



Sustainability Report

2009-2012

A photograph of a cornfield with rows of green corn plants growing in dark brown soil under a clear blue sky. The image is used as a background for the lower half of the report cover.

sustainability
Live. Learn. Grow.

Prepared by: Sustainability Coordinating Committee

Introduction

A widely accepted definition of sustainability is to “... **meet the needs of the present without compromising the ability of future generations to meet their own needs**” (Brundtland Commission, 1987). This definition was used in the development of Humber’s first Sustainability Policy and Action Plan in 2009. The document was created by the Humber College community (staff, students, and faculty) through town hall gatherings to provide a framework for Humber’s sustainability initiatives. Using the definition of sustainability by the Brundtland Commission, the Action Plan proposed fifteen goals in three interdependent areas of concern: environmental preservation, economic vitality and social responsibility.

In response to recommendations made in the Action Plan, a Sustainability Coordinating Committee was established in 2009 to bring a focused approach to Humber’s sustainability initiatives.

This first Humber Sustainability Report Summary provides an overview of sustainability initiatives currently implemented throughout the College, and highlights achievements made since the Sustainability Policy and Action Plan and Committee were formed in 2009.

As we develop Humber’s next Five-Year Strategic Plan, sustainability will be increasingly embedded in our daily operations. By measuring outcomes and effectively communicating progress, we will continue to raise awareness about sustainability throughout the Humber community. We are pleased to share some of our highlights from 2009-2012 with you here.



Sustainability Action Plan, Sustainability Committee and Green Teams

“As a leading educational institution, Humber must prepare students to address sustainability issues in their future workplaces. By considering sustainability in all our decision-making Humber is leading by example, showing that a large organization can green its operations by constantly implementing innovative new practices.”

Chris Whitaker, President and CEO

The 2008-2013 Strategic Plan developed by the Humber College identifies sustainability as one of the five values that support the vision and mission statement:

“Sustainability by considering the social and environmental costs and benefits in all of our decision making.” *Humber Strategic Plan 2008-2013.*

Incorporating sustainability into the core values reinforces Humber’s commitment to educating capable, purposeful citizens of the world and to managing resources with care and respect for the needs of future generations. The Sustainability Policy and Action Plan created in 2009, highlighted three areas of concern: environmental preservation, economic vitality and social responsibility.

The Sustainability Coordinating Committee established in 2009 has brought more focus to Humber’s sustainability initiatives. The committee is made up of volunteer staff, faculty and students. The mandate of the Sustainability Coordinating Committee is to:

- Coordinate Humber’s efforts to increase the sustainable literacy of students, faculty and staff.
- Make campus operations more sustainable.
- Create a culture of sustainability at Humber.
- Provide prioritized recommendations on sustainability initiatives to the Vice Presidents.
- Work with various stakeholders to implement approved projects.
- Track and publish successes using defined metrics.
- Communicate the work of the Sustainability Committee to the Humber community and beyond.

Green Teams were also created in a number of departments and schools and are open to anyone with an interest in environmental issues. Green Teams are sustainability champions that raise awareness about sustainability best practices within their departments and schools and develop green projects associated with their area of expertise.

“There is a lot of good will on campus to pursue sustainable practices. People are making individual commitments and putting their own spin on environmental responsibility. As a result, we’ve been able to undertake an incredible number of diverse initiatives.”

Laurie Turner, Associate Dean, The Business School, Sustainability Coordinating Committee Co-Chair

Highlight Achievements

1. Teaching and Learning

“At its core, sustainability is about systems thinking and interconnectivity. We build those concepts into the learning we offer at Humber by encouraging students to think about the meaning of sustainability and make social, environmental and economic connections across and through the curriculum.”

Kerry Johnston, Professor and Program Manager, Sustainable Energy and Building Technology

Sustainability in the Classroom

Principles of sustainability have been integrated into many areas of the curriculum, offering students a critical, interdisciplinary perspective on local and global issues.

