



Sustainability Annual Report | 2011



President's Message

Ensuring a sustainable campus is a McMaster priority. Our commitment to sustainability is comprehensive and touches every aspect of campus life: from education, health & well-being and green space to energy, transportation, water and waste. We are committed to achieving measurable outcomes and reporting our progress to you, the University community.



This year's report shows that we have made great strides in ensuring the sustainability of our beautiful campus. But the work is on-going, and everyone has a role to play. We must continue to work collectively and individually to do our share.

Together, we have created a more sustainable campus. Together, we must remain committed and enthusiastic. In this way, we will achieve our goals and foster a culture of sustainability on campus.

A handwritten signature in black ink, which appears to read "Patrick Deane".

Patrick Deane
President and Vice-Chancellor

Executive Summary

Nearing completion of its third year of operation, McMaster's Office of Sustainability has greatly matured in its role on campus and within the community. With the goal of achieving sustainable outcomes through innovation, communication, community engagement, collaboration and implementation, many notable achievements have been made.

The McMaster University Sustainability Policy states specific goals for achieving sustainability at McMaster. These goals are specified for each area of the following seven areas of focus:

- Education
- Energy
- Green Space
- Health & Wellbeing
- Transportation
- Waste
- Water

To reach these specific goals, over 57 campus sustainability initiatives were developed and implemented over the past three years. These initiatives, which include community engagement, research and surveys, infrastructure developments, educational campaigns, policy developments and more, have helped further the goals for achieving university sustainability in a variety of ways.

With respect to education, McMaster recognizes its role as an academic institution to provide students with the tools to become sustainability-conscious citizens. Each year the sustainability internship program has expanded in both breadth and depth. Taking on a minimum of ten individual student interns each year since the program's implementation in 2009, as well as expanding the program to include projects that involve participation from entire classes of students, see page 6, the Office of Sustainability has been able to connect with over 140 students in relating real-world sustainability initiatives to academic courses. The number of courses that have been identified by each faculty as having a sustainable theme grew from 83 in 2010 to 165 in 2011, showing an increased focus on themes of sustainability being taught in the classroom.

McMaster's goal for waste reduction was to minimize the amount of waste generated on campus. Through programs such as campaigns to educate about proper recycling and disposal of items at the end of their life, events that facilitate the reuse and responsible recycling of Information Technology waste, and policies such as the Plastic Bag Policy and the MSU's Plastic Bottle Policy, McMaster has been able to substantially decrease the amount of overall waste generated on campus. Between 2009 and 2011, McMaster decreased the total amount of waste generated on campus by 45%.



With respect to the Office's broader goal of developing McMaster as a leader in sustainability among Canadian universities as well as within our community, the following items have been achieved:

- Became signatory to the following university sustainability accords:
 - Ontario Universities' Statement on Creating a Sustainable Environment
 - The Talloires Declaration
 - University and College Presidents' Climate Change Statement of Action for Canada
- Increased McMaster's grade for the Sustainable Endowment Institute's College Sustainability Report Card from a C- in 2009 to a B in 2011, a grade only exceeded by two other universities in Ontario
- Expanded McMaster's Office of Sustainability Internship Program to cover community-based sustainability initiatives
- Assisted in the development of the City of Hamilton's Climate Change Action Charter
- Provided knowledge to help facilitate programs and policy around transportation demand management in the City of Hamilton

Through research and education, the development of new and innovative ideas, the formulation of community collaborations and the successful implementation of initiatives to achieve tangible outcomes, McMaster continues to develop its culture of sustainability and become a leader in the University sector, and in our local community.



Mission Statement:

McMaster University will apply its immense potential and use its creative and innovative campus community to advance sustainable operations and growth. McMaster is helping to shape the minds and values of a new generation of leaders and decision makers by integrating an environmentally, socially and economically sustainable consciousness into all aspects of the university lifecycle through innovation, communication, community engagement and implementation.

Guiding Principles:

- Identify and establish sustainable objectives and goals
- Provide a framework for developing sustainable procedures and initiatives
- Communicate awareness to all stakeholders
- Involve, engage and collaborate with all stakeholders
- Develop a university-wide culture of sustainability
- Educate for sustainable community participation
- Respond to concerns raised by stakeholders
- Conduct all initiatives in a transparent and sustainable manner
- Measure and report annually on the indicators to track progress toward improved sustainability

Areas of Focus:

Education
Energy
Green Space
Health & Wellbeing
Transportation
Waste
Water



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A. Education

Sustainability Internship* Program Expansion

Overview:

To enable students who have a passion for sustainability and to assist them in applying their formal education in sustainability theory in a practical way, the Office of Sustainability worked with faculties and departments across campus to create a number of sustainability internship opportunities for the 2010/11 school year. The Sustainability Internship Program has been highly successful and will continue to be expanded and developed. Broader communication will assist in program development and success.

*NOTE: Sustainability internships are non-paid experiential opportunities. Course credit is awarded to successful participants by the faculty through which the internship is offered.

Objectives:

- Provide internship opportunities for McMaster students to practically apply their educational learning to campus sustainability initiatives
- Highlight the achievements of students who have successfully completed their internship
- Provide an avenue for education and information sharing
- Communicate this practical learning opportunity to current and prospective students

Reporting:

A number of successful internships took place during the 2010/11 academic year; however, one specific project stands out as it took on a new form from other internships that have taken place in partnership with the Office of Sustainability. The uniqueness of this project is that it was not only an experiential learning opportunity for an independent study or a small group project, but a collaborative learning exercise for an entire class of 60 students.

In late 2010, while Dr. Michael Egan was looking for a campus sustainability project focused on energy conservation in which 60 students enrolled in his Arts & Science 3BB3 "Technology & Society II" class could partake, the University Librarian was also looking to engage McMaster students in an academic project focused on understanding sustainable ideas taking shape in campus libraries. Facilitated with assistance from the Office of Sustainability, a project was defined that asked the class to analyze waste and energy consumption data for both Mills Memorial Library and Thode Library and then work with Library staff to achieve reductions.

The students formed three working groups: two groups focused on waste and energy data analysis and a third group focused on communication. Energy data and waste data were both analyzed, and recommendations were made. The two analysis groups worked together to provide the communications group with information, while the students in the communications group focused on working with Library staff on a strategy that would help educate students and staff on how to make reductions. In addition, the data analysis groups established projected savings that would be achieved through implementation of their recommendations. The projections assisted the Library to evaluate each recommendation to determine which would be most feasible and have the largest potential return on investment. Both group's final reports can be found on the Office of Sustainability website.

Visitors to campus Libraries during the second term of 2011 may have seen such things as library screens displaying educational **internet memes**¹ focused on energy and waste conservation, a large display of coffee cups in the form of a castle to communicate the impact that single-use coffee cups have on the waste stream, or groups of students actively conducting inventories of the number of computers located in each study area or the amount of waste generated during various times of the day.



