

# Sustainability Annual Report | 2013





## President's Message

To continue our commitment to ensuring a sustainable campus and campus community, advancements have been made in all areas of sustainability at McMaster, including physical and operational upgrades to campus grounds and infrastructure, financial innovation strategies and new initiatives to support the social health and wellbeing of the university and broader community. I encourage you to navigate the University's website to learn more about these developments. McMaster's unique approach to developing a culture of sustainability on campus and within the community, with a focus on collaboration and student engagement, is highlighted throughout this report.

The majority of the initiatives reported on within this document were planned and implemented by McMaster students with support from faculty, staff, students and members of the community. This innovative approach to sustainability is leading to real results and creating lasting impact for the individuals involved in the various initiatives, as well as the broader local and international communities served by them.

As McMaster continues to advance sustainability on campus and within the community, this year marks new developments in bringing sustainability into the classroom through a focus on interdisciplinary, student-led, community-based and experiential education. These developments have been facilitated across campus in a number of different ways and through a wide variety of programs.

One such initiative is the Sustainable Future Program. There are currently two courses within this academic program; Sustain 2A03 - The Sustainable Future Project and Sustain 3A03 - Societal Tools for Systemic, Sustainable Change. Within these courses, students learn about sustainability through lectures and course material while having the opportunity to complete an experiential learning project where they work

with members of the campus and broader community to develop and implement a real-world sustainability initiative.

Through the Sustainability Internship Program, which was developed in 2009, students from across campus receive course credit from their home Faculty for taking part in an experiential learning project related to sustainability. This program has been highly successful and continues to thrive. Due to the program's success, a new initiative, known as the Graduate/Undergraduate Collaboration in Experiential Learning, is in development and will provide graduate students with an experiential education opportunity, for which recognition is received.

Work is also underway on the development of a minor in sustainability. The intention is to promote sustainability education in a more integrated and formalized fashion and further demonstrates McMaster's commitment to interdisciplinary education on sustainability.

To highlight the work that McMaster students have completed over the last year, 16 of the 22 initiatives reported on have been written by Sustain 2A03 students and 3 have been prepared by Sustainability Student Interns. The remaining 3 initiatives relate to programs that have been developed to support these recent advancements towards sustainability education at McMaster. As you read this report, you will notice the huge amount of collaboration that has taken place between students, faculty, staff and members of the community to ensure the success of these initiatives.



A handwritten signature in black ink, appearing to read 'Patrick Deane'.

Patrick Deane  
President and Vice-Chancellor

## Mission Statement

McMaster University will apply its immense potential and engage 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, scholarship, research, education, communication, collaboration, community engagement and implementation.

## Guiding Principles

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

## Areas of Focus

The Office of Sustainability operates with seven areas of focus outlined in this report.

The areas of focus are:

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



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# Recent Developments

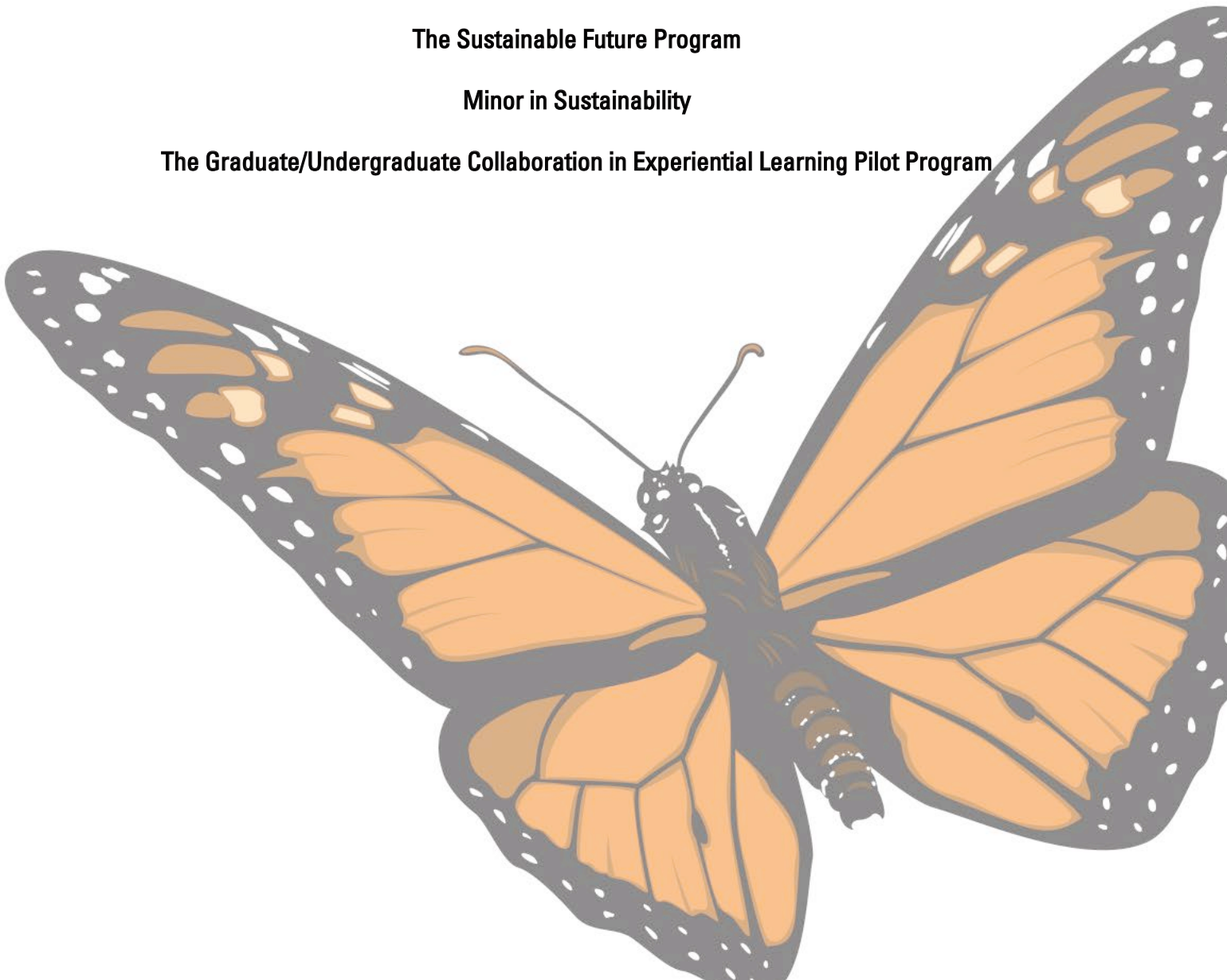
With the goal to truly engage students in learning about sustainability, McMaster has developed three new and innovative programs over the past year, which each provides students with the opportunity to take part in community-based, self-directed, interdisciplinary and experiential education, all related to sustainability.

These three new programs are listed below and are outlined in the pages to follow.

**The Sustainable Future Program**

**Minor in Sustainability**

**The Graduate/Undergraduate Collaboration in Experiential Learning Pilot Program**



# The Sustainable Future Program



## Overview

Initiated in January 2012, the idea of creating an interdisciplinary course in sustainability was proposed out of the work being undertaken by the Task Force on Sustainability within the Faculty of Engineering. Popular support for this idea led to the creation of a working group composed of cross-campus stakeholders from each of the various faculties and administration. The goal for this group was to develop an interdisciplinary course that would engage students in learning about sustainability through experience, research and community involvement.

It was identified through the group's early discussions, that what was trying to be accomplished in providing students with a solid understanding of sustainability from an interdisciplinary perspective, while also including experiential education, community engagement and student-directed learning, would take more than one standalone course to achieve. The group also identified that the objectives of the program were heavily aligned with many of these themes outlined within the President and Vice-Chancellor's directional letter to the University, *Forward with Integrity* (President Deane, 2011), for which the program could act as an exemplar. These themes include enhancing the student experience, fostering community engagement, placing focus on opportunities for research, and establishing connections internationally.

## Objectives

- 1 Teach students about sustainability from an interdisciplinary perspective.
- 2 Provide the opportunity for self-directed, interdisciplinary and experiential learning.
- 3 Support student learning within the University and local community.
- 4 Engage undergraduate students in taking part in meaningful, experiential research.
- 5 Foster opportunities for students to place local knowledge and local action within a global context.



# The Sustainable Future Program



## Reporting

Throughout the calendar year of 2012, development of the inaugural course, Sustain 2A03 – The Sustainable Future Project, took place. A Course Instructor was brought onboard to develop the course content and community outreach began with the goal to obtain support for student experiential learning projects and mentorship. It was in this first year that the primary goal for creating a standalone course in sustainability had rapidly evolved to placing this initial project within a larger framework. Through this evolution, the standalone course, The Sustainable Future Project, transformed into the Sustainable Future *Program*. The goal of this broader program was then established, which was to guide the direction of the inaugural course as well as the additional components to come.

The first course, Sustain 2A03, was successfully launched in January 2013. More information specific to Sustain 2A03 can be found within this report on page 15. From this initial success and from broad community support, approval to continue to offer Sustain 2A03 for a second term, as well as approval to develop a second course under the Sustainable Future Program was granted.

