Virginia Western Community College Sustainable Campus Operations

October 7, 2009

Virginia Western Community College

History:

VWCC is the 5th largest community college of the 23 community colleges in the Commonwealth of Virginia. It is a single campus inside Roanoke City, 70 acres in size serving 12 thousand students annually.

There are 14 academic buildings on site. 50% of the facilities were constructed in the mid 1960's and the balance prior to 1994. These are eras in which energy conservation was not a top design priority.

Sustainability:

Since 2002, Virginia Western Community College has been able to achieve 35% reduction in energy consumption by a series of incremental steps.

Virginia Western was able to achieve these reductions and savings using a comprehensive strategy.

Strategy for Sustainable Campus Operations

- ✓ Energy Management /Physical Plant Improvements
- ✓ Campus Master Planning Initiatives
- ✓ Administrative Policy
- ✓ Active Environmental Stewardship:

Energy Management/Physical Plant Improvements

MEP Systems:

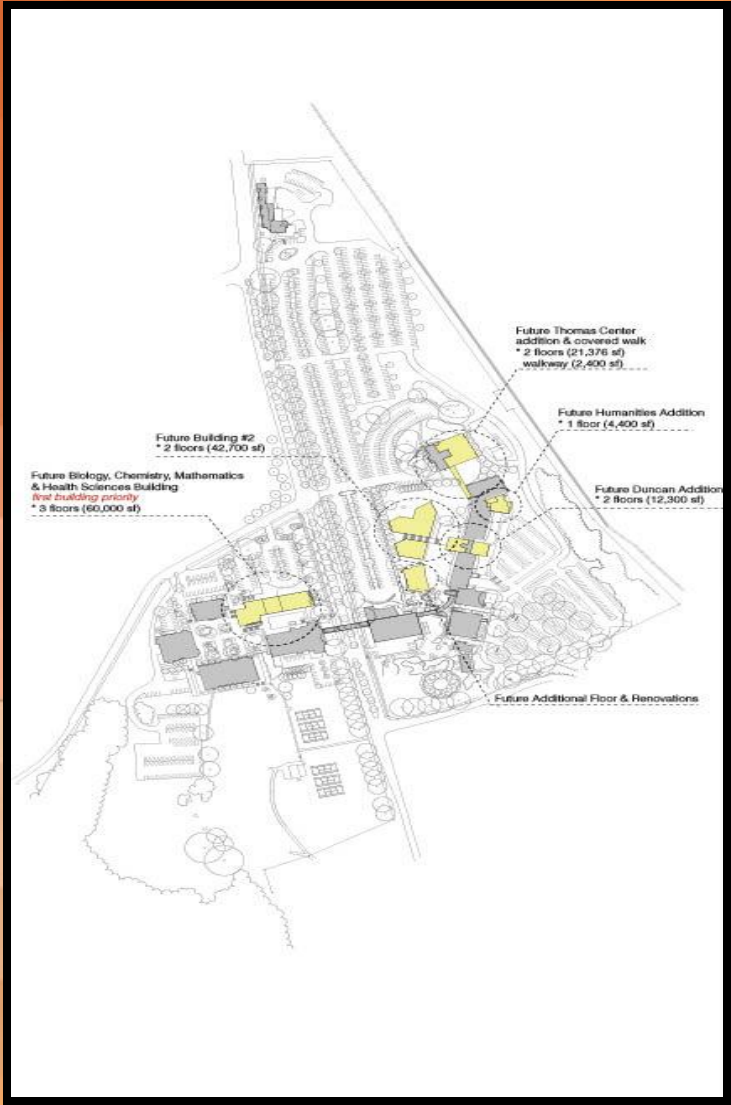
- Electronic ballast on fluorescent lighting and change to T-8 bulbs.
- Replace bulbs on regular maintenance schedule.
- Motion sensors installed in classrooms to turn off lights when no one is present.
- Outdoor lighting put on computerized timers and being switched to LED.
- Lengthen shut down times of HVAC equipment at night.
- Replace old mechanical units with high efficiency units.
- Install more VAV's and controllers enabling fine tuning of spaces.
- Converted 80% of campus facilities to DDC controls.
- Replace single pane storefront and windows with insulated glass.
- New roof insulation designed to exceed the minimum energy code requirement.
- Increase exterior wall insulation requirements for new and renovation projects.
- Replace old commodes using 4.5 gallon with new commodes using only 1.5 gallon per flush.
- Replace flush valves and faucets with timed and reduced flow valves.
- Replace hot water heaters with high efficiency units.