Through the studies conducted and recommendations made, both waste and energy reductions have been achieved. Capturing the full scope of the results is currently underway and will be included in the 2011 update on McMaster's Climate Action Plan as well as on the Office of Sustainability website.

Collaborators:

A variety of faculty and students at McMaster have been involved in the Sustainability Internship Program. Stakeholders, both internal and external to the University, have provided information and expertise that have contributed to students' success in this program.

Specific to the internship described above, key collaborators included Dr. Michael Egan and all 60 students enrolled in the 2011 Technology & Society II class, the University Library and the Office of Sustainability. Tremendous support was obtained from McMaster's Facility Services' Utilities Managers for providing students with supervised access to real-time energy data for McMaster's Libraries as well as historical trends in energy consumption of each Library building.



Presentation Series

Overview:

Support has been demonstrated by stakeholders from across campus to host a seminar or presentation series on topics related to sustainability. Access to expert knowledge on all sustainability **Areas of Focus** will enable effective information sharing and educational awareness on topics of sustainability.

Objectives:

- Educate sustainability-minded citizens
- Share information and expertise
- Network across disciplines
- Expose research and learning opportunities to fellow faculty, staff and students
- Encourage participation in sustainability initiatives within the community, on campus, and independently

Reporting:

A number of groups on campus are currently running, or looking to run, events aimed at promoting concepts of sustainability through presentations and information sharing. These events provide wonderful opportunities for collaboration. In 2011, two student-led initiatives took place which highlighted the outcomes that can be achieved by engaging students and forming collaborations to share information.

Sustainability 101 is a student-led public lecture series, which took place at McMaster University during the winter of 2011. Four speakers from Hamilton and across North America presented topics on sustainability initiatives being undertaken worldwide. In addition to the speaker series, Sustainability 101 also launched an Eco-Entrepreneurship Challenge, which showcased efforts of teams from across Canada working to create solutions for environmental and social problems. Competitors submitted descriptions of their project and were then required to present their ideas to a panel of judges. Teams were narrowed to three finalists who were awarded with cash prizes to help them pursue their initiatives.

The second initiative highlighted here is facilitated by BioSphere. BioSphere is a student group organized through the Biology Society, which focuses on sustainable initiatives. Since March of 2009, BioSphere has hosted an annual conference on campus called EverGreen, which is always very well attended and anticipated by the McMaster Community. In recent years, BioSphere began looking to broaden the scope of topics to include speakers from not-for-profit groups and the business sector. Collaboration between the Office of Sustainability and BioSphere was formed, and the 2011 EverGreen conference included seminar talks from Grand & Toy as well as two not-for-profit organizations: Green Venture and the Bay Area Restoration Council (BARC).

Collaborators:

Sustainability 101 was run by a McMaster student in the Xerox Centre for Engineering Entrepreneurship & innovation program. The event was sponsored by the Faculty of Engineering, the Walter G. Booth School of Engineering Practice, Grand & Toy, and the Xerox Centre for Engineering Entrepreneurship & innovation. Assistance in event communication and judging for the Eco-Entrepreneurship Challenge was provided by the Office of Sustainability.

BioSphere runs the EverGreen conference each year in March. Beginning in 2011, collaboration was formed with, and assistance was provided by, the Office of Sustainability with respect to helping identify potential speakers and providing additional avenues for communication, as well as supporting with facilitation of the event.





Student Sustainability Pledge

Overview:

Providing avenues for students to become engaged in sustainability, as well as being able to facilitate ongoing communication and information sharing between the University, the McMaster Students Union (MSU), and the broader student population, is an important component in being able to effectively foster a culture of sustainability at McMaster.

Objectives:

- Provide opportunities for student engagement
- Educate students about sustainability initiatives at, or related to, McMaster

Reporting:

MACgreen, the MSU Service focused on environmental sustainability, and the Office of Sustainability worked together to investigate various student sustainability pledge statements at other universities to evaluate their strengths and weaknesses as well as help to generate new ideas on how McMaster can utilize this approach to engage and communicate with its own student body.

Important components to be included in McMaster's Student Sustainability Pledge were determined as follows:

- Ability to not only sign the Pledge, but also be able to state which specific initiatives the signatories will commit to in order to satisfy the Pledge statement
- Ability to record the number of signatories on an ongoing basis
- Ability for students to enter their email address so that they can be connected to a network that would support ongoing communication and information sharing on topics of sustainability

Through investigation of various technologies and web-tools available, all of the identified components stated above were able to be achieved, such as a list of items that signatories can agree to commit to, including a field to input individual initiatives, a counting device to log the number of signatures, and the option to receive campus sustainability-related news updates. With the launch of the Pledge in September 2011, MACgreen is able to utilize this tool to engage students on an ongoing basis and keep them informed through their bi-weekly newsletter, the *GreenVine*. The full Pledge can be found on MACgreen's website; a link is also available from the Office of Sustainability website.

The McMaster Student Sustainability Pledge statement is as follows:

“ I will strive to take an active role in understanding the social, economic, and environmental consequences of my decisions and actions in order to effectively contribute to the development of a culture of sustainability at McMaster University and within the communities which I am a part. ”

Collaborators:

MACgreen is leading this initiative for McMaster. McMaster's Office of Sustainability assisted by providing feedback during the Pledge's creation and support during initial implementation.



Energy

Beverage Vending Machine Energy Usage

Overview:

McMaster is committed to finding ways to conserve energy on campus in an effort to maintain efficient operations, lessen its impact on the environment and avoid unnecessary costs. Improving the efficiency of vending machine operation was identified as an opportunity to achieve energy reductions on campus. This initiative was defined by a group of managers taking part in McMaster's Certificate in Advanced Leadership and Management (CALM) course, which is offered through McMaster's Centre for Continuing Education (CCE). The group identified a total of 53 Pepsi vending machines on main campus alone, which operate 24 hours each day and consume enough energy to power over 13 homes (<http://oee.nrcan.gc.ca/>). It was therefore determined that improving the operating efficiency of these machines could provide notable energy savings for McMaster and that this opportunity should be investigated further.

Objectives:

- Realize energy and cost savings associated with effectively managing the cooling cycle of beverage vending machines
- Determine energy conservation solutions that can be expanded to other electronic devices on campus
- Reduce **phantom power** being consumed when equipment is not in use

Reporting:

The CALM project team successfully implemented the pilot program in June 2011. The group worked with a number of third-party vendors and campus stakeholders to install a software management tool to shut down the vending machine compressor both when buildings are closed as well as during times when energy costs are at a premium. The software activates the compressor shutdown while still enabling the dispensing mechanism for customers to purchase beverages. Wireless temperature sensors were installed to monitor the internal temperature and ensure that the beverages were not being warmed. From the group's cost-benefit analysis, the projected savings are estimated at \$19,400 and 8.3 tonnes of carbon dioxide equivalents (**CO₂e**) over five years for all 53 machines, which is a 42% internal rate of return on investment.

