

# 2010

Facilities and Services

# SUSTAINABILITY

## Report



UNIVERSITY OF  
TORONTO

## Introduction from the **ASSISTANT VICE-PRESIDENT, FACILITIES & SERVICES**

It is with great pleasure that I introduce our first Facilities and Services Sustainability Report. For almost forty years sustainability has been an integral part of the Facilities and Services department's core mission of supporting excellence in teaching and research by providing a safe, clean, comfortable, attractive and sustainable physical environment. This report highlights the operations of the department on the St. George campus, the sustainable practises it has instituted so far, the University's performance as a whole, and our plans going forward.

Some have compared Facilities and Services' scope of operations to that of running a small city. With over 600 staff providing services to a daily community of approximately 70 thousand people in 120 buildings, we are uniquely positioned to understand and manage the University's impact on the environment. Key responsibilities include the management and operation of an extensive district energy system, and building operations for over 11.5 million square feet. Other core services include property management, caretaking, campus police, fire prevention, telecommunications, landscaping and in 2007, the Office of Sustainability was added to the department of Facilities and Services.

Since the Oil Crisis of the early 1970's, the University has invested heavily in conservation. We hired our first full-time energy manager back in 1977. The department of Facilities and Services has completed hundreds of conservation projects yielding impressive savings in water, natural gas and electricity. **Since 1973, our activities have resulted in the avoidance of over 1 million tonnes of greenhouse gas, saved 60 billion litres of water and 200 million dollars in utility expenses.** Our recycling program, started in 1990, is now one of the most comprehensive and successful of any post secondary institution in North America. **Through the recycling of paper products alone, we have saved the equivalent of one quarter of a million trees.**

More recently, the department conceived and coordinated the banning of incandescent lamps across the institution, undertook a \$20 million energy reduction project, led the installation of the largest solar thermal array in the GTA (at the time of its installation), and championed the University's first LEED Gold certified capital project.

The Sustainable Endowments Institute, in its most recent survey, recognized the University of Toronto as a "College Sustainability Leader" for earning a grade of A- on the *College Sustainability Report Card* - a comparative evaluation of campus sustainability activities at colleges and universities across North America. Guiding our commitment going forward, President David Naylor signed *Ontario's Commitment to a Greener World* in November 2009. The pledge is signed by the executive heads of twenty Ontario universities to reinforce their commitment to preserve and protect the environment. Subsequent to this commitment, the University of Toronto completed its first comprehensive greenhouse gas inventory in 2010.

Facilities and Services has taken a number of important strides to reduce energy consumption, improve efficiency and reduce waste with very positive results. However, we still have a long way to go to reduce our environmental impact. Future challenges include growth in our portfolio of buildings and our plans to further enhance research intensive and graduate activities at our University.

We look forward to and are committed to working with students, faculty, and staff to continue our rich legacy of sustainable practices and to further integrate environmentally responsible activities throughout the institution as we move into the future.

*Ron Swail*

Assistant Vice-President, Facilities and Services

# Table of CONTENTS

<b>Introduction</b>	<b>2</b>
<b>What is Sustainability?</b>	<b>4</b>
<b>Planting Seeds for a Greener Future</b>	<b>5</b>
<b>Sustainable Milestones</b>	<b>6</b>
<b>Greenhouse Gas Inventory</b>	<b>12</b>
<b>Our Performance</b>	<b>17</b>
<b>Intensities</b>	<b>18</b>
<b>Sustainability Report Card</b>	<b>22</b>
<b>Awards and Recognitions</b>	<b>24</b>
<b>U of T's Commitments</b>	<b>25</b>
<b>Going Forward: Operational Areas of Focus</b>	<b>28</b>
<b>Towards 2030 and the St. George Campus</b>	<b>32</b>
<b>Appendix</b>	<b>34</b>

# Facilities & Services



## what is SUSTAINABILITY?

**Sustainability** is defined as “meeting the needs of the present without compromising the ability of the future generations to meet their needs (WCED 1987).” With this definition at its heart, sustainability requires us to be more efficient and minimize resource use, while meeting the needs of our citizens today and tomorrow.

Rather than a traditional approach where market economics rule, sustainable decision-making requires that three aspects: 1) the environment, 2) social needs, and 3) economic factors are taken into consideration to make environmentally conscious decisions.

The Facilities and Services operation at the St. George campus has consistently followed this definition over the past four decades. We facilitate research and teaching by seamlessly (and for the most part invisibly) managing the physical environment. We provide a safe, clean, comfortable and attractive environment for staff and students at the lowest possible cost. Through this report, we will illustrate how the triple bottom line of sustainability - the environment, society, and the economy - is served through this operation.

# Planting Seeds for a



# GREENER FUTURE

The department of Facilities & Services strives to facilitate the University's core mission of excellence in teaching and research through the provision of many services across the St. George Campus. Our department is specifically responsible for:

- Operation and management of the St. George Campus district energy system which includes all heating, cooling and electrical services provided to the buildings through kilometres of tunnels, as well as the production facilities for those energy sources;
- Operation and management of the base building mechanical equipment and much of the faculty specific equipment in all buildings (excluding a few student residences and faculty housing);
- Typical support services within the building such as: property management, telecommunications, trade services, and caretaking;
- Campus-wide services including landscaping, mail, moving, snow removal, waste and recycling, campus police and fire prevention services;
- The Sustainability Office, which works with students, faculty and staff to provide support and advice for the development of sustainable initiatives on the St. George campus.

