

## **Past & Future Energy Conservation Measures at the University of Maryland Baltimore County**

For its 40-year history, UMBC has actively promoted the design and construction of buildings and infrastructure that can be effectively and efficiently maintained and operated. With the advent of energy saving technology, UMBC's Facilities Management has made numerous modifications to mechanical, electrical, and structural systems to conserve energy. Numerous programs have been implemented to reduce waste. These and other efforts minimize the university's impact to the environment.

UMBC's President's signature on The American College & University Presidents Climate Commitment combined with the newly established UMBC Climate Change Commitment Task Force is an affirmation and reflection of Facilities Management's long standing pursuit of energy conservation measures.

The following outlines program initiatives and specific examples of sustainable practices in use at UMBC. We have identified our efforts in categories. These initiatives are categorized as Energy Demand Management, Environmental Impact Reduction and Waste Stream Management efforts.

### **Energy Demand Management**

1. UMBC continues to convert existing incandescent and fluorescent lighting fixtures to accommodate energy efficient 40W T-5 fluorescent lamps.
2. Existing roadway and walkway lighting systems have been modified to accommodate energy efficient metal halide lamps.
3. Outdated HVAC automation systems have been updated from pneumatic to direct digital controls resulting in more reliable and efficient heating and cooling.
4. The Central Plant has been retrofitted with higher efficiency boiler and chiller equipment.
5. UMBC has installed a one million gallon chilled water storage tank to supplement the Central Plant.
6. A boiler and chiller Satellite Plant replaces stand-alone units for student housing buildings.
7. Planning is underway to replace roofs and windows to decrease heat loss.
8. Capital planning is underway to upgrade chilled water distribution systems for improved efficiency.
9. Campus-wide conversion of building mechanical systems continues to move facilities from constant volume to variable air volume HVAC distribution systems.

## Environmental Impact Reduction

1. Four and one half percent (4 1/2%) of the campus' electrical consumption is provided by renewal energy sources.
2. HVAC set point temperatures have been adjusted to be higher in the summer and lower in the winter.
3. HVAC temperature set backs when buildings are in an unoccupied mode.
4. Mowing is done when necessary in irrigated areas only.
5. UMBC irrigates in the morning only when evapotranspiration is low.
6. Irrigation formulas are employed to minimize water usage and reduce waste.
7. Added mulched planting beds reduce water needs.
8. Ten fully electric vehicles have been purchased.
9. Gas purchases are reformulated with anywhere from 5%-15% ethanol depending on the season.
10. 4 CNG vehicles are in the UMBC fleet.
11. Paper products in toilet rooms meet or exceed the EPA standards for recycled materials (EPA 60%). Trash Bags used on campus are composed of 60% recycled materials.
12. Cleaning supplies currently used are either 75% green seal certified or EPA registered and accepted.
13. A program has been launched whereby funds are earmarked for the annual installation or replacement of indigenous trees on campus.
14. A new program has been launched whereby funds are earmarked for the annual installation or replacement of planting beds around campus.
15. A new program has been launched whereby funds are earmarked for the annual installation of bike racks on campus.
16. A new program has been launched whereby funds are earmarked for the annual restoration of stream beds and drainage outfalls on campus.
17. An on-going program ensures that all construction projects conform to Maryland Department of the Environment's requirements for storm water management with regard to sediment and erosion control, storm water run-off quantity management and storm water quality management.
18. An on-going program ensures that all applicable new construction and renovation projects conform to the Maryland Department of Natural Resources' reforestation requirements.
19. The demolition at the Hillcrest site resulted in the reclamation of 8,268.80 square feet of pervious surface.
20. The design for stream restoration at Stadium Locker Room facility is nearly complete.
21. Stream restoration needed near the Commons Garage is currently in the planning phase.
22. A trial installation of pervious pavement has been incorporated into the plaza design at the Stadium Locker Room facility. The test will permit UMBC Facilities Management to assess the viability of this material for use at other projects on the UMBC campus.

### **Environmental Impact Reduction, Continued**

23. The design for the Performing Arts and Humanities Building will incorporate sustainable design features that will make it possible to certify the building as a green building per US Green Building Council guidelines.
24. New lighting fixtures with energy efficient ballasts, lamps, and occupancy sensors to minimize energy consumption were used on Admin-3<sup>rd</sup> floor and in the Lecture Hall 4 project.

## Waste Stream Management

1. UMBC ranks 1st place among schools participating in Recyclemania (2007) in the State of Maryland for Paper and Cardboard Recycling.
2. UMBC ranks 2<sup>nd</sup> among schools participating in Recyclemania (2007) in the State of Maryland in rankings for:
  - Grand Champion Standings,
  - Per Capita Classic Standings, and
  - Gorilla Prize Standings in cumulative recyclables per person.
3. UMBC ranks 3<sup>rd</sup> among schools participating in Recyclemania (2007) in State of Maryland for recycling bottles and cans at 1.27lbs/person.
4. A new program has been launched whereby construction debris generated by new construction, renovations, or demolition on campus will be recycled in accord with the Maryland Recycling Act (MRA) and the All StAR (**All State Agencies Recycle**).
5. Numerous building modifications (e.g. low flow toilets and elimination of water cooled condensing units) have resulted in a 10% reduction of campus-wide water consumption.
6. UMBC donated building materials in the form of approx. 1.5 tons of brick and block to charitable organizations.
7. UMBC plans to donate athletic equipment and office/classroom furniture to charitable organizations.
8. 150 tons soil and root material were recycled by UMBC.
9. UMBC continues to recycle wood chips from tree trimming and steel from desks and cabinets.
10. UMBC added cardboard recycling dumpsters at ITE and RAC.
11. UMBC added glass and a plastic recycling dumpster at RAC.
12. UMBC has solicited a new computer recycling vendor.
13. UMBC recycled tires and 1,000 gals of oil in FY 2007.
14. UMBC recycled 6,000lbs of fluorescent lighting in FY 2007.
15. UMBC recycled 24,000gals of grease.
16. The demolition of the Hillcrest Building netted the following in recycled material:
  - 77.82 tons of ferrous metal; 3.14 tons of non-ferrous metal; 137.23 tons of glass, wood, and roofing; and 2,361.00 tons of brick and concrete.
17. Products with recycled content are employed wherever possible for campus renovations. Examples include ceiling tiles, gypsum wall board, and carpet. The carpet in the newly renovated offices on the third floor of the Administration building is recyclable.
18. Recycling bins are incorporated into the design of the Administration Building lobby and the Susquehanna Hall project in 2007.
19. UMBC added paper recycling at the Commons.
20. UMBC installed an earth dam for TRC Salt pile storage to provide run off retention.