Greening Charm City:
Advancing Sustainability in Higher Education in Baltimore
Welcome

We are pleased to present the Sustainability Report for the Baltimore Colleges and Universities for a Sustainable Environment (B’CaUSE) network. Recognizing that each school has an impressive collection of successes in fostering a vision of sustainability and promoting campus action, the purpose of this report is to highlight some of the unique and interesting activities that make our schools such a driving force for progress in the region. Collectively, we believe our actions and accomplishments demonstrate a high degree of environmental, social and economic leadership in the Baltimore region.

B’CaUSE was formed in 2008 comprising of 13 higher education institutions and is supported by the Baltimore CollegeGreen Network. The mission of the B’CaUSE network is to foster collaboration on ideas, best practices, and projects between the institutions of higher education to advance campus and regional sustainability goals. The network meets quarterly, and over the years the group has discussed operational issues such as composting, energy reductions, greenhouse gas management, and alternative transportation options, as well as people focused issues such as fostering positive behavior change, successful communications strategies, and engaging students to make meaningful change. By sharing the inspiring work occurring at each of our institutions, the members of this network are clearly stronger through this beneficial collaboration.

The report tells an important story of sustainability in Baltimore. As seen throughout the school narratives, sustainability is a common thread that ties us all together.

Table of contents

Welcome ................................................................. 1
Baltimore City Community College ................................. 2
Coppin State University ............................................... 4
Goucher College ....................................................... 6
Johns Hopkins University ............................................. 8
Loyola University Maryland .......................................... 10
Morgan State University .............................................. 12
Notre Dame of Maryland University ........................... 14
The Community College of Baltimore County ................ 16
The Maryland Institute College of Art ......................... 18
Towson University ..................................................... 20
University of Baltimore .............................................. 22
University of Maryland, Baltimore ............................... 24
University of Maryland, Baltimore County ................... 26

Contributors

Darcy Accardi
Davis Bookhart
Joanna Calabrese
James Chrystal
Clara Fang
Jeff La Noue
Eric Martinez
Payal Patnaik
Ashley Pennington
John Ullman
Overview

Serving primarily the residents and the business community of Baltimore, Baltimore City Community College (BCCC) is a state-sponsored, urban, comprehensive, degree-granting community college with one main campus and satellite locations throughout the city. With its broad range of degree and certificate programs, affordable tuition, and extensive outreach, BCCC offers educational opportunities at all levels to students. By attending BCCC, students receive the quality education and training necessary to obtain good jobs, transfer to four-year institutions, and upgrade or acquire new skills to be competitive in the global marketplace.

Key Initiatives

The BCCC community is committed to developing sustainability projects and increasing environmental awareness among its constituents and neighbors. Sharing a common vision to change lives and build communities, students, faculty members and staff work hand in hand to promote sustainable operations and develop necessary solutions.

BCCC is part of the GRACE Plan, a community planning effort with the mission of creating long term visions for the revitalization of the Greater Rosemount and Coppin Heights areas. In conjunction with the community, various projects aimed at community greening have been developed such as bike and pedestrian connection improvements, community gardens and green landscaping of open areas. BCCC is also pursuing LEED silver certification for renovation and modification of its existing buildings, and aiming to meet LEED gold certification for new construction.
Dynamic Curriculum

Interdisciplinary environmental science courses that combine ideas and information from the natural sciences (biology, chemistry, geology), mathematics and the social sciences (economics, political science, English) are among various credit courses that demonstrate the link between various academic divisions of the college.

The student body, together with the faculty and staff, are also active stewards working toward campus sustainability. The BCCC Environmental Science Club focuses on increasing environmental knowledge and initiatives inside and outside the college. The club has initiated a number of programs and projects focused on recycling, composting, and community involvement. To name a few, they were instrumental in establishing the Cafeteria Organic Recycling Act and Library Waste-keeper Recycling Act, and maintain a campus garden on one of the building’s roofs.

Designated as a National Weatherization Training Provider in Baltimore City, BCCC has opened a Weatherization Hub Training Center at 1819 East Preston Street. Weatherization, in the broadest sense, is the practice of protecting a building – exterior and interior – from the elements. In the green economy, weatherization means modifying a building to reduce energy consumption and optimize resource efficiency to create an environment that is safe, comfortable, and cost efficient.

BCCC continues to enhance and expand its weatherization and energy efficiency offerings. The college received a $1 million grant from the U.S. Department of Energy and has named this newly funded project the “Technology Solution Center.” The new facility will develop and implement green technologies like photovoltaics and solar thermal.
Overview

Founded in 1900, Coppin State University (CSU) provides educational access and diverse opportunities for students through excellence in teaching, research, and community engagement to foster analytical, socially responsible, lifelong learners. CSU builds on a rich legacy of empowering students, promoting community revitalization, and strengthening relationships with local, national, and global partners.

Key Initiatives

CSU plays a significant role in advancing sustainability and environmental efforts in West Baltimore. Since signing the American College and University Presidents’ Climate Commitment (ACUPCC) in March of 2008, the university has initiated the following sustainability and environmental justice initiatives:

• Completed a greenhouse gas inventory and a comprehensive climate action plan containing policies and practices designed to reduce the university’s GHG emissions and make sustainability and environmental justice a key part of the curriculum.

• Simulated the most efficient solar energy cells in the world and worked with 200 university and high school students to explore the properties of solar cells and investigate how nanomaterials are used to increase solar conversion efficiency.

• Installed a 500kW solar photovoltaic system; the only public entity in Baltimore City to do so.

• Became a partner in the establishment of a National Socio-Environmental Synthesis Center in Annapolis (SeSync) – a $27.5 million grant from the National Science Foundation that will promote collaboration among the University of Maryland Center for Environmental Science, University of Michigan, Coppin State University, Washington State University at
Vancouver, Gallaudet University, Resources for the Future and several international partners.