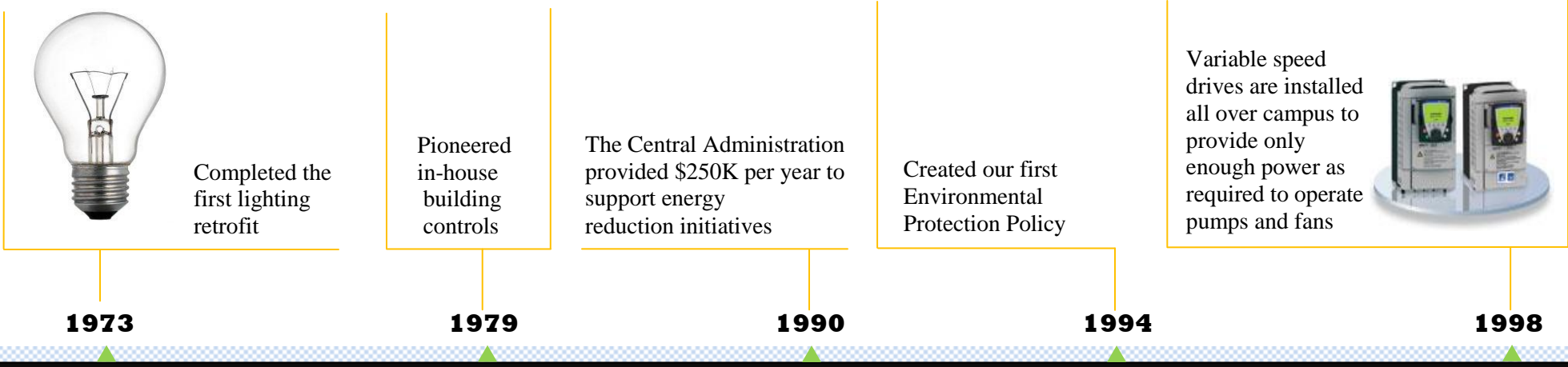


As pioneers of sustainability initiatives, this department continues to play a vital role in leading the University toward cost efficient sustainable practices. We understand that little changes have big impacts, so our initiatives range from large scale projects such as facilitating construction developments and replacing utility equipment, to smaller projects that introduce eco-conscious alternatives to our students, faculty and staff. Through hundreds of initiatives, our efforts have minimized negative impacts on the environment while conserving natural resources and respecting biodiversity. **Here are some of our achievements dating back to the oil crisis of 1973:**

*See "Our Performance" on page 17 for our key performance indicators.*

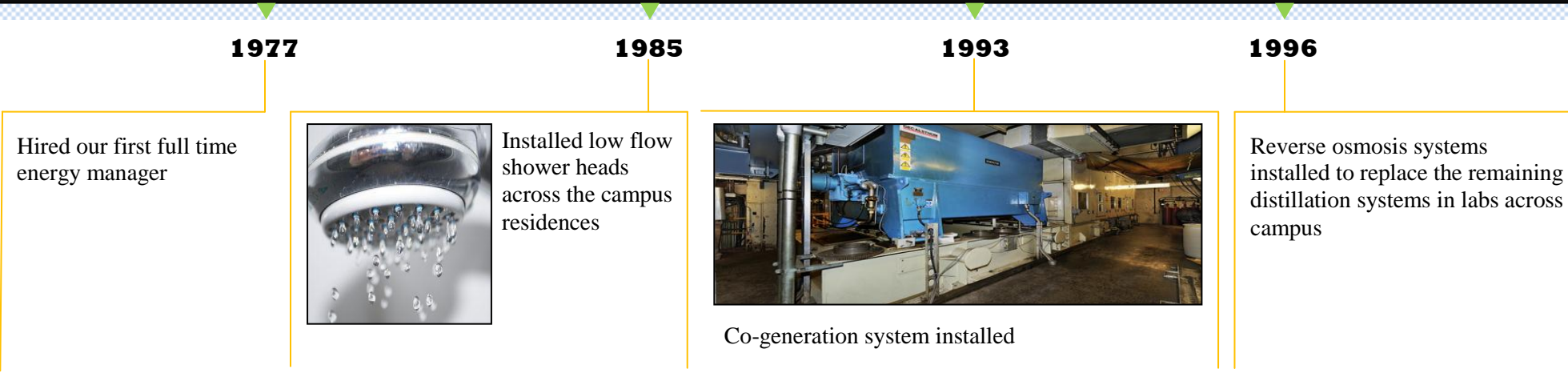
# Sustainability Milestones

1973-2010



This segment of the timeline covers the years 1973 to 1998. It features a lightbulb icon for the 1973 milestone and a variable speed drive unit for the 1998 milestone. The milestones are connected by a horizontal line with upward-pointing triangles.

