with the energy performance standards applicable to federal residential and commercial buildings set forth in reference (a).

b. Industrial Activities. Improve gross energy efficiency 20 percent by FY05 as compared to FY90.

c. General. Comply with the requirements of the Energy Policy Act of 1992 as it pertains to vehicles and facilities and maximize use of practical energy sources. All contractors, SUBASE Bangor departments, and reimbursable customers are to maximize the use of cost effective measures to reduce their energy use.

8. Report. SUBASE Bangor will forward its energy performance data to Naval Facilities Engineering Service Center using the Defense Utility Energy Reporting System and Shore Activity Energy Management Reports.

9. Action. Addressees will comply with the provisions in this directive. All SUBASE Bangor personnel shall be encouraged to participate in the Energy Management Policy by correcting unnecessary use or waste of utilities, or by reporting the situation to the cognizant building officer per reference (d).


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Distribution: (SUBASEBANGORINST 5605.1P)
Lists I & II

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SUBASE BANGOR ENERGY PROGRAM MANAGEMENT RESPONSIBILITIES

1. Responsibilities

a. Executive Officer, Code 01: Chair the SUBASE Bangor Energy Efficiency Committee (EEC).

b. Public Affairs Officer, Code 005: Support the Energy Branch, Public Works Department by assisting in the development and publication of timely energy efficiency articles in the TRIDENT TIDES and when required assist in putting together appropriate Navy Energy Award packages.

c. Security Officer, N2: Work with N8A31 to effectively assign and allocate the use of security lighting and other types of security devices only where it is needed per enclosure (1).

d. Financial Resources Management, N6:

(1) Ensure all requisition documents involving energy-related material are reviewed by N8 to ensure the most cost-effective and energy-efficient material is ordered. For portable energy systems including space heaters, and air conditioners, including window units, all requisitions must be approved by N8A.

(2) In March of each fiscal year, provide a copy of the proposed annual profits from the recycling program to N8 of which up to 50 percent may be used to fund energy projects per reference (e).

(3) Set aside up to 50 percent of the realized energy savings and rebates for reinvestment in locally funded energy projects per reference (f).

e. Morale, Welfare, and Recreation (MWR), N7:

(1) Coordinate with N8 to ensure all MWR facilities are designed, constructed, operated, and maintained in the most energy efficient manner.

(2) Ensure energy efficiency projects to be funded by net profits from the recycling operations are solicited from N8 and submitted to the Commanding Officer per reference (e).

f. Public Works Officer, N8:

(1) Quarterly, with input from N7, forward suggestions for energy efficiency projects to the Commanding Officer that are eligible to be funded by net profits from recycling operations per reference (e).

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(2) Improve fleet readiness and sustainability and reduce costs through the application of more energy efficient facilities and systems by ensuring energy efficiency and fuel flexibility are taken into account in the design, construction, and acquisition of new facilities and equipment and in the repair, modification, and maintenance of existing facilities and equipment. Ensure that in approving modifications or repairs on existing systems that the potential impacts on energy consumption are balanced against other requirements including: mission, vulnerability, environmental impacts, Quality of Life, and especially Life Cycle Cost Analysis (LCCA).

(3) Ensure energy project funding is maximized by optimizing coordination of all sources of funding including SUBASE Bangor Operation and Maintenance (O & M), NAVFAC energy, and CINCPACFLT Environmental funds. Optimize the use of all available funding sources to identify and execute shore facilities energy and water conservation projects with a payback period of less than 10 years by the year 2005.

(4) Promote the development and submission of Energy Efficiency Projects.

(5) Ensure that all private construction contractors using SUBASE Bangor utilities are required to reimburse the command for energy cost incurred.

g. Assistant Public Works Officer, N8A. Designated as Energy Officer (EO) for SUBASE Bangor and shall:

(1) Be the overall coordinator for the Command's Energy Management Program.

(2) Brief the PWO, EEC, and CO as required.