- Introduced a Center for Sustainability and Environmental Justice (CSEJ) to promote environmental education and research.
- Made the commitment to environmental stewardship as a key element within the university’s 2009 to 2019 Facilities Master Plan.

Greening the Campus Square: A Unique, Transformative Sustainability Initiative at Coppin State University

In 2010, Coppin State University, a comprehensive, urban, four-year public liberal arts university located in Baltimore, Maryland, transformed its “typical” campus courtyard known as the “central quad” into an attractive, sustainable, well-designed green space that now serves as an outdoor laboratory for teaching sustainability.

CSU enhanced the aesthetics of its central courtyard to promote a high quality living and learning environment by restoring open green space, while retaining existing trees and minimizing grade changes to reduce the heat island effect. Since most of the quad became green space, CSU estimates that it is able to reduce stormwater run-off from this area by 50 percent. The university also utilizes a water collection system to provide water for the automatic sprinkler system. Water is collected from the HVAC condensing units on top of the library, and its flow is directed to cisterns below. The new central quad also has dark sky fixtures that reduce the amount of light pollution. During construction of the central quad, CSU used recycled cobblestones and rapidly renewable materials, such FSC certified wood, for new benches. Furthermore, local material helped achieve CSU’s sustainable goals as well as the use of water efficient landscaping with native and drought-tolerant species.

The large-scale transformation of the central quad area not only reduced the university’s carbon footprint, but has also become a living laboratory that integrates sustainability into the academic curriculum. The greening of the central quad is a transformative initiative that demonstrates how CSU strives to achieve a high level of environmental stewardship and responsibility in the development and expansion of the campus, as well as how the university has engaged in environmentally conscious construction and renovation practices.
Overview

Goucher College is a selective, independent, coeducational institution in Baltimore dedicated to the interdisciplinary traditions of the liberal arts and a broad international perspective on education. As the first college in the nation to pair required study abroad with a special travel stipend for every undergraduate, Goucher believes in complementing its strong majors and rigorous curriculum with abundant opportunities for hands-on experience in the world.

Key Initiatives

Goucher has embarked on a far-reaching campaign to promote environmental sustainability through both its co-curricular activities and its academic programs. The college’s main environmental goal is to institute the provisions set forth in the American College and University Presidents’ Climate Commitment (ACUPCC) that President Sanford J. Ungar signed in summer 2007. Some highlighted initiatives include:

- The Goucher Environmental Sustainability Advisory Council (GESAC) was formed in 2009 and the college’s greenhouse gas emissions (GHG) inventory was completed in 2010. In May 2011, GESAC completed the college’s first Climate Action Plan (CAP), which set a goal to reduce GHG emissions 20 percent by 2020.

- As of fall 2007, all entering Goucher students are required to explore the ecological and/or policy dimensions of environmental sustainability as part of the college’s new liberal education curriculum. In 2010, Goucher adopted a new environmental sustainability major to complement the existing minor in this field.

- The college purchases Renewable Energy Certificates (RECs), uses only green cleaning products, and changed over interior and exterior lighting on campus to LEDs.
• Composting of all food waste occurs in Goucher’s dining halls, which complements the already-existing, campus-wide recycling program.

• Utility submeters are being implemented on campus buildings to encourage competition to lower energy costs between users and to raise awareness of the amount of energy being consumed.

• Goucher’s food service provider, Bon Appétit, is committed to supporting local farmers and food producers who provide organic fruits and vegetables, hormone-free dairy products, and free-range meats.

• As of 2009, all buildings or major renovations must achieve at least a LEED-certified Silver level, and the college’s newest facility, the Athenaeum, became Goucher’s first LEED-certified Gold building.

• In the college’s new Strategic Plan, Transcending Boundaries and Transforming Lives, environmental sustainability is a critical component of campus operations, academics, volunteer and study-abroad opportunities, events programming, and shared community principles.

Goucher Light Emitting Diode (LED) Lighting Project

Background

Goucher College has invested in the implementation of a substantial number of energy-saving initiatives since 1990. As a signatory of the American College and University Presidents’ Climate Commitment, Goucher continues to be committed to reducing its carbon footprint. As the development of new technology has progressed, more sustainable options are available for applications that achieve positive results, including Light Emitting Diode (LED) technology for lighting.

Solution

Goucher has developed a lighting replacement initiative that is being implemented in two phases: Phase I included the replacement of 65 roadway and parking lot lights, and Phase II will include the replacement of 55 exterior walkway lights.

<table>
<thead>
<tr>
<th>Results</th>
<th>Phase I</th>
<th>Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected cost savings (annually)</td>
<td>$67,600</td>
<td>$22,900</td>
</tr>
<tr>
<td>Estimated reduction in metric tons of carbon (annually)</td>
<td>49.1</td>
<td>16.6</td>
</tr>
<tr>
<td>Payback of capital investment (years)</td>
<td>1.1</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Overview

Founded in 1876, the mission of The Johns Hopkins University is to educate its students and cultivate their capacity for life-long learning, to foster independent and original research, and to bring the benefits of discovery to the world. More than 130 years later, Johns Hopkins remains a global leader in teaching and research. Home to nine schools - ranging from the arts and music, the humanities, and the social and natural sciences, to engineering, international studies, education, business and the health professions - throughout the Baltimore-Washington area, since 1979 Johns Hopkins faculty have won more federal research and development funding than any other university. When considered in partnership with its sister institution, the Johns Hopkins Hospital and Health System, the university is Maryland's largest employer and contributes more than $10 billion a year to the state's economy.

Key Initiatives

Johns Hopkins defines sustainability as smart and responsible actions that prioritize people, natural resources, and finances to safeguard the health of future generations. To this end, the university has established the “Sustainability Network” to support and highlight the efforts of individuals and groups across divisions and campuses. This growing network is the key to addressing the broader university goals of producing world-class scholarship and research within a nurturing setting that embraces a vision of sustainability.