- 1973**: Completed the first lighting retrofit
- 1979**: Pioneered in-house building controls
- 1990**: The Central Administration provided \$250K per year to support energy reduction initiatives
- 1994**: Created our first Environmental Protection Policy
- 1998**: Variable speed drives are installed all over campus to provide only enough power as required to operate pumps and fans



This segment of the timeline covers the years 1977 to 1996. It features a shower head icon for the 1985 milestone and a co-generation system image for the 1993 milestone. The milestones are connected by a horizontal line with downward-pointing triangles.

- 1977**: Hired our first full time energy manager
- 1985**: Installed low flow shower heads across the campus residences
- 1993**: Co-generation system installed
- 1996**: Reverse osmosis systems installed to replace the remaining distillation systems in labs across campus

# Sustainability Milestones

1973-2010

Flue gas heat-recovery system is installed to harvest heat from exhaust gases going up the chimney at the Steam Plant and a no idling program is implemented at the St. George Campus



Bahen Centre for Information Technology building is connected to the flue gas heat-recovery system, becoming the first building to be 100% heated with energy that would otherwise have gone up the chimney

Purchased three natural gas vehicles

Started replacing hard surface walkways with water permeable walkways allowing natural drainage and migration of water into the earth

Sustainability Office is established, with academic & student representation



Campus Police purchased their second hybrid vehicle and installed GPS on all vehicles to ensure efficient travel time

2000

2002

2004

2006

2001



Major lab buildings (MSB, Lash Miller, Earth Science) are connected to the flue gas heat-recovery system to pre-heat incoming fresh air to the building and a second steam absorption chiller is installed at the Medical Sciences building, producing air conditioning from waste steam.

Groundskeeping reduced planting annual flowers and increased planting perennials

2003

Expanded “Lug-a-Mug” program: students, staff and faculty who bring their own reusable mug receive a \$0.25 discount at many campus cafeterias and coffee shops.

Natural Resources Canada awards U of T with the Energy Innovators Award for our commitment to energy efficiency and for our reduction in greenhouse gas emissions



2005

Campus Police purchased their first hybrid car, making U of T the first Canadian university to own a hybrid vehicle



# Sustainability Milestones

1973-2010

\$20M was spent on energy retrofit projects: Including the replacement of seventeen chlorofluorocarbon (CFC) chillers with twelve high efficiency chillers (HFC-134a )

A Sustainability Board was established at the Assistant Vice President level

U of T banned the use of incandescent light bulbs

U of T received the City of Toronto’s Environmental Award of Excellence for the \$20M “Energy Reduction Project” combined with the “Rewire” project

Purchased hybrid vehicle for a pilot test of plug-in hybrid electric vehicle technology (PHEV)

Started collecting and composting food waste

Began installing GPS in all Facilities and Services vehicles



2007

2008

Phase II of \$20M energy retrofit projects began- a T-8 lighting retrofit for 38, 000 fixtures and 86,000 lamps

Jackman Humanities Building retrofitted with new energy efficient lighting in offices; window unit HVAC equipment replaced with new heating, ventilating and air-conditioning units that have advanced controls systems. Saving 541,871 kWh annually.

Facilities & Services and Real Estate Operations established a new office standard, significantly improving space utilization within the University’s first LEED gold certified office space



Expanded recycling efforts by placing recycling depots in underground parking garages

Groundskeeping started using “PaperBuster”, a program used to scan and store digital copies of invoices and all paperwork

Reclaimed the heat from the co-generation gas compressor to pre-heat combustion air for the steam plant

Reclaimed 25,000,000 BTU of heat per year, from the continuous ‘blow-down’ of the central steam plant boilers



# Sustainability Milestones

1973-2010

100 exterior lighting poles were retrofitted with LED lighting

New College's Dining Hall and lounge area's lighting controls were upgraded saving 53,734 kWh

Piloted a centralized automated irrigation system to check weather conditions

Replaced a 40 ton water cooled chiller with an air cooled chiller at Robarts Library saving 59 million litres of water and \$100k per year

U of T installed a solar thermal array heat recovery system at Warren Steven Athletic Centre. At the time, it was the longest solar array within the greater Toronto area and in any Canadian university

Reflective window film installed at New College and McLennan Labs

255 McCaul Street is featured in CFM & D magazine for achieving LEED GOLD certification

Began collecting and recycling paper coffee cups and started a non-chemical floor scrubber pilot



## 2009

## 2010

Created and installed the "Did You Know" information kiosk at the Exam Centre

Replaced OISE garage lighting with efficient T8 lamps and occupancy sensors

New Environmental Protection Policy approved by Governing Council



Installed 544 hallway light fixtures and upgraded control timers at the Jackman Humanities Building saving 68,432 kWh

Wetmore Residence rooms at New College redesigned with hotel function occupancy, including new lighting fixtures and occupancy lighting sensors for washrooms, common laundry and utility areas, saving 70,000 kWh

Facilities and Services launched a \$250,000 Sustainability Fund that allowed students, faculty and staff to put their environmental ideas into action

Started converting exterior building lighting from high pressure sodium to LED and induction lighting technology

# Green Building

LEED stands for Leadership in Energy and Environmental Design and is an internationally accepted benchmark for the design, construction and operation of green buildings. Certification is based on a voluntary, consensus-based rating system. Buildings achieve points within specific categories including: site planning, water and energy management, procurement and material use, indoor air quality, and innovation and design. There are four levels of certification. “Gold” is the second-highest level of LEED certification after platinum.

