

Going Greener



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The 2009 pledge by Ontario's universities to "go greener" continues to get results.

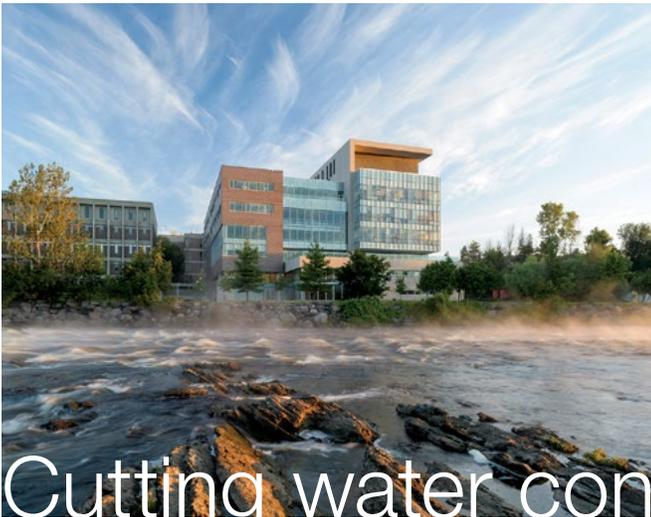
This sixth annual Going Greener report demonstrates those results through campus case studies about food sustainability, conservation efforts, and partnerships that are building a greener community. The report details how university communities are becoming more sustainable in their operations and policies, developing academic programming that seeks to create knowledge leaders in emerging fields, and broadening their understanding of environmental issues so that partners can work together to develop solutions to one of society's most pressing problems.

The report represents not only the strides being made in going greener but also the sharing of best practices to encourage further progress. Included are highlights from the 2013-14 Green Universities' Survey, which reflects data from 22 campuses.

Conservation Nation

Impressive work is being undertaken by Ontario's universities as they seek ways to drive down energy use by implementing conservation measures, and innovate with the Three R's.

Carleton campus by Doublespace Photography.



Cutting water consumption by

87,000 cubic metres

saves about 35 Olympic-sized swimming pools' worth of water per year¹.

ENERGY EFFICIENCY

Carleton University and the **University of Guelph** each have entered into long-term energy services business partnerships with local energy firms. By conducting audits of energy and/or water usage, the partnership can work together to make informed decisions on how to improve the university's indoor environment and create sustainable solutions for the campus.

These energy and sustainability assessment tools enable universities to demonstrate savings and align campus master planning to energy and sustainability requirements.

At Carleton, energy conservation measures included: mechanical upgrades, heating, ventilating and air conditioning (HVAC) system improvements, Building Automation System controls, lighting improvements, building envelope and retrofit water fixtures.

Carleton sought financial incentives that were available through Enbridge Gas, Hydro Ottawa and the City of Ottawa, totaling \$90,000 to date.

Robertson Hall was the first building selected for energy improvements. With an initial program investment of \$1.3 million, annual costs savings were \$120,000, achieved through a 28 per cent decrease in natural gas, 27 per cent less electricity and water reductions of 31 per cent.

¹. An Olympic-sized swimming pool contains 2,500m³ of water.

The Campus' Athletics Centre realized similar annual energy savings of \$137,400. The campuses' remaining buildings have been prioritized for future retrofits based on a detailed analysis of historical energy and water use.

In addition to the financial and carbon savings, the use of Association of Physical Plant Administrators' (APPA) Energy and Sustainability Assessment Tool (ESAT), developed with Carleton, helped track and review progress. ESAT, available to all APPA members, rates buildings across a variety of areas, including energy and water use, to create a baseline from which to measure the success of future improvements. After the program was implemented, the overall rating for Robertson Hall increased by 23 per cent over the 2009-10 baseline.

Guelph's Green Gryphon Initiative audit gave them the baseline from which to make target reductions in the areas of electricity, water and natural gas consumption. The initiative is expected to save the University \$2.5 million a year in utility costs by 2017, while reducing their greenhouse gas emissions by 4.7 million Kg of CO₂e (carbon dioxide equivalent) per year.

In 2014-15, **McMaster's** Energy Management and Sustainability Division completed a LED lighting retrofit in campus basements and corridors, which are lit 24/7 for safety

purposes. LED tubes consume 25 to 40 per cent less power and have higher life expectancy than traditional bulbs.

Implementation in approximately 30 buildings across campus has resulted in an estimated annual energy cost avoidance of \$120,000 per year and annual greenhouse gas emissions avoidance of 145 metric tonnes of CO₂e. The simple project payback—or the number of years it takes for benefits from the project to equal the total project cost—is three years. The project has also resulted in significant costs savings on maintenance and improved lighting quality.