(3) Expedite the effort to maximize energy efficiency funding aboard SUBASE Bangor.

(4) Ensure SUBASE Bangor and BOSC personnel who design, install, operate, and maintain energy systems are trained in energy efficiencies to the maximum extent.

(5) Ensure personnel are trained in the efficient operation and maintenance of energy using systems.

(6) Approve all requisitions involving portable energy systems including space heaters, and air conditioners, including window units.

h. Facilities and Utilities, N8A11:

(1) Work with N8A31, N8B3, and N8C to maximize the use of cost effective and energy efficient facilities, replacement components, and systems, as shown by LCCA on SUBASE Bangor utility systems.

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(2) Coordinate with N8A31 to train all SUBASE Bangor energy system inspectors and Technical Representatives of the Commanding Officer (TRCOs) as soon as funding is available.

(3) Ensure that energy efficient maintenance and replacement components and practices are incorporated in daily operations and maintenance.

(4) Ensure the Direct Digital Control System is limited to Barber Colman and Automated Logic, and the systems it controls are operated and maintained to optimize energy efficiency.

(5) Work with N8A31 to develop a utility billing system that eliminates the use of engineering estimates and distributes all unmeasured utility cost among customers.

(6) Assist N6 in updating SUBASE utility rates to ensure all cost including installation and maintenance of meters as well as line loss is included .

i. Energy Section, N8A31:

(1) Function as the point of contact for all SUBASE Bangor energy matters including SUBASE Bangor progress on achieving the goals and objectives of this instruction.

(2) Distribute within SUBASE Bangor pertinent energy information materials and provide training and resource tools for Energy Monitors.

(3) Conduct energy efficiency spot checks, studies, and audits. Work with N8A11 and N8B3 to identify the most energy and cost effective solutions to deficiencies found during spot checks, studies, and audits

(4) Maintain the SUBASE Bangor energy plan which establishes specific goals and objectives for reducing energy consumption. The plan is to be updated, approved and issued quarterly to the EO.

(5) Seek off-base funding for energy efficiency audits, studies, projects, and training.

(6) Provide N8A11, N8B3, and the BOSC information and funding with regards to attending energy efficiency training.

(7) Ensure that the manufacturers of Direct Digital Control (DDC) Systems are limited to Barber Colman and Automated Logic, and that DDC optimizes energy efficiency of the systems it controls. Ensure that DDC systems are properly designed and built for efficient lowest LCCA operation and maintenance costs. Maintain the ability to track trends, establish all temperature settings and set operation schedules.

(8) Submit the annual energy management report to CINCPACFLT.

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(9) Submit projects by 1 February annually for Energy Cost and Investment Plan and Federal Energy Management Program funding.

(10) Pursue the development and use of the latest energy technology at SUBASE Bangor. Work together with N8A11 and N8B3 to ensure technologies are practical and feasible.

(11) Participate in demand side management (DSM) and conservation programs that are offered by utility companies.

(12) Obtain reliable natural gas supplies at the lowest cost through centralized acquisitions.

(13) Perform energy project reviews including LCCA as requested by N8A11 and N8B3.

(14) Maintain an accurate list of Energy Monitors for SUBASE Bangor.

(15) Initiate actions to increase the Energy awareness at SUBASE Bangor.

(16) Review all departmental and reimbursable customer requisition documents involving energy-related material to ensure the most cost-effective and energy-efficient material is ordered.

j. SUBASE Bangor Contracts Site Office, N8C:

(1) Assist the command in contractual matters associated with energy savings initiatives.

(2) Amend the BOSC contract as needed to incorporate energy efficiency initiatives.

k. Facilities Engineering and Construction Division Director, N8B3:

(1) Ensure energy efficiency and fuel flexibility are taken into account in the design and acquisition of new facilities and equipment. Ensure that in approving modifications or repairs on existing systems that the potential impacts on energy consumption is balanced against other requirements including: mission, vulnerability, environmental impacts, Quality of Life, and LCCA.

