



DELIVERING INNOVATION THROUGH RESEARCH AND ENGAGEMENT

Annual Report
November 2005

Executive Summary

Since its inception at the University of Toronto in the fall of 2004, the Sustainability Office has enjoyed tremendous success in its efforts to engage students, staff and faculty in research and actions addressing the strategic priorities of the Office. The accomplishments of the Office over this first year have been diverse, including the establishment of a robust governance and organizational structure, the development of a very strong and visible presence on campus, widespread positive media attention and the attraction of significant resources from all levels of government and private foundations.

More specifically, highlights of the first year of the Office include the engagement of over 100 students on a volunteer basis and the hiring of over 50 staff. Furthermore, the Office has enjoyed a large amount of popular media attention, including articles in the Globe and Mail, 24 Hours and numerous community and campus publications, resulting in an excellent reputation both inside and outside the University of Toronto within a very short time. More than \$160,000 has been spent to date on various initiatives, with funding commitments totalling in excess of \$400,000. The Office also has applications pending for a further \$2.1 million to 2009.

Sustainability Office projects include Bikechain, a bicycle promotion and repair facility, an Anti-Idle campaign, a major research project on changing electricity consumption behaviour, a modest research project on using biodiesel fuel, a comprehensive inventory of energy use and greenhouse gas emissions on campus, a green tour of the campus and a major review of university policies and procedures.

Overall, the Sustainability Office has established a very strong presence in all areas identified in the University's Stepping Up process, including: enhancing the student experience through highly successful student engagement; interdisciplinary collaboration with faculty and students in many departments and faculties on campus; linking teaching and research through engagement of large numbers of students in applied research courses; promoting scholarship and education in a highly relevant and timely field and promoting equity and diversity through our very large work-study program, which subsidizes needy students.

Core Sustainability Office funding will cover operating expenses and the Sustainability Coordinator's salary for one more year. Within that period we hope to secure base support of \$140,000 per year to cover these long term costs.

Table of Contents

| | |
|--|-----------|
| Executive Summary | 1 |
| Table of Contents | 2 |
| 1. Introduction | 3 |
| 2. Administrative Structure | 3 |
| 3.1. Existing Relationships | 4 |
| 3.2. Potential Relationships | 4 |
| 3.3. Clients and Constituents | 5 |
| 4. Outreach Activities | 6 |
| 4.1. Internal Media | 6 |
| 4.2. Events | 6 |
| 4.3. External Media | 6 |
| 4.4. Recognition of Achievement..... | 6 |
| 5. Organizational Objectives and Strategic Priorities | 7 |
| 6. Projects and Initiatives | 7 |
| 6.1. Anti-Idle | 7 |
| 6.2. Behaviour Change | 7 |
| 6.3. Bikechain | 8 |
| 6.4. Biodiesel..... | 8 |
| 6.5. Energy Retrofits..... | 8 |
| 6.6. Financial Planning..... | 8 |
| 6.7. Greenhouse Gas Inventory..... | 9 |
| 6.8. Green Tour..... | 9 |
| 6.9. Policy and Procedural Review | 9 |
| 6.10. Student Projects | 9 |
| 6.11. Work study teams..... | 10 |
| 7. Financial Statement | 10 |
| 8. Next Steps | 10 |
| Appendices | |
| A: Three-year Strategic Plan | |
| B: Organizational Chart | |
| C: Media | |
| D: Work plan | |

1. Introduction

The University of Toronto Sustainability Office (SO) was established by the University's Environmental Protection Advisory Committee in late 2004 with a three year grant from the Toronto Atmospheric Fund (TAF) and considerable support from various units in the University. The scope of the Office falls within the University's Environmental Protection Policy (<http://www.fs.utoronto.ca/English/Environmental-Protection.html>) and is limited to the St. George campus, excluding the federated colleges.

In response to the mandate of the TAF, the short term mission of the SO over the next three years is to substantially reduce the consumption of energy and other resources at the University of Toronto. Over the medium term (four to six years), the Office intends to develop and employ policies and programs to increase energy conservation, green space and reduce waste in all the decisions, practices and procedures of the university. Finally, in the long term (seven years and on), the Office aims to create a culture of sustainability at the University of Toronto, which will be reflected in its functions and operations, resulting in tangible environmental, economic and social benefits.

The organizational objectives of the SO flow from the following broad goals. Through a wide array of programs, the Office aims to meet and, if possible, exceed the Canadian commitments to the Kyoto Protocol at the University of Toronto. Furthermore, the Office will also strive to make the University of Toronto a leader in energy policy and management among Canadian universities and large institutions in the City of Toronto by establishing transferable practices and procedures. Finally, the Office expects to establish energy efficiency and waste reduction as key criteria for decision making with respect to facilities planning, renovations and purchasing, and plans to install state of the art technologies on the University of Toronto campus for educational and demonstration purposes. A more detailed presentation of the organizational objectives and strategic priorities of the Office can be found in the three-year strategic plan, included in Appendix A.

2. Administrative Structure

Since its inception, the Sustainability Office has developed a robust organizational structure under the guidance of its Director, Beth Savan and Bruce Dodds, Director of Utilities and Building Operations. The Environmental Protection Advisory Committee serves as the Board of Directors, and provides general guidance and policy advice. An organizational chart of the Office is included in Appendix B.

The financial support received from the University of Toronto, the Toronto Atmospheric Fund, the federal and provincial governments and private agencies is managed by the Department of Facilities and Services and collectively supports:

- Two-thirds of the Director's time;
- A full-time coordinator;
- A full-time project manager;
- Two full-time interns;
- 15 work study students in 2004-2005 and 31 work study students in 2005-2006;
- Three part-time staff; and,
- Five full-time summer staff.

Furthermore, the office has also engaged the services of:

- More than 15 volunteers in 2004-2005 and 2005-2006; and,
- Greater than 50 students in 2004-2005 and 12 in 2005-2006 involved in Sustainability Office related research projects.

Engaging students and enhancing their experience at the University of Toronto is one of the priorities of the SO and represents a major success of the inaugural year.

3. Partnership Development

The efforts of the Sustainability Office to develop relationships, with other public and private institutions have been critical to the success of the Office. The SO considers the existence and development of substantive relationships with the University of Toronto community that makes up its clients and constituents to be one of its greatest resources and strengths.

3.1. Existing Relationships

Since receiving initial funding from the Toronto Atmospheric Fund and various divisions of the University of Toronto, the Sustainability Office has pursued relationships with private sector partners and all levels of government. This effort has resulted in numerous partnerships which provide cash, in-kind and/or strategic and administrative support. In total, the Office has secured promises of cash contributions totalling over \$400,000, along with a vast amount of in-kind contributions to projects.

The Sustainability Office currently receives generous external funding support from:

Toronto Atmospheric Fund, EcoAction, Natural Resources Canada, Ontario Ministry of the Environment, City of Toronto Better Buildings Partnership, Human Resources and Skills Development Canada and Toronto Dominion Friends of the Environment.