Through the first course offering, Sustain 2A03 achieved 84% enrollment and engaged over 250 Community Project Champions, Community Mentors and other members of the University and broader community who supported students in their experiential learning. Through their experiential learning projects, 38 initiatives were planned, developed and implemented by the

**Collaborators:** The development of the Sustainable Future Program was made possible through the support from all faculty and staff involved in the planning and implementation of the course and from all members of the community who helped guide students in their experiential learning. The hard work put forth by the students enrolled in the inaugural course as well as the formative feedback they provided throughout was integral to the program's success and future development. A special mention goes to the Faculty of Engineering for funding the administration of both Sustain 2A03 and Sustain 3A03.

students throughout the course, of which 16 are included within this report, beginning on p.18.

The second course within the Sustainable Future Program is titled Sustain 3A03 – Societal Tools for Systemic Sustainable Change, and is being offered for the first time starting September 2013.

## Links

<http://www.mcmaster.ca/sfp/index.html>

# Minor in Sustainability



## Overview

Addressing sustainability in our society poses interdisciplinary challenges that require interdisciplinary solutions. Currently, sustainability is taught most often in silos within individual faculties, and within individual and isolated classes. The goal of this minor is to alter this pedagogy and teach sustainability both within and across faculties. This minor will provide a path for students to study and integrate diverse aspects of sustainability from different disciplines into a cohesive whole.

## Objectives

The following Guiding Principles have been established by the Task Force to form a foundation of knowledge and to provide direction for the development of a minor in sustainability at McMaster University:

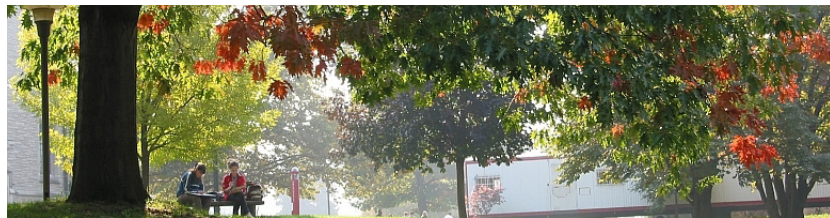
- 1 Provide students with foundational knowledge of sustainability.
- 2 Create a consciousness and respect for the diversity of sustainability perspectives held in different faculties.
- 3 Ensure a truly interdisciplinary educational experience whereby students from all of McMaster University's faculties interact in a shared learning environment.
- 4 Encourage and support student-directed learning through inspiring inquiry and empowering student leadership.
- 5 Provide every student the opportunity for meaningful, experiential learning, for which they have the ability to achieve tangible and/or measurable results.
- 6 Educate students to become sustainably-minded citizens, understanding the inter-relationships among society, the environment and the economy.
- 7 Provide students with knowledge, skills and abilities that society demands.
- 8 Ensure students are well-equipped and experienced in the act of engaging in and facilitating respectful and reciprocal relationships with community members.
- 9 Provide a program that is complimentary to other programs at McMaster with a focus on avoiding redundancy of similar programs.
- 10 Ensure interfaculty equity, including the consideration of following:
  - Accessibility of program to all students with respect to enrollment.
  - Financial and budgetary considerations.

# Minor in Sustainability



## Reporting

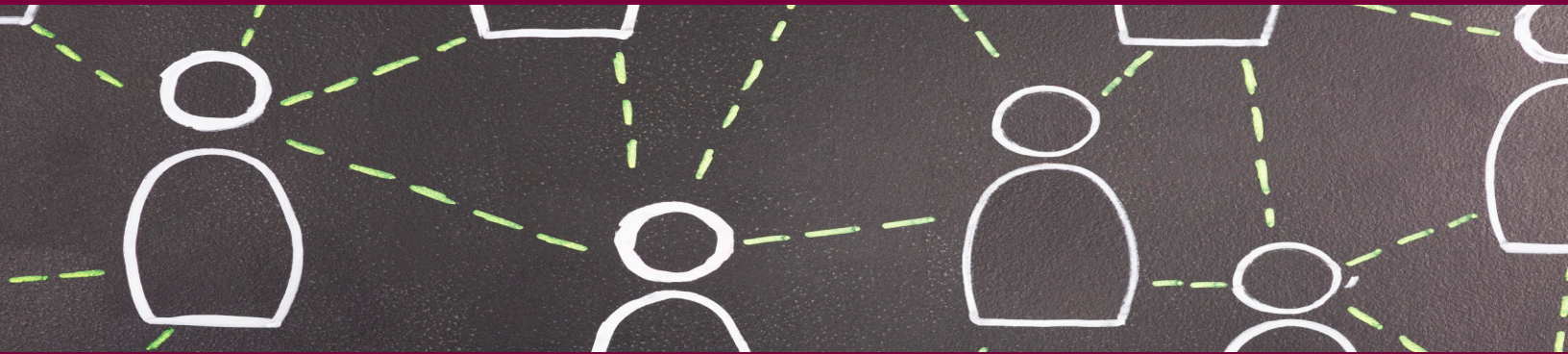
The concept was originally brought to the Associate Deans Group in February 2013. The Associate Deans supported this proposal, recommending two faculty members from each faculty to join a task force to develop a proposal for the minor in sustainability. This task force comprised participants from five faculties including Faculty of Business, Faculty of Engineering, Faculty of Humanities, Faculty of Science, Faculty of Social Science and the Arts & Science Program. The task force met from April through July in which time they established a set of guiding principles, both a proposed governance and operational structure for the minor, as well as a list of sustainability courses from different faculties and the Arts & Science Program. The members of the task force have continued to work collaboratively with other faculty and staff members from their area to communicate and generate support for contributing to the minor. It is anticipated that each faculty will choose from their current course offerings a select list of sustainability-themed courses, which will be made available to students taking part in the proposed minor in sustainability. This will ensure that students have an opportunity to obtain a truly interdisciplinary perspective of sustainability. The implementation date for the minor in sustainability is anticipated for September 2014, subject to approval by the Undergraduate Council.



**Collaborators:** The development of a minor in sustainability at McMaster would not have been possible without the support of many students, faculty and staff members from across campus. Members of the Task Force include: John Maclachlan, Arts & Science Program; Brent McKnight and Dean Mountain, Faculty of Business; Cameron Churchill and Gordon Irons, Faculty of Engineering; Judy Major-Girardin and Susie O'Brien, Faculty of Humanities; Luc Bernier and Maureen Padden, Faculty of Science; and Sandra Preston, Faculty of Social Science. Integral support was also provided by the Associate Deans Group, which offered support in developing the minor as well as in forming the members of the Task Force. Maria White, Assistant Dean (studies), Faculty of Engineering and Susan Searls Giroux, Associate Vice-President, Faculty, provided guidance throughout, including providing information on logistics related to the administrative processes involved in development and implementation of an interdisciplinary minor.

# GUCEL

(Graduate/Undergraduate Collaboration in Experiential Learning)



## Overview

With the goal to provide experiential learning opportunities to graduate students, Melissa Gallina, former Sustainability Student Intern and now a McMaster graduate student, began the development of the Graduate/Undergraduate Collaboration in Experiential Learning (GUCEL) Program. While in the process of a one-year pilot, the GUCEL Program encourages graduate and undergraduate students to work together on an interdisciplinary project, resulting in the creation of novel intellectual communities. This dynamic interaction facilitates the development of an intellectual community through the exchange of ideas, knowledge, and perspectives. Furthermore, students have the opportunity to expand their existing intellectual community to include individuals from across campus, representing a variety of disciplines and levels of study.

## Reporting

In the spring of 2013, Melissa secured funding through a successful SPICES\* grant application and through the process obtained integral support from the School of Graduate Studies. Equipped with funding as well as departmental support, Melissa began formal program development, which included the creation of a website and a communications campaign to engage students in taking part. Melissa drafted program documents to effectively facilitate the administrative aspects of the program's operationalization as well as engaged in cross-campus consultation with each faculty's experiential education office or equivalent. Through her work, Melissa successfully implemented the GUCEL Pilot Program in the summer of 2013.

Through the program, student project teams are responsible for planning and implementing a project either at McMaster University or within the broader community. In addressing such a "real-world" problem, students engage with academic knowledge in an applied and experiential manner.

## Objectives

- 1 Enhance the student experience by contributing to an intellectual community and encouraging engaged scholarship.
- 2 Encourage interdisciplinary and multi-level collaboration between graduate and undergraduate students.
- 3 Foster a culture of collaboration among students, faculty, staff and members of the broader community.

The first GUCEL project began in the summer of 2013. This inaugural project focuses on waste management at McMaster University and is being supported by McMaster's Facility Services Department. As part of the project, Janelle Trant, M.Sc. student in Earth Sciences, is working with the University's internal and external stakeholders to improve waste volume reporting with the goal to make McMaster's waste reports more user-friendly and easy to interpret. Once completed, waste volume data can be used to more effectively manage McMaster's waste volumes and diversion rates as well as can be easily shared with the internal and external community for educational purposes. Jeff Chan, 4th year Life Science major, is working with custodial staff of Facility Services to engage faculty, staff and students in waste reduction and diversion through infrastructure improvements, education and community engagement initiatives. A second GUCEL project will commence in January 2014.