Work on several significant sustainability initiatives has continued at **York University**, including the implementation of the \$40 million Energy Management Program. This has included a comprehensive overhaul of the university's energy infrastructure as well as audits, retrofits and upgrades to building fixtures and systems. For the past several years, MCW Custom Energy Solutions has worked with the university on implementing the initiative. York has met their objective to decrease the university's energy consumption by 25 per cent from their 2006 baseline, the year the program began. This reduction represents sufficient energy to supply more than 4,500 homes with electricity for one year.



\$2.5M

a year in utility costs is expected to be saved by 2017 through the initiative

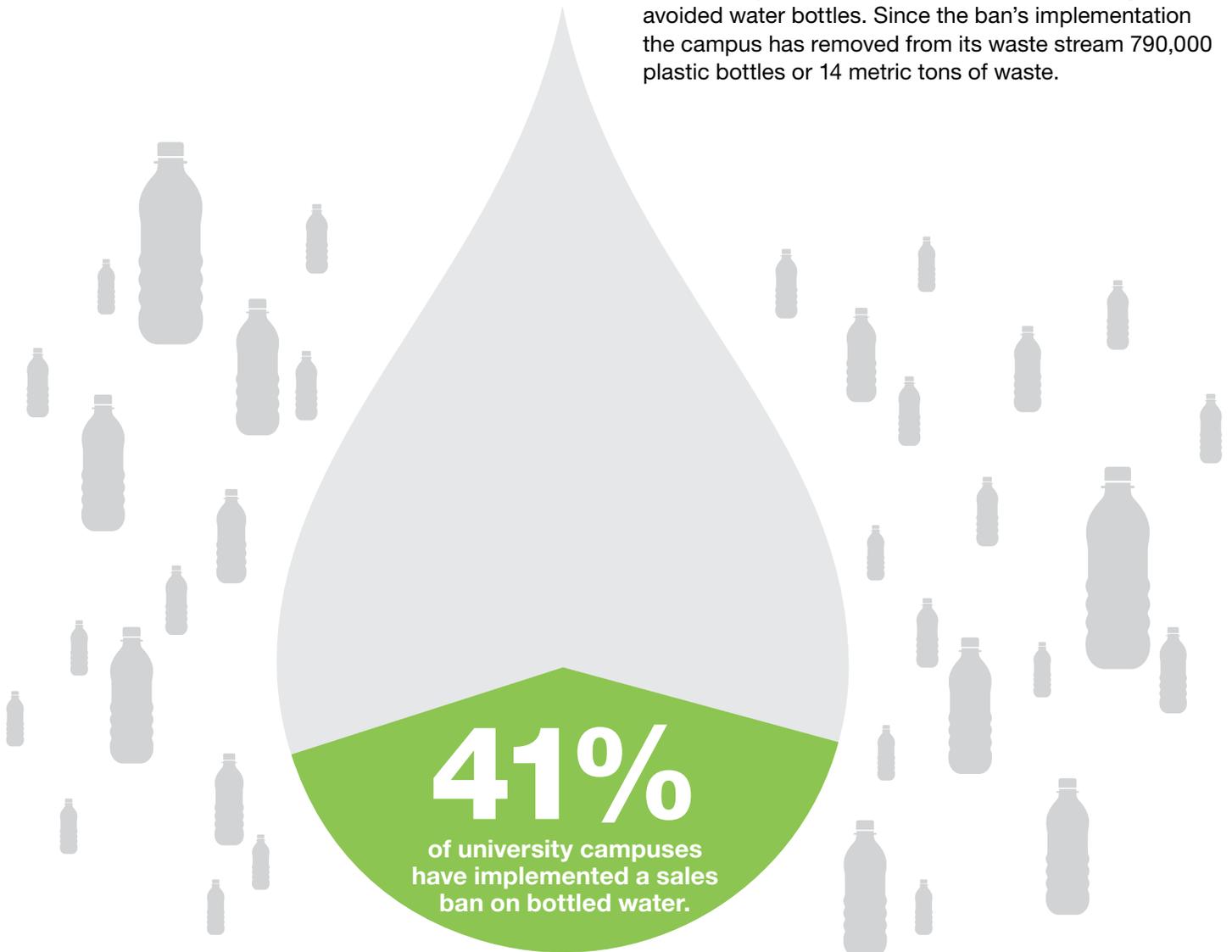
Reducing greenhouse gas emissions by **7,400** metric tonnes annually is the equivalent of taking **1,500** cars off the road².

REDUCE

In 2010, Queen's University Principal Daniel Woolf made a commitment to reduce and eventually end the sale of single-use bottled water on campus, which was achieved in September 2012.