Examples include:

- Student chefs in the Culinary Management program learn about energy conservation and food composting while working in one of the most energy-efficient culinary labs in the country.
- Students in Interior Design, Industrial Design and Architectural Technology Programs study sustainable design, apply environmental best practices and conduct research projects with real world relevance.
- Sustainable Energy and Building Technology Co-op educates students about energy policies and technologies of tomorrow.
- Co-operative partnerships with government and industry that provide job-related training. Example at the end of the report: DECCS Case Study



Recognition

A team of Humber and Ryerson students won silver medal in Home Sweet Home green building design competition (Ontario) in 2010

A Sustainable Energy and Building Technology (SEBT) program graduate won the 2012 President’s Medal and \$25,000 grant from ESRI Canada for a Geographic Information System (GIS) in the Arboretum

2. Student Engagement

“The Humber Students’ Federation (HSF) is continuously looking for new and innovative ways to keep the Humber community engaged in the ongoing conversation surrounding sustainability. The events and campaigns that we run during the academic year are designed to build a stronger and more active Humber community, while demonstrating the true value of being a sustainable student.”

Bhalinder Bedi, HSF President 2012-13

Sustainability is a top priority for the Humber Student Federation (HSF) which actively partners with Humber to advocate for environmental, social and economic preservation.

- Two student representatives, one from the HSF and one from the general student population, sit on the Sustainability Committee to ensure that students have a strong voice in shaping Humber’s sustainable future.
- A great deal of the design content for the sustainability website was done by students in Humber’s Advertising program. These include infographs, a video, interactive green maps and the sustainability logo (www.humber.ca/sustainability).
- HSF has undertaken a variety of activities to promote sustainability on campus:
 - A pedal-powered concert where the audience generated the power for the band by riding bicycles.
 - 10,000 Acts of Green, a web-based project that encouraged students, faculty and staff to electronically register their individual acts of green.
 - A recycling-themed fashion show, where students in the Fashion Program designed clothing from recycled materials.
 - In support of Earth Hour, the student residence turned off their lights, shut down their electronics and attended an “unplugged” coffee house.



3. Procurement

“We want to ensure that the companies we do business with are socially, environmentally and economically responsible.”

Emily Eyre, Manager, Purchasing Services & Sustainability

Incorporating sustainability principles, social responsibility and fair labour practices into Humber’s procurement process is a key component of our sustainability strategy. To formalize our commitment, sustainability standards are now factored into our purchasing matrixes.

Companies that do business with Humber are required to meet our sustainability guidelines and performance expectations. We review the environmental implications of the products and services that we purchase and evaluate our suppliers on their corporate commitment to sustainable practices. This rigorous approach to procurement has allowed us to significantly reduce the environmental impact of Humber’s daily operations and to integrate sustainability into all aspects of campus life.

- 175 Energy Star certified multi-function photocopiers and printers were installed campus-wide to reduce the number of energy-inefficient devices at Humber.
- Humber exclusively uses copy paper made from 50% post-consumer waste. Many paper products are also FSC (Forest Stewardship Council) certified, ensuring that the paper is produced responsibly from healthy forests.
- All of the toilet paper at Humber is made from 100% recycled content. The selected product is chlorine-free, Green Seal certified and manufactured using certified renewable energy.

4. Energy Management

“Energy efficiency is a classic win-win scenario. We can update our facilities and reduce maintenance and energy costs, while lowering our environmental impact and making Humber more sustainable.”

***Spencer Wood, Associate Director of Facilities, Operations and Maintenance
Sustainability Coordinating Committee Co-Chair***

- Since 2005, Humber has achieved a 16.5% reduction in energy consumption per square foot. During the same period, enrolment has grown by 20%.
- All new staff computers have been configured with power-saving features, estimated to save approximately \$20,000 per year, cut CO2 emissions by 111 tonnes and reduce energy use by over 360,000 kilowatt hours.
- Forty submeters were installed to measure energy use across both the North and Lakeshore campuses. The submeters are connected to Real Time Operating System (RTOS) software which tracks Humber’s energy use on a building-by-building basis, allowing the College to manage power use more effectively.
- Humber’s North Campus chiller plant was the first of its kind in Canada and is the most efficient system in the country. The Hartman Loop technology uses 60% less energy than the previous system, saving over \$100,000 a year in energy costs and lowering greenhouse gas emissions by 443 tonnes of CO2 annually. This is the equivalent of taking 100 cars off the road or 150 homes

off the grid. Humber was recognized by Toronto's Better Building Partnership (BBP) as a leader in environmental preservation and received \$157,000 in incentive funding for installing this innovative, energy-efficient technology.