At the same time, the Office enjoys a large amount of support from numerous faculties and departments at the University of Toronto, including the:

Faculty of Arts and Science, Faculty of Applied Science, Faculty of Medicine, Centre for Environment, Faculty of Forestry, Office of the Vice-President and Provost, Faculty of Architecture, Landscape and Design and the Students' Administrative Council.

The Sustainability Office also has significant partnerships with:

Toronto Hydro, Tridel Corporation, the Clean Air Partnership and Citizens' Environment Watch.

3.2. Potential Relationships

The Sustainability Office has continued to submit several major grant applications, along with numerous smaller applications. Together these grant applications have the potential to result in greater than \$2.1 million dollars of external funding over a period of four years for the Office.

There are three major grants to which the Sustainability Office has applied, or is in the process of applying: Networks of Centres of Excellence New Initiatives (NCE-NI), ETech and Knowledge Impact in Society (KIS).

The application for the NCE-NI, a granting body consisting of the Natural Sciences and Engineering Research Council, the Social Sciences and Humanities Research Council and Health Canada, was written in partnership with the University of British Columbia and Dalhousie University. The proposal, delivered in September 2005, requested \$1.6 million over four years, to be used to increase the effectiveness, communication and reach of existing Canadian Sustainability Offices, as well as to develop similar offices across Canada. The results of the competition are expected to be released by the end of 2005.

The grant proposal to ETech, an Ontario Centre of Excellence, was written over the summer in large part by a student intern funded through Human Resources and Skills Development Canada. This proposal requested a total of \$210,000 over three years, to be applied to research involving the behaviour change project. More specifically, the grant requested funding for the employment of skilled researchers and students to undertake the analysis and evaluation of the project.

The final major funding proposal is to be submitted in January 2006 to the Social Sciences and Humanities Research Council funding pool for Knowledge Impact in Society, and will request funding of \$300,000 over three years. It is expected that the results of this competition will be released in the late spring of 2006.

Applications for funding with a smaller financial scope include the EJLB Foundation and Enbridge Gas. Furthermore, the Office is expecting to submit applications for a student levy fund for its projects, including the Bikechain and Anti-Idle.

3.3. Clients and Constituents

The clients and constituents of the Sustainability Office are identified, served and engaged in the following manner:

Students:

The Sustainability Office engages students at the University of Toronto through employment, coursework and volunteer programs, and collaborates with student groups, such as the University of Toronto Environmental Resource Network (UTERN) and the Environmental Students' Union (ENSU) in initiatives which promote energy and resource conservation.

Staff and Administration:

The Office is in the process of reviewing and developing policies and procedures with the administration and staff at the University of Toronto to ensure that energy and resource conservation are integrated into decision making processes, and to support institutional initiatives which contribute to those goals. Furthermore, the Office is launching an initiative to increase the engagement of staff through the solicitation of their ideas for university-relevant course, research and volunteer projects.

Faculty:

The faculty at the University of Toronto are being engaged by the Sustainability Office through partnerships in research initiatives, the development of curriculum focused on sustainability and by engaging faculty to provide ideas and promote course related projects that will provide research and implementation capacity to the Office. The position of the Sustainability Director as Undergraduate Coordinator of the Centre for Environment facilitates this interdisciplinary collaboration.

4. Outreach Activities

The Sustainability Office has many different methods to reach its primary constituents and clients: the University of Toronto community. At the same time, the Office actively pursues relationship development and networking opportunities across Canada and internationally. The transfer of knowledge, technologies, innovations, policies and practices is achieved through the production of internal media, popular media coverage, events and conferences and finally, achievement recognition.

4.1. *Internal Media*

The main method of outreach for the Sustainability Office is through its in-house media production and communications strategy. This includes the recently redesigned Office website at www.sustainability.utoronto.ca, a quarterly newsletter, regularly updated pamphlets, and monthly electronic updates to a listserv with over 160 subscribers.

4.2. *Events*

The Sustainability Office plans and executes many events for the public and the University of Toronto community, while also giving poster and paper presentations at local, national and international events and venues. Events that were organized by the Office include the Bikechain launch, which received national media coverage, and the launch of the Office in February 2004, which included the attendance of Deputy Mayor Sandra Bussin. Other events at the University of Toronto and greater community are regularly attended as well, including the Students' Administrative Council Clubs Day and the Citizens' Environment Watch Community Hall Day in December 2005.

Conference attendance by SO staff and volunteers has been extremely diverse, and includes participation at the Sierra Youth Coalition National Conference in Vancouver in September 2005 and the COP-11 discussions for UNESCO in Montreal in December 2005. Presentations have been given at the Winnipeg CU Expo in September 2005, featuring methods for student engagement developed at the Sustainability Office, and the Sustainability Director participated in the Conference on Sustainability Education in Halifax in October 2005.

4.3. *External Media*

Over the past year, the Sustainability Office has been featured in over 20 print popular media print articles, including the Globe and Mail, 24 Hours, the RAIC Architectural Journal and a host of campus and community publications, a selection of which are included in Appendix C. Sustainability Office staff have also appeared on radio, including the Canadian Broadcasting Corporation's 30 year anniversary program of Quirks and Quarks, and CIUT.

4.4. *Recognition of Achievement*

The staff and the students involved in the Sustainability Office are generally of the highest calibre and character and as such are consistently recognized for their achievement and contributions to the University of Toronto community and to Canadian society in general.

Seven students working with the Sustainability Office were recognized by the federal government through the Energy Innovators program and received recognition at an awards ceremony in Ottawa in February 2005, while more recently one of the interns was awarded the Healthy University Award for significant contributions to the university community, due to her innovative Bikechain project. One of the part-time staff was also awarded the Environmental Protection Advisory committee student award last spring.

5. Organizational Objectives and Strategic Priorities

The organizational objectives of the Sustainability Office, described in the introduction, were developed in parallel with the granting application to the Toronto Atmospheric Fund, and as such reflect the goals of that organization. These objectives will be met through projects that fit into one or more of the four strategic priorities of the Sustainability Office:

- Energy conservation;
- Institutional policies and procedures;
- Outreach and engagement; and,
- Curriculum and research.

The numerous and diverse projects of the Sustainability Office outlined in the next section work together to meet each of the strategic priorities and therefore the organizational objectives of the Office. They also demonstrate the linkage of teaching and research through engaging student course-related involvement in several applied research initiatives. All projects are topical, relevant to off-campus agencies and have the potential to provide models for transfer to other institutional settings.

6. Projects and Initiatives

The Sustainability Office has a vast number of projects in various stages of planning and implementation on the University of Toronto campus. New projects are promoted on the website, which invites and facilitates ideas for projects. Project planning and implementation are supported through our partnerships with the University of Toronto Environmental Resource Network and the Environmental Students Union, which provide grants and volunteer resources to new student-initiated projects. A short history and summary of each project is included below, while the larger picture can be viewed through the overall work plan of the Office, contained in Appendix D.