Leading up to this commitment, several student groups had been actively campaigning for a campus bottled water ban. They were motivated by the growing concerns about the industry's sustainability performance, including extraction methods that often draw water faster than natural replenishment rates, a manufacturing process that requires many times more water to make the product than the amount of water that is actually in the bottle, and the significant shipping distances involved with bottled water distribution.

Following much stakeholder engagement, planning and inventorying of existing water access and availability, the university installed 60 new bottle filling stations. These modern Elkay EZH20 units meet both the university's accessibility standards and allow for the tracking of avoided water bottles. Since the ban's implementation the campus has removed from its waste stream 790,000 plastic bottles or 14 metric tons of waste.

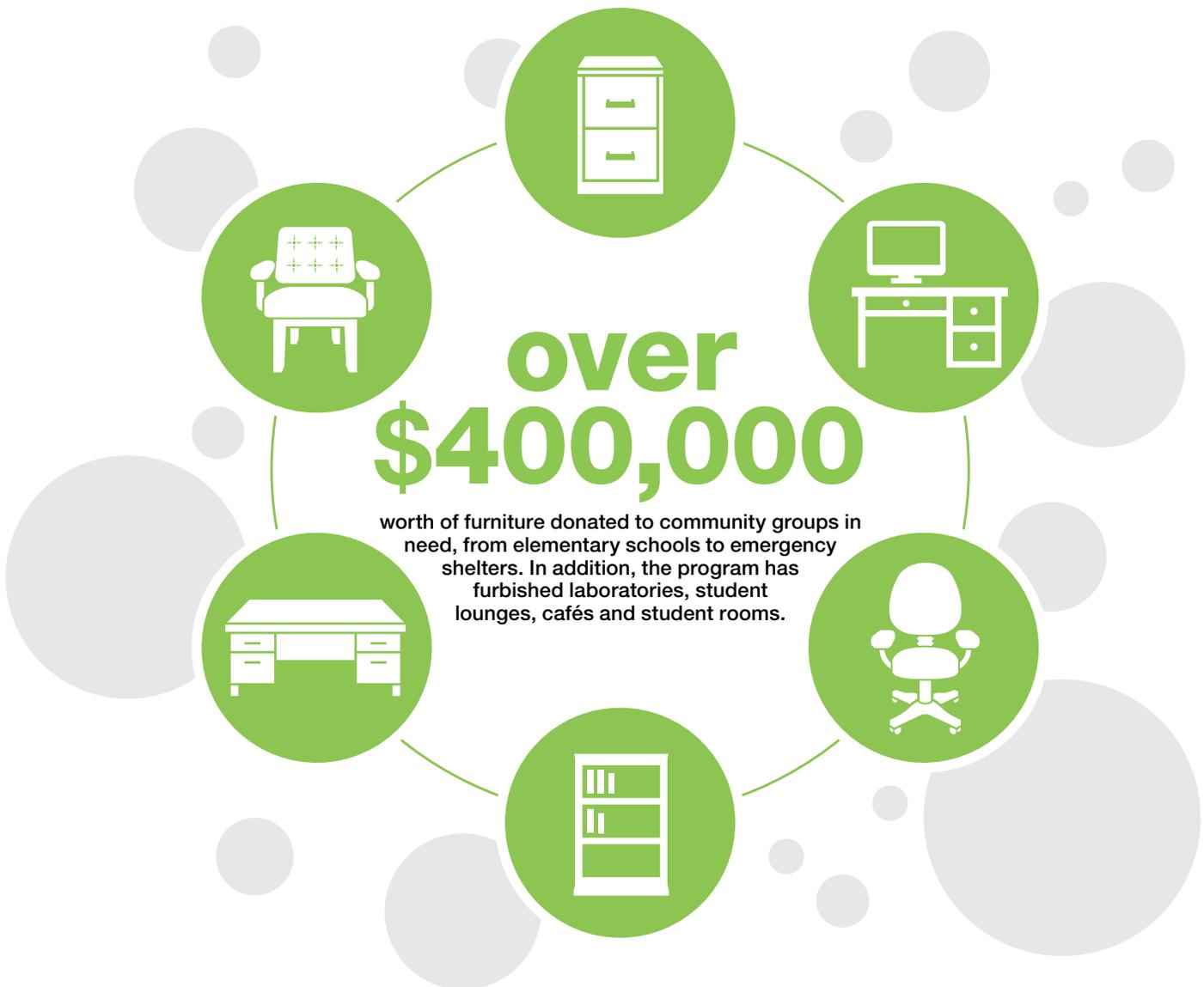


REUSE

The University of Ottawa's Furniture Reuse Program (FRP) continues to generate significant savings for the campus and is on target to match or surpass the \$733,000 in savings achieved in 2013-14.

The program is growing to include equipment beyond furniture. The savings associated with the program are not limited to the replacement costs of the furniture, but also related to avoided waste costs and funds generated from the sale of recyclables.