**Collaborators:** Funding for this pilot program was provided by the School of Graduate Studies through a SPICES grant. Integral support was provided by Allison Sekuler, Associate Vice-President and Dean of Graduate Studies and the entire Graduate Student Life & Research Training team. The first GUCEL project is support by various McMaster staff members as well as local community partners, including: Carlos Figueira, Director of Custodial, Grounds, Logistics and Mail Services; Cathy Kelly and Janice Flynn, Facility Services Service Managers; Ryan Dear, Owner of Niagara E Waste; Dominic Evangelista, District Sales Manager and, Brad Mandryk, District Manager at Progressive Waste Solutions Company. Support and guidance for the development of the GUCEL Pilot Program is provided by McMaster's Office of Sustainability.

\*Student Proposals for Intellectual Community & Engaged Scholarship

# Sustainability Internship Program

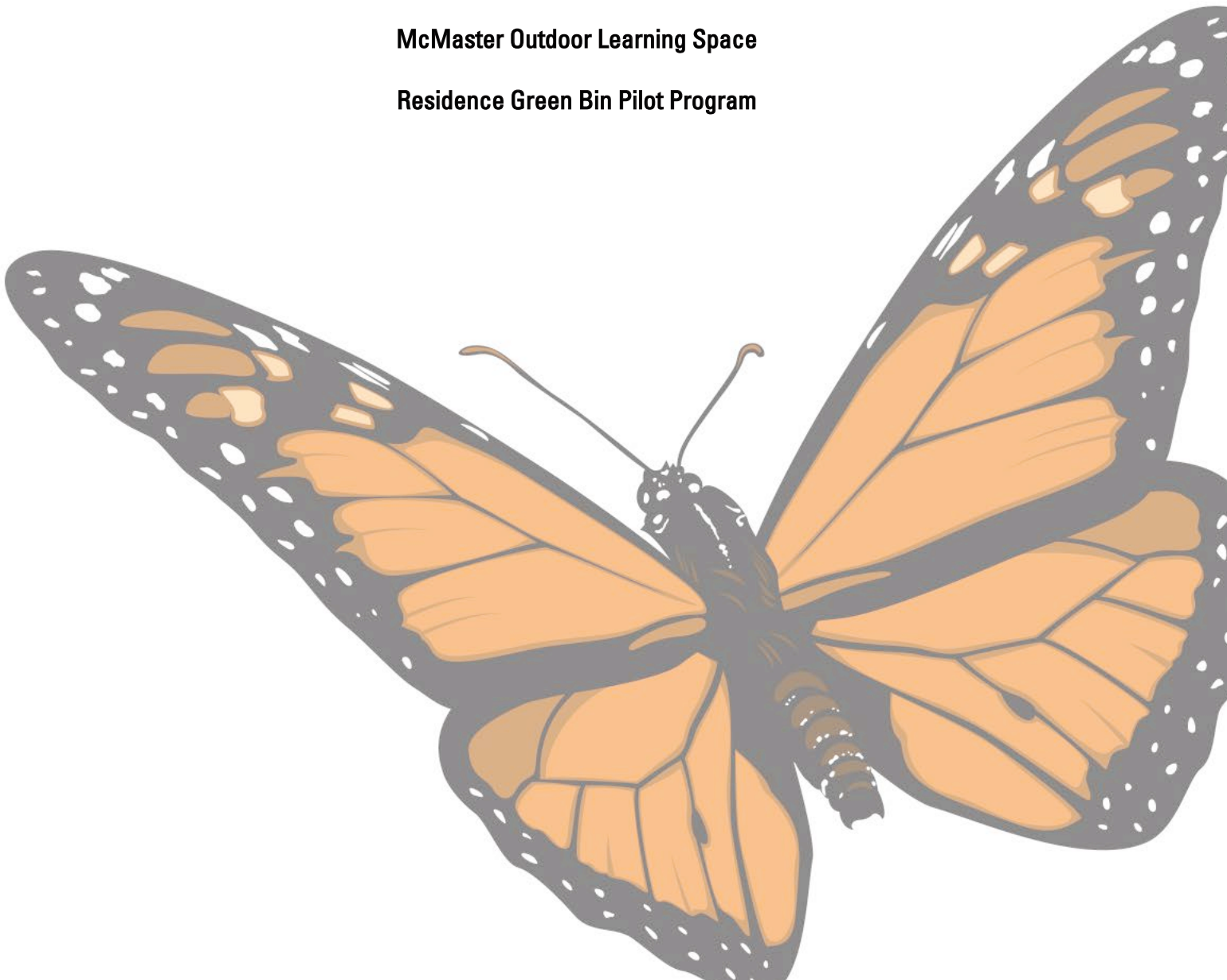
First implemented in 2009, the Sustainability Internship Program has had continued success.

The following three initiatives listed below were led directly by undergraduate students through their participation in the program. Each student received academic credit from their home faculty for the successful completion of their experiential learning project.

**Climate Action Plan**

**McMaster Outdoor Learning Space**

**Residence Green Bin Pilot Program**



# Climate Action Plan



## Overview

In 2010, McMaster released its inaugural Climate Action Plan (CAP) report, which set targets for reduction in emission sources from 2010 to 2015. The first year where reductions were targeted and measured was 2011. The reductions achieved, in combination with recommendations made by the energy, waste and transportation working groups, are the basis of the updated 2013 Climate Action Plan that was released in summer 2013.

## Objectives

- 1 Report on progress of McMaster's inaugural Climate Action Plan.
- 2 Engage in community consultation and review targets for reduction.
- 3 Generate new initiative ideas to achieve future reductions.
- 4 Produce and communicate the McMaster 2013 Climate Action Plan.

## Reporting

Meaghan Langille, a fourth year Life Sciences student completing an academic placement with the Office of Sustainability, engaged with the three working groups outlined below to identify the following objectives and initiatives, which were then integrated into the 2013 CAP:

- Energy: The energy working group has identified the following as examples of initiatives to help achieve the reduction goal of 4% annually for the next five years: providing education to building occupants to support behaviour change towards sustainability, removal and recycling of inefficient electronic office and laboratory equipment, as well as providing resources to support sustainable procurement. More information on these and additional initiatives to support energy reduction can be found in the McMaster Energy Management Plan developed by Facility Services.
- Waste: The waste working group has identified the following as examples of initiatives to help achieve the reduction goal of 10% over the next five years: expanding the campus composting program and electronics recycling program as well as providing resources to support sustainable procurement. More information on these and additional initiatives to support waste reduction and diversion can be found in the McMaster Waste Reduction Work Plan that has been developed jointly by Facility Services and the Office of Sustainability.
- Transportation: The transportation working group has identified the following as examples of initiatives to help achieve the goal of maintaining fuel usage from fleet vehicles, despite population growth; identifying locations for more campus bike racks and supporting employee engagement focused on sustainable operation of vehicles to reduce fuel consumption.

The CAP report can be accessed in its entirety on the Office of Sustainability website at <http://mcmaster.ca/sustainability/reports.html>

**Collaborators:** Sustainability Student Intern Meaghan Langille created the first report on the McMaster 2010 Climate Action Plan as well as led the campus-wide effort to collaborate with individuals, groups and departments from across the University to update the CAP for 2013. Individuals who contributed by taking part on one or more of the three working groups include: Undergraduate and graduate students as well as members from internal faculties and departments, including Faculty of Science, Faculty of Engineering, Facility Services, Security and Parking Services, Strategic Procurement, Hospitality Services, Housing and Conference Services and the Office of Sustainability.

# McMaster Outdoor Learning Space



## Overview

As part of a larger initiative to increase urban green space at McMaster University, the creation of an outdoor learning space on main campus will provide a unique opportunity for teaching, learning and community engagement. Complementary to the McMaster Teaching and Community Garden (MTCG), the McMaster Outdoor Learning Space (MOLS) has been developed in collaboration with the Integrated Science (iSci) Program, Facility Services, the Office of Sustainability and many students, faculty and staff from the University, ensuring that the MOLS will incorporate and adhere to values of the greater McMaster community.

## Objectives

- 1 Develop a new outdoor facility to support teaching, learning and community engagement at McMaster.
- 2 Encourage a sustainable alternative to traditional indoor classroom learning.
- 3 Transform an underutilized campus space into a unique and useful venue.

## Reporting

In the fall of 2012, Justine DiCesare, a fourth year Science student completing an Applied Science Placement with the Office of Sustainability, undertook the research and initial planning of the McMaster Outdoor Learning Space (MOLS). Justine conducted a background study of outdoor teaching and learning spaces at other institutions, which is documented in her best practices report: *Design and Infrastructure to Facilitate Education in an Outdoor Learning Environment*. With this information, Justine was able to construct an effective consultation plan for a similar space at McMaster. Justine engaged key stakeholders through focus groups. These focus groups included members of the McMaster community who were identified as having an academic, administrative and/or operational interest in the outcome of the MOLS, including undergraduate students, graduate students, faculty and staff.

Justine obtained additional feedback from the broader McMaster community through an online survey. The feedback received was compiled and used to propose a design for the MOLS, which encompasses a community-oriented vision. Justine's proposal was submitted and approved by Facility Services to be implemented in the summer of 2014. Through a successful grant application, this initiative received \$28,000 from the Student Life Enhancement Fund.