6.1. Anti-Idle

The anti-idle campaign was initiated as a student course project during the 2004-2005 academic year, and has since expanded to include partnerships with the University Parking Services and the City of Toronto. This initiative examined the prevalence of unnecessary automobile idling on the University of Toronto campus, developed a plan to reduce the incidence of idling through an awareness and information campaign, and identified 'hot spots' where exhaust is emitted near air intake vents. With the assistance of Parking Services., this initiative aims to reach 2,000 motorists that pass through the University campus, and reducing idling, especially in 'hot spots'. In addition, the Office plans to strengthen and continue the development of relationships with Parking Services, the City of Toronto and the University Police.

6.2. Behaviour Change

The behaviour change project consists of a rigorous plan to survey, implement and monitor the effectiveness of a community-based social marketing campaign aiming to reduce electrical energy consumption across the University of Toronto by up to 10% by 2008. It is expected that a peak demand reduction of approximately 200 kW will result from this project. Initiated through a student research course completed in spring of 2005, this project is one of the most multi-disciplinary, sensitive and exciting projects at the Office. There are several pilot stages, during which the social marketing principles of the environmental psychologist Douglas McKenzie-Mohr will be implemented in offices and residences across the university, and carefully monitored and analyzed. The end result will be a set of "toolkits" which will serve to reduce the greenhouse gas emissions of the University, and will be

easily transferable to external applications. Anticipated cost savings upon the implementation of this program across the St. George campus, are on the order of \$150,000 annually.

This project is co-directed by Dr. Daniel Dolderman of the Department of Psychology and Dr. Beth Savan, and involves four work study students, four students carrying out related coursework, two part-time staff along with two interns, and the Sustainability Office Coordinator. The Office is applying for significant external funding for this project, and has already attracted contributions from Natural Resources Canada and the City of Toronto Better Buildings Partnership.

6.3. *Bikechain*

The Bikechain is an excellent example of the innovation and dedication brought to the Sustainability Office by University of Toronto students. This project was the idea of a fourth-year student who is now employed as a full-time intern at the Office. The Bikechain has enjoyed tremendous success, with a new facility at the Ontario Institute for Studies in Education, launched with great fanfare in September 2005, receiving print media coverage in the Globe and Mail, 24 Hours and numerous campus and community publications. Since the launch, an average of 20 cyclists per day visit the facility, demand which has stretched resources sufficiently to warrant investigation of a move to a more suitable, year round venue. Furthermore, a strategic plan specifically for the Bikechain is in development, and is expected to be complete by spring 2006.

6.4. *Biodiesel*

The biodiesel project was initially conceived as graduate course research topic by a student in the Department of Electrical and Computer Engineering, and was eventually converted into an implementation and policy initiative through employment of an undergraduate student in Mechanical and Industrial Engineering at the Sustainability Office. Working with the administration and the staff at Facilities and Services, this project aims to have a high-percentage biodiesel blend in common use for grounds vehicles by the end of 2006. Furthermore, the project will recommend methods by which the entire University of Toronto fleet can be converted to a more sustainable fuel source.

6.5. *Energy Retrofits*

The current plans for energy retrofits at the University of Toronto are guided by Bruce Dodds, the Director of Utilities and Building Operations. Current retrofit plans fall into two categories: lighting retrofits and chiller replacements. The former will see over 70,000 light bulbs replaced in three buildings on the University campus: Robarts Library, the Medical Sciences Building and the Ontario Institute for Studies in Education. The latter will involve a massive upgrade of the St. George chilled-water system, which provides the means to cool buildings, and will replace 18 chillers, affecting 21 buildings.

With a project value approaching \$20 million, Facilities and Services Department has secured funding through Natural Resources Canada, and is expecting funding through the Better Buildings Partnership and Toronto Hydro-Electric Corporation. Overall, the project will deliver \$1.3 million per year in savings and reduce greenhouse gas emissions from the University by 3100 tonnes per year of CO_{2E}.

6.6. *Financial Planning*

The Sustainability Office is actively working with the Development Office at the University to secure private funding in exchange for naming opportunities on items such as an energy efficient building on campus or for the establishment of the revolving fund.

6.7. Greenhouse Gas Inventory

In order to determine the goals of the Kyoto Protocol for the University of Toronto St. George campus, the Sustainability Office has taken the initiative to develop a comprehensive greenhouse gas inventory for each building on the campus. This project was undertaken in earnest beginning in the spring of 2005, with the aim of developing both a global and a building by building inventory for the steam, natural gas and electricity use on campus, components of which will be made available to the public on the website of the Sustainability Office. The inventory will eventually include greenhouse gas emissions due to waste and transportation at the University. There are two major reasons for performing this procedure: public information and awareness, and for the purposes of analysis and planning. The first will allow building occupants to monitor energy reduction progress and encourage behaviours that reduce energy consumption. The latter will be extremely valuable in providing detailed information in order to pinpoint areas where efficiency can be increased and operational and policy improvements can be made.

6.8. Green Tour

Like many of the other projects at the Sustainability Office, the green tour began as an initiative of two students. The background research for this project was completed in the spring of 2005, and since that time, an electronic version of the green tour for implementation on the website has been developed, and will be launched early in 2006. Work has begun to attract volunteers to provide a guided green tour of the campus as well as a paper version, with the tour being expanded as more relevant sites are added at the St. George Campus.

6.9. Policy and Procedural Review

One of the main goals of the Sustainability Office is to integrate relevant research into guidelines, procedures and policies directly into the administration of new building design, retrofits and purchasing at the University. This large project is being planned by staff at the Sustainability Office and Facilities and Services. The review will begin in early 2006, with the aim of revising all of the relevant policies and procedures at the University within an 18 month timeframe. The end goal of the review will be the development of a set of revised guidelines, policies and procedures that can be delivered to the appropriate University governing body, and integrated into existing practise. It is expected that this process will be critical to the development of a “culture of sustainability” at the University which will persist into the future, as well as significant long term savings in operating costs.

6.10. Student Projects

The Office has undertaken many projects in partnership with students through volunteerism or for course credit. These projects all focus on issues relevant to the University of Toronto and are geared to research relevant to the attainment of the organizational objectives of the Office. Some examples of current projects include:

- A feasibility study and pilot project for reduced paper consumption at the Faculty of Law;
- Research to develop weighting factors for heating and cooling loads by university room type;
- A feasibility study for renewable hydrogen generation for fleet vehicles at the University of Toronto;
- The investigation into best-practices for the promotion of bicycling on campus; and,
- An investigation of energy conservation through improvements to fenestration and the heat distribution system at Massey College.

Project concepts are frequently brought to the Sustainability Office by students, and the Office is in the process of soliciting ideas from the staff and faculty at the University.

6.11. Work study teams

The Office has hired over 30 work-study students for the 2005-2006 academic year, working on projects such as the Bikechain and the greenhouse gas inventory. Furthermore, significant human resources are expended on Office communications and outreach, through fora such as a quarterly newsletter, a monthly electronic update through an email listserv and various conferences and other events. This large contingent of work-study positions provides excellent experience and training to a diverse group of students in financial need, enhancing the contribution of the Sustainability Office to student equity. The office welcomes students of all backgrounds, ethnicities, religions and sexual orientation.

