

# **Virginia Western Community College Campus Sustainability and Clean Water**

**June 2016**

# Virginia Western Community College

**VWCC is the 5<sup>th</sup> 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.**

**There are 14 academic buildings on site. 50% of the facilities were constructed in the mid 1960's to 1990's. Energy conservation was not a top priority in that era. New buildings use high efficiency equipment and a well insulated building envelope.**

**VWCC has its own independent MS4 Stormwater Permit and uses established Minimum Control Measures (MCM's) & Best Management Practices (BMP's). In addition, VWCC actively practices water conservation for sustainability.**

## **Sustainability Achievements:**

**Since 2005, Virginia Western Community College has been able to achieve 35% reduction in energy consumption by a series of incremental steps and 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.**
- **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 with estimated savings of 50K over a 3 month period.**

# Campus Master Plan Initiatives

- **New buildings and major renovations use International Green Construction Code (IGCC) requirements for design.**
- **Commitment to preservation of green space and view sheds. Locating new buildings to create inviting and useful outdoor spaces for students and using infill buildings to increase density.**
- **Encouraging use of public transportation.**
- **Planning for Parking Garages and converting surface parking to green space to reduce stormwater run off and increase absorption. Trade impermeable area for permeable. Use native plants and avoid irrigation.**
- **In partnership with City of Roanoke plan improvements of Colonial Ave that will improve safety, manage traffic, reduce stormwater run-off and provide multi-modal transportation (bike way)**
- **Investigating feasibility of using solar power, solar preheating of water or other forms of renewable energy.**

# Administrative Policy

**VWCC has 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, events and activities from 14 buildings to 3 buildings enabling shut down of HVAC/Electrical Systems in buildings not used. This also reduces HVAC use of fresh water for cooling towers.**
- **VCCS/VWCC contracted with T.A.C. to evaluate and implement energy conservation projects through physical plant improvements using performance contracting.**
- **Ask faculty and staff to turn off all lights and equipment when not in use.**

**Fun Fact: In 2008 an evaluation of computer labs with CPU's 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 2008 KWH cost. VWCC has since economized more by move to virtual computer system.**

# Active Environmental Stewardship

- **Water conservation by replacement of restroom fixtures, flush valves and faucets campus wide to timed / reduced flow units.**
- **Commissioned Stormwater Master Plan that calculated all permeable and impermeable area and watersheds on campus property. Stormwater inlets and outfalls are identified and inspected quarterly. Sediments or contaminants are removed ASAP. Compliance with MS4 regulations. New projects utilize E&S and SWPPP plan.**
- **VWCC voluntarily participated in the Roanoke "Clean and Green" business coalition to reduce CO2 emissions from March 2008 to December 2012. Aggregate average of the group was a 33% reduction in energy consumption equivalent to 2 million in energy costs.**
- **Selection of new or replacement 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.**
- **VWCC recycles fluorescent lights for recovery of mercury and has active plastic, paper and cardboard recycling program.**
- **Indigenous shrubs and plants are selected for drought resistance, reduced fertilizer, and improved water absorption qualities. Irrigation is not used conserving H2O.**

# **Stormwater/Clean Water:**

## **Virginia Western has its own MS4 Stormwater Permit with DEQ.**

**There are 3 vegetative roof gardens on campus. VWCC houses the Community Arboretum that demonstrates using native plants and absorptive and water filtering vegetation.**

**VWCC recycles cardboard, paper and plastic to keep these out of waste stream and environment.**

**There are 2 large detention ponds and one underground storage tank to store water in a storm surge and dissipate it slowly to prevent erosion.**

**There are absorptive swales in north edge of Lot 14 and remaining surface water is channeled into the Lot 14 rain garden. There are an additional 3 raingardens serving parking areas and 1 rain garden in middle of the Fralin Center plaza. Fralin Center site also has 2 absorptive underground storage areas. Sediment and runoff to outfalls is minimized.**

**VWCC maintains Best Management Practices (BMP's) and Minimum Control Measures (MCM's) that are part of our permit.**

**VWCC maintains E & S and SWPPP plans and implements these as relevant to project regulatory requirements.**

# **Stormwater/Clean Water: Virginia Western has its own MS4 Stormwater Permit with DEQ.**

**VWCC provides FMS and FPD staff training on BMP's, MCM's, E & S, SWPPP, inspections of inlets and outfalls and other relevant training.**

**VWCC provides public outreach and sponsors public awareness events.**

**VWCC has partnered in a coalition with City of Roanoke, Roanoke County, City of Salem and City of Vinton to share practices and outreach information.**

**Inspections of stormwater inlets and outfalls occurs on a regular basis to assure waste or sediment are removed from storm drain areas.**

**Illicit discharges or hazardous spills (such as vehicle radiator fluid) are contained, cleaned up and disposed of according to established procedures to keep these contaminants out of the water and environment.**

**An approved nutrient management plan is maintained to reduce nitrates.**

**Biodegradable and green friendly chemicals are used in custodial and snow removal operations.**

**VWCC submits 3 year plans and annual reports to DEQ on compliance activities for accountability.**