With completion of the pilot installation in June, the management software was installed on four campus vending machines; each is being monitored and evaluated with respect to usage rates and energy consumption throughout the summer and into the academic term of 2011. If this pilot proves to be successful during the academic term, it is anticipated that campus-wide implementation of this initiative will take place in 2012.

Collaborators:

The CALM project team members, in collaboration with Hospitality Services and the Office of Sustainability, were the lead facilitators on defining, planning and implementing this initiative at McMaster.

Support and guidance were obtained from the MSU, Facility Services and CCE, as well as a number of staff and students who provided feedback throughout.

IBM and Enistic are the third parties who provided the energy management tool to McMaster. Enistic is the project lead with respect to the software and is responsible for the management and installation of the pilot project and potential expansion.

Support from Facility Services in working with IBM and Enistic to integrate this initiative into campus operations has been integral for success of the program.

Pepsi has provided tremendous support in working with McMaster and Enistic to pilot this software on their machines.



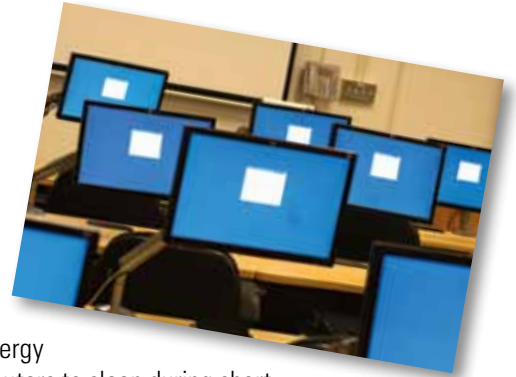


Desktop Power Management

Overview:

As a research-intensive institution, McMaster University requires large quantities of energy to maintain its operations. This presents several opportunities for ways to conserve, manage, and minimize McMaster's energy consumption.

An opportune area for energy conservation at the University is within campus computer labs. This area of opportunity exists in the form of phantom power – energy that is consumed when the computers are left on but are not in use. Setting computers to sleep during short periods of inactivity and implementing full computer shutdowns during longer periods of inactivity and overnight would provide substantial opportunity for energy savings.



Objectives:

- Decrease the amount of energy being consumed by campus computers when they are on, but not in use
- Decrease the risk of fires caused when computers are left on and unattended for extended periods of time

Reporting:

In order to maximize energy savings from the reduction of phantom power by campus computers, desktop power management software has been identified which consists of two components: the NightWatchman power management tool and associated WakeUp software. The main function of this package is to turn off and restart computers according to a designated schedule. This software system can be programmed to accommodate start-up and shut-down times based on lab operating schedules as well as weekend and holiday schedules.

McMaster's Computer Services Unit (CSU) in the Faculty of Health Sciences piloted the desktop power management software in one lab of 24 computers. Upon implementation of the power management software, each of the 24 computers began conserving approximately \$4 worth of electricity each month. This is a total annual savings of approximately \$1,152 for the entire computer lab. This project is planned to expand to 400 computers in 2012 which, when all costs are included, is expected to achieve net savings of approximately \$14,500 in energy each year.

In addition to the power management tool described above, McMaster's University Technology Services (UTS) is managing power consumption using the EZ GPO tool that allows for centralized control of power management settings. As a result, as a participant in the Low Carbon IT Campaign, UTS was recognized by the United States Environmental Protection Agency and received a certificate in recognition of their commitment to a better environment and reducing greenhouse gas emissions.

Collaborators:

McMaster's CSU in the Faculty of Health Sciences has taken the lead on being the first to pilot NightWatchman software at McMaster. Without their involvement, this initiative would not have been possible.

Support from McMaster's Office of Administrative Strategies and UTS was instrumental in helping the Office of Sustainability define a software provider and assisting with the facilitation of this initiative on campus.

Funding for this software has been generously provided by McMaster's Facility Services to support their ongoing energy conservation initiatives.

1E is the third party that provides NightWatchman and WakeUp software as well as ongoing technical support for this initiative.

UTS organized the facilitation and implementation of the EZ GPO tool in all seven of their computer labs. More information on this and other green IT initiatives taking place in UTS can be found on the UTS website.

Solar Thermal Heating of McMaster's Pool

Overview:

While investigating alternatives to supplement steam heating at McMaster University, solar thermal pre-heating was considered as one of a number of possible solutions. Starting in 2007, McMaster worked with Blackstone Solar Inc. to investigate the possibility of implementing solar thermal hot water pre-heating at McMaster, and in 2009 piloted the first project on campus with great success. From the outcomes achieved by the pilot project, it was recognized that with further development of this alternative and sustainable form of energy production, substantial savings in producing steam could be achieved. To expand on the initial pilot application, the campus pool was identified as an area of opportunity to further test the capabilities of the system.

Objectives:

- Decrease the amount of steam required to heat the campus pool water by converting to a solar thermal pre-heating system
- Achieve savings in dollars and reduction of carbon dioxide production

Reporting:

For the expansion of this initiative to the campus pool, which became operational in 2011, glycol tubing within solar panels was installed on the roof of McMaster's Ivor Wynne Centre (IWC) to capture solar radiation, which is then used to pre-heat water for the pool. The system contributes between 40% and 60% of the total energy required to heat the pool and offers the ability to add more solar thermal collectors in the future.

McMaster was awarded a \$110,000 government grant for the installation of this system and is currently anticipating a ten-year payback with annual savings in excess of \$10,000 per year.

Collaborators:

McMaster's Facility Services department is leading this initiative with the beneficiary stakeholder of McMaster's Department of Athletics & Recreation and a third party, Blackstone Solar Inc., to implement this project.





Residence-Wide Energy Challenge

Overview:

McMaster University has approximately 3,700 students living in 12 residence buildings on campus. The majority of these students are in their first year of study and have never lived away from home. Providing residence students with opportunities to take part in sustainability initiatives on campus is an effective way to educate them about sustainability and engage them in creating a sustainable culture at McMaster. The Residence-Wide Energy Challenge (RWEC) is a competition between residence buildings that is designed to provide students living in residence with those opportunities.

Objectives:

- Engage residence students in campus sustainability initiatives
- Provide opportunities for information sharing as they relate to energy conservation



Reporting:

The Inter-Residence Council (IRC), Housing & Conference Services (H&CS) and the Office of Sustainability have worked together to facilitate a pilot RWEC to encourage residence students to reduce their energy consumption. Baseline energy consumption was calculated by taking the average daily energy consumption for each residence building over a seven-day period prior to the start of the Challenge. Throughout the Challenge, energy data was extracted twice each week for a three-week period, and updates were provided to residence students on reductions achieved from their baseline. Those students living in the residence with the greatest percentage reduction at the end of the Challenge were named the 2011 Residence-Wide Energy Challenge Champions.

The total amount conserved across all residence buildings was 2,821,085g of CO²e. Moulton Hall was announced the 2011 Residence-Wide Energy Challenge Champion with a savings of 366,258g of CO²e, a decrease of 7.3% from their baseline. A group of campus stakeholders from McMaster's IRC, H&CS and the Office of Sustainability initiated, planned and implemented the RWEC for the first time at McMaster. The IRC is a student-run organization which operates in all 12 residence buildings at McMaster and is supported by McMaster's H&CS.