5. Water Conservation

"Low flow toilets and shower heads are installed throughout the College including in the residences. We encourage students to be conscious of their water consumption to reduce our environmental impact but also to keep costs (and therefore student fees) down. It just makes sense."

Susan Miller, Residence Manager, Lakeshore Residence

Recognizing that water is a precious resource, Humber is making water conservation an integral part of campus life. New buildings are designed with water efficiency in mind and existing buildings have been retrofitted to reduce water use.

- Humber has introduced a number of water conservation initiatives that have reduced water use per student by 35% since 2005.

- In 2010, two Sustainable Energy and Building Technology students, Adam Vayia and Nicholas Samavarchian, created a unique bio-filter that uses living plant material to biologically remove pollutants and harmful chemicals from rain water. The device can also be used to grow food and house mushrooms for soil remediation.



- Steps that Humber takes to conserve water and support a healthy ecosystem on campus include: practicing drought-resistant gardening (xeriscaping) wherever possible, using pest-resistant plant species, avoiding the use of all pesticides to prevent toxins from leaching into the soil, and using only environmentally-friendly coated salt products to minimize corrosive salt damage.

6. Recycling Management

"Minimizing our waste volume is everyone's responsibility here at Humber. Informative signage throughout the campus, a dedicated support team, and our waste management personnel - we all work together to continuously increase our diversion rate."

John Schroder, Maintenance and Operations Manager, North Campus

The volume of waste generated by the campus population and Humber's daily operations makes waste management an on-going priority.

- Humber's Culinary Management program has introduced food composting in all of its culinary labs. Food waste is also collected in the Food Service kitchens and cafeterias at the North Campus for an offsite compost program. Plans to do the same at the Lakeshore Campus are set for 2013.
- 100% of the cooking oil used in campus kitchens is recycled into biodiesel, 5 metric tonnes in 2011.
- Between October 2010 and December 2012, the Humber College ITS department collected and recycled 60,774 kg of electronic waste (outdated computers and photocopiers).



- In 2011 and 2012, the School of Hospitality, Recreation and Tourism Green Team organized a highly successful White Elephant Swap that promotes material reuse. Office supplies, household items and clothing were donated by faculty and staff and offered free to Humber students.

7. Campus Development

“A Campus Development Plan must be a stimulus for culture change. Through open and collaborative dialogue, the Plan creates a common vision that embodies the fundamental principles of a sustainable campus.”

Carol Anderson, Director, Facilities Management & Capital Development

Humber's vision of a sustainable campus is articulated within a framework of responsible planning and development. The [2008-2012 Campus Development Plan](#) supports sustainability principles by recommending a more compact campus, greater density and improved access to public transportation.

Rigorous technical specifications have been established to ensure that new institutional buildings and major renovations are constructed to standards that maximize water and energy efficiency.



- The Humber Arboretum Centre for Urban Ecology was one of the first LEED Gold Certified buildings in Toronto. The Centre is part of the Sustainable Sites Initiative, and is the first to achieve Platinum Certification from Ontario EcoCentres, and innovative program designed to help education centres address the issue of climate change.

- The Lakeshore Campus Building L was built to LEED Silver standard.
- Green roofs are installed on the Centre for Urban Ecology and Lakeshore Campus Building L. These reduce storm runoff, collect rainwater for natural irrigation and provide insulation from vegetation to reduce heating and cooling demands.
- The Lakeshore Campus has grown in size, while converting existing buildings into much needed instructional and office space. This is revitalizing the local neighbourhood, preserving heritage buildings and reducing the need to build more campus facilities.
- Twenty-eight solar panels have been installed on the roof of the skilled Trades Centre on Carrier Drive.

