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**Subject: Campus Energy and Water Policy**

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## **1. Purpose**

The purpose of this policy is to guide the operations of the university in order to achieve the highest standards in energy/water usage with consideration of the impact on environmental quality and economic performance. To accomplish this goal, the university shall establish procedures to consider energy/water use in the design and operation of university facilities in the most economical and environmentally friendly manner possible, educate the university community on the use of energy/water, and consider energy/water use in purchasing decisions and transportation. The benefits gained include, but are not limited to, protection of ecosystems, improvement of air and water quality, reduction of waste, and conservation of resources.

## **2. Policy**

University facilities shall, to the extent possible, be designed, constructed, renovated, operated and maintained in accordance with the latest energy/water efficiency standards and in a manner consistent with the US Green Building Council’s LEED™ Building Rating Systems. Specifically the university shall:

1. Comply with Governor Timothy M. Kaine’s Executive Order 48 (2007) “Energy Efficiency in State Government.”
2. Make decisions concerning investments for renovations or new construction of all facilities at the university based on total cost of ownership or life cycle cost analysis.
3. Identify and strive to implement those strategies identified as being available and least costly.
4. Evaluate and compare alternative energy sources for short and long-term costs while considering future projections for availability and price escalation of all energy sources.
5. Explore teaching and research opportunities to assist in evaluating energy and water usage and recommending potential conservation measures.

### **3. Procedures**

#### **3.1 Efficiency and Conservation**

Virginia Tech achieved the 10% energy savings goal established for 2006 in Executive Order 54 (2003). Executive Order 48 (2007) "Energy Efficiency in State Government" requires the university to reduce costs of non-renewable energy purchases by an additional 15% of fiscal year 2006 expenditures by fiscal year 2010. Specific recommendations for energy/water efficiency and conservation include:

1. Identify, evaluate and implement, when practical, cost effective strategies to reduce energy/water demand.
2. Develop and implement strategies to encourage full participation of building occupants in energy/water efficiency and conservation programs. Include strategies such as information dissemination and incentive programs.
3. Develop and promote energy/water efficiency and conservation strategies whenever possible and practical.

#### **3.2 Design**

This policy incorporates the Virginia Tech *Design and Construction Standards*, latest edition, which, in turn, shall incorporate the latest energy/water standards and codes. Specific facility design recommendations include:

1. Review plans for construction, renovation, and maintenance of university-owned facilities and the installation of equipment within those facilities for compliance at each stage of the design and prior to finalizing bid documents.
2. Design, renovate, and operate building lighting, heating and cooling systems to align space use and occupancy patterns with a goal of reducing energy use during unoccupied periods.
3. Review university facility control systems with the objective of establishing the ability to communicate with each other and with the goal of reducing energy costs.
4. Set a minimum standard for all energy consuming equipment to be Energy Star® rated in efficiency or better.
5. Set a minimum standard for all water-related equipment and fixtures to meet or exceed the Federal Energy Policy Act of 1992/2005 (EPA) or EPA WaterSense requirements.
6. Properly commission all new buildings or significant renovations prior to substantial completion.
7. Incorporate as high a solar reflectivity as practical for the situation and application on all roofs.

#### **3.3 Operation and Maintenance**

The university shall strive to educate all building users and occupants concerning the use of campus buildings, with an emphasis on safety, energy and resource efficiency. Recommendations for operation and maintenance include:

1. Set nominal temperature targets for occupied facilities to be 68°F in the winter and 74°F in the summer. Exterior windows and doors should be closed when heating and cooling systems are in operation.
2. Ensure that all computers at the university are Energy Star® rated, have Liquid Crystal Display (LCD) monitors/screens (or best performing equivalent) set to default to sleep mode after a period of 15 minutes or less of disuse, except in those cases where specific research, instruction, or office mission requirements demand otherwise.
3. Install occupancy sensors to de-energize room lighting after a period of 15 minutes or less of non-use in all suites, meeting rooms, classrooms and other spaces used sporadically as per campus goal. For all spaces not controlled by occupancy sensors (for reasons of practicality), encourage occupants to take responsibility for turning out the lights when the space is not in use.
4. The use of portable electric space heaters, window air conditioners, and refrigerators is discouraged. If there is a valid need for using the devices they must be of a type approved by Environmental Health and Safety Services. Encourage the discarding or recycling of old and inefficient appliances.
5. To avoid the wasteful use of energy, the university should upgrade temperature control equipment.

### 3.4 Transportation

The university shall strive to achieve a passenger fleet vehicle average fuel efficiency of 30 miles per gallon or as appropriate to be consistent with Federal fuel efficiency guidelines. Specific recommendations for transportation include:

1. Increase the number of hybrid passenger vehicles available for use through Fleet Services.
2. Convert all other existing university vehicles to use biodiesel fuel whenever practical.
3. Continue to promote the use of carpooling and alternative modes of transportation including, but not limited to, utilizing Blacksburg Transit, bicycles, walking and alternatively fueled vehicles.