In 2010, President Daniels noted that universities “are institutions that discover, that educate and that, often, set an example. When it comes to global climate change, Johns Hopkins will be a leader in all three.” Backing this statement, President Daniels announced a goal to reduce university-wide GHG emissions by 51% by 2025, and to create a new institute to focus on climate research and collaboration. Along with similar attention to water,
waste, management of grounds, and the development of green and healthy buildings, Johns Hopkins is leading the way towards a sustainable Baltimore.

**Johns Hopkins Climate Showcase Project**

The Johns Hopkins Climate Showcase Program was a three year, community-outreach initiative committed to creating a more sustainable non-profit sector in Baltimore. The project was funded by a U.S. Environmental Protection Agency grant and was partnered with the City of Baltimore. It focused on strengthening Baltimore’s non-profit sector by providing city non-profits with dynamic free student-led energy and sustainability assessments. Since its inception in 2010, the Program has encouraged Baltimore City nonprofits to reduce their resource consumption and integrate sustainability into their highly varied missions and operations. In doing so, the program has cultivated an enduring relationship between university students and the city.

The Climate Showcase Program was the natural outgrowth of a campus sustainability initiative created in 2009 at Hopkins in which Green Building Interns performed basic sustainability assessments of on-campus buildings. During the summers of 2010, 2011 and 2012, cohorts of both undergraduate and graduate students from Johns Hopkins University were recruited, trained and supervised by the Office of Sustainability. The assessments were conducted over a week long period and involved a walk-through observation of the non-profit buildings, benchmarking and analyzing energy and water utility bills and data; facilitating an in-person survey on transportation, purchasing and other day-to-day practices of the organizations; and hosting brainstorming sessions with organization staff to uncover opportunities for engagement in new sustainable actions. At the end of each week, the students provided each organization with a recommendations report for achieving greater levels of resource conservation, and resources on financial incentives. Where possible, the students implemented many of the low or no cost recommendations, such as installing water-saving devices, re-programming thermostats, or setting computers and printers to conservation modes.

The Climate Showcase Program dedicated extensive time and resources to measuring its success. Based on data analysis and feedback from previous participants, the interns were able to calculate the estimated potential and actual reductions of CO2 emissions, kWh use, and nonprofit operating costs. These results, represented in the chart below, reflect how the Climate Showcase Project has uncovered substantial potential for increased sustainability throughout Baltimore.

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimate of total potential CO2 emissions reductions based on all recommendations</th>
<th>Estimate of total potential kWh reductions based on all recommendations</th>
<th>Estimate of total potential dollars saved based on all recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>184,583 lbs per year</td>
<td>158,819 kWh per year</td>
<td>$20,640 per year</td>
</tr>
<tr>
<td>2011</td>
<td>193,632 lbs per year</td>
<td>161,630 kWh per year</td>
<td>$18,152 per year</td>
</tr>
<tr>
<td>2012</td>
<td>240,930 lbs per year</td>
<td>200,775 kWh per year</td>
<td>$24,093 per year</td>
</tr>
<tr>
<td>Total</td>
<td>619,145 lbs</td>
<td>515,954 kWh</td>
<td>$63,885</td>
</tr>
</tbody>
</table>
Overview

Loyola University Maryland is a Jesuit, Catholic university committed to the educational and spiritual traditions of the Society of Jesus and the development of the whole person. The university inspires students to learn, lead, and serve in a diverse and changing world. With majors and minors in more than 40 academic fields, Loyola offers an undergraduate program grounded in the liberal arts, focused primarily on developing undergraduate students as well-rounded scholars and leaders who are distinctly prepared to succeed in every aspect of their lives. Graduate degrees at the master’s and doctoral levels are also available in a wide range of programs and areas of study.

Key Initiatives

Loyola has taken many measures to reduce energy consumption, including retrofitting 70 percent of campus buildings in the past three years, implementing programmable thermostats and installing solar panels on the roof of Butler Hall to reduce the overall carbon footprint of the campus. These measures have reduced energy consumption by 12 percent over the past three years, despite a growing campus community. The Emergency Load Response Program (ELRP) includes a consortium of universities that have volunteered to reduce electricity consumption during high stress periods on the Mid-Atlantic electricity grid. The university is also home to Flannery O’Conner Hall, where fortunate first-year students have the opportunity to live in a residence hall that is made from recycled LDPE concrete, powered by a geothermal energy system, and capped off with a green roof, which reduces heat absorption and increases water retention. Thanks to a single-stream recycling system put into place back in 2006, Loyola has one of the best recycling rates in the country, diverting 55 percent of waste from ever reaching a landfill. For students looking to enter the green space upon graduation, the Career Center keeps a large database of green jobs.
and hosts a non-profit career fair focusing on “jobs relating to social justice and the environment.”

Sustainability & Justice through Service

A Loyola education, firmly rooted in the Jesuit tradition, insists that service and outreach programs should be “at the core of every Jesuit university’s program of studies.” Students can take part in an annual spring break trip to West Virginia and learn about justice issues surrounding energy extraction. The students have the unique opportunity to tour sites in West Virginia, where local citizens are actively addressing environmental issues.

The week-long trip guides participants through an exploration of the ways in which the harvest of Appalachia’s coal, natural gas, and wind affect the local people — people who have already struggled with significant poverty and marginalization over the past two centuries. It is important to remember that Appalachia’s vast natural resources supply significant quantities of energy to the region, nation, and world, and the relentless global energy demand often drowns out the voices of local residents who have to live with the repercussions. When traveling from site to site around the state, the group meets with local organizers to learn about the issues, listen to their stories, and engage in direct service related to environmental concerns.

The tour includes visits with:

- Keeper of the Mountains — an activist organization educating the public on mountaintop removal issues through a first-hand tour of a MTR site.