7. Financial Statement

The Sustainability Office came into existence due to a grant from the Toronto Atmospheric Fund. Since November 2004, the Office has received over \$185,000 in funding from numerous governmental and private sources. At present, the Office has an operating surplus of approximately \$27,000 and has excellent financial prospects for the future. The Office has expenditures amounting to \$161,902 over the past year, primarily for human resources, which is by far the largest drain on financial resources, with a relatively minor share (\$11,000) contributing to the operational costs. The low operational costs are due to the vast amount of in-kind resources to which the Office has access, especially from the University and the City of Toronto.

| | Nov 2004 to April 2005 | May 2005 to November 2005 | Total |
|---------------------------|-------------------------------|----------------------------------|---------------------|
| Revenues | | | |
| University of Toronto | \$49,228.08 | \$3,750.00 | \$52,978.08 |
| Municipal | \$76,500.00 | \$8,500.00 | \$85,000.00 |
| Provincial | | \$13,000.00 | \$13,000.00 |
| Federal | | \$36,700.00 | \$36,700.00 |
| Total Revenues | \$125,728.08 | \$61,950.00 | \$187,678.08 |
| Expenditures | | | |
| Human Resources | \$67,084.36 | \$82,224.40 | \$149,308.76 |
| Operations | \$8,667.99 | \$2,925.44 | \$11,593.43 |
| Total Expenditures | \$75,752.35 | \$85,149.84 | \$160,902.19 |

8. Next Steps

The core funding of \$85,000 from the Toronto Atmospheric Fund pays for the Sustainability Coordinator, while the University contribution of \$14,500 covers one full course equivalent of faculty buyout, as well as some further staff expenses. With only one full time position, the Sustainability Coordinator, with the part-time support of the Sustainability Director has been able to parlay meagre resources into the equivalent of eight additional full-time staff positions, as well as considerable other funds for research and program delivery. Furthermore, the Sustainability Office is providing an approximate long term return of \$150,000 per year of electricity cost savings associated with the behaviour change project, as well as the \$1.3 million annual savings garnered from the collaborative work with Facilities and Services on the retrofit project.

The Sustainability Office has ambitious plans for further student engagement, energy efficient retrofits, behaviour change programs and demonstration projects on campus (see attached Strategic Plan). The Sustainability Office's detailed inventory will provide a strong basis for the plan to allocate energy budgets to local units. Our student engagement efforts will continue to grow, and our research and development programs will also mature and bring in additional project grants. Within two years, however, core funding for the office expires. It is our goal to build a budget of \$140,000 into base: \$80,000 for the Sustainability Coordinator, \$40,000 for administrative support, \$12,000 for the Sustainability Director's buyout, and \$8,000 for office expenses, to allow the Office to continue its work into the future.

Appendix A: Three-year Strategic Plan



Three-Year Strategic Plan

Table of Contents

- Introduction
- Mission
- Core Competencies and Functions
- Organizational Objectives
- Clients and Constituents
- Three-Year Vision and Performance Indicators
- Strategic Priorities
 - 1. Energy Conservation Projects
 - 2. Institutional Policies and Procedures
 - 3. Outreach and Engagement
 - 4. Curriculum and Research

INTRODUCTION

The University of Toronto Sustainability Office was established in 2004 with a three year grant from the Toronto Atmospheric Fund and considerable support from various units in the University. This plan represents an evolution of the original Business Plan submitted as a funding proposal to the Toronto Atmospheric Fund and provides a basis for consultation with our various partners and constituencies both inside and outside of the university.

MISSION

Short Term: To undertake projects that will substantially reduce the consumption of energy and other resources at the University of Toronto.

Medium Term: To develop and employ policies and programs to increase energy conservation, green space and reduce waste in all the decisions, practices and procedures of the university.

Long Term: To create a culture of sustainability at the University of Toronto which will be reflected in its functions and operations, resulting in tangible environmental, economic and social benefits.

CORE COMPETENCIES AND FUNCTIONS

- Support and catalyze student, faculty and staff stewardship and action
- Develop, fund and implement renewable energy development as well as energy and resource conservation projects
- Establish baseline data and monitor changes in energy use
- Develop and implement institutional policies to promote energy and resource conservation
- Support and catalyze research and education on energy and resource conservation
- Network and develop partnerships with regional organizations and institutions

ORGANIZATIONAL OBJECTIVES

Through our programs, the Sustainability Office aims to:

- Meet and, if possible, exceed the Canadian commitments to the Kyoto Protocol at the University of Toronto
- Become a leader in energy policy and management among Canadian Universities and large institutions in the City of Toronto by establishing transferable practices and procedures
- Establish energy efficiency and waste reduction as key criteria for decision making with respect to facilities planning, renovations and purchasing
- Install state of the art technologies on the University of Toronto campus for educational and demonstration purposes
- Develop a sustainable funding mechanism in the form of a revolving fund, for the ongoing implementation of energy and emissions reduction projects

CLIENTS AND CONSTITUENTS

The clients and constituents of the Sustainability Office include students, faculty, staff and the administration at the University of Toronto, as well as relevant external communities. These clients and constituents are identified and served in the following manner:

Students:

Engage students at the University of Toronto through our employment and volunteer programs, and collaborate with student groups in initiatives which promote energy and resource conservation.

Staff and Administration:

Develop policies and procedures with the administration and staff at the University of Toronto to ensure that energy and resource conservation are integrated into decision making processes, and support institutional initiatives which contribute to those goals.

Faculty:

Engage the faculty at the University of Toronto in energy conservation action and stewardship, and catalyze and contribute to education and research related to energy and resource conservation.

Community:

Forge mutually beneficial partnerships with complementary groups locally, regionally and nationally, such as the City of Toronto, Toronto Hydro, the Toronto Atmospheric Fund, the Ontario Ministry of Energy and National Resources Canada.

THREE-YEAR VISION, PRIORITIES AND PERFORMANCE INDICATORS

VISION

In analyzing past performance and prospects for growth, the Sustainability Office's staff and advisors have articulated the following collective vision for how the organization will have evolved by 2007.

By the end of 2007, the Sustainability Office will have substantially reduced energy consumption and therefore greenhouse gas emissions at the University of Toronto.

STRATEGIC PRIORITIES AND PERFORMANCE INDICATORS

The following goals, implementation strategies and performance indicators have been developed after close examination of the University of Toronto's current operations and potential for growth of the Sustainability Office. The performance indicators are intended to measure the Sustainability Office's success in reaching its stated three year objectives.

1. GOAL: To increase energy conservation by implementing energy efficient retrofits, renewable energy and technological demonstration projects.