Buildings can be built to LEED specifications. However, to receive certification buildings have to be confirmed by the Canadian Green Building Council once the space

is built and fully operational. The University boasts its first gold certified LEED project at 255 McCaul Street, which houses the new Exam Centre, as well as the offices for Facilities & Services and Real Estate Operations.



Our offices on the fourth floor of 255 McCaul set a new standard for office design by showcasing many innovative sustainable features:

- Rainwater, harvested from the roof, is used to flush water-efficient toilets and urinals, reducing water use by 62% less than a conventional building
- Dimmable high output fluorescent lighting controlled by motion sensors, along with LED task lights, result in a reduction of electricity
- Operable windows, digitally controlled diffusers, and temperature and airflow controls are used to improve thermal comfort
- A demand control ventilation used in perimeter offices and meeting rooms reduces air-conditioning requirements and maintains healthy indoor air quality
- A green wall connected to the lobby air distribution system improves air quality by filtering and removing pollutants in the air.

## More LEED buildings at U of T:

U of T's first LEED-certified building was the Hazel McCallion Academic Learning Centre at the University of Toronto's Mississauga campus. U of T has five other LEED-certified buildings in the works.

The rise of LEED buildings and office spaces at U of T is part of a university-wide commitment to preserving and protecting the environment and the future well-being of the province.



## Feature Magazine Articles

**2008**

*Energy Retrofit Project*, feature Article [EP & C Magazine](#)

**2009**

*Facilities & Services / Real Estate Operations New Work Environment*: feature article in [CFM & D Magazine](#)

**2010**

*LED and Induction Lighting Retrofit Project*, feature article in [CFM & D Magazine](#)

## How did we achieve LEED Gold Certification? We...

- Repurposed a vacant warehouse rather than tearing it down and recycled 75% of the construction waste
- Reduced water use by an estimated 62%, compared to a typical building, by capturing and reusing rain water and by installing efficient washroom fixtures
- Utilized our sustainable roofing standard
- Saved 15% of electricity use compared to a typical building
- Provided staff with natural light
- Supported alternative transportation with bike chains
- Established smaller but effective office standards (25% smaller than our former offices)
- Installed "Did You Know" information kiosks to keep students, faculty and staff informed of our sustainability efforts and achievements

# Greenhouse Gas INVENTORY



## You can't manage what you don't measure!

**The department of Facilities & Services**, with assistance from a third party consultant, developed an inventory of the University's greenhouse gases in order to effectively measure and manage the University's emissions.

The greenhouse gas inventory covers the fiscal year of May 2008 to April 2009 and is specific to the St. George campus. Completing a GHG inventory is the first and most important step for a carbon management plan. The inventory clarifies the campus' sources of emissions and serves as a baseline and guide for future reduction strategies.

The inventory uses the GHG Protocol and the Campus Carbon Calculator version 6.4 Clean Air-Cool Planet to report emissions in Metric Tonne Carbon Dioxide Equivalents (mtCO<sub>2</sub>e) according to their global warming potential (GWP). Applying these leading technologies, the GHG report divides emissions into three separate scopes. →

### Scope 1: Direct Emissions

The GHG Protocol defines Scope 1 emissions as all direct GHG emissions from sources under the University's control. Included is the generation of electricity, heat, or steam from fossil fuels. Within the University, this included stationary emissions (natural gas consumption), owned vehicle fleets (machinery and automotive vehicles), fugitive emissions (leakage from refrigerants in air conditioning equipment), and fertilizer application.

### Scope 2: Indirect Emissions

Scope 2 emissions include all emissions associated with purchased electricity, heat or steam. For many organizations, Scope 2 emissions represent a large proportion of GHG emissions. Accounting for Scope 2 emissions allows organizations to assess the risks and opportunities associated with changing electricity provided. Scope 2 emissions for the University include purchased electricity, purchased steam and purchased chilled water.

### Scope 3: All Other Indirect Emissions

Scope 3 includes all emissions from outsourced activities. Such emissions may have resulted from the activities of community members at the University, but occurred at sources owned and controlled by another organization (e.g. air travel, solid waste management, commuting activities). These are the most difficult emissions to track as organizations do not track all of the required information. For this scope, the University of Toronto's St. George campus included directly financed travel, faculty/student commutes, and waste disposal. Table 1 defines emission by scope and reveals what greenhouse gas is emitted by each source.