- Friends of Deckers Creek — a watershed group committed to cleaning and restoring Deckers Creek in Morgantown, WV.

- West Virginia Coal Association – a trade association representing more than 90 percent of WV’s underground and surface coal mining production.

After meeting with activists with opposing views, participants gain an appreciation for the complexity of such issues. The unique educational opportunities, coupled with daily reflections, result in a call to action for each individual to implement upon returning home. The students who go on the trip have a life changing experience and afterwards reflect on how their daily actions impact others. Many of the student participants now run advocacy campaigns on campus. By educating others about the complex issues in West Virginia, our students are giving a voice to people who are often ignored.
Overview

Morgan State University is the premier public urban research university in Maryland, known for its excellence in teaching, intensive research, effective public service and community engagement. Morgan prepares diverse and competitive graduates for success in a global, interdependent society.

For over 140 years, Morgan State University has been an important part of the higher education system in Baltimore City, the State of Maryland, and the nation. Throughout its history, Morgan has served the community with distinction while meeting the educational needs of an increasingly diverse society.

Morgan State University serves as an intellectual and creative resource by supporting, empowering and preparing high-quality, diverse graduates to lead the world. The University offers innovative, inclusive, and distinctive educational experiences to a broad cross section of the population in a comprehensive range of disciplines at the baccalaureate, master’s, doctoral, and professional degree levels. Through collaborative pursuits, scholarly research, creative endeavors, and dedicated public service, the University gives significant priority to addressing societal problems, particularly those prevalent in urban communities.

Looking to the future, Morgan has recently completed its strategic plan that focuses on a core set of goals that over the next ten years will build a transformative educational environment enriched by diverse perspectives. This environment will ensure a supportive atmosphere that promotes student success, enhances Morgan’s status as a doctoral research university, and facilitates the University’s contribution to community development.

The strategic plan also emphasizes Morgan’s commitment to sustainability. “Morgan will enhance its infrastructure and processes by improving the efficiency and efficacy of its operating procedures, and by focusing on the environmental sustainability of its facilities.”
The Center for the Built Environment and Infrastructure Studies (CBEIS) is a 126,000 GSF shared facility for academic engineering and design programs at Morgan State University. CBEIS houses research and instructional programs for the School of Architecture and Planning and the School of Engineering’s Civil Engineering, Transportation Studies, and the National Transportation Center, in a highly collaborative environment within and among these disciplines.

Morgan State has mandated that the new facility be at the forefront of sustainable design practices, utilizing high performance materials and systems, serving, both a demonstration and incubator of responsible planning, design, engineering and cutting-edge technology. The CBEIS building is seeking to achieve LEED Gold or Platinum certification due to its numerous sustainability features, such as photovoltaic glazing on the windows, solar electric and hot water panels, a green vegetative roof, and a rain water harvesting system.

The BSAED Program

The Bachelors of Science in Architecture and Environmental Design program supports the mission of the Morgan State University and the School of Architecture and Planning to:

• Provide access to the architecture and environmental design professions for African American and minority students. The ability to increase minorities in the decision making processes that shape the built environment is beneficial to our students, the design professions and the larger community.

• Engage in continued research on the urban design and architectural issues involved in the sustainable redevelopment of Baltimore City. Through coursework and design projects, students will become familiar with the issues and concerns affecting design within our region and within the urban context.

LightBox is an adaptive reuse design build project executed by students from the BSAED program under the direction of Michael Zebrowski, Lecturer in the School of Architecture and Planning (SA+P).

The design build team utilized a 40’ high-cube shipping container along with reclaimed building materials from The Loading Dock (TLD), a non-profit materials reuse center, to create a workshop and studio space for Morgan State University’s Department of Architecture and the TLD. The structure is an exploration in creative adaptive reuse, construction with reclaimed material and passive solar design. The LightBox is composed of 85 percent recycled and reclaimed material.

The LightBox was installed at ArtScape 2011 for exposure to the 350,000 attendees, on Mt. Royal Avenue in front of the Mt. Royal Tavern. After the display, the LightBox moved to its permanent home at The Loading Dock on N. Kresson Street Baltimore, Maryland.

Mission of LightBox:

The Lightbox serves three programs. All three programs involve education in sustainable architectural design and construction.

1. The Loading Dock workshops and educational programs for the Highlandtown Community

2. Morgan State Design Build Studio

3. MARS (Mobile Adaptive Reuse Studio) Research and product development strategies for reusing reclaimed building materials and general ecological design practice.
Overview

Notre Dame of Maryland University (NDMU), founded as a Catholic liberal arts college in 1895 by the School Sisters of Notre Dame, educates nearly 3,000 women and men enrolled in degree and certificate programs at its main campus in north Baltimore and at satellite centers in Maryland. The University encompasses a distinguished Women's College, the first Catholic institution of its kind in America; a College of Adult Undergraduate Studies; a College of Graduate Studies, and an English language Institute, and includes Schools of Arts and Sciences, Education, Nursing and Pharmacy. Rich in tradition, Notre Dame provides students with opportunities in research, study abroad and service to the global community.

Key Initiatives

The Notre Dame community strives to be responsible global citizens and environmental stewards while advancing women's roles in environmental initiatives. A working group – the Notre Dame Sustainability Committee – comprising faculty and staff members, alumni and current students developed a five-year strategic plan for sustainability in 2012. One of the most fundamental goals within the plan is to formalize the institution’s commitment to sustainability by establishing an Office of Sustainability. In turn, this office would facilitate implementing the various actions outlined in the five-year plan, namely developing a Climate Action Plan, auditing campus facilities, and determining best practices for sustainability action and engagement of the campus community at large.
Sustainability across Sectors

In the Classroom

With Notre Dame of Maryland’s new Environmental Sustainability major, students have the opportunity to explore the connections between environmental concerns and social, political and economic institutions. Students can choose from three concentration areas – a science, public policy or sustainable entrepreneurship emphasis – to customize the track, and are encouraged to integrate their coursework with the university’s international programs, such as Alternative Spring Break, Service Abroad, and study abroad.