The success of the inaugural Challenge provided the opportunity for continuation and expansion into 2012. The project team produced a document entitled, *RWEC 2011 Inaugural Annual Report*, which includes an overview of the implementation of the Challenge as well as the full results and suggested next steps. This report has been shared with other institutions and is available electronically on the Office of Sustainability website.

Collaborators:

Engagement from students living in residence was integral to the success of this initiative by providing feedback and making strides to conserve energy during the Challenge. Students and staff representatives from McMaster's IRC, H&CS and Office of Sustainability worked together to plan and implement this initiative by garnering support, spreading awareness, and encouraging residence students to take part in the RWEC. The completion of the Inaugural Annual Report was also a collaborative effort of the parties mentioned above and will be used as a starting point in planning the 2012 RWEC. Assistance in data analysis and guidance throughout was provided by McMaster's Facility Services' Utility Managers.

Green Space

Bookstore Green Space Initiative

Overview:

In 2009, McMaster became the second university in North America to ban the sale and distribution of single-use plastic bags on campus. To further discourage the use of single-use plastic bags, Titles Bookstore began giving away 2,000 reusable bags at the start of each academic year; as well, they started charging ten cents each for their single-use, oxo-biodegradable bags. One hundred percent of the funds generated by the sale of single-use bags at Titles have been allocated to the implementation of a campus green space project planned to take place in 2011.

Objectives:

- Increase green space on campus
- Form collaborations among departments to develop and implement campus sustainability initiatives
- Re-invest funds from previous sustainability initiatives to promote ongoing campus-wide sustainability efforts

Reporting:

Titles Bookstore has generated enough funds from the sale of oxo-biodegradable single-use bags to purchase large planter boxes to be placed in front of the Bookstore. The planters will be installed in the fall of 2011 and will be filled with vegetation to increase the amount of green space on campus.

Collaborators:

Titles Bookstore is leading this initiative with support from McMaster's Facility Services and the Office of Sustainability.





Health & Wellbeing

Mac Farmstand

Overview:

McMaster recognizes that providing easy access to local produce will benefit the health and wellbeing of the campus community. In addition, purchasing food from local sources has less of an adverse effect on the environment by decreasing the distance food is shipped, and supporting local food producers provides an economic stimulus for the local economy.

Led by the MSU, McMaster's Hospitality Services and the Office of Sustainability collaborated to launch the first Mac Farmstand in the summer of 2010. The Farmstand is a mini produce stand, which is held on main campus during the summer and early fall. The Mac Farmstand was a wonderful success in its inaugural year. As the Farmstand is a "not-for-profit" entity, it was considered economically successful as it was not intended to experience a substantial loss or gain in profits; all produce was sourced from local growers at a fair cost, and the Farmstand experienced tremendous support from members of the McMaster community.

Objectives:

- Encourage the purchase of local food
- Provide access to healthy food choices
- Support local farmers
- Provide an opportunity for community engagement
- Educate about sustainable consumption

Reporting:

To ensure that the Mac Farmstand continues to be an ongoing part of McMaster University, the MSU, Hospitality Services and the Office of Sustainability worked together to identify and complete the necessary steps required to help institutionalize the Mac Farmstand:

- In 2011, the MSU's Student Representative Assembly (SRA) approved the creation of an internal position for the Farmstand Director.
- An agreement has been prepared outlining the roles and responsibilities of the Farmstand's key collaborators, which consist of the MSU, Hospitality Services and the Office of Sustainability.
- McMaster's Hospitality Services helped to further develop the business model, marketing strategy and operating procedure to ensure the Mac Farmstand operates to the same high level as their other food-service locations on campus.
- The MSU Farmstand Director and Hospitality Services prepared a formal operating procedures guide to ensure efficient and ongoing training of Farmstand staff members.



This ongoing collaboration ensured the continuation of the Mac Farmstand for its second season. The Farmstand was in operation from July 2011 to October 2011, which is more than two months longer than the 2010 Farmstand. To support the high demand from the campus community, the Farmstand took place once each week during July and August and twice each week starting in September. Once again, the Farmstand was a success in terms of its economic operations, its support of local producer, and the tremendous response it received from members of the campus community who continued to support this initiative.

Collaborators:

The MSU, Hospitality Services and the Office of Sustainability are the key collaborators on the Mac Farmstand. Support was also provided by Facility Services, MACgreen and the Student Health Education Centre (SHEC). Local participating farms include Simpler Thyme in Flamborough, Two Century Farm in Grimsby, Busy Liz's Farm Shop in Campbellville, Berry Fresh Farms in Fenwick, and Heart's Content Organic Farmstead in Brantford. Bread and honey were provided by the Earth to Table Bread Bar on Locke Street and Dutchman's Gold in Carlisle.

Health and Education Fair

Overview:

Linking concepts of how initiatives aimed at improving health and wellbeing and initiatives aimed at improving sustainability are related is a challenge for many who think of “sustainability” solely in terms of the natural environment or in terms of the “bottom line.” In the holistic sense, sustainability includes social, environmental and economic aspects. Ensuring that only one or two of the three “spheres” of sustainability has been considered means that true sustainability may not have been achieved.

Implementing initiatives aimed at improving individual health and wellbeing is essential to maintaining McMaster’s approach to sustainability. Furthermore, creating and taking advantage of opportunities to draw connections between the three individual spheres of sustainability will help foster a culture of sustainability at McMaster.

Objectives:

- Provide opportunity for community engagement
- Create linkages between health and sustainability
- Support student-led initiatives

Reporting:

To take advantage of an opportunity to make connections between social health and wellbeing, environmental and economic sustainability, McMaster’s Office of Sustainability worked with the Student Success Leaders from McMaster’s Student Wellness Centre to promote the theme of their annual Health Fair as “Going Green.”



Every March, volunteers taking part in the Student Success Leaders program organize an annual health fair for the McMaster student body. As defined by the volunteers, the theme for the 2011 event was “Going Green,” and the event was named “Welcome to the Green Life – A Health Event.”

The event lasted four hours and was held in the McMaster University Student Centre. Participating clubs and organizations set up several tables where students could interact with representatives and gain information on issues pertaining to health and the environment. The 2011 Fair had a very high rate of participation from McMaster students, staff and faculty as well as from Hamilton community members. Many groups present at the event encouraged interaction from Fair attendees through games or prize give-aways.

To support and promote the Fair, details for the event were sent primarily through electronic media such as email to major student body organizations and participating McMaster offices. Non-electronic methods of promotion included banners made from used T-shirts and newspapers. Additionally, all decorations were made in a sustainable manner, such as streamers made from newspapers and decorative flowers made from recycled paper, while catering consisted of locally sourced apples provided to all who attended the Fair.