**Collaborators:** Justine received support from academic supervisor Walter Peace, Associate Professor, School of Geography and Earth Sciences, and non-academic supervisor Katie Ferguson, Manager, University Sustainability. Members of the community who took part in Justine's focus groups provided valuable insight through engaged discussion. Participants included: Nic Armstrong, Faculty of Science; Jay Brodeur, Arts & Science Program and School of Geography and Earth Sciences, Mills Library; Patrick Byrne, Arts & Science; Amber Dewar, Lavinia Ghinea and Mackenzie Rogers, Undergraduate Students; Russ Ellis and Carolyn Eyles, Integrated Science Program; John MacLachlan, Arts & Science Program and Maps, Data and GIS; Jessica Merolli, Graduate Student Association; Cathy O'Donnell, Security & Parking Services; Olive Wahoush, School of Nursing; Kate Whalen, Office of Sustainability. Support from the following individuals was also influential to the success of the initiative: Mohamed Attalla and Carlos Figueira, Facility Services; Chad Harvey and Sarah Robinson, Integrated Science Program; Bruce Newbold and Michelle Vine, School of Geography and Earth Sciences; Terry Sullivan, Security and Parking Services; Wayne Terryberry, Athletics and Recreation; and Jean Wilson, Arts & Science Program.

# Residence Green Bin Pilot Program



## compost

### Overview

Stemming from a University initiative to divert organic waste from landfill, the Residence Green Bin Pilot Program was developed with an aim to expand the diversion of organic waste at McMaster to include an on-campus residence building. A pilot program in Mary E. Keyes residence provided students the opportunity to expand their working knowledge of organic disposal and waste management practices, while contributing to university sustainability.

### Objectives

- 1 Pilot the expansion of the McMaster Composting Program to determine the feasibility of organic waste disposal facilitated by students in a residence building.
- 2 Provide educational material and additional resources to participating students, enabling them to become knowledgeable and confident in their ability to sort and dispose of organic waste appropriately.
- 3 Offer recommendations for future program development.

### Reporting

The Residence Green Bin Pilot Program was developed and implemented by Jeff Chan, a third-year Science student completing an Applied Life Sciences Placement with the Office of Sustainability. To design a program feasible for the residence system at McMaster, Jeff consulted other universities with respect to their organic waste disposal practices and related programs. With support from McMaster's Housing and Conference Services, Jeff drafted a program proposal to suit Mary E. Keyes residence building, including infrastructure information and related costs. Accompanying the proposal were the following supporting documents, to be utilized for the program's success: the *Residence Composting Program Roles and Responsibilities*, which outlined those duties of each party involved in the initiative; the *Residence Composting Program Agreement*, which outlined the terms and conditions for participation in the program and was required to be signed by all participating students; the *Composting Quiz*, required all participants to achieve a score of 100% before commencement of the program; and the *Bin Inspection Checklist*, which was utilized by Jeff Chan to monitor and document the progress of the pilot.

Participants of the pilot comprised members of the McMaster Inter-Residence Council and their suitemates, enabling two suites in Mary E. Keyes residence to partake in the program. An information session for participants was held by Jeff in November 2012 to introduce the program, provide education on composting and waste disposal practices as well as to facilitate the Composting Quiz and signing of the Residence Composting Program Agreement. Over the winter break, organic waste bins and the McMaster University Waste Guide magnet were placed in the participating suites by custodial staff, in preparation for the official launch of the program in January 2013.

Throughout the term, Jeff conducted regular suite inspections to ensure proper maintenance of the program and to obtain feedback from the students about their experience. The results highlight the overwhelming success of the program.

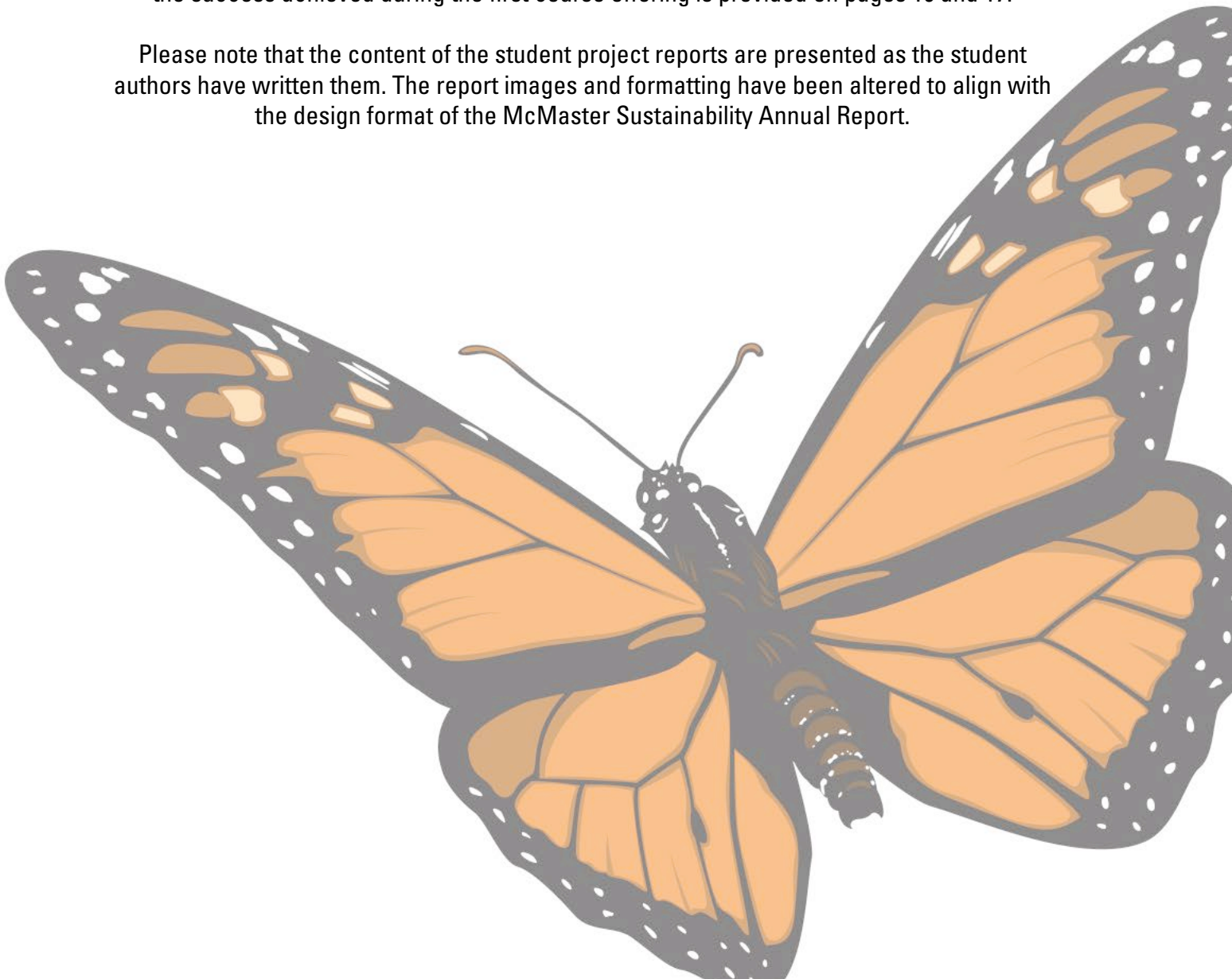
**Collaborators:** Jeff Chan was the lead facilitator of this initiative, with support provided by academic supervisor Dr. Maureen Padden, Assistant Professor, School of Geography and Earth Sciences and non-academic supervisor Katie Ferguson, Manager, University Sustainability. Support to the program was provided by Housing and Conference Services: Cathy Miller, Kevin Beatty, Beau Frigault, Kim Holland and Vadim Levin; Hospitality Services: Robert Dew; the McMaster Inter-Residence Council; Progressive Waste Solutions Company; and the Office of Sustainability: Kate Whalen and Zeinab Rahal.



# **Sustain 2A03 - The Sustainable Future Project**

As the first major initiative of the Sustainable Future Program, Sustain 2A03, was successfully implemented starting in January 2013. A total of 38 sustainability projects were implemented by the students enrolled in this inaugural course, of which 16 have been selected and are highlighted in the pages to follow. As a preamble to the student project pages, a brief report of the success achieved during the first course offering is provided on pages 16 and 17.

Please note that the content of the student project reports are presented as the student authors have written them. The report images and formatting have been altered to align with the design format of the McMaster Sustainability Annual Report.



# Sustain 2A03 - The Sustainable Future Project



## Overview

In January 2012, McMaster began the development of the Sustainable Future Program. This University-wide program is the product of collaboration amongst cross-campus stakeholders from various faculties and administration with the goal to engage students in learning about sustainability through experience, research and community engagement.

The first major initiative of the Sustainable Future Program is the development and implementation of the course, Sustain 2A03: The Sustainable Future Project.

## Objectives

- 1 Work collaboratively with representatives from across the University to develop an inaugural course that would satisfy the overall Sustainable Future Program objectives:
  - a. Teach students about sustainability from an interdisciplinary perspective.
  - b. Provide the opportunity for self-directed, interdisciplinary and experiential learning.
  - c. Support student learning within the University and local community.
  - d. Engage undergraduate students in taking part in meaningful, experiential research.
  - e. Foster opportunities for students to place local knowledge and local action within a global context.
- 2 Achieve full implementation in term two of the 2012/13 academic year.
- 3 Obtain feedback from all stakeholders on the overall experience and evaluate the level of success achieved.
- 4 Provide students with a rich and meaningful educational experience.