In the Office

Today, Information Technology is as important in everyday life as eating. Notre Dame of Maryland University has made considerable strides in moving IT operations and equipment to more sustainable standards. From replacing old, less efficient equipment and adjusting power settings on computers, printers and other multi-function units, to migrating to Cloud computing and consolidating servers on campus through virtualization, efficiency and conservation are high priorities.

A number of university departments have also converted to paperless processes, including Academics, Conference Services, Security and Human Resources. Reducing paper consumption on campus isn’t the only benefit; moving to electronic forms can often speed up the process, make filing easier and generally streamline operations to increase manpower efficiency.

In the Academic Buildings

Two of Notre Dame’s newest buildings were designed and built to meet silver-level certification according to the Leadership in Environmental and Energy Design (LEED) green-building rating system. Opened in 2011, G. Avery Bunting Hall has received a silver certification, and the new University Academic Building, opened in 2013, is awaiting its LEED rating.

In the Residence Halls

With students undoubtedly comprising the largest constituency on any campus, ensuring sustainability is a part of every experience is critical for creating a shift in culture and cultivating a new generation steeped in awareness and action. From providing single stream recycling in residence facilities so students can divert waste during the academic year, to partnering with Baltimore Free Store during spring move-out, students directly encounter opportunities to be forward-thinking and share in NDMU’s commitment.
Overview

The Community College of Baltimore County (CCBC) is an accredited community college with three main campuses located in Catonsville, Dundalk, and Essex, and three extension centers in Hunt Valley, Owings Mills, and Randallstown. CCBC has more than 100 associate degree and certificate programs, and is a National Alternative Fuels Training Consortium (NAFTC) Training Center.

Key Initiatives

In April 2008 the Community College of Baltimore County launched its effort to become a sustainable community college. CCBC joined with 682 other institutions of higher learning in pledging to support the American College and University President’s Climate Commitment (ACUPCC). With the belief that CCBC’s community can play a dominant role in addressing climate change, CCBC is proud to participate in this effort.

This commitment requires that CCBC embrace a long-term perspective and a willingness to encourage a participatory problem-solving process as it relates to sustainability. Incorporating a preference for sustainability in campus operations is an investment bringing returns both in energy saving and improvement in quality of life. Adopting this perspective also presents educational opportunities for participation in decision making on a variety of sustainability options on campus.

Supporting the larger college-wide Sustainability Committee are three campus based committees located at the Catonsville, Dundalk, and Essex campuses. All committees endeavor to reduce the rate at which the College contributes to the depletion and degradation of natural resources while also increase its use of renewable resources. It is the mission of the Sustainability Committee to incorporate concepts of sustainability into all aspects of the academic and daily affairs of the College.
Green Training Program

CCBC has adopted a green cleaning program that develops and maintains a set of written guidelines that protects human health and the environment. It reduces the impact of cleaning on custodians, building occupants, visitors, and the environment by governing the cleaning procedures, chemical handling, tracking requirements, equipment maintenance, operation procedures, communication protocols and requirements, training and inspection programs, and reporting and record keeping procedures.

The Department of Plant Operations was tasked with finding safe and sustainable cleaning solutions that protect health without harming the environment. Part of the implementation of the Green Cleaning Program was properly training the custodial staff in green cleaning practices. Actions taken included creating a comprehensive custodial training manual, developing an individual training and accountability form, developing a campus-wide total monthly evaluation form, and providing additional training to earn LEED-EB points.

The CCBC custodial manual and subsequent in-house training address the following: employee evaluations; employee safety; cleanliness standards (no eating at desks policy, clean and organized janitorial closets, hand sanitizers in high touch areas); proper processes; equipment (ergonomically designed vacuum cleaners and equipment); chemicals (replacing non-certified with those that meet sustainable standards); paper products; and floor care (vacuum cleaners that pick up microdust irritants, microfiber system).

The overall benefits of this program range from establishing more accountability, to fostering authentic environmental stewardship within a key level of campus operations. In addition to reducing waste by migrating to a reusable system, the microfiber cloths – which outperformed paper towels and other wipes – increased overall cleanliness, conserved water and detergent, and reduced annual costs.

The Building Services team meets monthly to discuss the sustainable chemicals, cleaners, equipment, and products, and the status of the program. Each Building Services supervisor goes through a process in which they first try the different products, assess the results, and communicate their findings to each other. They then try the product on the other campuses, compare and discuss those results, present the combined results for final discussion, and implement the product throughout all three campuses after approval.

Through implementation of the green cleaning program, the Building Services team now has a system that provides them optimum product choice through a process of testing and open feedback and increased communication across campuses. The program successfully met 50-100 percent of CCBC green schedule goals. The products used, a standard industrial and institutional cleaner GS 37, are non-toxic to humans, do not contain carcinogens or reproductive toxins, are not corrosive, combustible, or toxic to aquatic life, are biodegradable, contain no phosphates, and are as a concentrate in recyclable packaging.
Overview

Founded in 1826, the Maryland Institute College of Art (MICA) is among the top visual arts colleges in the nation. The college currently enrolls undergraduate and graduate students from 48 states and 54 foreign countries, offering programs of study leading to bachelor and master degrees, as well as post-baccalaureate certificate programs and credit and non-credit courses for adults, college-bound students, and children. MICA is recognized as an important cultural resource for the region, sponsoring many public and community outreach programs.

Key Initiatives

Part of MICA’s sustainability mission is to implement a comprehensive sustainability program that will reduce the costs and environmental impacts of every aspect of MICA’s operations. To achieve this goal, there is collaboration among administrators, facilities managers, students, faculty, and staff to develop technological and educational approaches that will be the most effective in the MICA community. Beginning in the fall of 2011, MICA offered its first academic concentrations directly related to sustainability and has a goal of establishing sustainability as an integral part of its curriculum.