1.1 Develop and maintain an emissions inventory and track reductions

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|---------|------|------|
| i | Determine normalized energy consumption and CO ₂ emissions inventory for the St. George campus | ✓ July | | |
| ii | Identify historic and current energy use and emissions for each building unit | ✓ July | | |
| iii | Implement tracking system | ✓ Sept. | | |
| iv | Display on website | | Mar. | |
| v | Establish reduction targets for energy | | June | |
| vi | Determine CO ₂ emissions inventory due to transportation and waste | | Dec. | |
| vii | Implement tracking system | | | Jan. |
| viii | Display on website | | | Mar. |
| ix | Establish reduction targets for transportation and waste | | | Aug. |

1.2 Complete three lighting retrofits and four chiller system upgrades

| Strategies | | 2005 | 2006 | 2007 |
|------------|--|--------|------|------|
| i | Obtain grants and low interest loans to fund these projects through BBP, NRCAN | ✓ Aug. | | |
| ii | RFP's for retrofit work | ✓ Mar. | | |
| iii | Obtain university investment in these projects | | Mar. | |

| | | | | |
|----|---|--------|-------|------|
| iv | Implement feasibility studies | ✓ Nov. | | |
| v | Completion of OISE chiller | | Sept. | |
| vi | 3 major lighting retrofits; 7 chiller system upgrades | | | Dec. |

1.3 Plan and implement renewable energy projects

| Strategies | | 2005 | 2006 | 2007 |
|------------|--|------|-------|------|
| i | Establish partnerships with technology providers and university organizations | | Sept. | |
| ii | Obtain grants and low interest loans to fund these projects | | Oct. | |
| iii | Obtain university investment in these projects | | Nov. | |
| iv | Project implementation | | | Jan. |
| v | 1 or more photovoltaic, solar, wind or other renewable energy projects completed | | | Dec. |

1.4 Plan and implement technological demonstration projects

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|------|------|------|
| i | Establish partnerships with technology providers and interested campus organizations | ✓ | | |
| ii | Identify projects with interested groups (eg. Dept. of Mechanical Engineering, Biodiesel Project) | ✓ | | |
| iii | Obtain grants, low interest loans and in-kind donations to fund these projects | | Oct. | |
| iv | Obtain university investment in these projects | | Nov. | |
| v | Project implementation | | Dec. | |
| vi | 1 or more state of the art technology demonstration projects completed | | | Dec. |

2. GOAL: To establish institutional policies and procedures promoting energy conservation.

2.1 Establish a revolving fund

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|--|---------------------|-------------------------------|
| i | Secure agreement in principle | | April | |
| ii | Secure start-up funding | ✓ June \$250k | | |
| iii | Funds contributed by University | \$250k | | |
| iv | Funds contributed by donors | None | | \$500k |
| v | Funds invested by endowments | None | | \$500k |
| vi | Total in revolving fund | None | | 1.5m |
| vii | Project funds raised from grants | ✓ \$225k TAF \$45k EcoAction \$13k Ont. MOEnv. | ✓ NRCan \$29,000 | \$250k more in various grants |
| viii | Number of SO staff | ✓ 1 + 0.6 FTE buyout | | 1.6 FTE buyout |
| ix | Number of projects funded by revolving fund | None | 1 | 2 |

2.2 Raise funds to secure future of office and revolving fund

| Strategies | | 2005 | 2006 | 2007 |
|------------|--|--------|------|------|
| i | Establish ongoing commitment from Facilities and Services at the University of Toronto to provide a resource person for the SO | ✓ June | | |
| ii | Extend the lifetime of the SO by securing external funding sources | ✓ Aug. | | |
| iii | Approach internal institutional sources | ✓ Dec. | | |
| iv | Secure long-term commitment to incorporate SO base budget | | Aug. | |

2.3 Establish new RFP and construction guidelines for buildings

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|--------|------|-------|
| i | Supervise student projects on the development of new guidelines | ✓ Jan. | | |
| ii | Preparing complete review of guidelines | | Jan. | |
| iii | Present project recommendations to relevant staff | | | Sept. |
| iv | Work with staff to implement changes | | | Oct. |

2.4 Establish new transportation guidelines promoting energy efficiency in the use of university and private vehicles

| Strategies | | 2005 | 2006 | 2007 |
|------------|--|------|-------|-------|
| i | Supervise student project on development of new guidelines | | Sept. | |
| ii | Present project recommendations to relevant parking and vehicle management staff | | Mar. | |
| iii | Work with staff to implement changes | | | Sept. |

2.5 Establish new procurement guidelines ensuring energy and resource conservation in university purchases

| Strategies | | 2005 | 2006 | 2007 |
|------------|--|------|-------|-------|
| i | Supervise student project on development of new guidelines | | Sept. | |
| ii | Present project recommendations to relevant staff | | Mar. | |
| iii | Work with staff to implement changes | | | Sept. |

3. GOAL: Promotion of the Sustainability Office and the engagement of the University along with local, regional and national bodies.

3.1 Outreach

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|--------|---------|------|
| i | Establish outreach mechanisms (newsletter, email list) | ✓ Feb. | | |
| ii | Use existing university mechanisms (newspapers, display cases, website) | ✓ Feb. | | |
| iii | Engage external media | | ✓ Sept. | |

3.2 Engagement

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|----------------------------|-------------------------------------|---------------------------------------|
| i | Total number of students engaged in SO activities | 100 | | 200 |
| ii | Hire work study students | ✓ 18 | ✓ 30 | 31 |
| iii | Summer students employed at the SO | 6 | | 6 |
| iv | Engage graduate students in relevant research | 10 | 10 | 10 |
| v | Engage students with relevant course assignments | 60 | 100 | 150 |
| vi | Engage volunteers in SO programs and projects | 10 | 20 | 50 |
| vii | Involve building managers in the work of the SO | 0 | 30 | 30 |
| viii | SO display on campus | 2 | | 10 |
| ix | Campus media articles on the SO | 9 | | 10 |
| x | Off-campus media articles on the SO | ✓ 5 | 5 | 5 |
| xi | Establish partnerships with federated colleges | ✓ 1 | ✓ 1 | ✓ 1 |
| xii | Establish partnerships with student groups | ✓ 5 | ✓ 5 | 5 |
| xiii | Establish partnerships with local agencies and institutions | ✓ 2 | ✓ 4 | 6 |
| xiv | Engage students, staff and faculty in behaviour change campaign | ✓ Pilot at Trinity College | Evaluate 2 residences and 2 offices | Launch across campus |
| xv | Organic waste disposal | | Initial analysis and pilot project | Promotion and expansion across campus |

4. GOAL: Increase the number of educational and research activities that promote sustainability.

4.1 Curriculum

| Strategies | | 2005 | 2006 | 2007 |
|------------|---|-------|-------|------|
| i | Review curriculum offerings | Sept. | | |
| ii | Design plan to enhance existing curriculum | Mar. | | |
| iii | Engage academic units to effect changes | | Sept. | |
| iv | Number of courses incorporating sustainability curriculum | 181 | | 200 |
| v | Number of students enrolled in such courses | 5000 | | 7000 |