The FRP has distributed thousands of pieces furniture since 2009 and is on track to divert 600 tonnes of waste over the same period, equivalent to 250 garbage trucks. The program has also donated over \$400,000 worth of furniture to community groups in need, from elementary schools to emergency shelters. In addition, the program has refurbished laboratories, student lounges, cafés and student rooms.



RECYCLE

The non-hazardous laboratory glass and plastic recycling program at the University of Toronto's St. George (UTSG) campus broke new ground in finding a way to recycle waste laboratory containers: the program is the first of its kind in Canada.



UTSG non-hazardous laboratory glass and plastic recycling bins; photo courtesy of University of Toronto's Facilities and Services department.

Used non-hazardous glass and plastic laboratory containers, such as beakers, flasks, test tubes, and petri dishes, as well as the plastic buckets used to collect laboratory waste, previously were disposed of in the garbage and ended up in landfills. This initiative involved the collection and recycling of laboratory waste into three separate streams—amber glass, clear glass, and plastic—through the introduction of three different-coloured collection bins in all buildings with laboratories.

By establishing criteria for determining what could and could not be included in the program, combined with clear protocols for disposal and developing a training program, the team eliminated the barriers that had previously prevented laboratory personnel from participating in recycling programs in laboratories.

The results have been impressive: 31 metric tonnes of material were diverted in 2013-14. This includes 24 metric tonnes that were recycled and seven metric tonnes—approximately 8,550 plastic buckets—kept out of landfills.

By advancing this pioneering recycling initiative into one of the University's core operations, the UTSG Campus' Recycling Services contributed to the all-time record diversion rate of over 72 per cent.

24

metric tonnes
recycled

8,550

plastic buckets
kept out of landfills



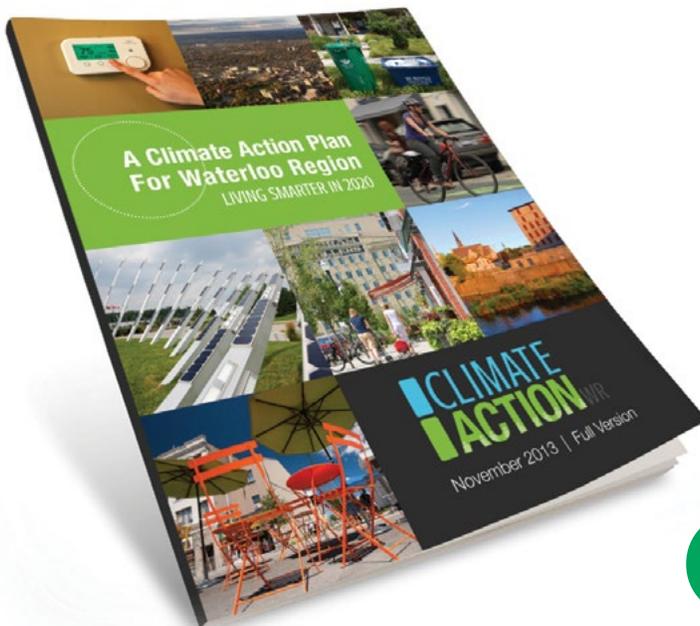
Building Green Communities

Universities are teaming up with municipal governments, local businesses and students to make positive changes. They are growing academic programs, designing sustainable buildings, and expanding options for earth-friendly transit.

PARTNERSHIPS FOR CHANGE

In fall 2013, Waterloo Region's political leaders unanimously endorsed its first ever community-wide Climate Action Plan. The city's two universities, the **University of Waterloo** and **Wilfrid Laurier University**, play key roles in the development and oversight of this Plan. For example, Waterloo's students created the initial feasibility study for the Climate Action Plan, helped develop the plan through Co-operative Education experiences, and have volunteered in its implementation. Meanwhile, Laurier's Sustainability Manager was appointed to ClimateActionWR's Leadership Committee and was subsequently nominated as co-chair. The Leadership Committee comprises 17 community leaders across Waterloo Region who work alongside ClimateActionWR partner organizations, staff, and volunteers to keep the Plan moving forward.

The final version of the plan recommends a six per cent reduction in emissions by 2020, or approximately 216,000 tonnes of CO₂e, and ultimately a higher quality of life for residents of Waterloo Region.



The plan recommends a reduction of
216,000 tonnes of CO₂e

STUDENTS IN ACTION

Rez Powers Down is an energy conservation challenge that takes place within **Western University's** student residences over a two-week period in the fall. Students are encouraged to implement sustainable practices in their daily lives, such as using the stairs instead of the elevators, taking colder and shorter showers, unplugging unused electronics, and shutting off the lights when they leave a room.

