**NORTH CAROLINA STATE UNIVERSITY ENERGY POLICY**

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| Authority: | Board of Trustees |
| History: | First Issued: XX-XX-2009 |
| Related Policies: | American College and University President’s Climate Commitment |
| Additional References: | * N.C. General Statute 143-64 (Senate Bill 668 and 1946) * American Society of Heating, Refrigerating, and Air-Conditioning Engineers Standard 55-2004 |
| Contact Info: | * Assistant Vice Chair – Facilities Operations * Director – Utilities and Engineering Services * Director – Office of Sustainability * Chair – Energy Council |

***Policy Purpose:*** The goal of this policy is to create a realistic and comprehensive document that identifies energy and water conservation and efficiency as significant issues for the entire campus community. This document details steps that will be taken to address these issues and reach the energy efficiency goals of the University. This policy will be reviewed and updated periodically as public awareness, management techniques and technologies change.

***Effective Date:*** XX-XX-2009

***Applies To:*** All North Carolina State University students, faculty and staff.

***Introduction:*** North Carolina State University (“NC State”), located in Raleigh, North Carolina, is a land grant University with approximately 35,000 students, faculty and staff. NC State is a leader in the areas of teaching, research and public service. Facilities Operations, through the Office of Energy Management, has been charged with the responsibility to manage the energy and water resources purchased and consumed by NC State in the most cost efficient manner and to promote energy and water conservation and awareness throughout the campus community. This policy is crafted to achieve a superior academic environment and continued growth, while simultaneously accomplishing our primary conservation responsibilities.

***Conservation Goals:*** NC State will achieve a 20% reduction in building energy consumption by 2015 ($6.5 mm savings), with a stretch goal of achieving a 30% reduction ($9.8 mm savings), compared to the 2002-2003 baseline. We will reduce the Annual Water Consumption per Gross Square Foot by a minimum of 10% compared to the 2001-02 baseline. By following specific measures outline below, the campus may achieve additional savings.

**A. Buildings**

Windows and doors of conditioned spaces will be kept closed. Personal computers, other office equipment, lights, window air conditioners and personal heaters will be turned off when not in use. The use of personal heaters is discouraged. Power management features of personal computers will be enabled. As time and funding allow, buildings and mechanical systems will continue to be integrated into the Enterprise Building Automation System. This will permit real time control over operating schedules and temperatures, will reduce energy consumption, and will permit implementation of demand management strategies to reduce energy costs.

**B. New Construction and Major Remodels**

New construction and major remodels will be designed and built to minimize energy use. All new campus construction and major remodels will be built to at least the U.S. Green Building Council’s LEED Silver standard, or equivalent. Furthermore, the most recent version of ASHRAE Standard 90.1 - Energy Efficient Design of New Buildings Except Low Rise Residential Buildings will be set as the minimum energy efficiency guideline, since it has been shown that further reductions in energy use are economically achievable. The design process will include energy life cycle costing analyses. New construction will be added to the existing building automated control system for enhanced energy management capabilities. Alternative energy sources, such as passive solar heating and heat recovery will be considered, as well as daylighting and other strategies for decreasing building energy consumption. Primary consideration will be given to connecting and/or extending central systems for heating, cooling and other mechanical systems. Year-round cooling needs will be met by utilizing the most energy efficient systems, for example plate-and-frame heat exchangers versus less efficient air-cooled systems. All new construction will include IP enabled utility metering (electricity, natural gas, steam, and water).

**C. Lighting**

Most lighting on campus is being retrofitted or upgraded to high efficiency fluorescent lighting with electronic ballasts. Remaining areas will be upgraded as funding is available. New construction and remodels will use high efficiency lighting and minimize incandescent lighting. Interior decorative lighting will be kept at a minimum and exterior decorative lighting will be discouraged. Lighting levels recommended by the Illuminating Engineering Society Lighting Handbook will be used as guidelines to avoid over-lit spaces. Fluorescent lighting fixtures will have in-board and out-board switching. Occupancy sensors will be included where practical to further reduce use of electric lighting. Increased use of daylighting and daylighting controls will be considered because use of daylit spaces decreases energy costs and has been shown improve building occupant learning and productivity.