- The University of Guelph-Humber building houses a four-story living, breathing biowall that acts as a biofilter. The biowall is connected to the building's air handling system and draws dirty air over the root zone of the plants, where pollutants are removed biologically. This lowers energy consumption and generates cost savings by reducing the need for fresh air ventilation.



8. Transportation

“Humber's sustainable transportation vision makes a positive contribution to the social, environmental and economic sustainability of our thriving campus community. We are committed to making our campuses more pedestrian friendly, improving public safety and offering more sustainable travel options for our staff and students.”

Rani Dhaliwal, Vice President of Finance and Administrative Services

With nearly 80,000 full- and part-time students travelling to and from campus on a regular basis, transportation management is always a major focus at Humber. Humber actively supports energy-efficient forms of transportation, such as public transit, bicycle commuting and carpooling. By managing transportation demand, reducing traffic congestion and enhancing campus security, we are steadily improving our environmental outcomes and making our campus cleaner and safer for the Humber community.

- A 2011 Transit Study conducted at Humber determined that over 80% of people coming to campus are using public transit. Every car we remove from the road reduces our carbon

footprint by 0.765 tonnes of CO₂ emissions (based on an average commute of 116 km per month.)

- Humber is currently working in partnership with transit authorities to bring over 1,300 buses on campus every day. A new bus loop will be constructed as part of a major redevelopment of the North Campus transportation network and arterial roads will be relocated to create more space for pedestrian walkways.

9. Campus Services

“Campus Services incorporates sustainable practices into our daily operations by educating and developing all stakeholders and future leaders, building and renovating facilities that are energy efficient, and reducing our use of inputs and outputs through reuse and recycling.”

Paul Iskander, Director, Campus Services

- Chartwells, a division of Compass Group Canada, is responsible for food services at Humber and has been recognized as one of Canada’s 50 Greenest Employers for three years in a row.
- In response to student requests, Humber became Chartwells’ first Ontario-based College client to switch from regular eggs to certified cage-free eggs.
- Humber has established zero tolerance guidelines for Styrofoam. Food suppliers are required to use biodegradable paper cups and all food packaging materials must be compostable and biodegradable.
- The Hurley Group, responsible for cleaning services at Humber, uses 100% chemical-free cleaning.

Future Priorities

"With regards to sustainability, Humber students could not be in a better place. They already have high expectations and a good understanding about sustainability and we offer a great range of programs with sustainability at their core. Practical, hands-on learning opportunities mean that our students not only critically explore the issues, but contribute to real-world strategies and solutions."

Jason Hunter, Dean of Students

- Complete the Association for the Advancement of Sustainability in Higher Education (AASHE)’s Sustainability Tracking, Assessment & Rating System (STARS) certification. **November 2013**
- Prioritize sustainability related projects, based on STARS results. **Fall 2013**
- Create a 5 year Sustainability Strategy based on STARS results which supports Humber’s 2013-2018 Strategic Plan. **Fall 2013**
- Continue to improve communication and engagement of Humber’s sustainability initiatives and progress. **Ongoing**

Sustainability Coordinating Committee 2012/2013

| Member Name | Role |
|----------------------------------|--|
| Spencer Wood | Associate Director, Facilities (Co-Chair) |
| Laurie Turner | Associate Dean, Business School (Co-Chair) |
| Emily Eyre | Manager, Purchasing and Sustainability |
| Kerry Johnston | Academic Manager, SEBT |
| Lindsay Walker | Sustainability Manager |
| Alix Link | Director, Arboretum |
| Joe Andrews | Director, Orangeville Campus |
| Paul Iskander | Director, Campus Services |
| Leanne Henwood-Adam | Fitness Coordinator, Athletics |
| Sarah Chappel | Sr. Writer & Web Editor, Marketing and Communications |
| Hansel Menezes David Dokhoian | Student, HSF representative Student at large |
| Najamuddin Mohammed | Client Services Agent, Information Technology Services |
| Wanda Buote | Principal, Lakeshore Campus |

Appendix: Case Study

Distributed Energy Charging and Communications Station (DECCS)

Background

The DECCS project was created as a student-led collaboration. The goal of the project was to provide the Humber Arboretum and Centre for Urban Ecology with an outdoor wireless network and electronics charging station that could be used by members of the public and the student body alike. Unlike the school-supported networks at Humber College, this free, public Wi-Fi network was intended to allow all visitors to the Arboretum to easily and safely surf the web while enjoying the Arboretum's beautiful outdoor setting. The project also included a 120V electric socket that would allow visitors to charge their electronic devices from an off-grid solar power system.