Collaborators:

Led by the Student Success Leaders with support from the Student Wellness Centre, the Green Life Fair was a result of the participation of many organizations from the Hamilton community and with the cooperation of several McMaster student clubs and offices. Among these include the MacVeggie Club, the McMaster School of Bhanga, Dream Rhythm, Green Venture, SHEC, BioSphere, MACgreen, Leave the Pack Behind, the Mac Farmstand, the MSU, and the Office of Sustainability.



Transportation

Campus Transportation Survey Results

Overview:

In order to maintain valued communication with the McMaster community about their transportation preferences, including mode choice, commuting patterns and overall attitudes toward transportation, a Campus Transportation Survey was developed and distributed to all McMaster employees and students in the fall of 2010. Conducting an in-depth analysis of this information will help McMaster determine which **Transportation Demand Management (TDM)** measures will best support the campus community and have the greatest influence on increasing the percentage of commuters who take a sustainable mode.

Objectives:

- Analyze and report on the findings from McMaster's Campus Transportation Survey
- Utilize the findings to make recommendations for future TDM initiatives on campus

Reporting:

The Campus Transportation Survey was sent to all McMaster employees and students in 2010 and posed questions about individual travel behaviour, such as the respondent's mode of transportation and his/her attitudes towards them, as well as questions relating to the respondent's demographics. Initial findings from this study were communicated to the campus community in May 2011 and showed the following results:

- 45% of respondents agree or strongly agree that they limit their automobile travel to improve the environment.
- 37% of students and 18% of employees choose to walk or cycle.
- 39% of students and 13% of employees ride the Hamilton Street Railway (HSR).
- 24% of students and 65% of employees choose to drive a personal automobile.

A full report of the survey results has been prepared by Christine Fandrich, a sustainability intern in the School of Geography and Earth Sciences (SGES). The report includes information such as, 13.9% of employees and 3.8% of student respondents, who live within a **walkable** and **bikeable distance** of main campus, drive to campus every day even though another mode is a viable option. Furthermore, 3.2% of students and 34.3% of staff who live within a bikeable distance have a McMaster parking permit. Initiatives such as the Flex Pass, described on page 20, are aimed at providing opportunity and incentive for those types of commuters to try taking an alternate mode of transportation. The *Campus Transportation Survey Results Report* is available on the Office of Sustainability website. The information from the survey will inform sustainability initiatives that will encourage the use of active modes of travel.



Collaborators:

The Office of Sustainability collaborated with SGES and student intern, Christine Fandrich, on the analysis of the Campus Transportation Survey results and creation of the final report. Dr. Antonio Paez oversaw this project by providing academic guidance as well as funding, which was received from the Social Sciences and Humanities Research Council.

Bike Racks

Overview:

McMaster has a growing population of cyclists on campus and continually invests in infrastructure to support this active and sustainable form of transportation. From the results of the 2010 Campus Transportation Survey, it was found that 37% of students and 18% of employees at McMaster choose either walking or cycling as their main mode of transportation to and from campus. Evaluating the level of demand for bicycle parking locations across campus and then installing racks to meet this demand is a necessary requirement to encourage cycling at McMaster.

Objectives:

- Encourage cycling as a form of sustainable transportation
- Provide cyclists with more bicycle parking spaces on campus
- Align bike rack placement with the current plan for campus design, which considers the location of campus bikeways, demand for bike parking at various locations across campus and landscape design

Reporting:

In the spring and summer of 2011, the Office of Sustainability worked with campus stakeholders to conduct a survey of current bike rack locations and obtain feedback on preferences for rack placement. A bike rack plan was prepared as a result of this cross-campus consultation, which included in-person conversations as well as the use of an online poll posted on the Office of Sustainability's website.

During the fall of 2011, eight new bike racks were purchased and installed in the following locations:

- Grassy Mall of Main Campus
- Health Sciences Library
- East side of Mills Memorial Library
- Thode Library
- Michael G. DeGroot Centre for Learning and Discovery
- David Braley Athletic Centre

Five four-ring bike racks and three eight-ring bike racks will provide space for 68 more bicycles on campus. To accommodate spatial demands further, six racks were moved from locations that were identified as low use by community members and were relocated to areas of higher demand.

Collaborators:

McMaster's Security & Parking Services provided financial support for the funding of eight new bike racks and their installation by McMaster's Facility Services. The MSU provided assistance in distributing the link to the online poll to the student community. Special mention goes out to the members of the McMaster community who provided their feedback pertaining to their desired bike rack locations.





Cycle Safe Campaign

Overview:

At McMaster, approximately 37% of students and 18% of staff chose walking or cycling as their main mode of transportation to and from campus. McMaster recognizes the importance of encouraging and educating about pedestrian and cycling safety.

Objectives:

- Educate about pedestrian and cyclist safety
- Encourage the use of active modes of travel

Reporting:

McMaster's Student Community Support Network (SCSN) is a student-run service aimed at expanding and strengthening positive relationships between students and various members in the local community. In addition the group strives to foster a sense of community in the West Hamilton Area as well as act as a support and local resource for off-campus students through programming and events. To promote safe and enjoyable commuting by walkers and cyclists, SCSN is leading an educational safety initiative called the Cycle Safe Campaign throughout the fall of 2011. This program is focused on providing commuters with information about safety procedures and rules of the road, such as the importance of wearing a helmet, riding on the road, using lights at night, not riding in prohibited areas, removing headphones when crossing intersections and stopping at stop signs.

During the Cycle Safe Campaign events, participating groups hand out prizes such as information cards and buttons. Cyclists who are spotted practicing safe cycling are rewarded with a Cycle Safe tag or reflective bracelet as a way to recognize and reward their efforts.

Collaborators:

McMaster's SCSN is leading this initiative with support from McMaster's Security & Parking Services, Environmental and Occupational Health Support Services Safety (EOHSS), and the Office of Sustainability.



CYCLE
SAFE

Flex Pass

Overview:

A common theme in transportation literature is that the cost to drive a vehicle once all of the upfront expenses are paid, such as the purchase of the vehicle, insurance, and parking permit, is relatively inexpensive. Traditionally, on-campus parking permits are sold for a month-long term. In this system, it is most economical to purchase a monthly permit if the commuter plans to park four or more times each month on main campus. The challenge is how to create an economic incentive for those who have already paid these upfront costs to leave their vehicle at home and take a sustainable mode instead. The introduction of a flexible parking permit, which would charge drivers only for those days they choose to drive and park rather than charge for an entire month of parking, will create an economic incentive of taking a sustainable mode.



Objectives:

- Increase awareness of sustainable transportation
- Encourage the use of alternatives to **single-occupancy vehicles**
- Provide an economic incentive to monthly permit holders to take a sustainable mode of travel instead of driving (when possible)

Reporting:

To encourage staff, faculty and students to take a sustainable mode of transportation, Security & Parking Services has introduced the Flex Pass, which is a ten-ticket reloadable parking pass; tickets do not have an expiry date and can be used for many lots on campus. For the fair-weather cyclist or the potential walker who occasionally has off-campus meetings or for anyone who drives to campus ten times or less each month, the Flex Pass provides a more sustainable option to parking on campus*.