**Table 1:  
Sources  
of  
Emissions**

Identification of Emissions Sources by Scope	Scope	GHG Emitted
On-site stationary sources	1	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
University fleet vehicle transportation	1	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
Refrigerant release	1	HFCs, HCFCs
Fertilizer application	1	N <sub>2</sub> O
Purchased electricity	2	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
Purchased steam	2	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
Purchased chilled water	2	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
Directly financed travel	3	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
Faculty/staff/student commuting	3	CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub>
Waste disposal	3	-

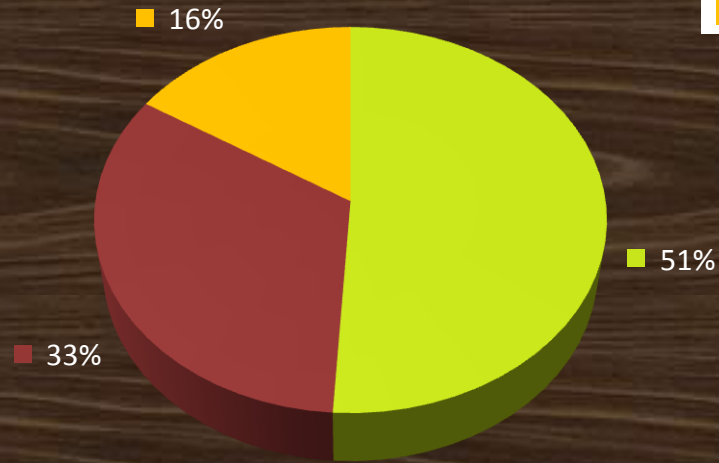


The inventory found that for the base year of May 2008 to April 2009, the St. George campus emitted a total of 164,491 mtCO<sub>2</sub>e. The major sources of GHG emissions are those defined in Scope 1 and Scope 2. Scope 1 emissions accounted for 51% and Scope 2 accounted for 33%, together they comprise 84% of GHG emissions.

- The majority of Scope 1 is associated with on-campus stationary sources including heating;
- Scope 2 emissions included purchased electricity, steam and chilled water. Accounting for 33% of total emissions;
- Scope 3 emissions include other indirect emissions that are a consequence of the University's activities, but are from sources neither owned nor controlled by the University of Toronto such as commuting, directly financed air travel and waste disposal.

**Figure 1- mtCO<sub>2</sub>e Emissions by Scope**

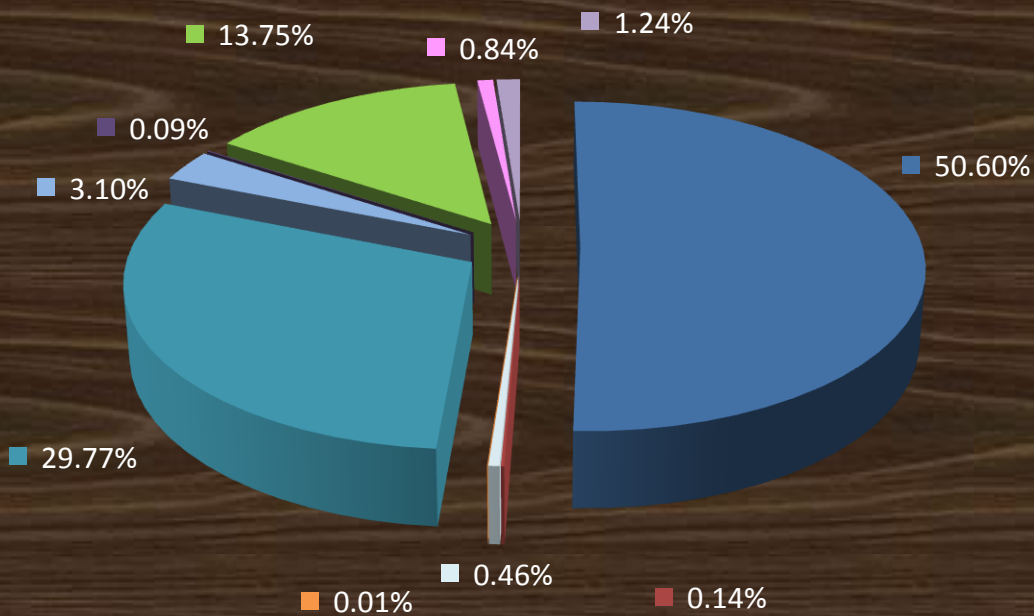
**St. George Campus**



Scope 1	84,247 mtCO <sub>2</sub> e
Scope 2	54,215 mtCO <sub>2</sub> e
Scope 3	26,029 mtCO <sub>2</sub> e

**Figure 2- mtCO<sub>2</sub>e Emissions by Activity**

**St. George Campus**



On-Campus Stationary	83,230 mtCO <sub>2</sub> e
Direct Transportation	237 mtCO <sub>2</sub> e
Refrigerants & Chemicals	764 mtCO <sub>2</sub> e
Fertilizer Application	15 mtCO <sub>2</sub> e
Purchased Electricity	48,964 mtCO <sub>2</sub> e
Purchased Steam	5,100 mtCO <sub>2</sub> e
Purchased Chilled Water	151 mtCO <sub>2</sub> e
Commuting	22,614 mtCO <sub>2</sub> e
Financed Travel	1,374 mtCO <sub>2</sub> e
Waste Disposal	2,041 mtCO <sub>2</sub> e

## Scope 1: Direct Emissions



The data provided by the department of Facilities and Services was crucial in quantifying the University of Toronto's emissions. The data showed that over 98% of the University's Scope 1 emissions come from the burning of natural gas. The University operates a large natural gas fired heating plant and an electricity generating plant also fired from natural gas. These systems generate steam and electricity for both the U of T campus and other facilities not under the University's control.