4.2 Research

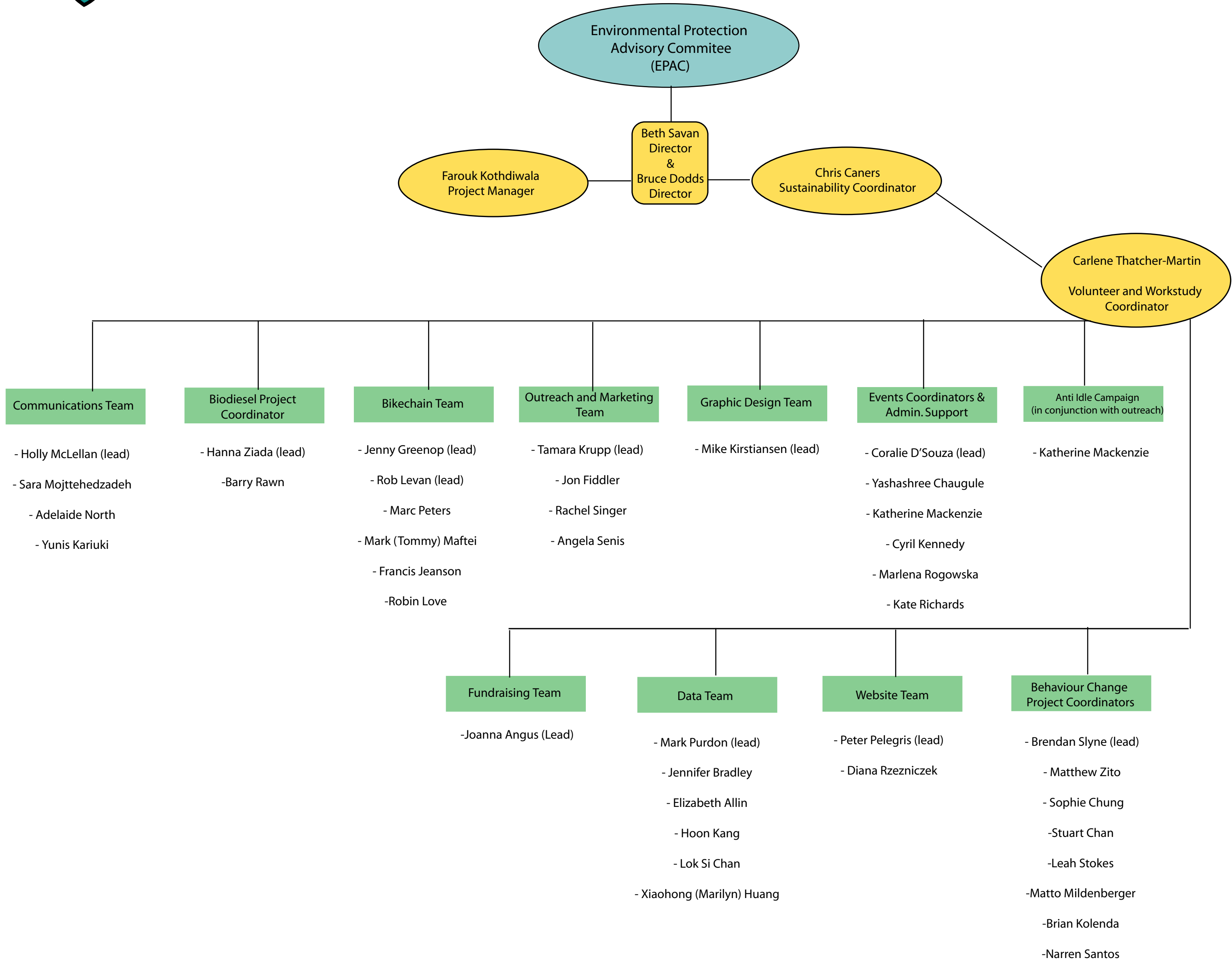
| Strategies | | 2005 | 2006 | 2007 |
|------------|--|------|------|------|
| i | Document relevant U of T research for newsletter | Aug. | | |
| ii | Establish list of faculty with relevant research | Feb. | | |
| iii | Establish list of graduate students with relevant research | Dec. | | |
| iv | Design two networks for faculty and graduate students | | Oct. | |

| | | | | |
|-----|--|-----|------|------|
| v | Host research seminar for faculty and students | | Nov. | |
| vi | Hold annual workshops for each network | | | Oct. |
| vii | Number of faculty engaged in sustainability-related research | 127 | | 150 |

Appendix B: Organizational Chart



Staff Organization Chart 2005/2006



Appendix C: Media

U of T launches bicycling initiative

New environmental office offers repair shop, mechanics to encourage cycling

BY UNNATI GANDHI

It doesn't take much to bring the University of Toronto's 50,000 community members one pedal push closer to cycling to campus — just a few cordoned-off underground parking spots, a bicycle repair stand, wrenches, and a couple of student mechanics, along with the dedication of a tiny office tucked away in the Earth Sciences building.

Today, the eve of International Car Free Day, U of T's Sustainability Office launches BikeChain, a free, self-help bike repair shop and resource centre on campus.

The aim is to "make a dent in the oppressive smog blanketing our city," said 23-year-old cycling enthusiast Carlene Thatcher-Martin, who co-ordinated the initiative.

Ms. Thatcher-Martin saw a similar program in place at the University of British Columbia last summer and was instantly drawn to it.

"When I came back to U of T, I noticed cycling culture on campus seemed to be missing," she said. "There were a lot of people that biked, but no central place for them to go or any kind of services for them."

Working with Beth Savan, director of the Sustainability Office, Ms. Thatcher-Martin fleshed out the details of the repair facility, which has such goals as improving city air quality through the displacement



Mechanic Dan Lambert will be on hand to fix bikes for BikeChain.

of car travel and ultimately reducing traffic congestion.

Two experienced bike repair helpers will be on standby every weekday afternoon at the underground parking lot of the Ontario Institute for Studies in Education with a professional bike repair tool set. They'll fix flat tires, change brake pads, clean chains and make minor alignment adjustments.

"I want to see people who aren't necessarily inclined to ride their bike to feel it's more of an option to them," Ms. Thatcher-Martin said.

"If it goes well, I hope that over the years we will be able to include the rest of the community as opposed to just university members."

The Sustainability Office was launched last February, making U of T one of a handful of universities with environmental watchdog offices, including Laval, UBC, Harvard and the University of Michigan.

"We're not the first, we're not the biggest, but we hope to be one of the most comprehensive," Ms. Savan said, adding that the office's ambitious plan is to turn the university into a highly energy-efficient operation, where green technologies and conservation are embedded into how the campus runs and grows.

Funded by a three-year grant of \$250,000 from the Toronto Atmospheric Fund, along with additional support from the Eco-Action Project, Environment Canada, Ontario's Ministry of the Environment, and offices and departments within U of T, the office has an annual budget of roughly \$150,000.