An online survey has been developed and implemented to gather information on the impact this program is having on staff and student transportation patterns. Analysis of survey results will be the basis for recommendations and future development of this and similar TDM initiatives at McMaster.

*Note that cost analysis is based on permit prices for McMaster's Parking Lot C

Collaborators:

Security & Parking Services worked with the DeGroote School of Business at the Ron Joyce Centre (RJC) to pilot this initiative. With support from the Office of Sustainability, this initiative was expanded to all faculty, staff and students in the fall of 2011. Development of the online survey was conducted by the Office of Sustainability in collaboration with Security & Parking Services as well as Christine Fandrich and Dr. Antonio Paez from McMaster's School of Geography and Earth Sciences.





Waste

Information Technology Collection, Reuse, and Recycle Expansion

Overview:

As a research-intensive educational institution, McMaster generates large amounts of electronic waste. Ensuring there are options for reuse, and when removal and disposal of electronic equipment from campus is required, ensuring it is done in a socially, environmentally and economically sustainable manner is very important to the University.

McMaster established its first Information Technology (IT) Collection, Reuse and Recycle event in celebration of **Earth Day** 2009. At the Collection event, outdated and/or unwanted items were collected at a central location on campus and offered free of charge for reuse by employees and students. All items left over at the end of the event were taken to be fully recycled in compliance with the Ontario Electronic Stewardship (OES) Program. The success of this first event has led to the expansion of IT Collections at McMaster.

Objectives:

- Provide the opportunity to reuse outdated electronic equipment from campus
- Ensure that electronic equipment from McMaster is being fully recycled
- Educate about responsible recycling practice

Reporting:

Continued success of McMaster's IT Collection, Reuse and Recycling events has encouraged further expansion to include other campus locations as well as to students and residents in the surrounding neighborhood to enable recycling of their electronic waste.

During Earth Day 2011, IT Collections were held at the following campus locations:

- Grassy Mall of main campus
- Ewart Angus Centre in the Health Sciences Centre
- McMaster's Downtown Centre
- McMaster's Ron Joyce Centre



In addition to the events held at various campus locations, communication was sent to students and residents in surrounding neighborhoods to advise them that McMaster would be sending its IT recycling company to designated areas within the community to collect electronic waste items placed at the curbside on a specified date. Information was provided advising residents of the City of Hamilton's method for the disposal of electronic waste, which involves taking the material to a municipal transfer station to ensure that it would be properly recycled.

Between January and October 2011, McMaster sent more than 34,000 pounds, or 15.7 metric tonnes of IT waste to be recycled. From campus locations alone, McMaster saw a savings of \$2,000 on its waste bill as a result of the IT recycling program.

Collaborators:

The primary stakeholders involved in McMaster's IT Collection, Reuse and Recycling events on main campus consist of volunteers from the Faculty of Health Science's CSU, UTS, EOHSS and the students from BioSphere. EOHSS facilitates battery recycling at these events and BioSphere supplies Think Recycle boxes to collect cell phones and ink cartridges. The Collection at McMaster's Downtown Centre was coordinated through the Office of the Assistant Vice-President (Administration) and is supported by numerous departments, such as, Financial Services, UTS and CCE. At the RJC, volunteers from the Masters of Business Administration (MBA) Association and RJC Technology Services, as well as a representative from Sodexo, the RJC building management contractor, made this event possible. McMaster's Facility Services and third-party vendor, Niagara E-Waste, facilitated the collection of the electronic waste left over at the end of the event, which is then sent to MIDA Inc. for proper recycling.

Composting Expansion

Overview:

In 2009, the Office of Sustainability worked with MACgreen, Hospitality Services and Facility Services to investigate the opportunity to incorporate composting as a method of waste diversion on campus. It was found that a variety of models could be used in combination to support the unique requirements of the various areas across campus.

Working with McMaster's third-party waste services provider, BFI Canada Waste Management (known commonly as BFI), to pilot a decentralized campus composting program has proven to be successful and has provided opportunity for further expansion.

Objectives:

- Divert organic waste from landfill
- Achieve carbon reductions associated with organic waste composting

Reporting:

Through the collaborative effort of a number of on-campus stakeholders and service providers of the University, McMaster has successfully developed and expanded its composting program beyond the initial pilot, which took place at the East Meets West Bistro. McMaster's composting program now includes Bridges Café, Twelve Eighty, Union Market, La Piazza, The Phoenix, East Meets West Bistro, and the Communications Research Laboratory (CRL).

The University's most recent waste audit covers the period between March 2010 and March 2011 and shows McMaster diverted more than 160 metric tonnes of organic waste from landfill through its composting program. This is equivalent to 244 tonnes of CO₂e. Since the most recent expansion, which includes the eateries stated above, started in April 2011, these results are expected to increase substantially in McMaster's 2011 waste audit.

Collaborators:

Key stakeholders responsible for the successful expansion of this program include McMaster's Hospitality Services, Facility Services, and the MSU. In addition, a group of very dedicated and engaged employees who work within the CRL building have taken it upon themselves to request support from Facility Services and the Office of Sustainability to help them facilitate a composting program in their building's lunchroom locations. This program has been very successful and could not have been possible without the leadership of employees involved.

All organic material is taken away daily by composting hauler, Planet Earth, to the Walker Environmental Group Compost facility in Thorold, Ontario.





Recycling Program Alignment

Overview:

To maintain consistency of communication and reporting, McMaster's Office of Sustainability has been working with staff at the RJC and McMaster Innovation Park (MIP) to align the various standards for recycling and waste disposal practices of each campus location.

Objectives:

- Ensure that recycling programs at McMaster's satellite campuses are aligned and that educational material includes consistent messaging
- Decrease the variation between campus recycling programs to minimize confusion and the need for re-education of recycling procedures

Reporting:

Through collaboration among a number of on-campus stakeholders, student groups and campus vendors, alignment of recycling and waste disposal procedures is well underway.

With support from BioSphere, a division of the student-run Biology Society, the MBA Association has been able to successfully implement the Think Recycle program for ink cartridges, toner cartridges and cell phones at the RJC. This program will generate funds for the MBA Association to be able to support ongoing sustainability initiatives throughout their organization. Facilitated by Sodexo and members of RJC's Technical Services team, as well as a group of MBA student interns and representatives from the MBA Association, staff and students at the RJC were able to take part in the first IT Collection, Reuse and Recycling event at their new location.

Through collaboration between Sodexo and the Office of Sustainability and with support from BFI, the waste and recycling programs at McMaster and the RJC were aligned. This allowed the same educational information located at the main campus to be relevant to the RJC, including information posted on the Office of Sustainability's website and allowing "This, That, and The Other" waste and recycling posters to be affixed on all waste and recycling bins at the RJC.

Employees at MIP have implemented the Think Recycle program within their building and will be taking part in the next IT Collection, Reuse and Recycling event in October 2011.