The MICA Sustainability Group meets monthly and helps prioritize sustainability objectives. The group comprises individual students, faculty, and staff, as well as representatives of other campus organizations interested in helping MICA push forward with helpful ideas that can enable MICA to reduce waste, conserve energy, and otherwise promote a healthy environment.
Sustainability & Social Practice

Artists and designers wish to be cultural contributors; for many, this means acting as agents of social change, often through a proactive involvement with sustainability, climate change, and social responsibility – issues which are also primary drivers of many professional fields. Although higher education has seen a rapid growth of programs in these areas, until recently, these have been largely restricted to the fields of science, engineering, and medicine.

The concentration in Sustainability and Social Practice – the first of its kind among art colleges – was established at MICA with course offerings beginning in the fall of 2011. The new concentration prepares students to engage their creative practice with the social and ecological issues facing the world today, earning the knowledge, language and skills necessary to excel in this emerging field.

This new concentration allows visual artists to connect their practice with these global issues and prepares them to become professionally engaged in the areas of sustainability and social practice as artists, designers, entrepreneurs or scholars.

Sustainable practice has practical results, and students in the concentration will find pragmatic solutions that reflect the three pillars of sustainability: environment, economy, and social justice. The social practice aspect gives students the opportunity to contribute to a fine arts discourse around environmental and urban issues, and to pursue new knowledge as they discover ways to engage the concepts of sustainability through social engagement. Because students move seamlessly between applied, fine, and liberal arts, they will also form hybrid models of study between disciplines, becoming better prepared for recent changes in the professional fields of art and design. The skills and knowledge that students will gain can be applied to many fields, both preexisting and emerging. Arts and social organizations, as well as the government and the business communities will require participation and creative problem solving from artists and designers as they move toward ecologically and socially-responsible practices. Students in the program can go on to work for architectural and urban planning firms, in addition to many other possibilities.
Overview

Founded in 1866, Towson University (TU) is recognized among the nation’s best regional public universities, offering more than 100 bachelor’s, master’s and doctoral degree programs in the liberal arts and sciences and applied professional fields. As the second-largest public university in Maryland, Towson combines research-based learning with practical application. Its many interdisciplinary partnerships with public and private organizations throughout Maryland provide its students with opportunities for applied research, internships and jobs.

Key Initiatives

Towson University has been focusing on sustainability for the past decade and is making huge strides to promote and advance the goal of climate neutrality. These efforts are transforming the culture of campus to one that is aware of sustainability and understands the need for both individual and collective environmental stewardship. Some highlighted initiatives include:

• Development of a comprehensive Sustainability Plan which documents climate action strategies and provides a framework and direction for achieving climate neutrality.

• Creation of the TU Urban Farm for awareness about urban agriculture and to teach students about sustainable farming practices and its importance in combating climate disruption.

• Development of a TU mobile application to provide information on campus bike rack, hydration station and recycling container locations to encourage sustainable behavior.

• Provision of “out of class” opportunities such as the annual Environmental Conference, New York Times Talk Luncheons, Campus Sustainability Day, Freedom Square debates, and RecycleMania to engage students, faculty and staff in sustainability education and research.
A Study in Energy Conservation:
Campus-wide Lighting Upgrade

A majority of the buildings on Towson University’s campus were designed and constructed more than 25 years ago. The lighting systems in many of these buildings had not been upgraded since the original construction, and even those that had been upgraded didn't meet campus standards for energy efficiency. For example, light fixtures in some buildings are decades old and use 30 to 40 percent more energy than newer fixtures. Over the entire campus, this adds up to an enormous impact on energy usage and carbon emissions. Electric use on campus currently costs the university nearly $8 million a year and generates more than 40,000 metric tons of carbon emissions annually.

Beginning in spring 2011, the university began implementing a comprehensive upgrade to campus lighting systems through an Energy Services Contract (ESCO) partnership with Constellation Energy. The nearly $8 million investment in upgraded lighting systems and fixtures increased the energy efficiency of classrooms, residence halls, dining areas, office space, and corridors in 38 of the 46 buildings on campus. When the project was completed in early 2012, 14,000 new high-efficiency light fixtures, 20,000 retrofit fixtures, and 9,300 occupancy sensors were installed across campus. The project is forecast to save the university more than $1 million annually in operating costs, and $2 million in one-time lighting upgrade rebates from Baltimore Gas & Electric. The project will reduce the campus carbon footprint by nearly 10,000 tons annually.

Results

- $1 million annual cost savings from reduced energy consumption
- 10,000 ton reduction in carbon emissions annually
- 6-year payback of capital project investment
- 9.6 million reduction in kilowatt hours
- Reduction in campus mercury disposal
Overview

The University of Baltimore (UB) was founded in 1925 as a private institution. Its founders were a group of Baltimore civic leaders who wanted to provide low-cost, part-time evening study in business and law for working adults. In 1975, UB became a state institution, and in 1988 it became part of the University System of Maryland. UB comprises repurposed and new buildings in the heart of midtown Baltimore, and includes the Yale Gordon College of Arts and Sciences, the Merrick School of Business, the College of Public Affairs, and the School of Law. UB continues to educate business and law students, but its added many full-time day programs and professionally oriented majors in the arts and sciences and public affairs.

Key Initiatives

The University of Baltimore’s commitment to sustainability has grown over the years, reaching a milestone in 2009 when President Robert L. Bogomolny signed UB’s Climate Action Plan. Now the UB Green Committee, a partnership with the Office of Administration and Finance and faculty, staff, and student volunteers, coordinates climate and sustainability initiatives. The university’s goal is to make consistent improvements to its sustainable practices and policies, make measurable reductions in its carbon footprint, and develop higher levels of environmental literacy within the UB community.