As an incentive to participate, the winning residence that conserves the most energy receives 25 per cent of the total monetary savings from the campus residences' utility bill. The residents collectively decide how to spend this money towards a building improvement, such as buying a pool table for their lounge, or offsetting the cost of an upcoming residence event. An additional 25 per cent of the total monetary savings are donated to a global sustainability initiative of the residents' councils' choice.

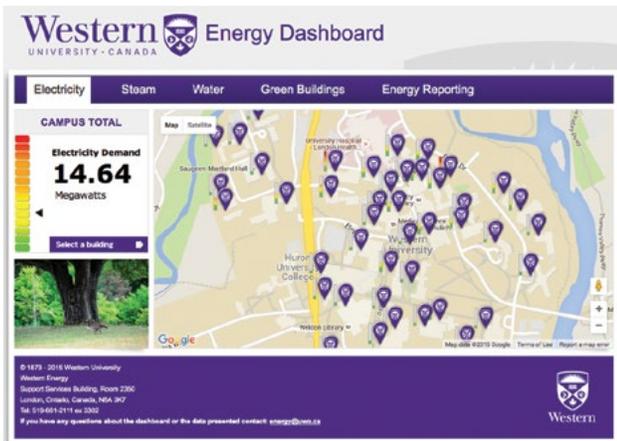
To track the electricity demand, the program organizers

utilize Western's Energy Dashboard, which tracks in real-time the energy use of all campus buildings. For the two weeks leading up to the challenge energy consumption within each residence is tracked and is set as the baseline.

The most recent challenge saw a total decrease of 71,000 kWh (kilowatt-hour) across campus residences, compared to the previous two-week baseline. This reduction in energy usage translated into a \$7,810 savings on the residence utility bill or a nine per cent reduction in energy consumption over the two-week competition period. There was a decrease in energy savings across all nine residences. After three years and five challenges, the amount of energy saved totals 182,377 kWh or over \$20,000.

An exciting observation from post-challenge data shows that students adopted new sustainable behaviours: energy usage decreased in the weeks following the challenge by a total of seven per cent, equivalent to \$6,000 in energy savings.

After three years and five challenges,
the amount of energy saved totals
182,377 kWh



Western's Energy Dashboard tracks in real-time the energy use of all campus buildings.



2013 Minister's Award for Environmental Excellence, awarded to Western for their energy dashboard by Ontario's Ministry of the Environment and Climate Change.

LEADING THE CHARGE

Benchmarking energy consumption, composting in residences and a zero-waste cafeteria are just a few of the initiatives in progress as **Laurentian University** advances its green agenda under Kati McCartney, Laurentian’s new Manager of Energy and Sustainability.

“This position is new to Laurentian, but the University is already recognized as an environmental champion on many fronts, and we have the potential to create real leadership in sustainability and conservation,” says McCartney. “I’m confident that we can be in the top tier of green universities.”

The new position, and corresponding Office of Sustainability, was formed in 2014. McCartney will lead the development of sustainable operation planning and will manage the energy purchase and use portfolio. She is developing both short- and long-term sustainability goals for Laurentian including benchmarking against

other institutions, energy and water conservation initiatives, increased waste diversion efforts, and many outreach and education projects.

The University community is engaged both inside and outside of the classroom. For example, students in the Science Communication Graduate Program in the School of the Environment are collaborating with the Office of Sustainability to create communications infographics on sustainability in order to drive campus-wide behavior changes. Faculty and staff were engaged in planting flowers around the campus this spring and participated in commuter challenges to reduce their transportation footprint. Several classes also conducted waste audits throughout the semester as part of their course and then provided the data to the Office of Sustainability. McCartney also holds Campus Sustainability Forums twice a year to promote awareness, solicit feedback and engage the entire campus community in strategic sustainability planning at the University.



Laurentian University signed the Talloires Declaration, a 10-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities. It has been signed by almost 500 university presidents and chancellors in over 50 countries³.

3. www.ulsf.org/programs_talloires_signatories.html

LEADING THE CHARGE

The University of Ontario Institute of Technology (UOIT's) Go Green. Stay Blue platform of programs ensures that sustainability is fully integrated throughout University operations. The platform has facilitated the development of programs, plans, policies and outreach activities across the university. Community engagement is core to the success of the platform. Students are invited to submit project ideas and proposals, with several of their initiatives implemented to date, including the successful ride-sharing application BlancRide. Collaborative partnerships with local government agencies and organizations have also been established for tree-planting and smart-commute programs.

UOIT has marked the success of their program thus far with numerous changes:

- Phasing out all incandescent bulbs in favour of LED;
- Transitioned campus-wide paper supply from virgin sources to 100 per cent recycled content and wheat by-product derived products; and
- Installed 33 hydration stations across campus and distributed over 10,000 branded reusable water bottles to all staff, students, and faculty. In less than one year this initiative has helped to divert over 120,000 one-time use plastic bottles from landfill.