# Sustain 2A03 - The Sustainable Future Project



## Reporting

Successfully launched in January 2013, and open to students from all faculties in second year and above, Sustain 2A03 provided students with the opportunity to take part in community-based, student-led, interdisciplinary and experiential education. From the list of proposed projects, students enrolled in Sustain 2A03 were able to connect with those members of the community who proposed the idea to learn more about the project and then select a project that aligned with their individual interests. Students were also encouraged to develop their own project idea and to identify relevant project collaborators.

To encourage interdisciplinary learning through class and tutorial discussion as well as through group work, course enrolment was limited to 100 students and distributed across all faculties. For the experiential portion of the course, students had the opportunity to work as individuals or in groups of up to four. All project groups consisted of members from more than one discipline.

A poster symposium was held on April 11th, 2013 to highlight the success of all students and their project collaborators.

A total of 83 students enrolled in this first offering of Sustain 2A03 completed 38 projects which can be found on the Sustainable Future Program website. To support community-based student experiential learning, a total of 15 projects were proposed by members of the McMaster and broader community as well as 250

individuals volunteered to provide support to students in the development and implementation of their experiential learning project. Through conducting formative feedback, it was found that the majority of students rated the experiential learning project as the most interesting element of the course. From a poll of Community Project Champions, 80% stated that they enjoyed their experience and are interested in further involvement with the Sustainable Future Program.

As a result of the success of this inaugural course, approval has been granted to increase course enrollment from 100 to 140 in 2013/14 as well as to proceed in the development of a second course, which will be offered for the first time in September 2013.

**Collaborators:** The development of Sustain 2A03 - The Sustainable Future Project was made possible through the support from all faculty and staff involved in the planning and implementation of the course and from all members of the community who helped guide students in their experiential learning, either as Project Champions, Mentors and/or project collaborators. The hard work put forth by the students enrolled in the inaugural course as well as the formative feedback they provided throughout was integral to the course's success and future development. A special mention goes to the Faculty of Engineering for funding the administration of both Sustain 2A03 and the forthcoming Sustain 3A03.

# McMaster Social Innovation Lab

Student Authors: Kathryn Dye and Simon Gooding-Townsend

## Overview

The ultimate scope of this project is to develop an implementation plan for a Social Innovation Lab at McMaster. A Social Innovation Lab would provide McMaster students with the tools and connections they need to transform themselves, the University, and the community. Teams would enter the space with a socially focused question and take part in a systematic problem-solving process that seeks to meaningfully engage them with different stakeholders and experts.

## Objectives

- 1 Provide an opportunity for undergraduate students to test ideas in a real world application.
- 2 Contribute to McMaster's culture of innovation and extend these opportunities beyond traditional research opportunities.
- 3 Contribute to McMaster's vision of addressing real problems and challenges in the community.

## Reporting

The aim from our course was to help ensure that the Social Innovation Lab could be launched successfully in the fall of 2013. Our largest challenges were finding space, finding financial resources to start the project, and generating sufficient support for the project in the University. For space, the mechatronics society has agreed to give us access to their lab rooms. We are awaiting funding from numerous applications we submitted such as the Student Life Enhancement Fund and McMaster Students Union (MSU) Sponsorship and Donations Committee. We have had numerous meetings with individuals across campus to identify how this project can relate to their needs including finding case studies that are interested in participating in the project next year. Our next step is a meeting with potential stakeholders to work out the implementation of the project.



**Collaborators:** Arts & Science Program students Brianna Smrke and Michael Hewlett, Project Champions; Computer Science Society; Mechatronics Student Society; McMaster Social Innovation Lab Student Committee; McMaster Students Union; Dr. John MacLachlan, Arts & Science Program Instructor; Dr. Jay Brodeur, Arts & Science Program Instructor; Louw Erasmus, Incubator Project; Dr. Nancy Doubleday, Peace Studies and Philosophy Professor; Greg Atkinson, Science Media Lab; Jeannie An, A Framework for Supporting Experiential Learning at McMaster University; Dr. Jean Wilson, Arts & Science Program Director; Dr. Brian Baetz, Engineering and Society Program Director; Dr. Peter Smith, Associate Vice-President (Academic); Adam Kuhn, Student Success Centre; Elise Quaite-Randall, McMaster Industry Liaison Office Executive Director; Dr. Lynn Stewart, Validation of Reflection: A proposal to investigate how to enhance an Engineering student's Learning Portfolio; Dr. Fiona McNeill, Associate Vice-President Research; Dr. Laura Harrington, Forward with Integrity Project Director; Tyler Wright, Innovation Factory; Colina Maxwell, Director of Centre3; and James Arlen, Founder of ThinkHaus.

# Promoting Cardboard Construction

Student Authors: Basmah Ahmed, Elizabeth Nagai, Tsering Shrestha and Nickolay Vityuk



## Overview

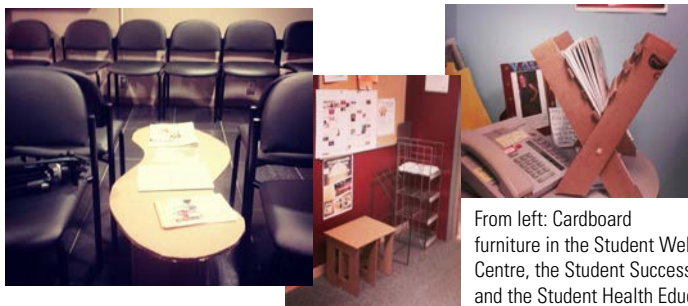
The primary area of focus was to launch a guerilla-marketing plan throughout the winter 2013 semester in order to make people more aware of Adaptive Design Hamilton (ADH). We wanted people to engage in upcycling cardboard, while turning it into functional furniture pieces.

## Objectives

- 1 Provide advertising, education and a social event surrounding cardboard construction.
- 2 Cardboard is inexpensive and accessible to everyone. The goal was thus to provide the necessary knowledge for a person to build their own customizable furniture.
- 3 To support the upcycling of cardboard into fashionable, functional and sustainable furniture.

## Reporting

- Educational Video: To educate and get the community excited about cardboard construction. Played in Mills Library and posted on the OPIRG\* website, YouTube, and shared on Facebook
- Facebook Page for ADH: Gained approximately 50 followers and advertised cardboard workshops and promoted upcycling
- Cardboard Furniture Building Competition: Created a three hour competition in the Student Center atrium that invited students and the greater McMaster Community to physically engage in upcycling cardboard
- Cardboard Furniture Pieces installed on Campus: Replaced regular furniture on campus with cardboard furniture pieces in various McMaster offices. Information on our event was put next to the pieces
- Our advertising has taught approximately 20 people how to create cardboard furniture. Using an estimate of one piece of furniture created per person, we have been able to upcycle 160 large cardboard boxes
- In the future, we encourage ADH to host one community event per year that will educate the public on upcycling. Permanent cardboard furniture installations should be used to promote ADH continually



From left: Cardboard furniture in the Student Wellness Centre, the Student Success Centre and the Student Health Education Centre.

**Collaborators:** Arts & Science Program students Brianna Smrke and Alisha Sunderji, Project Champions; Joel Hilchey, Course Instructor, Sustain 2A03; Brandon Barliak and Karin Gordon, Teaching Assistants, Sustain 2A03; McMaster Students Union; Student Wellness Centre; Student Health Education Centre; OPIRG; and Student Success Centre.

\*Ontario Public Interest Research Group at McMaster

# From Farm to Table

Student Authors: Narina Jabari and Nauras Jabari



## Overview

The goal is to create an online distribution centre that connects local farmers to restaurant owners without having to deal with a physical distributor. It will specifically target restaurant owners in Hamilton and farmers located within the Ontario Greenbelt. The purpose is to increase the use of local food in restaurants, thereby keeping the return within our local economies and ultimately decreasing our carbon footprint.

## Objectives

- 1 Connect with small restaurants around Hamilton that try to serve consciously grown food.
- 2 Create an online system. The initial thought was to create a large database of farms in the Greenbelt and types of food seasonally offered.

## Reporting

The project began with our previous research regarding the connection between farmers and restaurant owners in the region of Halton. Surveys found that the overwhelming majority of owners do not know where their supply comes from, simply that it is offered by the distributor. Online research regarding the food system revealed a common process: food is grown/raised by a farmer (the supplier), moved to a larger, central collector (the distributor), where it is then delivered to a multitude of destinations (the consumer).

The initial thought was to create a large database of farms in the Greenbelt with types of food and seasonality offered. To refine the feasibility of how to go about creating a distribution company, we needed as much information as possible from as many sources as possible, so we met with the following: Hamilton's Farmers Market, Farmers Web, OntarioFresh.ca, the Union Market, Bridges Café, the Mustard Seed, MacFarmstand and Plan B Organic Farms.

Next steps:

- Survey more farms in the Hamilton area to ensure that we have a more complete amount of supporters prior to launch.
- Develop and launch the website.



Website Mockup

**Collaborators:** Hamilton Farmer's Market; Farmers Web; Ontario Fresh; MSU Union Market; Bridges Cafe; The Mustard Seed; MacFarmstand; and Plan B Organic Farms.