(2) Ensure that the manufacturers of Direct Digital Control (DDC) Systems are limited to Barber Colman and Automated Logic, and that DDC optimizes energy efficiency of the systems it controls. Ensure that DDC systems are properly designed and built for efficient lowest LCCA operation and maintenance costs. Maintain the ability to track trends, establish all temperature settings and set operation schedules.

(3) Ensure all projects comply with the energy standards found in reference (a).

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(4) Substitute, where practical and cost effective, more energy efficient facilities, replacement components, and systems, especially where indicated by LCCA on repairs, modifications, maintenance, etc.

(5) Ensure that all projects involving utility systems shall be either reviewed by a Washington State Non-Residential Energy Code, Certified Plan Examiner or by N8A31.

(6) Optimize energy efficiency in design in order to reduce the energy use per gross square foot for repair, modification, and new construction projects where appropriate by performing a LCCA on each of the project's alternatives. Each LCCA shall include alternatives that use both new and conventional technologies.

(7) Ensure that all people in the Division who are involved with the design, installation, operation, or maintenance of energy using facilities, are trained in LCCA, fundamentals of building energy systems, building energy codes, and applicable professional standards to result in the most efficient facilities over their expected life.

(8) Ensure appropriate projects have sufficient funds programmed in the planning stage to cover the expense of LCCA energy efficiency.

(9) Reduce the estimated annual design energy usage per gross square foot by one percent per year in new facilities.

l. Safety, Environmental, and Planning Division Director, N8E:

(1) Coordinate with N8A31 to maximize the use of energy and environmental funds to execute projects of common interest, such as air emission reduction, replacement of refrigeration coolants, etc.

(2) Provide N8A31 and N8B3 as needed environmental data in support of project LCCA.

(3) Ensure all environmental projects have sufficient funds programmed to cover the expense of life cycle cost analysis and energy efficiency.

m. Information Technologies, Code 006 shall:

(1) Brief SUBASE personnel who operate Automated Data Processing (ADP) equipment having de-energizing (power-saving) features on how to properly activate them.

(2) Ensure that all ADP equipment purchased has the latest available automatic power saving features.

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n. Department Heads and Reimbursable Customers:

(1) Ensure all requisition documents involving energy-related material are endorsed by N8A31 to ensure the most cost-effective and energy-efficient material is ordered. For portable energy systems including space heaters, and air conditioners, including window units, all requisitions must be approved by N8A.

(2) Designate in writing an Energy Monitor (EM) and an alternate to assist you in implementing all provisions of this instruction. Forward a copy of this designation to N8A31.

(3) Instruct designated EMs to survey their respective areas at least monthly to ensure compliance with the applicable parts of this instruction.

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ENERGY EFFICIENCY MEASURES

All personnel who have an impact on how energy is used at SUBASE Bangor are to carry out the following measures. These personnel include:

- Public Works Department Design, Energy, Facility Management, and Utility Personnel
- SUBASE Bangor Building Officers and Energy Monitors
- BOSC personnel
- SUBASE Bangor Department/Staff Code Heads and their respective supervisors

For energy efficiency measures which require modification of the BOSC, mission and budget analysis shall be done by N8A11, N8A31, N8B3, and N8C, as appropriate, to determine if modifications to the contract are appropriate.

1. Facilities Operation

a. Operating hours. Operation of facility energy systems shall be minimized outside occupied hours, to the greatest extent possible, without adversely affecting the mission requirements.

b. Operations. Heating, Ventilating, and Air Conditioning (HVAC) system operators are the only personnel authorized to adjust temperature settings or any other controls, including thermostats. If changes must be made, contact your building officer per reference (d). Prior to making any changes, the BOSC shall notify N8A11 via N8A31 three work days prior for any change in operating hours or temperature settings.