**D. Heating**

During the heating season, room temperatures will be maintained at least 69°F / 50% Relative Humidity (“RH”) limit when occupied. Whenever it is economically and technically feasible, night setback features of the Enterprise building automation system will be utilized to allow temperatures to drop to 55°F during unoccupied periods. The only exceptions to this policy are special areas such as libraries, animal care units, or research facilities that require constant or warmer temperatures. The Provost’s Office will evaluate requests for exemptions on an individual basis. Facilities Operations will utilize the most energy efficient means of supplying heat for approved off-hour/holiday requests. Use of electric heaters in University buildings will be minimized. Areas that are either too hot or too cold will be reported as soon as possible to Facilities Operations.

**E. Cooling**

During the air-conditioning season, room temperatures will be maintained at 76°F / 50% RH limit when occupied. Whenever it is economically and technically feasible, night setback features of the Enterprise building automation system will be utilized to allow temperatures to rise to 85°F during unoccupied periods. The only exceptions to this policy are special areas such as libraries, animal care units or research facilities that require constant or cooler temperatures. The Provost’s Office will evaluate requests for exemptions on an individual basis. Window air conditioners are used in areas that lack central cooling, or proper air balance. Temperature settings for these units will be raised manually, or the unit will be turned off when areas are not in use. Supervisors are encouraged to accommodate reasonable requests from employees who wish to wear more casual clothing because of the increased temperatures. Areas that are too cold or too hot will be reported to Facilities Operations.

**F. Water Usage**

Use of irrigation water will be minimized through rainfall monitoring. The University will also investigate collecting stormwater and HVAC condensate for non-potable uses on campus. Low water use flush valves and flow restrictors on faucets and showers will be used in locker rooms and restrooms. No single-pass cooling water will be used on mechanical equipment in new construction or remodels. Existing equipment that uses single-pass cooling water will be eliminated as time and funding allows. Water that does not go to the sanitary sewer system (such as lawn irrigation, cooling towers, and fountains) will be metered to obtain a sewer credit from the City. Water leaks, dripping faucets and fixtures that do not shut off will be reported to Facilities Operations.

**G. Energy Efficient Equipment Procurement[[1]](#footnote-1)**

Limit computer and other electric equipment purchases to devices that are identified as ENERGY STAR products. These products are designed to use less power when sitting idle/unused. ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy to help consumers and businesses save money and protect the environment through energy efficient products and practices. Purchase of more expensive energy-efficient equipment can be justified when the extra cost is less than or equal to the resulting energy savings.

**H. Renewable Energy**

NC State will continue to support the development and, when feasible and supported by Life Cycle Cost Analysis, deploy renewable energy sources on campus, including solar, wind, biomass, hydroelectric and geothermal. [Would like to add that “NC State will not purchase Green RECs with appropriated funds.”]

***Continued Success:*** There are several ongoing activities that will help ensure the success of NC State’s Energy Policy.

**A. Monitoring**

No energy conservation program will be successful if progress is not monitored on a continuing basis. Most buildings on campus have metering devices installed. Meter readings can be used to track utility consumption, and the data can be used to locate problem areas as well as determine if conservation goals are being met.

**B. Training**

Training must be provided to ensure that both operations and service technicians have the skills and knowledge to effectively apply the technology used to achieve energy savings.

**C. Maintenance**

Mechanical system efficiency tends to degrade over time. Proper maintenance is required to ensure that systems operate as efficiently as possible. A building tune-up, or retro-commissioning, program will be established. Existing buildings will be periodically surveyed to ensure mechanical building systems are operating at peak performance, which will save energy.

**D. Education**

University faculty, staff and student cooperation and support of the Energy Policy are key to its success. An education program that provides information on utility costs, trends, and user impact on these costs will enable the campus population to understand the need for this policy, and how it can positively impact them by freeing up money from utilities for educational purposes.

**E. Suggestions**

Faculty, staff and students with suggestions that may reduce energy consumption, or costs, should contact the Office of Energy Management at 3-2188 or send an email to [save\_energy@ncsu.edu](mailto:save_energy@ncsu.edu).

1. State Contracts – It is recognized that the State Purchasing Office does not always consider energy efficiency ratings in selecting equipment to be included in state term contracts. For purchases of equipment that are covered under state term contracts where there is no ENERGY STAR certified equipment, purchases will determine if ENERGY STAR equipment is available in the marketplace, and, if it is, will competitively bid those items considering ENERGY STAR certification as necessary criteria to meet the campus energy conservation commitment. Life Cycle Cost Analysis should be applied to identify the best procurement option. [↑](#footnote-ref-1)