### 3.5 Billing

The university's records concerning energy/water usage shall be consolidated and current. Specific billing recommendations include:

1. Ensure coordination for utility billing and payment processes for Educational and General (E&G) centralized facilities and investments in utility conservation measures occur through a combination of external and internal systems and entities.
2. Continue to operate the university's internal billing systems in the existing manner. The Associate Vice President for Facilities Services is assigned the responsibility for the payment of these utility charges, where appropriate, using centrally managed funds for each utility (electricity, gas, steam, chilled water, potable water, domestic hot water and propane).
3. Maintain responsibility among decentralized operating units for billing processes and funding commitments associated with their facilities. This decentralized billing process shall apply to utility bills from external parties for service to outlying parts of the campus as well as off-campus operations.

### 3.6 Point of Contact

- The Associate Vice President for Facilities Services is the point of contact for this policy.

### 3.7 Energy and Sustainability Committee

- The university's Energy and Sustainability Committee shall assist the Associate Vice President for Facilities Services and the Vice President for Administrative Services with the development and implementation of the Campus Energy and Water Policy.

### 3.8 University Departments and Regulatory Agency Contracts

The Associate Vice President for Facilities Services office will coordinate with other university departments and outside regulatory agencies to develop and implement procedures to ensure full compliance of the design and execution of the work with applicable codes, standard permitting requirements and other university concerns. Each of the university activities below should identify a lead person responsible to represent them and to support the Associate Vice President for Facilities Services to coordinate university wide sustainability initiatives. These contacts should include, but are not limited to:

- Academic Deans and Departments
- Athletic Department
- Environmental Health and Safety Services
- Office of the University Architect
- Recreational Sports
- Student Programs
- University Unions and Student Activities
- Virginia Department of Environmental Quality
- Virginia Department of Mines, Minerals and Energy

### 3.9 Implementation and Compliance

Each department head or supervisor shall:

- Designate an energy/water conservation representative for each organization or unit occupying each building.
- Communicate this policy to everyone under his/her supervision by providing access to the policy and discussing with his/her employees.
- Identify all training requirements in this area that may apply to those individuals working in the organization and inform supervisors of the need for appropriate training.

## 4. Definitions

**ASHRAE:** American Society of Heating, Refrigeration and Air Conditioning Engineers

**Commissioning:** A process which ensures that systems are designed, installed, functionally tested, and performing in conformity with the design intent.

**Energy Star®:** A program of the US Environmental Protection Agency including rating of appliances and equipment for energy/water efficiency.

**Energy Policy Act (EPAct):** Federal legislation governing permissible flow rates for water-consuming fixtures and appliances. Original legislation for most common fixtures was passed in 1992, with several updates in 2005.

**Facility:** Any portion of a building, structure or area, including the site on which the building, structure or area is located, wherein specific services are provided or activities are performed including all utilities, systems and building service equipment associated with the facility.

**HVAC:** Heating Ventilating and Air Conditioning.

**LEED®:** A building rating system developed by the US Green Building Council, Leadership in Energy and Environmental Design; a voluntary, consensus-based national standard for developing high-performance, sustainable buildings with three versions of rating systems: LEED-NC (New Construction), LEED-EB (Existing Buildings), and LEED-CI (Commercial Interiors).

**Maintenance:** Work performed to a facility or the fixed systems and building service equipment therein, for the purpose of maintaining quality and function.

**Portable:** HVAC equipment used within a facility but without permanent connection to the building's utility services.

**Renovation:** Any work to a facility or the fixed systems and building service equipment therein which is done to improve the existing level of quality and function, or to accommodate a change in the nature of the use of a space within a building or facility.

**Repair:** The reconstruction of or renewal of any part of an existing facility for the purpose of maintenance or restoration of its state.

**Retro commissioning:** A systematic process for improving and optimizing an existing building's operations and supporting those improvements with enhanced documentation and operator training.

**Utilities:** Energy (electricity, steam, chilled water, domestic hot water, natural gas, and propane) and water (potable water/sewer).

**WaterSense:** A program of the US Environmental Protection Agency including rating of appliances and equipment for water efficiency.

## **5. References**

ASHRAE 90.1 (Energy Standard for Buildings except Low-Rise Residential Buildings)

EPA Water Conservation Plan Guidelines, Safe Drinking Water Act, USC 42

National Energy Conservation Policy Act, Public Law 95-619

National Appliance Energy Conservation Act, Public Law 100-12

Virginia Tech *Design and Construction Standards*

Governor's Executive Order 48 (2007): Energy Efficiency in State Government

## **6. Approval and Revisions**

Approved September 26, 2006 by Vice President for Business Affairs, Kurt J. Krause.

- Revision 1

Significant revisions to enhance energy and water conservation and support university sustainability efforts.

Approved by Energy and Sustainability Committee September 25, 2008.

Approved January 14, 2009 by Vice President for Administrative Services, Sherwood G. Wilson.