Now that the groundwork has been laid, UOIT's Office of Campus Infrastructure and Sustainability can ensure that sustainability continues to be integrated throughout the institution as a process of learning and applied as a catalyst for educational change and institutional innovation.

120,000

one-time use plastic bottles have been kept from landfill.



UOIT's Go Green. Stay Blue Program.

GROWING EDUCATION

Lakehead University believes that higher education must lead the way in preparing learners for citizenship in a world where complex issues of sustainability—environmental quality, individual and community health and wellbeing, and social equity and justice—are paramount. In April 2014, the Centre for Place and Sustainability Studies (CPSS) conducted Lakehead University's first Sustainability Across the Curriculum faculty retreat. This two and a half day retreat was part of an ongoing series of workshops convened by Dr. David Greenwood, Canada Research Chair in Environmental Education at Lakehead and director of the CPSS.

The retreat sought to build community among an interdisciplinary group of faculty with diverse commitments to “sustainability”—broadly defined. Together, participants explored theory and practice, engaged with the

particular local and global challenges and opportunities facing sustainability education at Lakehead, and committed to strengthening sustainability action on campus and beyond. One outcome of the workshop is a plan for a book that compiles faculty sustainability stories from across disciplines. Another outcome is an energized faculty group that seeks to create more commitment to sustainability at Lakehead.

The University of Waterloo has established a new Master of Climate Change Program. This unique program aims to train graduates to understand the complex interdisciplinary scientific, socioeconomic, technological and institutional issues associated with a transition to a low-carbon economy and climate resilient adaptation. Eight courses are chosen from a suite of 18 that cover the themes of the Intergovernmental Panel on Climate Change's working groups. Students must also complete a capstone project or internship.

More than 200 sustainability-focused programs are offered by Ontario's universities.



The Centre for Place and Sustainability Studies (CPSS) conducted Lakehead University's first Sustainability Across the Curriculum faculty retreat.

BUILDING SMARTER

“Grow Smart, Grow Green” is the guiding principle for development at the **University of Toronto Mississauga (UTM)** campus, balancing the need for growth with environmental sensitivity and responsibility. As a microcosm for the pressures of urban growth, UTM remains committed to prove that expansion and development can be accomplished in an environmentally sensitive and responsible manner. “Grow Smart, Grow Green” provides a framework to guide all its decisions that may impact upon our environment.

UTM currently has five Leadership in Energy and Environmental Design (LEED) certified buildings on campus, and one LEED certified renovation. UTM’s Instructional Centre, built in 2011, is certified LEED silver and features a geothermal heating and cooling system, a green roof, and solar panels. The two newest buildings on campus, Deerfield Hall and the Innovation Complex, are also anticipated to be certified LEED silver at minimum.

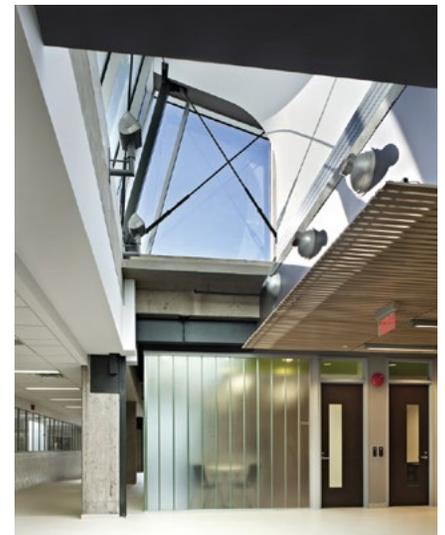
In addition, a major renovation in the William G. Davis Building has been certified LEED gold. The renovation features skylights, low-flow fixtures, and recycled and rapidly renewable building materials.

The University of Windsor’s Ed Lumley Centre for Engineering Innovation (CEI) is also designed to LEED gold standards. It includes a number of innovative sustainability features: motion controlled lighting; a Thermodeck air delivery system that stores heat (or cold) in the structure of the building to reduce peak loads; a “green wall” that filters the recirculated air through living plants in order to remove toxins, add oxygen and control humidity; the collection and storage of rainwater for toilet flushing; and a green roof to reduce summer heat load and provide an aesthetically-pleasing space for gatherings. The building is also wired with sensors to monitor air quality, energy consumption (electricity, steam, hot water), building envelope temperatures and structural features so that the building itself is a “living laboratory” for engineering students.

LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices.



UTM Instructional Building; photo credit: Richard Peters.



Interior of the William G. Davis LEED Gold building.