On-site stationary fuel source emissions include: the natural gas fired co-generation plant, the natural gas fired central utility plant, distillate oil, and natural gas used in other buildings and were responsible for 98.79% of Scope 1 emissions.

Fleet vehicle transportation emissions include emissions from grounds equipment, facility service vehicles, security vehicles and any other University owned vehicles. The fleet consumed 94,058 litres of gasoline, 5,766 litres of diesel, and 4,941 litres of natural gas - generating 0.28% of Scope 1 emissions.

The remainder of Scope 1 emissions come from fugitive emissions derived from fertilizer application (15 mtCO<sub>2</sub>e or 0.02% of Scope 1 emissions) and from chemicals used in the University refrigeration equipment (764 mtCO<sub>2</sub>e or 0.91% of Scope 1 emissions). These chemicals include chlorofluorocarbons (CFC), perfluorocarbons (PFC), hydrofluocarbons (HFC) and SF<sub>6</sub>. The department of Facilities and Services provided data based on the amount of refrigerant that service technicians added to their systems in the base year. Together, these emissions account for only 0.93% of Scope 1, equivalent to 779 mtCO<sub>2</sub>e of emissions.

## Inventory Highlights

- U of T sells steam and electricity to facilities not under the University's control. This accounts for approximately 15% of Scope 1 emissions
- Heating buildings contributed to most of the University's emissions, accounting for 50% of the total emissions.
  - 16% from the co-generation steam plant
  - 34% from other on-campus stationary sources
- Electricity consumption accounts for 30% of the total inventory, and 90% of the Scope 2 emissions
- The largest section of Scope 3 was attributed to commuting emissions, accounting for 87% of the Scope 3 emissions.

## Scope 2: Indirect Emissions

Scope 2 emissions include purchased electricity, steam, and chilled water. The majority of these emissions came from electricity used to power the University's buildings. Together they accounted for 33% of the total GHG emissions.

The University redistributes some of the electricity purchased from the utility to other buildings. Although these buildings are outside of the University's control, the emissions were included in the Inventory.

Using the Campus Carbon Calculator to input data provided by Facilities and Services, the inventory concluded that purchased electricity accounted for 29%; purchased steam accounted for 3.10% and purchased chilled water accounted for 0.09% of the total emissions.

## Scope 3: Other Indirect Emissions

Scope 3 emissions are from sources that the University does not own or operate, but has some type of control over. This includes commuting, outsourced transportation, study abroad air travel, solid waste and paper use. Over 86% of the Scope 3 emissions resulted from commuting habits of student, staff and faculty.

Staff and faculty drove over 24 million kilometres per year commuting to work daily, and students drove over 27 million kilometres per year commuting to school. Commuting emissions yielded 24% or 22,614 mtCO<sub>2e</sub> for the base year. This attributed to 14% of total GHG emissions.

Directly financed air travel was calculated for all three campuses and showed that in the fiscal year 2009, the campus community flew 2,612,397 kilometres and yielded 1,260 mtCO<sub>2e</sub>. These emissions account for 5% of Scope 3 and 0.77% of the University's total GHG emissions.

Other financed travel including rental cars accounted for 0.44% of Scope 3 emissions - equivalent to 114 mtCO<sub>2e</sub>. Lastly, emissions from waste disposal accounted for 8% of Scope 3 and 1% of the St. George campus' total GHG emissions.







# Our PERFORMANCE

**St. George is our largest campus** with 1.25 million square metres of building space and a huge district energy system on seventy-one hectares in Toronto's downtown core. Given the amount of space the University is responsible for, and as we continue to expand, we understand that our choices in the goods we purchase, services we render, and the development of new buildings have a large impact on the city's environment.

Among our ongoing efforts is our "Best in Class" recycling operation at the St. George campus. Since 1991, the University's faculty, students and staff have actively contributed to the program, making it one of the most comprehensive and successful of its kind across North America. In 2009, our efforts resulted in a 66.3% diversion rate, one of the highest diversion rates of any North American university. In addition, our waste-to-landfill reduction from 1991 to 2010 has reached 107%. This means that for this period, we have recycled more than we have thrown out. Some key metrics achieved by our recycling program include over 31,372 metric tonnes of material recycled/reused – the equivalent weight of approximately 1,383 TTC streetcars; and by recycling glass, metal and composting organic matter, we reduced our CO<sub>2</sub> emissions by 10,807 metric tonnes - the equivalent weight of approximately 73 full cement mixers!