# The Sustainable Hamilton Project

Student Authors: Tomasz Diduszko, Jyssika Russell and Ainun Zaria



## Overview

Our goal was to help Sustainable Hamilton (SH) and the Hamilton Chamber of Commerce (HCC) to gather the opinions and current statuses of local businesses regarding social, economic and environmental sustainability. To achieve this goal, the students distributed a survey and conducted follow-up interviews to compare local businesses of opposite sizes. From the results, they were able to compare the sustainability experience of a large vs. small business.

## Objectives

- 1 Promote sustainable workplace environments and practises through the promotion of Sustainable Hamilton.
- 2 Gather information about the current sustainability climate in Hamilton's business sector to better adapt current initiatives for the local environment.
- 3 Identify roadblocks towards sustainability in businesses for further analysis and consideration.

**Collaborators:** Sustainable Hamilton; Hamilton Chamber of Commerce; ArcelorMittal Dofasco; Lunch-Bags; and the Office of Sustainability.

## Reporting

To fulfill our objectives, we created an online survey to gather information from local businesses. We met with Sustainable Hamilton to discuss their goals and researched effective survey methods in preparation. We then distributed the survey through HCC's and SH's newsletters reaching over 1000 businesses, and after a disappointing online response, distributed surveys in person to downtown businesses.

We found that:

- Businesses were interested in sustainability for "Increased Profitability" and "Cost Savings" over marketing benefits and reputation.
- The majority of respondents are currently "using sustainable practices to better our business".
- Most respondents indicated interest in SH's Sustainable Reporting Initiative.
- Businesses expressed the most interest in learning more about "Energy Management" and "Renewable Energy" over environmental or emission issues.

From our survey, we found two businesses interested in a follow-up interview: ArcelorMittal Dofasco and Lunch-bags. These interviews gave us the opportunity to compare large and small businesses and their different roadblocks towards sustainable practices.

Highlighted Results:

- ArcelorMittal Dofasco, a steel company, was more focused on energy management and cost effectiveness, whereas Lunch-bags, a catering service, was more focused on waste reduction and reducing environmental impact.
- Lunch-bags, a small business, has little government help or incentives for sustainability compared to Dofasco's greater government support.
- Both businesses cite capital and slow return on investment as the biggest roadblock to becoming more sustainable.

# Vote with your Wallet

Student Authors: Jessica Chen and Sarah Hampson



## Overview

We created a parody grocery flyer to raise awareness about sustainable meat consumption. Advertisements were substituted with information about the environmental and health impacts of red meat. Our flyer targets the average middle-aged, middle class community member.

## Objectives

- 1 Effectively educate the public on issues surrounding sustainable food consumption.
- 2 Target individuals with the most potential for change and produce a collective impact in the Hamilton community.

## Reporting

We held interviews with Janelle Trant, a key member in the implementation of the McMaster Sustainable Procurement Guide, and Greg Atkinson from the Lyons New Media Centre. We then refined our topic to red meat and identified our target audience, researched environmental and health impacts of red meat and designed a parody flyer.

Highlighted results:

- Created a credible, accessible, engaging and professional parody grocery flyer to inform readers about the sustainability impacts of red meat consumption.
- Collected information for each area of focus and synthesized it into a single document.

Going forward:

- We focused on red meat, but other food topics that could be further explored include produce, processed foods or staple grains.
- There is potential to scale up in terms of number of community members and neighbourhoods reached.

"Vote with your Wallet" flyer

**Collaborators:** Greg Atkinson, Digital Media Specialist, Lyons New Media Centre; Janelle Trant, GUCEL Graduate Student Intern; and Kate Whalen, Director, Sustainable Future Program.



# Think Bright, Think LED

Student Authors: Lavinia Ghinea, Daniel Lochbihler and Adam Milko



## Overview

Think Bright, Think LED is dedicated to a sustainable future through the installation of LEDs, which provide optimal energy efficiency and are a less environmentally hazardous material that can be recycled. This lighting installation will replace the fluorescent lighting system, which is McMaster University's current standard.

## Objectives

- 1 Create a more efficient campus that produces less hazardous waste.
- 2 Reduce energy consumptions, which in turn will lower annual costs.
- 3 Maintain the quality of life experienced in the workplace by members of the McMaster community.

## Reporting

Three rooms on the McMaster campus were chosen for lighting installation. Energy readings were taken and the room occupants were surveyed before and after the installation. Comparisons were then made to determine energy and cost savings, as well as to see how the room occupants were affected.

Annual Savings:

Commons Room B108 Savings = \$4.63

Student Centre Room 204 Savings = \$0.72

JHE Room 333 Savings = \$0.45

After the LED room installations, the room occupants were surveyed on how the lighting affected them. It was found that the occupants either did not notice that the lighting was different or found they needed time to adjust to the new colour of the lights. Two LEDs that were chosen for the installations were; 5000 Kelvin which are brighter and similar to daylight and 4000 Kelvin, which are less intense and more similar to fluorescent lighting colour. Therein, the room occupant responses significantly corresponded with the results that were originally predicted. We hope to encourage future sustainability group projects to implement this plan in an entire building, such as the student centre, to yield more accurate calculations of the amount of energy saved and to have a larger sample of subjects.

**Collaborators:** Mohamed Attalla, Director, Facility Services; Joe Emberson, Chief Operating Engineer, Facility Services; Brian Webber, LED Supplier; and room occupants in JHE, MUSC and Commons.

# Defining Natural Lands

Student Authors: Cristina Silvestri and Steven Tang



## Overview

McMaster University campus is situated beside one of the most biologically rich areas in Canada, encompassing Cootes Paradise and the Niagara Escarpment. The Cootes to Escarpment Parks System is an initiative to restore and protect significant lands, facilitate linkages between habitats, and encourage stewardship and outdoor activity. This project's main objective was to define "natural lands" and apply this definition to the parks system to see if it is sufficient for species to prosper.

## Objectives

- 1 Develop and understanding of the various ways "natural lands" can be defined and apply this definition to a portion of the proposed Cootes to Escarpment Park System.
- 2 Consolidate the information into a project summary report that can be used as a resource by individuals involved with the Cootes to Escarpment initiative.

## Reporting

Students consulted with experts at McMaster University and the wider Hamilton community. The definition of "natural lands" differed greatly among experts; suggestions included examining ecoservices, proximity to human development, level of biodiversity, presence of interior forests, or even taking a philosophical approach. Building on this advice, the students decided to narrow their focus and use the habitat requirements of birds as a way to define natural lands. The variation of habitat between species allowed the project to examine three distinct habitats in the Cootes to Escarpment Park System: grasslands, interior forests, and wetlands. The Species at Risk Act (SARA) was used to identify threatened species, while maps from Scholars GeoPortal were used to determine potential habitat ranges.

Project deliverables:

- A map designating the ranges the birds could use for breeding and foraging
- Small profiles of the birds that highlight their SARA assessments



**Red headed Woodpecker**  
*Threatened*

A species found all over Ontario, this species inhabits trees that have died. Though there are many oaks and beech forests, this species has many of its dead preferred trees cut down. This species is seen as an umbrella species providing habitats for other species.

Examples of bird profiles

**Cerulean Warbler**  
*Endangered*

Living in mature deciduous forests dominated by oak and maple, this species is threatened by landscape fragmentation. As an umbrella species, this warbler plays a significant part in biodiversity.



**Collaborators:** Wayne Terryberry, Outdoor Recreation Coordinator, Athletics and Recreation; Dr. Chad Harvey, Assistant Professor, Faculty of Science; Dr. Jim Quinn, Professor, Faculty of Science; Gail Krantzberg, Professor, Faculty of Engineering; Jen Baker, Hamilton Naturalists' Club; Scott Peck, Hamilton Conservation Authority; Dr. John MacLachlan, Assistant Professor, Faculty of Science and Arts & Science Program; and Gord Beck, Map Specialist, Mills Memorial Library.

# Growing the Garden

Student Authors: Amber Dewar, Med Dragueanu, Chelsea Soares and Daniel Walsh



## Overview

Our group worked with the current McMaster Teaching & Community Garden (MTCG) collaborators to create educational resources to support the garden. This included conducting research and providing best practices for the planting, growing and harvesting of plant species. Lessons learned were then put into practice by physically growing a select number of plants, creating educational modules for each and conducting a workshop.

## Reporting

We researched the best growing conditions for the different plants to be grown in the MTCG in the spring of 2013. To support our project, we held a herb sale and were able to raise funds of more than \$300. This led to the cultivation of 200+ plants for the MTCG.

We also held a seed-starting workshop based on the research we had conducted and were able to create a presentation outlining the relationship between food and climate change. With the help of the McMaster Centre for Climate Change, we presented our findings to a group of high school students.

## Objectives

- 1 Use the McMaster Teaching and Community Garden as an avenue for education.
- 2 Work with the McMaster Centre for Climate change and visit four local high schools to present a fun and interactive workshop.
- 3 Educate at least 10 students/faculty about vegetable gardening.



The Valentine's Day herb sale

**Collaborators:** Katie Ferguson, Manager, University Sustainability; Kate Whalen, Director, Sustainable Future Program; Zeinab Rahal, Coordinator, University Sustainability; Jasmine Sohal, Intern, McMaster Centre for Climate Change; Karin Gordon, Teaching Assistant, Sustain 2A03; and Carlos Figueira, Director, Facility Services.