IMPROVING GREEN TRANSPORT ON CAMPUSES

91%

of campuses offer discounted/free transit passes to students

77%

offer a car share station(s) on campus (e.g. Zipcar, Autoshare)

64%

offer a bike repair station

64%

offer a carpool/rideshare program



RIGHT: UWindsor environmental advocate Paul Henshaw and Josh Psavka, president of the University of Windsor Cyclists Association, celebrate the installation of a Fixit station in front of Essex Hall.

TRANSPORTATION

The University of Windsor's Cycling Association (UWCA) was founded in September 2013 and has grown tremendously. This student club hosted a Bike Week in both the spring and fall of 2014. These events have featured sessions on nutrition for cyclists, locking clinics, safe biking practices, free bike tune-ups, group rides and raffles. The group was also instrumental in obtaining the university's first Fixit station, which provides a hangar and tools for members of the cycling community to perform minor repairs on their bikes. In addition, the group has partnered with Share the Road for the UCycle program, and hosted group rides to encourage cycling among members of the uWindsor campus.



Food Revolution

Locally sourced food and sustainable practices are increasingly important initiatives for communities across the globe and for universities too. Local food systems support local growers and producers and encourage the consumption of fresh, seasonal food. Reduced transportation means lower greenhouse gas emissions as foods do not need to travel long distances via truck or plane.

96%

of campuses have local food initiatives

86%

have a community or teaching garden

77%

have a farmer's market on campus

73%

have implemented fresh food donation initiatives (e.g. Second Harvest)



REINVENTING FOOD SERVICES

In April 2013, **Ryerson University** committed to reinventing food services on campus.

“I’ve heard from students, faculty and staff that they want food that’s wholesome, affordable, sustainable, delicious and diverse. That’s a tall order,” said Julia Hanigsberg, former vice-president, administration and finance.

This new vision for food on campus was based around the procurement and purchasing of locally sourced food, which meant finding a food management service provider willing to make big changes. The food services contract included: a minimum target of 25 per cent of annual estimated food purchases to be sourced from local sustainable growers and suppliers; mandatory seasonal menus across campus; an increase in scratch cooking; and an effective waste mitigation program. Setting sustainability-focused procurement targets changed the game completely for suppliers applying for this contract.

The changes began in September, starting with more food from scratch. By December, Ryerson had brought on a new food distributor called 100 KM Foods Inc., which connected the university with over 60 small, sustainable family farms in Ontario.

Scratch cooking, or cooking from scratch, involves starting with basic, fresh ingredients, rather than pre-cooked, prepared or processed foods.

Trent University made similar reforms, requesting that bidders on their food services contract come up with innovative solutions to address sustainability concerns. The successful proponent, Chartwells Education Dining Services, introduced a number of significant changes in response to student and community priorities. The new contract includes features such as reusable take-out containers; options across campus for vegan, vegetarian and gluten-free diners; half-portion options; and a target of 90 per cent back-of-house waste diversion.

Chartwells also has started to purchase food grown on campus, by students, at the Trent Experimental Farm and committed funds to develop the infrastructure of the farm located on campus lands to support this initiative. Students are engaged in the new process to help create and continue these positive changes.

A number of Key Performance Indicators were established to enhance the University’s commitment to local food sourcing:

50%

of food to come from Ontario, increasing two per cent per year for five years; and within this target:

35%

from within 250km of the university, increasing two per cent per year for five years

2%

from the Kawartha region, increasing one per cent per year on an ongoing basis

Each of the target performance indicators was exceeded in the first year and plans are in place to continue to expand local procurement.

GARDEN OF VEGAN

The “[Urban Food Revolution](#)” was launched in October of 2013 by the Sustainability Office at the **University of Toronto Scarborough**. The UTSC Eco Team wanted to develop a community building activity allowing students to become part of the process of preparing and cooking healthy, nutritious and vegetarian meals, which use mostly local and organic produce and are served at affordable prices. The initiative’s mission was to encourage the campus to consciously opt for meals that are good for the mind, body and planet. The vegetarian menu was chosen to reach a larger audience and reduce the carbon footprint of the meal. This non-profit has served approximately 40 to 60 meals, reaching over 100 students each time.

This initiative is sparking a conversation about food production and food sourcing and creating an open environment to discuss other sustainability topics.