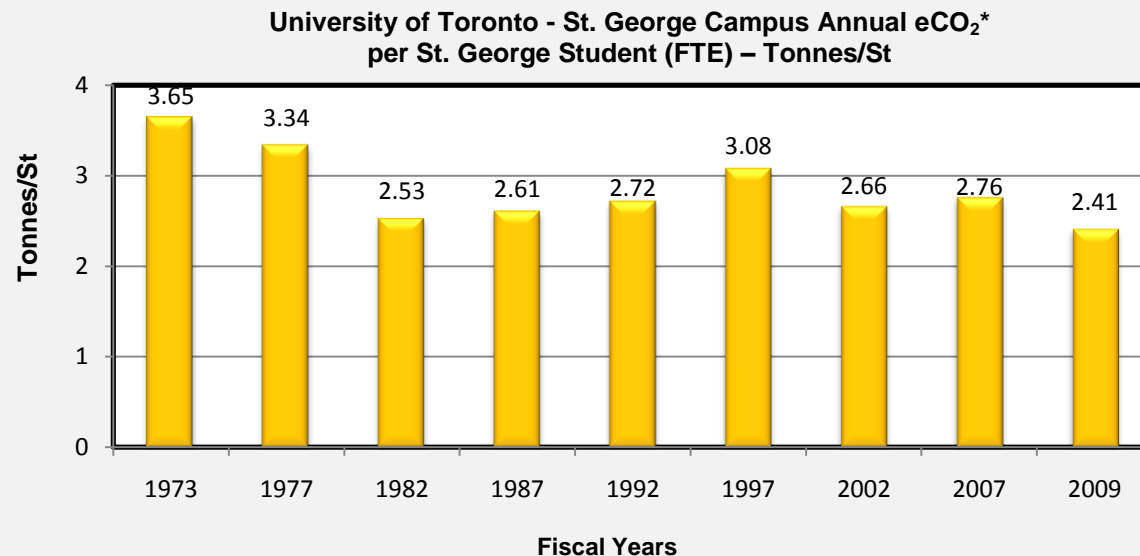
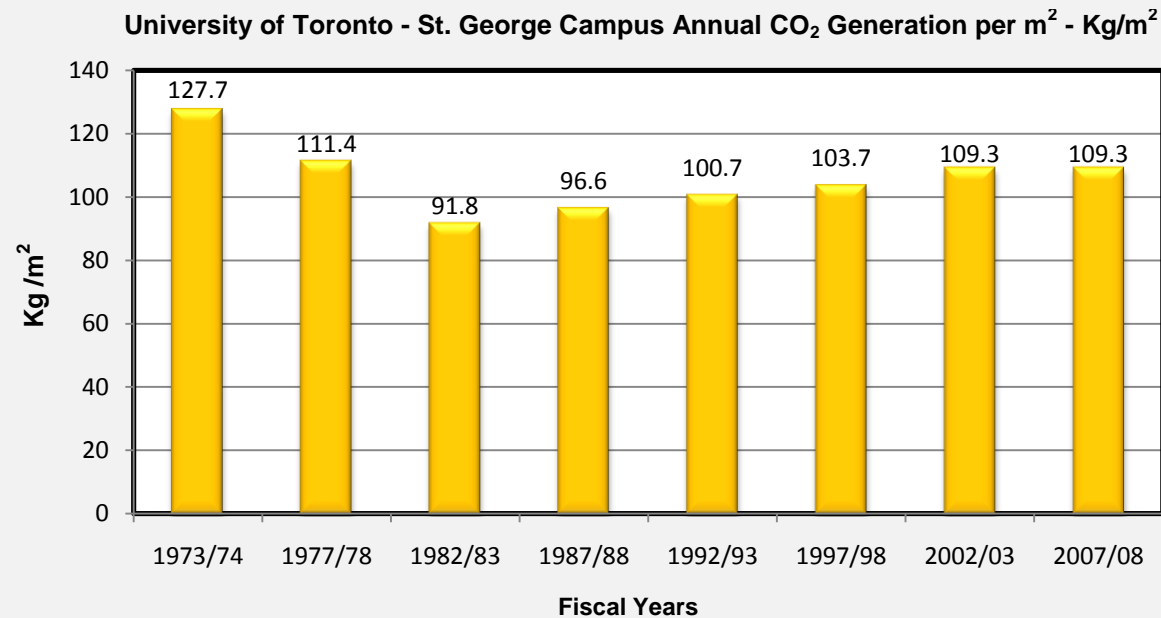
## Since 1973 the St. George campus:

- ▶ Saved 29,356,582 kWh of electricity
- ▶ Saved 250,000 trees by recycling paper and cardboard
- ▶ Saved over 13 million gigajoules of natural gas
- ▶ Saved the University \$200 million in utility expenses

## More recently Facilities & Services:

- ▶ Championed the 1<sup>st</sup> LEED Gold project at the University
- ▶ Achieved a 66.3% diversion rate in 2010
- ▶ Received an A- on the 2010 *College Sustainability Report Card* and named a "College Sustainability Leader" by the Sustainable Endowments Institute
- ▶ Eliminated the use of standard incandescent lights