# Beekeeping on Campus

Student Authors: Claire Danukarjanto, Daniel Fahey and Trevor Reid



## Overview

Our goal was to determine the feasibility of setting up an apiary on McMaster property, investigate the steps necessary to install two to three hives, and conduct a business model for a five-year lifespan. Bees are an integral component of a healthy ecosystem and their numbers have seen drastic declines over the past few decades. This project aims to not only directly relieve this deficiency, but also to promote education and awareness in our community.

## Objectives

- 1 Develop an experiential learning resource for students and the McMaster community.
- 2 Provide local honey and other honeybee products such as pollen.
- 3 Increase the local pollinator population promoting biodiversity in surrounding habitats.

## Reporting

We researched bee biology and current bylaws to find the potential limitations and regulations around beekeeping. We also got in contact with members from the Departments of Biology and Psychology and were able to gain faculty support.

To financially support the project, an implementation strategy and social enterprise business model was created and various grants were applied for, including the Academic Science Fund and the OPIRG Grant.

A 20 by 25 square foot fenced-in location for the apiary was found and the students worked with faculty members to ensure that the hives could be used in course material such as labs and coursework.

The apiary has been implemented in the summer of 2013 and is thriving with a colony of more than 40,000 bees. Next steps include starting an outreach and education program through workshops and informative seminars and establishing a volunteer group to assist with the maintenance of the apiary.



Brandi Lee showing a frame to a group of students

**Collaborators:** Brandi Lee MacDonald, Department of Medical Physics and Radiation Sciences; Reuven Dukas, Department of Psychology, Neuroscience, and Behaviour; Marvin Gunderman, Department of Biology; and Randy Kay, OPIRG.  
Photo credit: John Rennison.

# The Good Tomato Project

Student Authors: Ariel Bader-Shamai, Scott MacDonald, Jacob McLean and Mackenzie Rogers



## Overview

The Good Tomato Project began as a result of the common beliefs concerning food shared by the founding members, a common belief that today's food industry is morally bankrupt, that we need local, organic food, and we need it now. Knowing tomatoes to be one of the most commonly bought fruits in Canada, we've taken up the task of conducting a free, hands-on workshop to educate members of the McMaster community in caring for their very own organic cherry tomatoes, thereby reducing, in however small a way, the eco-footprint of Canada's tomato consumption.

## Objectives

- 1 Promote the importance of organic and local foods on campus.
- 2 Educate people in growing cherry tomatoes and thus encourage urban agriculture more generally.
- 3 Host a free workshop for the McMaster community to attend and grow their own cherry tomatoes.

## Reporting

The first step of the project was to refine our project action plan. We began with large ideals and a collective agreement on the faults of the current agricultural system. We saw a need for reform, and had to think of specific, small-scale ways of inciting this reform. We decided to focus on tomatoes, which we felt were an ideal choice since they are a staple in many diets. We then began researching local, organic farms and seed shops. We wanted to find an organic tomato that was ideal for indoor growth, and we wanted all other necessary materials (soil, pots, etc.) to be organic and locally produced as well. We discovered William Dam Seeds in Flamborough. They were an invaluable resource. The staff helped us hone in on the ideal tomato variety (Sweetie Cherry Tomatoes). After planting the seeds, we began working on developing a 30-minute workshop to deliver to students on campus. We decided the workshop would be best begun with "fun facts" about tomatoes, and then could move on to a discussion of the benefits of eating locally-grown, organic food. To avoid turning the workshop into a sort of lecture, we incorporated a "hands-on" component, allowing each participant to transplant his or her seedlings into a larger pot.



Workshop participants discussing indoor gardening

**Collaborators:** MSU MACgreen; William Dam Seeds; Kate Whalen, Director, Sustainable Future Program; MSU Union Market; MSU Underground Media and Design; Karin Gordon, Mehrzad Zonji and Jeff Chan, Teaching Assistants, Sustain 2A03.

# Healthy Sustainable Eating

Student Authors: Jacqueline Brown and Emily Trudeau



## Overview

We developed a cookbook for McMaster students that requires only twenty basic ingredients, five essentials, and five herbs and spices that are easy for students to access and prepare. Every recipe involves some combination of these ingredients. The aim of our project is to encourage students to purchase and make meals with local food and refrain from purchasing unhealthy pre-packaged meals.

## Objectives

- 1 Encourage collaboration and community gatherings among university students.
- 2 Motivate students to make meals from scratch using local food.
- 3 Showcase local vendors and food sources in Hamilton.

## Reporting

We compiled a list of locally available ingredients, selected recipes and adapted them to include only the ingredients on our list, cooked and photographed each recipe, incorporated recipes and directions into our cookbook template and researched “Did you know?” facts relating to local food in Hamilton.

Highlighted results:

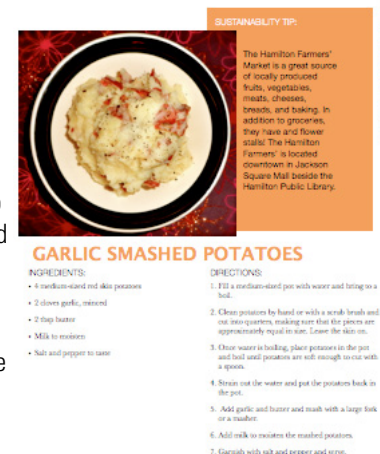
- Completed an easy-to-use cookbook for McMaster students that highlights local food sources.
- Discovered the value of making and sharing meals with friends to strengthen relationships and build confidence in our cooking skills.
- Learned about local food sources in Hamilton. This has enabled us to support local businesses, while also encouraging us to think critically about food choices.

Next steps include:

- Market cookbook to McMaster students.
- Use social media to encourage fellow students to share their own recipes, which we could include in a future edition of our cookbook.

The cookbook can be accessed in its entirety on the Office of Sustainability website at [http://mcmaster.ca/sustainability/health\\_wellbeing.html](http://mcmaster.ca/sustainability/health_wellbeing.html)

**Collaborators:** Special thanks to Mehrzad Zonji and Jeff Chan, Teaching Assistants, Sustain 2A03; our housemates who put up with us cooking; and the organizers of the Sustain 2A03 course.



A page from the recipe book

# Keith Neighbourhood Community Market

Student Author: Philip Hang



## Overview

This project focused on starting a produce market at the Eva Rothwell Resource Center located in the Keith Neighbourhood. Since the Keith Neighbourhood is considered a “food desert” in Hamilton, a local produce market in this area will help provide a convenient, sustainable food source that also promotes healthy eating habits for the neighbourhood.

## Objectives

- 1 Connect with current initiatives addressing the issue of “food deserts” in Hamilton.
- 2 Provide the framework for the creation of a produce market in order to provide local and seasonal harvests.

## Reporting

Since there are many current initiatives addressing the issue of “food deserts” in Hamilton, there were many individuals willing to provide a wealth of information about how to start a produce market in Hamilton. The focus of the current phase of the project is to connect with the resources that are already there, such as the Keith neighbourhood counsel, and the Good Food Box program and create an attractive community supported produce market.

Highlighted results:

- Participated in the Keith Neighbourhood community meeting
- Discussed the possibility of using the Perkins Center as a storage site for produce sold at Eva Rothwell Resource Center
- The Eva Rothwell Resource Center agreed to support a produce market at its location
- Created and presented a proposal plan and outlined the stages needed to start a produce market at the Eva Rothwell Resource Center

Next steps include:

- Contact local produce suppliers
- Talk to MacFarmstand
- Revise business plans
- Continue to contact local stakeholders

**Collaborators:** Kate Whalen; Gerry Polmanter; Diana Desimone; Karen Burson; Abram Bergen; Ted Hodgkinson; and Elyse Terrell.

# Bike Repair Station

Student Author: Prashant Patel



## Overview

Biking is a popular activity at McMaster University. In order to better enhance sustainability and bike-friendliness I am looking towards getting a bicycle repair station installed on campus to promote a sustainable bicycle culture.

## Objectives

- 1 Raise funds to install at least one repair station on main campus.
- 2 Encourage a cycling culture at McMaster by providing community members a convenient access to tools to keep their bicycles maintained.

## Reporting

In order to achieve the target, which is to have at least one bicycle repair station installed on campus several potential location were determined. After meeting with Parking & Security it was determined that DBAC would be suitable location. The most difficult challenge faced is to raise funds in order to implement the project. Various methods were approached but in the end it was decided that grants would be best at providing funding in order to implement the project. The following grants were applied for: The Student Life Enhancement Fund and The Academic Science Fund.

A total of \$1,530 was granted by the Student Life Enhancement Fund towards the full implementation of the bike repair station. Support from McMaster's Facility Services Department made it possible for installation to take place on main campus in the summer of 2013.

**Collaborators:** Student Life Enhancement Fund; Office of Sustainability; Parking Office; Facility Services; McMaster Students Union; the Science Society; and MSU MACycle Co-op.

Facility Services, Grounds has taken a leadership role in the installation and maintenance of this station, which was ultimately installed on central campus across from University Hall.