2. Lighting Guidelines. SUBASE Bangor's goal is to maintain lighting levels per Illuminating Engineering Society (IES) standards. Specific standards are available from N8A31.

a. Use of task lighting is to be maximized and lighting shall be turned off in areas not in use for more than 5 minutes.

b. During unoccupied hours, all possible lighting systems shall be turned off or reduced without affecting safety or security.

c. Replace incandescent lighting with high efficiency fluorescent lamps with electronic ballasts and other efficient systems where possible without adversely affecting working conditions.

d. Maximize the use of automatic lighting controls, such as photocells and occupancy sensors.

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e. Ensure there are separate lighting circuits set up to provide independent control for conference rooms, private offices, and other spaces which may not be occupied at all times. Switching shall also take advantage of daylight, so that unnecessary lights can be turned off if there is sufficient daylight.

f. Exterior lights shall be turned off during daylight hours, where they are unnecessary.

g. High pressure sodium lighting shall be used outdoors and in high bay areas where color rendition is not a concern.

h. N8A31 has lighting level meters available for use. EMs are encouraged to assist N8A31 in conducting lighting level surveys within their spaces.

3. Automatic Data Processing Equipment

a. Personal Computers (PCs) including monitors, modems, printers, and separate disk drives are to be de-energized at the end of business each day.

b. Monitors without power saving features should be de-energized when not in use for more than 20 minutes.

c. Uninterruptible Power Supplies (UPS) powering individual PCs shall be secured along with the PC. UPS powering networks shall be secured along with the network when it is shutdown.

4. Heating and Cooling

a. Cooling: Spaces requiring comfort cooling shall be maintained at temperatures no lower than 76°F. During unoccupied hours, cooling systems shall be turned off, except for the lead time required to prepare for occupancy.

(1) Prior to installing any portable A/C window unit, the building officer must request and receive written authorization from N8A.

(2) Except when required for humidity control, cooling shall be turned off during the winter months and optimum use of outside air for cooling shall be used.

(3) Temperature limits and hours of use are not applicable to spaces which have specific requirements or equipment (computer installations, weapons storage, etc.).

b. Heating. Spaces requiring comfort heating shall be maintained at temperatures no higher than 70°F. Buildings are to be preheated so they achieve the occupancy temperature by the time occupants arrive, but the warm-up period is to be as short as possible.

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(1) General:

(a) Heating shall be secured or reduced during the last hour of occupancy so that buildings will not be heated greater than 55°F when unoccupied.

(b) Except when required for humidity control, outside air and internally produced heat shall be used for heating as much as possible.

(c) Windows and doors are to be kept closed when HVAC systems are in operation.

(d) Exhaust and area fans: Exhaust and area fans are to be secured when not needed.

(2) Industrial:

(a) Warehouses and storage areas shall not be heated higher than 55°F.

(b) Other areas with high traffic to the outside shall be heated no greater than 65°F.

(3) Any deviation from items (1) and (2) above requires the approval of the Energy Officer.

c. The use of personal HVAC devices are allowed only with written approval from N8A.

d. Steam distribution and hot water heating systems in buildings shall be maintained to minimize steam losses.

(1) All leaks shall be reported to the BOSC per reference (e).

(2) Funds permitting, all steam piping and system components such as valves shall be insulated to minimize heat losses and all unnecessary steam heating shall be turned off during the summer months.

e. Maintenance. Only qualified personnel from the BOSC shall tune, calibrate, and clean HVAC equipment per BOSC schedule. Public Works Department Utilities TRCO Section shall ensure preventive maintenance is performed to the quality directed. The following requirements will help eliminate energy waste.

(1) HVAC equipment shall be calibrated, adjusted, operated, and maintained to maximize energy efficiency. Heating and cooling shall not occur at the same time, unless for humidity control. In addition, N8A31 and N8A11 shall work closely together to ensure practical and energy standards are set in the BOSC.

(2) Equipment Access: Proper access to operate and maintain all HVAC equipment, piping, and air ducts shall be installed so that personnel do not stand or walk on any components.