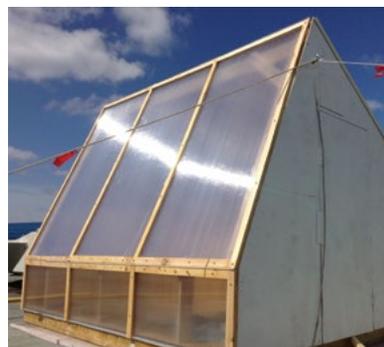
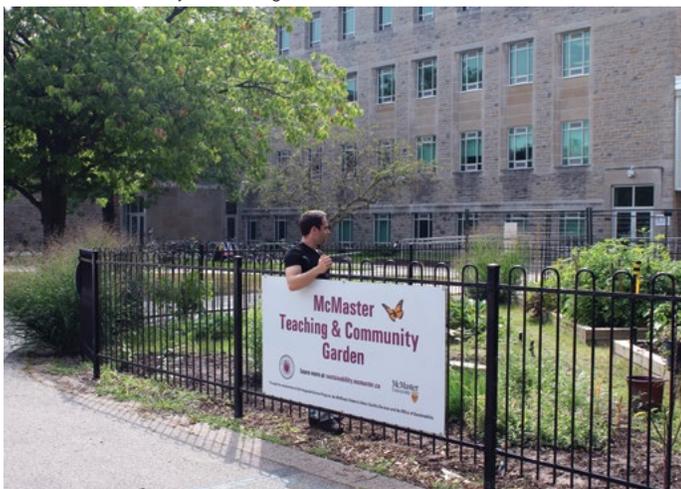
McMaster University’s 288 square foot [teaching and community garden](#) is a joint project of McMaster Facility Services and the Integrated Science (iSci) program. The goal of the garden is to focus on local food sources and production, and also to provide teaching and learning opportunities: the garden is situated next to the General Science Building for use as a “working lab” for students and faculty.

The garden plan was developed and executed by students supervised by Facility Services. With start-up costs of

\$17,000 funded entirely by grants, student volunteers maintain the garden and coordinate produce sales with the McMaster Farm Stand, a student-run non-profit farmer’s market. They organized workshops, outreach events and social media tools to increase awareness about the garden. With lessons learned from the first growing season, the students have developed plans to build on the success of the garden including collaborating with local food initiatives, coming up with ideas to improve seed and fertilizer procurement, and refining communications plans to improve outreach.

Cold weather countries are often challenged by the short growing season. **OCAD University’s** [Passive Urban Greenhaus](#) is a research project led by Dr. Ian Clarke and funded by the Metcalf Foundation that optimizes passive solar designs that trap heat for longer periods than a traditional greenhouse. This creates opportunities for winter urban agriculture in Toronto and other northern cities with no supplemental heating. In addition to the research being conducted, the passive solar heated greenhouse prototype will be used to assist with the undergraduate curriculum and to examine cultural and social significance associated with food production and food security issues. The prototype is on the roof of the Sharp Centre for Design and is being used to collect data and evaluate performance. It will be used as a basis for an open-source, low-production cost, scalable unit that could be built on existing rooftops, parking pads or alley garage spaces.

McMaster Community & Teaching Garden.



OCADU Passive Urban Greenhaus; photo courtesy of Dr. Ian Clarke.



FAIR TRADE

The Fair Trade Campus (FTC) Program recognizes the leadership role that Canadian institutions and their students, staff, and faculty can play. It also highlights the lasting and significant differences that actions can make and encourages ethical procurement practices that align with the growing demand for socially responsible products. In working with food suppliers to arrange for Fairtrade certified products to be sold on campus, designated universities ensure that their campus economies are supporting the work of producers in developing communities around the world.

FTC status was recently awarded by Fairtrade Canada to **Brock University**, becoming Canada's sixth university to be awarded this designation.

The campus designation was made possible by the hard work of the Brock Fair Trade Club student group and campus food services operators.

Initiated by Brock students Anneka Bosse and Charissa DiMarco in 2011, the Brock Fair Trade Club was created to raise awareness and educate the Brock community on fair trade issues at the University and in Niagara.

In order to meet Fairtrade Canada's standards for the FTC designation, Bosse and DiMarco worked with the University and students' union to ensure: the availability of FTC certified products at all food outlets under the control of the university; visibility of products and educational information; and the creation of a Fair Trade Committee to monitor, measure and report on compliance standards.

In celebration of the designation, a Fair Trade Campus Week was held on the Main Campus that included fair-trade banagram word games, a free screening of a documentary, and a "Play Fair" coffee house.

In 2013, Trent University also received the FTC designation.

The Brock Fair Trade Club was created to raise awareness and educate the Brock community on fair trade issues at the University and in Niagara.



the availability of FTC certified products at all food outlets under the control of the university

visibility of products and educational information

the creation of a Fair Trade Committee to monitor, measure and report on compliance standards

These case studies represent how students, faculty and staff at Ontario universities are continuing to collaborate on the development of new programs and initiatives that benefit the whole community. They are making systemic changes to their campuses with the aim that all of our actions should be viewed through the lens of sustainability and how they impact our collective future.

Universities and their communities have embraced the challenge of tackling climate change and developing innovative, grassroots solutions to creating a truly sustainable future. They have demonstrated their commitment to improving the way they do business and the services they offer and are building a cleaner, greener future, one campus at a time.

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