Highlighted initiatives include:

- Energy contracts to cut consumption by 30 percent through the installation of more efficient lighting, skylights and daylight harvesting, on/off sensors for electrical equipment, and plumbing fixtures that conserve water. Net savings will finance the cost of these upgrades.

- Promotion of alternative transportation through events like the UB HUB Transportation Fair, which markets Maryland’s “hub” of...
transportation, with MTA trains and buses, the Charm City Circulator, Zipcar, and zero carbon options of walking and bicycling readily at hand.

• Utilizing the Jones Falls, an urban stream adjacent to campus, as a laboratory for learning about the Chesapeake Bay ecosystem and human impacts on water quality.

• Creating the Environmental Sustainability and Human Ecology Program in 2010, and developing the UB Environmental Sciences Summer Academy for high school students.

• Showcasing the reuse and recycling of the city itself by redeveloping buildings and surface parking lots into usable structures.

A Study in Smart Growth: UB Transforms Parking Lots into Transit Friendly Developments

The Smart Growth concept employs green principles, including mixed land uses, walkable neighborhoods, reinvestment in existing communities, and maximizing the utility of existing roads, sewers, and transit. Too often, Maryland development patterns consume forests and farms, requiring new public infrastructure at the expense of existing communities and the Chesapeake Bay.

Solution

The University of Baltimore’s growth is strengthening the heart of Baltimore, making use of roads and sidewalks, sewers, and public transit already in place, while adding traffic for local retailers. UB created public private partnerships to make the Fitzgerald and The Varsity at UB Midtown projects possible. These LEED Silver developments have resulted in the conversion of just under five acres of surface parking into $100 million in new housing, restaurants, and shops that benefit both the UB community and the UB Midtown neighborhood. These developments, now on the Baltimore City tax rolls, are bringing the city and the campus closer together. These projects help UB and the community take advantage of its transportation assets including light rail, MARC trains, city buses, Zipcars, the Charm City Circulator, and walking. This results in sharp reductions in UB’s transportation carbon footprint. UB has significantly more students, faculty, and staff than it did three years ago, but less asphalt, more green roofs, more trees, and over 50 percent fewer people using cars to access campus.

Results

• 389 new apartments and four new retailers, built on UB surface parking lots in the last five years.

• UB annual transit pass sales up 270 percent since 2007.

• UB’s Walkscore increased to “walker’s paradise” level.

• Since 2008, UB and partners developed 95 percent of campus surface parking into LEED silver or higher buildings.
Overview

The Baltimore campus of the University of Maryland, founded in 1807 along a ridge in what was then called Baltimore Town, is a 61-acre research and technology complex encompassing 62 buildings in West Baltimore near the Inner Harbor.

The university is Maryland’s only public academic health, human services, and law center. Seven professional and graduate schools train the majority of the state’s physicians, nurses, dentists, lawyers, social workers, and pharmacists.

Under the leadership of President Jay A. Perman, MD, the university is a leading partner in the redevelopment of the west side of Baltimore. The University of Maryland BioPark, which opened in October 2005, promotes collaborative research opportunities and bioscience innovation.

Sponsored research totaled $567.1 million in Fiscal Year 2010. With over 6,000 students and almost 7,700 faculty and staff members, the university is an economic engine that returns more than $15 of economic activity for every $1 of state general funds appropriation. The university community gives more than 2 million hours a year in service to the public.

Key Initiatives

The University of Maryland, Baltimore recognizes its responsibility to a sustainable future and is dedicated to working diligently to that end. The university is committed to the idea that its built environment will have the lowest impact on the natural environment of any comparable institution. This commitment leads to best-in-class sustainable facilities operations. For example:

- The 2009 climate action plan, documenting actionable goals and objectives for achieving climate neutrality, was updated and adopted by the president in December 2011.
• The Plaza Garage and the School of Social Work buildings contain two green roofs.

• The Campus Sustainability Steering Committee has developed an easy to use web page to encourage the transfer and reuse of unwanted office furniture, supplies, and equipment between campus departments.

• All new construction and renovation projects must be LEED Silver or higher.

• Lighting controls such as occupancy sensors, daylight sensors, and smart breakers are being installed in corridors and public areas.

**Electric Charging Stations Project**

In the university’s 2009 Climate Action Plan, one of the primary goals was to reduce the campus’ carbon footprint. According to Robert Rowan, Associate Vice President for Facilities and Operations, and Chair of the Campus Sustainability Committee, thirty percent of UM’s carbon footprint is from cars. To encourage the use of alternatives to individuals driving to campus, UM initiated the following initiatives: carpooling, car sharing, making bike racks available, and installing a card-accessible secured bike cage located in one of the campus garages that is monitored by University Police cameras. In January 2012, the university established another transportation alternative that will bring the campus closer to its goal. Guided by Tony Green, transportation demand manager and customer service manager in the Office of Parking and Transportation Service, UM has installed free electric charge stations in all of the campus garages.

Through the ChargePoint America program, the university was able to purchase and install 10 Coulomb Technologies charging stations for electric vehicles. The costs were covered by a grant from the US Department of Energy, made possible by the American Recovery and Reinvestment Act through the Transportation Electrification Initiative. The official launch of the stations was held on January 31, 2012. Two University faculty members brought their electric vehicles to participate in the unveiling. The 10 stations in the seven University garages can be plugged in free of cost. Each station can provide a complete charge to two cars at a time.

