

## Building and Operating Practices and Guidelines

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In Humber's 2009 Sustainability Action Plan, three areas of concern were identified: Social Justice, Economic Viability and Ecological Preservation. These are also known as the three Pillars of Sustainability. Humber based the Sustainability Action Plan on these areas of concern as well as the UN World Commission on Environment and Development's definition of Sustainability (1987): "Meeting contemporary needs without compromising the ability of future generations to satisfy their needs."

Humber College is committed to reducing the use of resources and creating a more sustainable footprint. Sustainability is stated as one of the college's six core values: "We preserve our collective future by embracing the social, ecological, and economic impact of our decisions" (Humber Strategic Plan, 2013-2018). We fulfill this commitment is by embracing sustainable practices in our day-to-day operations and practices. As such, Humber College Facilities Management uses the following guidelines for the management of construction, maintenance and operations of all campus buildings.

### Building Design and Construction

Campus growth and expansion is a great opportunity to incorporate green practices into campus space planning, capital projects, renovations, and operation and maintenance activities.

Humber has integrated the following sustainable practices and planning principles into our Technical Standards for new construction:

- Develop campus buildings and infrastructure to achieve energy efficiency in a systematic fashion. Make all new institutional buildings at least 30% more energy-efficient on average than national standard.
- Create flexible multi-use spaces in the design of new and renovated space to accommodate changing needs and functions over time.
- Maximize natural daylight to reduce energy use such as creating work spaces near windows, corridors in the middle of buildings and incorporate skylights when possible. We integrate daylight sensors into our lighting systems to further maximize daylight.
- Reuse existing furniture for new projects/ renovations. Retired furniture that is still in working order is donated to charity or sold to Humber community members.
- Preserve and retrofit existing buildings to support current use and future growth.
- Design campus buildings with green spaces, minimizing the use of current green space for new development.
- Preserve mature trees
- Design new buildings to minimize the use of water
- Reduce construction waste to landfill

## Grounds

Humber College owns the land of its North and Lakeshore campuses. The properties represent approximately 125 acres.

Humber has integrated the following sustainable practices and planning principles into our grounds maintenance practices:

- We use sustainable landscape designs incorporating mostly Toronto-area native plants and non-water intensive plants.
- Avoid use of all pesticides to prevent toxins from leaching into the soil.
- Use only environmentally-friendly coated salt products to minimize corrosive salt damage.

## Water Management and Consumption

Recognizing that water is a precious resource, water conservation is an integral part of campus operations.

Humber has integrated the following sustainable practices and planning principles into our water management practices:

- Integrate technologies for efficient water use where possible.
- New buildings are designed with water efficiency in mind, such as adding auto-shutoff taps when renovating and constructing new buildings.
- Water use is monitored to track peak demand and manage overall usage.
- We continually work to further reduce the amount of water used for grounds maintenance by designing sustainable landscapes (see Grounds above).
- Humber continues its goal to reduce irrigation needs by designing sustainable landscapes, using on-site composted mulch on gardens and planting Toronto-area native and (drought-tolerant) non-water intensive plants.

## Energy Management

Humber College has been a leader in energy efficiency in Ontario for many years since the first energy efficiency projects were completed in the early 1990's. Facilities Management has introduced a wide variety of intelligent solutions for reducing energy consumption on campus. These energy efficiency initiatives support Humber's "triple bottom line" strategy by minimizing the College's environmental impact, generating cost savings and helping to conserve the world's non-renewable energy resources.

Humber College Facilities Management implements energy efficient measures in a systematic fashion, where profitable within our facilities, as a means of preventing environmental pollution and improving occupant comfort.

Humber has integrated the following sustainable practices and planning principles into our energy management practices:

- When economical and easily integrated, upgrade fixtures and other electrical equipment during other planned retrofits.
- High efficiency insulation in new building construction and improve insulation during building renovations.
- Install/design for variable speed drives, digital controls, energy meters and day lighting where possible.
- Conduct energy audits.
- Maintain and expand our system of real time energy meters.

## **Recycling and Waste Management**

Humber College works with food services and cleaning staff to properly manage our recycling and waste material. The volume of waste generated by the campus population and Humber's daily operations makes waste management an on-going priority. The college has a source separated recycling system for plastics, cans and bottles, paper, waste and in food-only areas we collect food waste for composting off-site.