# Bike Share System

Student Authors: Colin Delsey, Vivek Govardhanam, Raheel Syed and Jason Yeung



## Overview

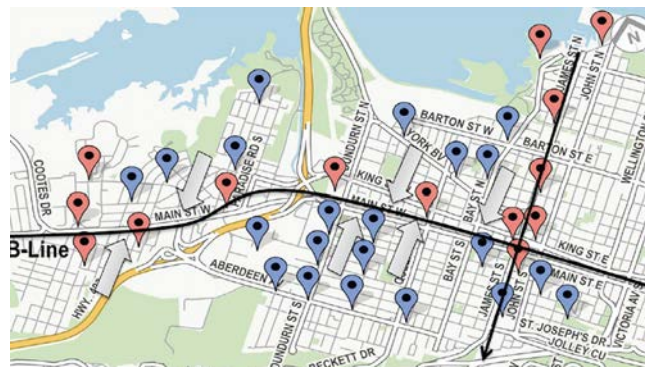
Much work has been done to determine the feasibility of implementing a bike share in Hamilton, such as the creation of a business case that was recently presented to the Hamilton City Council for approval. The students who took on this project intended to promote this plan and advocate via the McMaster Students Union to get support for this initiative.

## Objectives

- 1 Advocate for sustainable transportation in Hamilton.
- 2 Work towards getting a bike share system implemented in Hamilton.

## Reporting

A Bike Share is a form of transportation in which bicycles are available for shared public use. Our goal was to reach out to as many people as possible to get maximum support for this initiative. The MSU was zeroed in as a viable, potential target for collaboration. A method of reaching to student leaders within the MSU was assumed. Our group did a short presentation outlining the benefits of bike share and its long-term implications to the Student Representative Assembly (SRA). Following our presentation we put forward a motion to have the MSU officially endorse a bike share in Hamilton. The MSU voted unanimously to endorse this initiative. Finally the City of Hamilton approved the implementation of a bike share system.



Proposed station locations in Hamilton

**Collaborators:** Hamilton Public Works; Smart Commute Hamilton; McMaster Office of Sustainability; McMaster Students Union; MSU MACgreen; and Al Mithani.

# McMaster CAN-BIKE

Student Authors: Colin Coon and Victoria Medeiros



## Overview

We have organized a cycling course at McMaster to promote cycling as a form of transportation and lifestyle. Educating students on cycling will help to expand the cycling culture at McMaster and within the community. Increased cycling will help to decrease the number of cars on the road and reduce fossil fuel consumption.

## Objectives

- 1 Host a successful CAN-BIKE course on the McMaster campus.
- 2 Promote cycling as a viable form of transportation.
- 3 Implement a future plan for ongoing CAN-BIKE courses at McMaster.

## Reporting

In order to achieve our goals we set up weekly meetings with group members in order to carry out our plan. This included determining and acquiring necessary funding for the course, creating advertising media for the course, acquiring incentives and coordinating event logistics.

After the course was completed we created a future plan in order to run continual CAN-BIKE courses at McMaster using the information and resources used to run the pilot course. This included creating a proposal and assembling all relevant documentation. This was submitted to McMaster to continue running these courses.

In the end, we successfully ran a CAN-BIKE course with four participants. This project is sustainable, as we have provided all the tools for this course to run continuously in the future.



Abram Bergen, left, teaching workshop participants how to safely cycle in the city.

**Collaborators:** Dr. Michael Egan, Associate Professor, Department of History and Arts & Science Program; Abram Bergen, THAAT Delivery; Katie Ferguson, Manager, University Sustainability; Kate Whalen, Director, Sustainable Future Program; Mallory Drumm, Manager, Sustainable Future Project; Sandra Singh, Parking Office; Heidi O'Brien, Athletics and Recreation; Downtown Bike Hounds; Hammer City Cycle; New Hope Community Bikes; Annie Foreman-Mackey; Underground Printing Services; Zeinab Rahal, Coordinator, University Sustainability; and Gord Arbeau, Public Relations Office.

# Rain Garden at McMaster

Student Authors: Ian Blechta, Emily Ives, Kamal Prasher and Renata Samigullina



## Overview

Rain gardens are a natural and sustainable way of filtering water. Our project was focused on looking into the feasibility of implementing a rain garden at McMaster to help with filtration and drainage.

## Objectives

- 1 Research the feasibility of a rain garden and its applicability to other institutions.
- 2 Lay the frame work for the implementation of a rain garden on the McMaster main campus.

## Reporting

We researched the different benefits, challenges and types of rain gardens. Equipped with this information, our group collaborated with McMaster Facility Services to assess potential locations on campus for the implementation of this project.

Next steps included determining the dimensions and design of the garden, conducting a variety of tests to assess the feasibility of the location, researching a list of potential native plants and finally conducting a cost analysis of the project.

We were then able to submit a complete proposal outlining our findings. Going forward, grant applications will be submitted to fund the rain garden.



An example rain garden

**Collaborators:** Kelly Pike, Bay Area Restoration Council; Carlos Figueira, Facility Services; and Kathryn Gold, Green Venture.

# Annual Report | 2013

## Appendix A

### Resources Saved and Consumed at McMaster

Estimated on October 1, 2013 since May 1, 2008

| Resources Saved<br>at McMaster University Main Campus<br>(Estimated real time since May 1, 2008) | Resource Consumed<br>at McMaster University Main Campus<br>(Estimated real time since May 1, 2008) |
|--|--|
| 58,256,760 kWh of electricity saved  | 393,869,174 kWh of electricity used  |
| 222,558,651 lbs of steam saved   | 1,373,837,530 lbs of steam used  |
| 254,316 m <sup>3</sup> of natural gas saved  | 49,781,914 m <sup>3</sup> of natural gas used  |
| 300,211,497 L of water saved   | 2,543,565,033 L of water used  |
| 15,630,456 kg of waste diverted  | 9,101,092 kg of waste created  |
| 29,240,888 kg of carbon saved  |  |
| 776,956 plastic bags saved from landfill   |  |
| 8,116,457 dollars saved  |  |

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

## 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           |             | •        |
| Composting                         |             | •        |
| 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)*                           |             |          |
| MActive   |             | •        |
| Campus Farmstand  |             | •        |
| Campus Maps   |             | •        |
| Community Garden  |             | •        |
| Bike Racks  |             | •        |
| Bike Share  |             | •        |
| Clean Air Commute   |             | •        |
| Waste Reduction Work Plan                                   |             | •        |
| Composting Expansion  |             | •        |
| Sustainable Purchasing                                      |             | •        |
| Big 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                                 |             | •        |
| MacFarmstand  |             | •        |
| Health and Education Fair                             |             | •        |
| Campus Transportation Survey Results                  |             | •        |
| Bike Racks  |             | •        |
| Cycle Safe Campaign                                   |             | •        |
| Flex Pass   |             | •        |
| I.T. 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                           |             | •        |

\*Change in Scope

\*\*Not Operationally Feasible

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## 2012 Initiatives

| Initiative   | In Progress | Complete |
|--|-------------|----------|
| Climate Change Education and Community Engagement                                    |             | •        |
| Ambassador Program Expansion   |             | •        |
| Employee Sustainability Education  |             | •        |
| Utilities Dashboard  | •           |          |
| Climate Action Plan  |             | •        |
| Sustainable Printing Initiative  |             | •        |
| Permeable Paving Expansion   |             | •        |
| Ash Tree Preservation and Landscape Management                                       |             | •        |
| McMaster Students Union Green Roof Initiative  |             | •        |
| McMaster Teaching and Community Garden (Phase I)                                     |             | •        |
| McMaster Teaching and Community Garden (Phase II)                                    |             | •        |
| Health & Wellbeing: Open Streets Hamilton: McMaster Edition                          |             | •        |
| Carpool Week 2012  |             | •        |
| Flex Pass  |             | •        |
| CAN-BIKE   |             | •        |
| Long-Term Bike Rack Recommendation Plan  |             | •        |
| Waste Reduction and Diversion; A Study of the Impact of Infrastructure and Education |             | •        |
| Electronics Recycling Program Expansion  |             | •        |
| Written Work Submission Guidelines   |             | •        |
| Sustainable Procurement Guide  |             | •        |
| Composting Expansion   |             | •        |
| Waste Free Events  |             | •        |
| The Business of Waste  |             | •        |
| Water Management Program   |             | •        |



## 2013 Initiatives

| Initiative                           | In Progress | Complete |
|--------------------------------------|-------------|----------|
| Sustainable Future Program           |             | •        |
| GUCEL Pilot Program                  |             | •        |
| Minor in Sustainability              |             | •        |
| Climate Action Plan                  |             | •        |
| McMaster Outdoor Learning Space      |             | •        |
| Residence Green Bin Pilot Program    |             | •        |
| McMaster Social Innovation Lab       |             | •        |
| Promoting Cardboard Construction     |             | •        |
| From Farm to Table                   |             | •        |
| Sustainable Hamilton Project         |             | •        |
| Vote with your Wallet                |             | •        |
| Think Bright, Think LED              |             | •        |
| Defining Natural Lands               |             | •        |
| Growing the Garden                   |             | •        |
| Beekeeping on Campus                 |             | •        |
| Good Tomato Project                  |             | •        |
| Healthy Sustainable Eating           |             | •        |
| Keith Neighbourhood Community Market |             | •        |
| Bike Repair Station                  |             | •        |
| Bike Share System                    |             | •        |
| McMaster CAN-BIKE                    |             | •        |
| Rain Garden at McMaster              |             | •        |



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Designed by The Office of Sustainability

Generous support for the production of the 2013 McMaster Sustainability Annual Report has been provided by  
Ecopower LED Facility Lighting Solutions. <http://ecopowerled.com>