Collaborators:

In order to help align recycling programs at McMaster and existing satellite campuses, the Office of Sustainability has worked closely with student representatives from both the MBA Association, MBA student interns taking Dr. Pujari's "Sustainability and Corporate Social Responsibility" course, and BioSphere, as well as staff members from Sodexo and the Technical Services team at the RJC. Collaboration with staff representatives from the Leasing and Property Management department at MIP made alignment in their building possible.



Water Fountain Retrofit Program Expansion and Upgrade

Overview:

To support and encourage the use of refillable bottles rather than the purchase of single-use plastic bottles, McMaster installed twenty water-filling stations across campus in 2009. These water-filling stations included a bubbler for drinking, a goose-neck spout for refilling and a chiller to provide cool water. This program received a very positive response from staff, students and faculty as well as encouragement to continue by expanding the program to more locations. As requested, this program continued in 2010, again with very good success.

To support the campus community and improve on the identified sustainability initiatives, ongoing review of past programs and engaging in a process of community consultations are important steps in sustaining program success. In doing so for the Water Fountain Retrofit Program, it was recognized that improvements and advancements could be made. As such, a new model of fountain has been introduced which will provide additional benefits to the University and is the focus of the 2011 Water Fountain Retrofit Program initiative.

Objectives:

- Decrease the number of single-use plastic water bottles being consumed by the campus community by providing the infrastructure to support the refilling of reusable containers
- Promote the campus-wide use of reusable containers and water-filling stations

Reporting:

In support of McMaster's plan for continued expansion of the Water Fountain Retrofit Program, ongoing review of fountain locations and their respective level of usage, as well as obtaining recommendations from the community for the next annual list of upgrades, is an ongoing process. Through this process, McMaster's Facility Services have identified an alternative fountain model from the ones previously installed. This new model would not only support all of the defined requirements for drinking, refilling and offering cold water, but would also provide a lower life-cycle cost to the University for installation and ongoing maintenance. It was recognized that the goose-neck spouts on the previous model were easily damaged and costly to replace. As an added benefit, the new fountain model includes a water filter and electronic counter that records the number of single-use plastic bottles saved through refilling. This new model was piloted in a number of campus buildings with good results and has been the model used for all fountain retrofits which took place in 2011. Two fountains that had been previously retrofitted with a goose-neck filling station but had been repeatedly damaged were upgraded with the new fountain model. This was done to reduce maintenance costs, ensure that community members are able to refill their bottles, and to maintain good appearance of campus infrastructure. Fourteen additional fountains have been newly retrofitted as part of the program this year.

All locations selected for upgrade in 2011 have been installed with a new fountain along with an educational sign stating "tis better to refill than to landfill." The electronic counter which accompanies each new fountain model will also help promote and encourage bottle refilling as a sustainable initiative. A list of all retrofitted fountain locations can be found on the Office of Sustainability website.

Collaborators:

McMaster's Facility Services and Office of Sustainability, in consultation with various members of the McMaster community, worked in collaboration to evaluate the program as a whole, identify areas for program improvement and identify fountain locations to be retrofitted.





Plastic-Bottle-Free Zone Expansion

Overview:

To reduce the amount of plastic destined for the waste stream in the form of single-use plastic bottles, McMaster is encouraging the use of refillable bottles through initiatives such as the Water Fountain Retrofit Program described above. To further encourage employees and students to reduce their consumption of beverages sold in single-use plastic bottles, the creation of Plastic-Bottle-Free Zones was investigated.

In 2010, the MSU facilitated the creation of an online Plastic-Bottle-Free Pledge for students and employees, which confirmed their commitment to decrease their consumption of beverages sold in single-use plastic bottles. In addition to this Pledge, the MSU's main office and two of its services, COMPASS and the Student Health Education Centre (SHEC), defined their respective areas as Plastic-Bottle-Free Zones, whereby the physical location would remain free of single-use plastic bottles in support of the broader initiative of reducing the amount of plastic in the waste stream. Further development and expansion of these and related initiatives will help foster a consciousness around sustainable packaging, especially that of beverages.

Objectives:

- Decrease the number of single-use plastic bottles being consumed by the campus community through education and encouragement
- Promote the campus-wide use of refillable containers and alternatives to plastic bottles
- Expand upon the MSU's previous initiatives such as the Plastic-Bottle-Free Pledge and Plastic-Bottle-Free Zones

Reporting:

The 2011/12 MSU Board of Directors is again taking the lead on this initiative at McMaster by expanding upon their commitment to reduce the number of single-use plastic bottles generated on campus. The MSU's Vice-President of Administration, Katie Ferguson, submitted the MSU Plastic-Bottle-Free Policy to the SRA on September 18th where it passed unanimously. This Policy is an extension of the Plastic-Bottle-Free Pledge that was initiated by MSU's former president, Mary Koziol, in 2010/11. The Policy states that no money from the MSU budget will be spent on the purchase of beverages sold in single-use plastic bottles. The exception to this Policy is for Union Market, which purchases beverages for retail purposes.



Since signing the Pledge, more than 5,300* single-use plastic bottles have been saved from the MSU Main Office alone.

*Note: This figure was recorded by the digital counter on the MSU's water fountain in their main office and represents the number of plastic bottles saved by refilling between March 17, 2011 and October 1, 2011.

Collaborators:

The MSU and McMaster's Office of Sustainability are the main collaborators leading this initiative for McMaster.

Water

Clean-Up of Coldwater Creek

Overview:

McMaster University is located in the Hamilton Harbour watershed. All the water on the East side of campus flows into this beautiful bay or directly into the harbour's protected Cootes Paradise marsh, which is owned and managed by the Royal Botanical Gardens. On the West side of campus, the runoff water flows toward Coldwater Creek, a tributary of Spencer Creek, which also flows into Cootes Paradise marsh.

McMaster recognizes the importance of being a neighbour to such an important environmental asset and is focusing a number of campus sustainability initiatives to ensure that the University has a positive impact on these lands, habitats and waterways.

Objectives:

- Decrease the amount of garbage ending up in Coldwater Creek
- Provide opportunity for student and community education and engagement

Reporting:

The MSU, the Ontario Public Interest Research Group (OPIRG) at McMaster, the Graduate Students Association (GSA) and Alumni Advancement combined their "welcome back" events to host a joint community clean-up event and celebration barbeque.

First-year students took part in this event during the Friday of their Welcome Week, while OPIRG kicked off their Alternative Welcome Week (September 9, 2011) event, which takes place the week following MSU's traditional Welcome Week. Alumni Advancement invited all returning students and provided funding for the barbeque celebration, and the GSA placed a call out to McMaster's Graduate Students. The Office of Sustainability encouraged all faculty and staff to join the event. The Bay Area Restoration Council (BARC), an environmental non-profit organization with its office on campus, communicated the opportunity to their members and supporters. The President's Office and the Office of Public Relations encouraged members of the local community to attend the event to help clean up, meet students and employees of the University, and join the group for the barbeque celebration that followed.