During the launch ceremony, President Jay Perman remarked that sustainable transportation options are what the campus needs. “Sustainability is the number one issue brought up by our students on the Q&A line,” he noted. The charging stations on campus align with the President’s commitment to UMB’s faculty, staff, and students to provide alternative transportation options that contribute to reducing the school’s carbon footprint.
Overview

University of Maryland, Baltimore County (UMBC) is a dynamic public research university integrating teaching, research and service to benefit the citizens of Maryland. As an Honors University, the campus offers academically talented students a strong undergraduate liberal arts foundation that prepares them for graduate and professional study, entry into the workforce, and community service and leadership. UMBC emphasizes science, engineering, information technology, human services and public policy at the graduate level. UMBC contributes to the economic development of the State and the region through entrepreneurial initiatives, workforce training, K-16 partnerships, and technology commercialization in collaboration with public agencies and the corporate community. UMBC is dedicated to cultural and ethnic diversity, social responsibility and lifelong learning.

UMBC has a 9 kW solar rooftop on the Clean Energy Technology Incubator (CETI) building at bwtech @ UMBC South campus. In addition to academic departments and programs focused on environmental topics, UMBC hosts the United States Geological Survey (USGS), the Center for Urban Environmental Research and Education (CUERE), and Joint Centers for Earth Systems Technology (JCET). The campus has preserved large natural areas including the Conservation and Environmental Research Area (CERA) and other forested areas. The campus master plan, updated in 2009, highlights sustainability as a focus in campus planning and development.

Key Initiatives

UMBC is working to reduce the university’s environmental impact in a variety of ways. Through research and academic programs, UMBC is developing both the knowledge and the next generation of leaders needed to move the world toward dramatically reduced greenhouse gases. In addition, the campus community is engaged in initiatives to reduce the carbon footprint on campus and beyond.
Comprised of faculty, staff, and students, the Climate
Change Task Force (CCTF) was formed in 2007, charged
with advising President Hrabowski on strategies to
reduce greenhouse gas emissions generated by the
campus community, to engage the campus community
in efforts to reduce greenhouse gas emissions, and to
promote and support instruction and research on the
impact of greenhouse gas emissions. The CCTF is bro-
den down into four workgroups that focus on different
elements of sustainability: education and outreach,
transportation, energy and waste, and research and
education. In 2012, UMBC hired the university’s first
full time Environmental Sustainability Coordinator.

UMBC’s student government has implemented a ‘green
fee’ paid by students, funding five sustainability interns
for the 2012-2013 academic year. The university has also
adopted and promoted a new dual stream recycling pro-
gram, increasing its recycling rate to 27% in addition to
broughing a new composting program to campus. UMBC
has optimized shuttle routes, brought Zipcars to cam-
pus, and created a new incentive-based carpool policy.
The university has been making strides to transform
campus to become more bicycle and pedestrian friendly,
as well as improving access to public transit and van-
pooling. UMBC’s bus stop shelters on campus have been
replaced with new solar powered units and UMBC Transit
has upgraded its fleet to be low-sulfur, diesel fueled,
and efficient. All vehicles run on a blended bio-diesel
fuel supplied through the State of Maryland bidding
process, and one shuttle is presently committed to be
fueled solely with fuel supplied by the student organi-
zation dedicated to its production. The university also
has two electric vehicle charging stations on campus.

UMBC has achieved a 13.3 percent reduction in net
Greenhouse Gas Emission in FY 2012 over the baseline
year 2007. This reduction holds great significance
considering campus square footage has grown 2 per-
cent and student enrollment has grown by 15 percent
in that same time period. A portion of the reduction
can be attributed to a long term contract to purchase
20 percent of our energy from renewable sources.

The additions to square footage include a LEED Gold
certified addition to Patapsco Residence Hall, complete
with the campus’s first green roof, as well as a new
state of the art and sustainable Performing Arts Build-
ing built to LEED-silver standards. UMBC has com-
pleted an energy audit that identified opportunities
for reducing energy usage on campus and increased
energy efficiency within heating and cooling Systems.

**UMBC Biodiesel Project**

In 2008, an undergraduate chemical engineer named
Mike German launched an innovative new initiative
called The Biodiesel Project. The UMBC Biodiesel
group’s original mission was to recycle campus
waste to produce an environmentally-friendly energy
resource. More specifically, the group aimed to con-
vert waste cooking oil into biodiesel, an alternative
to the petro-diesel burned in buses and generators
on campus. The student organization won the UMBC
ProveIT Competition in 2010, a student government
association annual challenge for students to create
a novel and innovative project, service, or event to
benefit the UMBC campus. With several other grants,
the Biodiesel group developed an on-campus lab.
Today, the Biodiesel group conducts research using
a laboratory-scale batch reactor to refine opera-
tion parameters and prepare for full-scale produc-
tion. When fully operational, the group intends to
recycle 100 percent of campus dining oil and feed a
blend of biodiesel into campus transportation fleet’s
fuel stock. The student group has been successful
making biodiesel using their 10-L lab-scale reactor
design. The biodiesel is used in a campus genera-
tor, which contributes to greenhouse gas-friendly
energy to the campus’ current energy consumption.
The group is working with the UMBC transit system
and networking off campus to ensure that the bio-
diesel can be used in buses in the near future.
Mission:
The mission of the Baltimore Colleges and Universities for a Sustainable Environment is to foster collaboration on ideas, best practices, and projects between institutions of higher education to advance campus and regional sustainability goals.

Vision:
Baltimore Colleges and Universities for a Sustainable Environment will leverage the individual resources of its member schools to collectively contribute to a more sustainable Baltimore region.

Baltimore City Community College
www.bccc.edu
Coppin State University
www.coppin.edu
Goucher College
www.goucher.edu
Johns Hopkins University
www.jhu.edu
Loyola University Maryland
www.loyola.edu
Morgan State University
www.morgan.edu
Notre Dame of Maryland University
www.ndm.edu
The Community College of Baltimore County
www.ccbcmd.edu
The Maryland Institute College of Art
www.mica.edu
Towson University
www.towson.edu
University of Baltimore
www.ubalt.edu
University of Maryland, Baltimore
www.umaryland.edu
University of Maryland, Baltimore County
www.umbc.edu

© 2013