5. Domestic hot water. All SUBASE Bangor facilities shall comply with the following requirements:

a. For other than family housing and special purposes (laundries, galley, etc.), domestic hot water (DHW) temperature shall not exceed 105°F at the point of use. DHW circulating pumps and heating elements shall be turned off during unoccupied hours.

b. For family housing without dishwashers, hot water temperature shall not exceed 120°F.

c. For family housing with dishwashers but without a preheater, DHW temperature shall not exceed 140°F.

d. For special purposes, such as laundries, galleys, etc., DHW temperature shall be as low as possible to minimize energy use without degrading facility operation.

6. Boiler Plants and Steam Distribution: All steam distribution systems and physical plants shall be operated at optimum efficiency at all times and load conditions.

a. The combustion efficiency shall be checked according to the frequencies specified in reference (a).

b. Steam production, condensate return, and boiler makeup water metering data shall be recorded and maintained. The data shall be used to detect trends indicating leaks in the steam and/or condense systems, so that they can be found and fixed.

c. Heating plants (boilers) shall be operated at the minimum pressure necessary to supply heating loads while preventing detrimental effects to the plant or steam distribution system.

d. All steam piping shall be insulated, including fittings, flanges, unions and valves. Where necessary, removable insulation will be used to allow for ease of maintenance.

7. Compressed air. Compressed air systems shall be operated and maintained to minimize leaks.

8. Chilled water systems. Chilled water shall be maintained at the highest temperature possible to maintain comfort conditions.

a. For multiple chiller systems, one unit shall be loaded to 75 percent of maximum load before the second unit is brought on line.

b. During the design phase, absorption chillers shall not be used when compression type chillers are available unless not economical to do so.

9. Central Monitoring System (CMS) and Direct Digital Control (DDC). SUBASE Bangor has the ability to control and monitor HVAC equipment in buildings, from a central location. The following procedures shall be followed:

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a. New buildings or HVAC equipment where practical shall be controlled by the DDC system. DDC shall be compatible with Barber Colman or Automated Logic. New buildings or modifications of existing buildings of ten thousand square feet or greater shall be remotely metered through the DDC system for energy accounting and billing purposes.

b. Any device controlled by the DDC system shall be operated in the automatic mode.

c. Permanently disabling CMS or DDC equipment is prohibited without written permission of the N8A.

10. Metering. Remote metering shall be installed on all new facilities via the DDC system. The accuracy shall be within one percent of the actual value, verified after installation and checked every ten years. A verification report shall be forwarded to N8A31.

11. Weatherization. All buildings shall be weatherized as appropriate for facility type, use, and location per reference (d).

a. Buildings with heating or cooling shall have all cracks around windows, doors, utility penetrations, and other outside air leaks sealed.

b. Windows should be shaded externally where possible to aid in cooling.

c. Storm or double pane windows with reflective glazing shall be specified for new construction and retrofitted where cost effective.

12. Water conservation. All facilities are to be designed to meet State of Washington water conservation standards.

a. Once-through industrial plant cooling water is not permitted without written permission of the Public Works Officer.

b. All leaks shall be reported to the BOSC Trouble Desk via the Building Officer per reference (d).

c. Efforts shall be made to minimize the use of water as freeze protection.

d. New project designs are to incorporate water meters, minimal water landscape requirements, and water efficient plumbing fixtures.

13. Appliances. Energy efficient appliances shall be installed when commercially available.

14. Transportation

a. Encourage the use of mass transit and car/van pooling.

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b. Gasoline powered vehicles shall not be idled for periods exceeding 1 minute. Trips shall be consolidated to save fuel.

c. Meet the requirements of OPNAVINST 5100.5D.

15. Discrepancies. Discrepancies such as leaking steam valves, poor weather stripping, constantly running electrical equipment, etc., shall be reported to the BOSC Emergency Service Desk or submitted on a Work Request per reference (d).