Humber has integrated the following sustainable practices and planning principles into our recycling and waste management practices:

- Continuously review the materials that can be recycled and collect them where possible on campus. The college currently recycles the following: electronic-waste, ink cartridges, light bulbs, cell phones, single use batteries, writing instruments, paper, plastics, cardboard, post-consumer kitchen grease, wood pallets, sawdust, wood and metal scrap.
- Collect food waste food preparation, in our culinary labs during classes and in food areas for post-consumer food waste. Annually review other locations that food waste could be collected on campus.
- Conduct a waste audit annually to track waste generation and find areas for improvement.
- Maintain ongoing education and awareness campaigns on campus about reduce, reuse and recycling, especially during orientation and in the residence students living on campus.

## Guidelines in Practice: Accomplishments

### Building Design and Construction

- In our Design Centre, movable partitions/walls were used to create an interactive learning environment where a large space for group learning could be sub-divided into smaller study spaces.

### Grounds

- The parking lots at Humber College North Campus are landscaped using the City of Toronto's Design Guidelines for 'Greening' Surface Parking Lots ([http://www.toronto.ca/planning/urbdesign/greening\\_parking\\_lots.htm](http://www.toronto.ca/planning/urbdesign/greening_parking_lots.htm)). Three-quarters of the 200 trees and 1000 shrubs planted were selected from the guide's Native Species Planting List.
- The North campus is home to the Humber Arboretum, a 100-acre park that overlooks a natural wetland. Within the Arboretum is the Centre for Urban Ecology which is home to many environmental education programs and also acts as a living lab for Humber students. At the core of the Centre's programming is a commitment to reducing the impact of human activities on the natural processes that support life on earth.

### Fixtures

- All toilets at Humber have been replaced with 6L flow models and most of the taps run on motion sensors.
- North Campus, Building T and Lakeshore Campus Residences: all 13L toilets have been replaced with 4.8L low flush toilets and low volume shower heads (December 2012).
- Lakeshore, Building A: all toilets have been replaced with 6L low flow units with automatic flush valves saving over half the water volume used in original units (2009).

### Bottle Water Stations

- 55% of water fountains have been retrofitted with bottle fillers to encourage the use of reusable water bottles.
- Plans to complete retrofit of all water fountains by end of 2013.

### Native Vegetation / Xeriscaping

- The college installed two garden beds that were specifically designed according to xeriscaping techniques.
- Humber Arboretum has a number of rain gardens and more to be built in the future by Humber landscape design diploma students.

### Rainwater Collection

- Rainwater is captured from our Center of Urban Ecology building in a 10,000L cistern which is used to water surrounding gardens in the arboretum.
- Rainwater is also captured from our greenhouse building in two containers which is then pumped and used to irrigate the plants inside the greenhouse.

### Energy

- Replaced chiller in 2007. The new system (the most efficient chiller plant in Canada when installed) uses variable speed chiller pumps and cooling controls to provide air conditioning while using 60 per cent less energy than before –North Campus.

- High efficiency LED lighting in new parking lots and student center (North Campus); Areas in student residences and HSF building (Lakeshore).
- VAV conversions of North Campus constant speed ventilation systems (North Campus)
- Energy efficient new construction including heat recovery on the residences, Guelph-Humber Biowall and Thermodeck in Building B (North Campus)
- Campus lighting throughout uses 25W T8 lamps, and motion sensors throughout
- Upgrades to the ventilation system (Lakeshore)
- Upgrade lighting in gymnasiums to T5 high-bay fluorescent

#### On-Site Wastewater Treatment at Humber Arboretum

The Center of Urban Ecology building manages its own wastewater treatment using a Waterloo Biofilter system. The system reduces the environmental impact since none of the building's waste water goes through municipal sewage treatment and it does not require a large tile bed. Wastewater is treated by microbes living in a foam biofiltration medium. The microbes degrade and oxidize organic pollutants, coliform bacteria, and other contaminants. The clear, treated effluent is pumped to shallow pressure trenches nearby.

#### Real Time Operating System (RTOS)

As part of a project with all Ontario colleges, Forty sub-meters were installed (2008) to measure energy use across both the North and Lakeshore campuses. The sub-meters are connected to a Real Time Operating System (RTOS), a web-based software tool piloted by Humber and specifically designed to support the energy management needs of Ontario colleges. The RTOS software accurately tracks Humber's peak energy use on a building-by-building basis, allowing the College to conserve energy and reduce costs by managing power use more effectively.