By comparison, Toronto City Council has spent hundreds of thousands of dollars in past years to help people close off streets in various neighbourhoods and have car-free parties to celebrate Car Free Day, the annual event cele-

'If it goes well, I hope that over the years we will be able to include the rest of the community as opposed to just university members.'

*BikeChain co-ordinator
Carlene Thatcher-Martin*

brated by 100 million people in 1,500 cities around the world.

But this year, the proposal to spend \$500,000 to close off King and Queen Streets was rejected in the budget.

Instead, the city is exhorting employers to encourage employees to leave their cars at home tomorrow.

While Councillor Jane Pitfield (Don Valley West) defended the city's initiative, she conceded there needs to be some money to promote Car Free Day.

"When the budget decision was made, that it was getting zero budget, the decision was, 'Do we do nothing or do we come up with an approach that is positive and creative that has no budget line?'" she said.

"I admit that something needs to be in the budget and I will certainly do whatever I can to ensure we have money for 2006. We've got to have something. ... Maybe \$50,000 to \$100,000 would be realistic."

At city hall, Mayor David Miller praised Car Free Day as an "important symbolic step" to educating the public about alternatives to taking the car.

As for his own plans for the day, Mr. Miller said, "I will take the subway like I often do."

U of T hosts Bike Repair 101

A new bicycle maintenance program rolled onto the University of Toronto campus yesterday morning.

BikeChain, a self-help bicycle repair shop and resource centre located in the parking garage beneath OISE at U of T, will be fixing flats, changing brake pads, cleaning chains and more for the university's 50,000 community members.

"Response has been incredibly positive," said Carlene Thatcher-Martin, a recent graduate who is heading up the unique project.

But as would be expected on a campus, there will be some learning involved.

"It's meant to teach the community how to fix their own bikes," said Thatcher-Martin.

The good news however, is there will be no exam.

"Bikes are fairly easy to maintain. There's just a few things you need to know."

Six experienced mechanics will be staffing BikeChain armed with a full professional bike repair tool set and a selection of parts.

Students and staff can drop by to ask questions

or find help on weekday afternoons.

"Having these basic skills will probably save you a lot of time and will be a lot safer as well," said Dan Lambert, one of the work-study students who will be staffing BikeChain.

So far, \$4,000 has been secured for the project.

Thatcher-Martin is hopeful that with more funding they can expand the BikeChain mandate to include bike workshops, a bike refurbishing program and a partnership with the Community Bicycle Network's yellow-bicycle lending program.

- Barbi Green, 24 hours



- Barbi Green, 24 hours

University of Toronto student and bicycle mechanic Dan Lambert holds a demonstration at the launch of BikeChain, a new self-help repair program on campus.

U of T Aims to Meet Kyoto Targets

New sustainability office will spearhead reduction plan

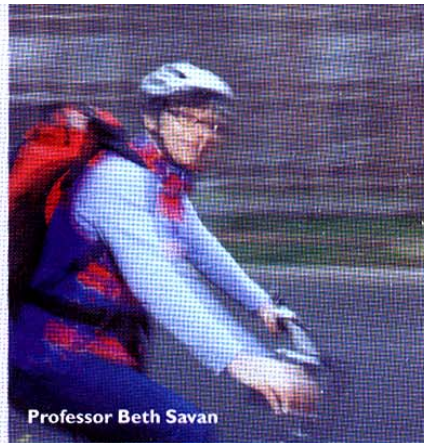
Ideally, U of T would like to comply with the Kyoto Protocol, says Beth Savan, the head of the university's new sustainability office. However, she acknowledges that her task will be "extremely challenging."

Toronto's second-largest non-profit landowner after the city, U of T produced 130,000 tonnes of carbon dioxide emissions in the 2002-03 academic year, equivalent to about 250 times the volume of the Robarts Library. Scaling back emissions to the magic figure of six per cent below 1990 levels, as specified by Kyoto, will be especially difficult in light of recent enrolment increases. "It's tough when you're growing," says Savan, who teaches environmental studies at Innis College.

A fixture for years with the city's environmental movement, Savan is spearheading an ambitious plan to turn U of T into a highly energy-efficient operation, where green technologies and conservation are hard-wired into the way the campus manages its growth.

Energy consciousness at U of T's St. George campus goes back to 1912, when administrators chose to outfit the rapidly expanding campus with a district heating and electrical system, linking the buildings with networks of steam pipes and electrical connections. Since the mid-1970s, the university has undertaken waves of energy improvements, says Bruce Dodds, director of utilities and building operations. It has upgraded its heating system, installed more energy-efficient lighting and, most recently, invested \$5.4 million to maximize energy efficiency at its natural gas-fired co-generation plant. Rising electricity rates, coupled with the university's tight fiscal environment, have spurred innovative thinking. "We have to be clever in how we deal with [energy costs]," says Dodds.

Staff at the sustainability office have hit the ground running. Established last year with a \$225,000 grant from the Toronto Atmospheric Fund, and working with a team of a hundred students, the group is drawing



Professor Beth Savan

up an inventory of energy use in each of U of T's 250 buildings. It has also launched a campaign against cars and trucks idling on campus and is providing information for students on how to reduce energy use in residence rooms, among many other initiatives.

The group's longer-term goal is to develop design and construction guidelines so that all new capital projects comply with emerging international standards for green buildings. Successful green initiatives include the new Student Centre at the University of Toronto at Scarborough and the Bahen Centre for Information Technology (which was designed with energy-efficient chilling capacity that is being linked to several nearby buildings). The University of Toronto at Mississauga has launched a number of environmentally friendly projects under the slogan "Grow Smart, Grow Green." These include an advanced waste reduction plan, fuel-cell powered town homes and a car-pooling program.

A key element of U of T's sustainability initiative involves the education of students and staff. Savan observes that the university is so vast that certain types of green policies, such as centralized purchasing, are difficult to implement. "There aren't guidelines to tell you to buy energy-efficient equipment," she says. Nor are individual departments or colleges financially rewarded for identifying cost-savings through smarter energy use.

To focus the university's efforts, the campaign is setting specific goals for environmental improvements. Savan points out that the sustainability office first must collect and disseminate data to paint a picture of the university's current emissions, waste streams and energy use. "I hope we'll be in a position to set some ambitious targets, but we're not at that point yet," she says.

-J.L.

PHOTOGRAPH: DEREK SHARFON

SUMMER 2005 21

University of Toronto cleaning up its act

By CARRIE BRUNET
Staff Writer

As one of the largest non-governmental landowners in the city, the University of Toronto is leading the charge in establishing environmentally friendly practices.

Last week the university established an environmental sustainability office to improve on its current practices and to move forward with new and innovative policies.

"In order to help with the country's general efforts to achieve (our

Kyoto (protocol commitments), I think the university should be a leader in the community," said Beth Savin, director of the environmental sustainability office.

She said that with the university's revolving population, the institution is in a "unique position to reach out to young people and model behaviour that is exemplary."

Because the university consumes large amounts of electricity with its various computer laboratories, science laboratories and res-

idences, it also makes financial sense to make changes to energy consumption, said Savin.