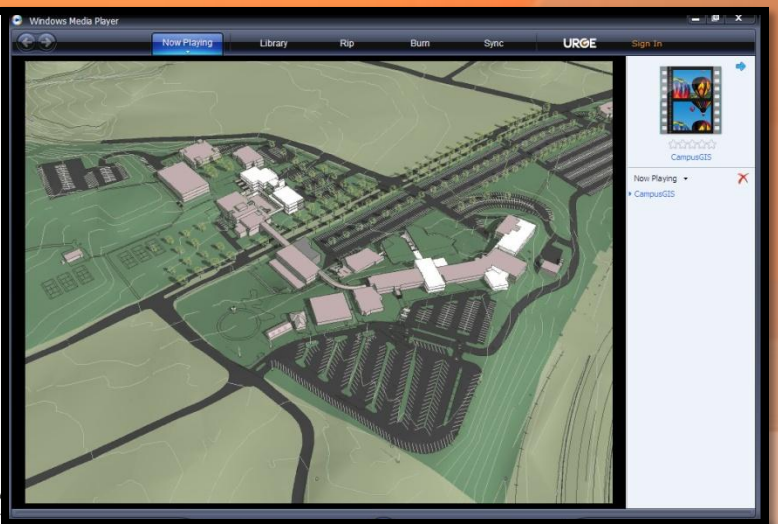
Recent innovation: During summer cooling season use buildings latent heat instead of boilers for heating needs. VWCC successfully implemented on 3 buildings this summer with estimated savings of 50K over a 3 month period.

Campus Master Plan Initiatives

- Campus master plan will require new buildings and major renovations use LEED (Leadership in Energy and Environmental Design) principles in their design.
- Commitment to preservation of green space and view sheds.
- Using infill buildings to increase density reducing impact on outdoor space.
- Locating new buildings to create inviting and useful outdoor spaces for students.
- Encouraging use of public transportation.
- Increase landscaping and reduce run off and improve on site absorption.
- Planning and cooperation with City of Roanoke for greening of Colonial Ave and connection to bike trails.
- Investigating feasibility of using solar power or wind turbines for lighting and planning prototype projects.

VWCC Campus Master Plan





Administrative Policy

(Team Work)

In 2006 Facilities Management developed several initiatives to reduce energy consumption which could only be implemented through College Administrative policy. Administrative support for campus conservation resulted in adoption of the following initiatives:

- **Consolidate weekend classes and activities from 14 buildings to 3 buildings enabling shut down of HVAC/Electrical Systems in buildings not used.**
  Note: This initiative required extensive coordination of departments, Deans, curriculum offerings, faculty and event scheduling.

- **Ask faculty and staff to turn off all lights and equipment when not in use.**

- **Prohibit use of personal fans, space heaters, and opening of operable windows.**

In 2008 an evaluation of computer labs was conducted. It was determined power consumption of our 12 computer labs, during non business hours, with computers in sleep mode, was consuming power equal to 30 thousand dollars a year at the current KWH cost.

- **Policy was adopted shut down of computer labs during non business hours.**
- **For 2009 the virtualization of the labs is being planned.**

Active Environmental Stewardship

- Recycling of fluorescent lights and recovery of mercury.
- Selection of materials that are VOC (Volatile Organic Compounds) and PVC (Poly Vinyl Chloride) free.
- Products with recycled content are given preference for conservation of new raw materials.
- New vehicles are flex fuel E85 compliant for use of ethanol.
- Indigenous shrubs and plants are selected for drought resistance, reduced need for fertilizer, and improved water absorption qualities.
- VWCC is installing JACE meters on electrical system to reduce power consumption at peak load times.
- VWCC voluntarily participates in the Roanoke "Clean and Green" group to reduce CO2 emissions.
- VWCC facilities department works with academic divisions to increase awareness and include information on sustainable design principles and renewable energy in programs of study.

Virginia Community College System (VCCS) Incentives

The VCCS represents all 23 community colleges. VCCS contracted with T.A.C. to evaluate, program and implement energy conservation projects through physical plant improvements using performance contracting method of delivery.

Results to date:

- 20 colleges completed
- 1.36M annual energy savings
- 55M in improvements completed
  - 40M in Capital Appropriations
  - 15M in Leveraged Savings

Benefits:

- Reduced energy consumption and corresponding savings.
- Improved student, faculty and staff comfort.
- Reduced maintenance / repair cost.

Sustainable Campus Operations - Conclusion:

Operations affecting positive change include physical plant, administration, active stewardship, and partnering with outside resources.

Benefits:

- **Energy conservation results in reduced consumption of raw materials and CO_2 emissions in the environment.**
- **Water conservation reduces demands on water supply and waste water that contributes pollutants to the environment and water ways.**
- **Use of environmentally friendly materials, sustainable materials, or materials that can be recovered for recycling is a wise and economical practice.**
- **The principle of conservation is smart money due to cost savings.**