The DECCS project presented three significant challenges to overcome:

1. The creation of a wireless network that would be broad enough to cover a large area of the Arboretum, while also being strong enough to penetrate through the significant amount of tree cover in the chosen area.
2. The design and development of an off-grid solar photovoltaic system that would provide enough energy to run the wireless network components 7 days a week, while also providing energy to charge electronic devices and, potentially, loudspeaker or projection equipment.
3. All electronic equipment had to be housed in a durable, vandalism-resistant casing that would be tough enough to withstand environmental and other abuse, while also allowing the electronic devices to be displayed to students and used as a learning tool for different programs at Humber.

Solutions

The challenge of designing and developing a wireless network was addressed by three students from Humber's Wireless Communications program, Simranjeet Saharan, Tariq Kantroo, and Sukesh Dogra. They used an omni-directional antenna and a relay-like system to spread the wireless signal throughout the target area of the Arboretum.

Graeme McKenzie and Rachel Lieberman, students in the Sustainable Energy and Building Technology program, with help from Jeff Craig in the Electronic Engineering program, addressed the second challenge. They developed a small-scale photovoltaic energy system that was oversized to allow for the constant drain on the system from the wireless equipment and incorporated a timer circuit to control the frequency of electronic charging.

Graeme McKenzie and Talete Gallo, an employee at the Humber Arboretum, addressed the third challenge. They designed a shed-sized structure to house the equipment safely and allow the solar panels to be placed high enough to avoid obstructions to their use. The structure could also be opened to allow students to stand inside and inspect and learn from the circuitry and photovoltaic components.

Partners

The following businesses and organizations made significant contributions to the success of this project:

Humber Arboretum and Centre for Urban Ecology The DECCS project couldn't have been completed without the guidance and solid workmanship of Talete Gallo and the staff at the Humber Arboretum. In addition to being the client, the Arboretum also provided tools, materials and man-hours to develop the project.

Toronto and Region Conservation Authority Glenn MacMillan provided invaluable guidance designing an off-grid solar photovoltaic system and a structure to withstand Ontario's diverse climate.

Ontario Centres of Excellence This public co-investment organization provided the majority of funding for the student project. Without its support, DECCS would have remained a design and would not have been developed into the useful device that it is today.

Humber College Research Department Laura Keating and the team at Humber Research played a vital role in bringing the DECCS project to fruition. They provided invaluable partnerships with public investment organizations and support to the students throughout the term of the project.

Systems Plus Inc. This electronic contractor provided innovative ideas in the design and installation of the electronic circuitry in the DECCS project.

Solsmart Energy Solutions Inc. These solar photovoltaic contractors provided extremely valuable knowledge in designing a small-scale off-grid photovoltaic system. They also provided materials for the photovoltaic system, which allowed the project to be built on time and on budget.



Project Team in Front of the DECCS

L-R: Talete Gallo, Humber Arboretum Employee
 Khalid Grant, Solsmart Employee
 Graeme McKenzie, Humber SEBT Student
 Rachel Lieberman, Former Humber Student
 Melanie Sifton, Humber Arboretum Director



DECCS in an Outdoor Setting

Benefits and Future Applications

The DECCS project was a complete success in providing the Humber Arboretum with a robust, outdoor wireless network. Starting in September 2012, the DECCS will be used by Humber students on a large scale, providing online learning in a healthy, diverse, outdoor environment. It will also be used as a teaching tool in future classes to demonstrate off-grid photovoltaic design and use.

The DECCS has the potential to be expanded to bring wireless Internet networks to any outdoor environment. For example, it can be used in rural areas to allow a community-based network or it can be installed in developing communities to provide power for electronic necessities and access to the extensive knowledge base provided by the Internet.