At the close of the event, more than 250 participants consisting of employees, students, and members of the local community joined forces to clean up the area surrounding the creek and the neighborhood area surrounding the University. Through this effort, 85 bags of garbage were collected.

Collaborators:

A tremendous effort was put forth by the following groups to make this event a success: the MSU, OPIRG, GSA, Alumni Advancement, the Office of the President, the Office of Public Relations, BARC, Facility Services, and the Office of Sustainability. Members of the campus and local community who attended the event made the results achieved possible.





Appendix A

Resources Saved and Consumed at McMaster

Estimated on October 1, 2011 since May 1, 2008

Resources Saved at McMaster University Main Campus (Estimated real time since May 1, 2008)		Resources Consumed at McMaster University Main Campus (Estimated real time since May 1, 2008)	
36,816,017	kWh of electricity saved	248,836,836	kWh of electricity used
140,648,451	lb of steam saved	867,956	lb of steam used
160,718	m3 of natural gas saved	31,450,983	m3 of natural gas used
189,722,044	L of water saved	1,606,961,693	L of water used
9,877,843	kg of waste diverted	5,749,846	kg of waste created
18,479,109	kg of carbon saved		
491,006	plastic bags saved from landfill		
5,129,286	dollars saved		

Source: Office of Sustainability home page:
<http://www.mcmaster.ca/sustainability/>

Appendix B

McMaster Sustainability Initiatives since 2009

2009 Initiatives

Initiative	In Progress	Complete
MacEARTH		•
Sustainability Internship Program		•
Sustainability Annual Report		•
Campus Sustainability Day		•
Sustainability Ambassador Program		•
Desktop Power Management		•
Carbon Inventory		•
Permeable Paving		•
MActive		•
Automobile Sharing Program		•
Transportation Survey		•
Secure Bike Storage Facility		•
Commuter Challenge		•
Campus Bike Rack Reorganization		•
Waste Diversion Strategy		•
Compositing		•
Sustainable Procurement		•
Water Fountain Retrofits		•
Campus Bag Policy		•
I.T. Collection, Reuse and Recycle		•
Rainwater Harvesting		•

2010 Initiatives

Initiative	In Progress	Complete
Sustainability Internship Program Expansion		•
Presentation Series		•
Campus Tours and New Employee Orientation		•
2010 McMaster Sustainability Annual Report		•
Climate Action Plan		•
Print Management Strategy		•
Permeable Paving (Parking Lot M)	•	
MAActive		•
Campus Farmstand		•
Campus Maps	•	
Community Garden		•
Bike Racks		•
Bike Share		•
Clean Air Commute		•
Waste Reduction Work Plan		•
Composting Expansion		•
Sustainable Purchasing	•	
Bike Garbage Pick-Up and Community Clean-Up		•
Water Fountain Retrofit Expansion		•
Plastic-Bottle-Free Zones		•
A.N. Bourns Science Building (ABB) Rainwater Capture Tank	•	
Engineering Technology Building (ETB) Rainwater Treatment		•

2011 Initiatives

Initiative	In Progress	Complete
Sustainability Internship Program Expansion		•
Presentation Series		•
Student Sustainability Pledge		•
Beverage Vending Machine Energy Use		•
Desktop Power Management		•
Solar Thermal Heating of McMaster's Pool		•
Residence-Wide Energy Challenge		•
Bookstore Green Space	•	
Mac Farmstand		•
Health and Education Fair		•
Campus Transportation Survey Results		•
Bike Racks		•
Cycle Safe Campaign		•
Flex Pass		•
Information Technology Collection, Reuse and Recycle Expansion		•
Recycling Program Alignment		•
Composting Expansion		•
Water Fountain Retrofit Program Expansion and Upgrade		•
Plastic-Bottle-Free Zone Expansion		•
Clean-Up of Coldwater Creek		•



Glossary

Areas of Focus

The Office of Sustainability operates with seven areas of focus outlined in this report. The areas of focus are: Education, Energy, Green Space, Health & Wellbeing, Transportation, Waste, and Water.

Carbon Dioxide Equivalents (CO₂e)

CO₂e is a unit of measurement used to account for other greenhouse gases—such as methane and nitrous oxides—that contribute to climate change. It converts those gases to “equivalent carbon dioxide,” and is often used to offer a single metric that can be used for all greenhouse gases.

Reference:

<http://www.350.org/en/understanding-350#14>

Cycleable Distance

A cycleable distance is considered to be 5 kilometres from origin to destination.

Reference: http://www.hamilton.ca/NR/rdonlyres/AC9C3A16-DECD-4F51-8FE3-22142EEED1F6/0/22WalkingandCyclingJan2005_2391831.pdf

Earth Day

First launched as an environmental awareness event in the United States in 1970, Earth Day (April 22) is celebrated as the birth of the environmental movement. In Canada, Earth Day has grown into Earth Week and even Earth Month to accommodate the profusion of events and projects.

Reference:

<http://www.earthday.ca/pub/about/history.php>

Internet Memes

A “meme” is defined as an idea, behaviour, style, or usage that spreads from person to person within a culture. The term “internet meme” is used to describe a concept that spreads swiftly via the internet. The idea may take the form of a hyperlink, video, picture, website, hashtag, or just a word or phrase.

Reference:

Kempe, D., Kleinberg, J. & Tardos, E. (2003). “Maximizing the spread of influence through a social network”. Int. Conf. on Knowledge Discovery and Data Mining. ACM Press. <http://doi.acm.org/10.1145/956750.956769>.

Phantom Power

The energy used by equipment while it is turned “off” – i.e., not being used or not performing its primary function. When the majority of equipment around the house today is switched off, it is really “asleep” or in standby mode, ready to respond to the demands of our “instant on” society. To achieve this, equipment must remain in standby mode, and therefore continues to draw power even if the user turns it “off.”

Reference:

<http://www.oeenrcan.gc.ca/residential/business/manufacturers/registration/presentations/2006/standby-power-e.ppt>

Single Occupancy Vehicles (SOVs)

A single-occupancy vehicle is a privately operated vehicle in which the only occupant is the driver. Single-occupancy vehicles are cited to be high polluters, cause traffic gridlock, and contribute to climate change, as well as waste fuel and money.

Reference:

<http://air.greenventure.ca/healthy-commuting>

Transportation Demand Management (TDM)

Transportation Demand Management (TDM) is the use of policies, programs, services and products to influence whether, why, when, where, and how people travel. TDM measures can lead people to shift their mode of transportation, make fewer trips, and/or drive more efficiently.

Reference:

http://www.sustainablecommunities.fcm.ca/files/Capacity_Building_Transportation/TransportationDemandManagement-e.pdf

Walkable Distance

A walkable distance is considered to be 2 kilometres from origin to destination.

Reference:

http://www.hamilton.ca/NR/rdonlyres/AC9C3A16-DECD-4F51-8FE3-22142EEED1F6/0/22WalkingandCyclingJan2005_2391831.pdf