"We are looking at not only a retrofit, but making institutional policies that promote energy efficiency," Savin said.

40,000 LAMPS CHANGED

Retrofits including changing more than 40,000 lamps in the Robarts Library alone will help save the university money while reducing greenhouse gas emissions.

The library has a wind-monitor-

ing device that will determine whether or not it will be suitable for a small-scale windmill in the future. The cost of retrofitting Robarts will be about \$2.6 million.

"We're still in the planning stages," said Savin. "We would like to begin sometime in 2005. We are securing funds and doing RFPs (request for proposals)."

The efforts are also largely student-involved.

"We have over 100 students engaged in our activities," said Savin. "One of our college's has stu-

dents monitoring the energy consumed in the residence and carrying out behaviour change programs with incentives to see if they can reduce consumption. Other initiatives such as an anti-idling campaign and energy audits are being undertaken by students as well."

The university has been a pioneer in environmental protection.

In 1994, Toronto became the first university to adopt an environmental protection policy and has reduced its waste going to landfill since 1991 by 68 per cent.

ANNEX GUARDIAN

NEWS THAT HITS HOME

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Staff photo/DENNIS HANAGAN

In tune

Rob Levan fixes a wheel on a bike in the underground garage at the Ontario Institute for Studies in Education (OISE) on Bloor Street West. The University of Toronto philosophy student works with a small business called Bikechain repairing people's bikes in the garage. The only cost is for parts.

Annex Guardian
October 28, 2005

10 February 2005

news

U of T gets green

by Matt Kim

U of T's new Sustainability Office was launched this week. The funding was provided by the City of Toronto's Atmospheric Fund and the federal Energy Innovators Initiative. The office will be under the direction of Beth Savan and Bruce Dodds, current director of utilities and building operations.

The new office compliments U of T's strong commitment to environmental preservation and sustainable development. Since the beginning of its recycling program in 1991, the university has reduced its landfill waste by 68 per cent and in 1994, an environmental protection advisory committee was established.

"The new sustainability office is a progressive new milestone of collaborative achievement by students and faculty on environmental issues," said Ron Venter, vice-provost (space and facilities planning). "We all need to be very much more aware of the global energy situation and the protection of our environment; at U of T we can collectively show the way forward."

The new Sustainability Office's first project is to retrofit Robarts Library's 60 000 lights with state of

the art, efficient energy lamps and fixtures. In addition, motion sensors will be installed in the library stacks, so that full lighting only comes on when it is needed. The result is a reduction in greenhouse emissions by a staggering million kilograms per year.

"The Sustainability Office is an historic step towards environmental improvement at the University of Toronto," says Beth Savan, Sustainability Coordinator, "I look forward to working with staff, students, and faculty to build a cleaner, greener U of T."

The Sustainability Office will be holding an open house today, February 10, from 11 a.m. until 3 p.m. in the lobby of the Earth Science Building.



PHOTO BY GILL CERBU

The Newspaper
February 10, 2005

Appendix D: Work plan



| ID | Task Name | 4/04 | 7/04 | 10/04 | 1/05 | 4/05 | 7/05 | 10/05 | 1/06 | 4/06 | 7/06 | 10/06 | 1/07 | 4/07 | 7/07 | 10/07 | 1/08 | 4/08 | 7/08 | 10/08 |
|----|---|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|
| 43 | Bora Laskin Chiller | | | | | | | | | | | | | | | | | | | |
| 44 | Financial Planning | | | | | | | | | | | | | | | | | | | |
| 45 | Application to NCE-NI | | | | | | | | | | | | | | | | | | | |
| 46 | Application to Etech | | | | | | | | | | | | | | | | | | | |
| 47 | Engagement of Marketing and Licensing | | | | | | | | | | | | | | | | | | | |
| 48 | Outreach to university administration | | | | | | | | | | | | | | | | | | | |
| 49 | Proposal to KIS | | | | | | | | | | | | | | | | | | | |
| 50 | Greenhouse Gas Inventory | | | | | | | | | | | | | | | | | | | |
| 51 | Acquisition of energy and waste data | | | | | | | | | | | | | | | | | | | |
| 52 | Analysis and development of energy inventory | | | | | | | | | | | | | | | | | | | |
| 53 | Organization of building inventory | | | | | | | | | | | | | | | | | | | |
| 54 | Development of website | | | | | | | | | | | | | | | | | | | |
| 55 | Analysis and development of waste inventory | | | | | | | | | | | | | | | | | | | |
| 56 | Integration of energy and waste inventories | | | | | | | | | | | | | | | | | | | |
| 57 | Analysis and development of transportation inventory | | | | | | | | | | | | | | | | | | | |
| 58 | Integration of energy, waste and transportation inventories | | | | | | | | | | | | | | | | | | | |
| 59 | Quantification of effect of office programs | | | | | | | | | | | | | | | | | | | |
| 60 | Recommendations for energy efficiency and conservation | | | | | | | | | | | | | | | | | | | |
| 61 | Green Tour | | | | | | | | | | | | | | | | | | | |
| 62 | Development and research | | | | | | | | | | | | | | | | | | | |
| 63 | Implementation on website | | | | | | | | | | | | | | | | | | | |
| 64 | Planning for physical tour | | | | | | | | | | | | | | | | | | | |
| 65 | Begin tours | | | | | | | | | | | | | | | | | | | |
| 66 | Policy and Procedures | | | | | | | | | | | | | | | | | | | |
| 67 | Planning of review | | | | | | | | | | | | | | | | | | | |
| 68 | Review | | | | | | | | | | | | | | | | | | | |
| 69 | Report on review | | | | | | | | | | | | | | | | | | | |
| 70 | Development of plan for policy implementation | | | | | | | | | | | | | | | | | | | |
| 71 | Implementation of revised policies | | | | | | | | | | | | | | | | | | | |
| 72 | Student Projects | | | | | | | | | | | | | | | | | | | |
| 73 | Paper policy feasibility study | | | | | | | | | | | | | | | | | | | |
| 74 | Paper policy pilot study | | | | | | | | | | | | | | | | | | | |
| 75 | Campus wide paper policy implementation | | | | | | | | | | | | | | | | | | | |
| 76 | Renewable hydrogen feasibility study | | | | | | | | | | | | | | | | | | | |
| 77 | Planning and funding recruitment for hydrogen project | | | | | | | | | | | | | | | | | | | |
| 78 | Development of energy sources for hydrogen project | | | | | | | | | | | | | | | | | | | |
| 79 | Implementation of campus hydrogen vehicles | | | | | | | | | | | | | | | | | | | |
| 80 | Workstudy Projects | | | | | | | | | | | | | | | | | | | |
| 81 | Newsletter | | | | | | | | | | | | | | | | | | | |
| 82 | Pamphlet | | | | | | | | | | | | | | | | | | | |
| 83 | Office display | | | | | | | | | | | | | | | | | | | |
| 84 | Conference display board | | | | | | | | | | | | | | | | | | | |