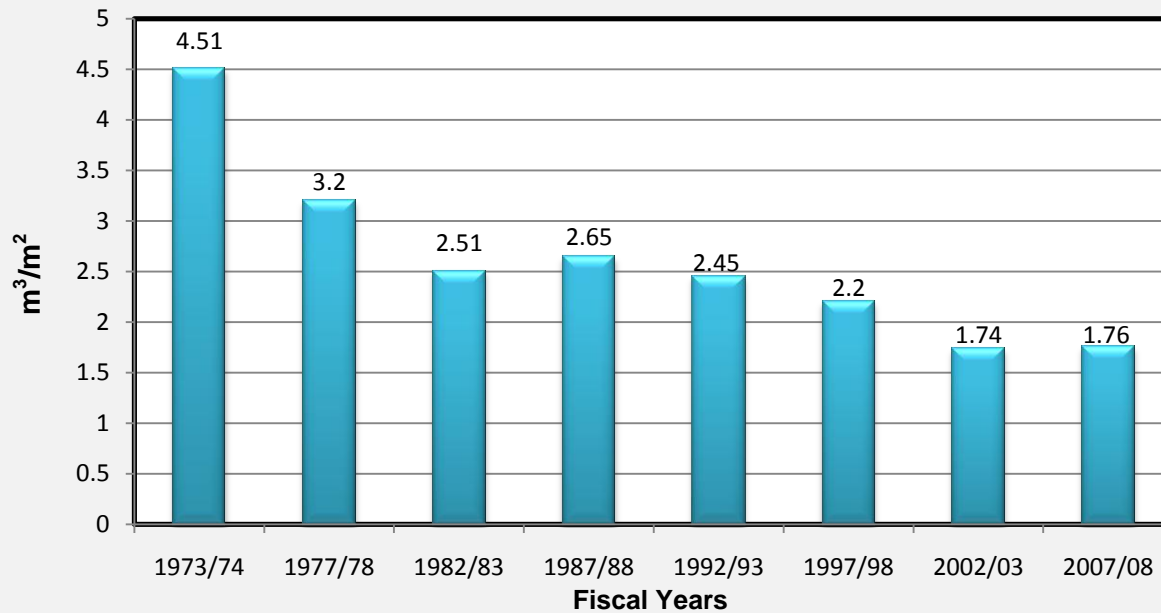
## Campus Internal Benchmarking: Intensities



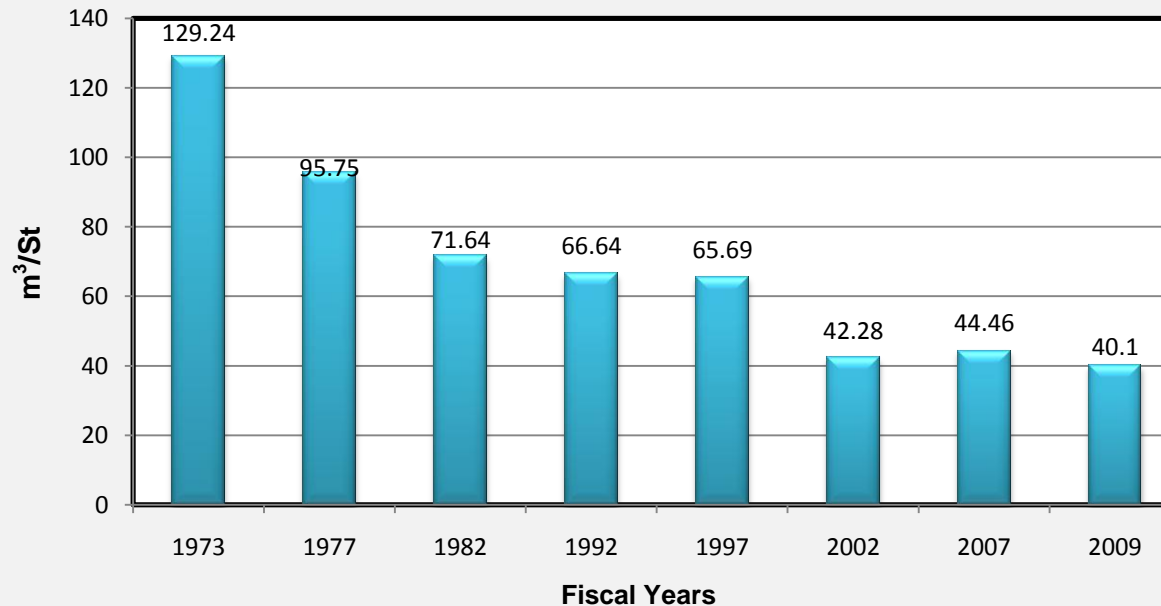
*Since 1973 we have been successful in avoiding over 1 million tonnes of GHG at the St. George campus. However, our GHG intensity per square metre has risen over the past few decades primarily as the result of a number of new research intensive buildings that have been added to the campus. These buildings include Earth Science, the Davenport wing of Lash Miller, CCBR, Leslie Dan Pharmacy, and the CBTC addition to Ramsey Wright. As the Student population has significantly increased on campus, our intensity of GHG per student has been reduced.*

\* Equivalent carbon dioxide (eCO<sub>2</sub>) allows emissions of greenhouse gases of different strengths to be added together. For carbon dioxide itself, emissions in tonnes of CO<sub>2</sub> and tonnes of eCO<sub>2</sub> are the same thing, whereas for methane, an example of a stronger greenhouse gas, one tonne of methane emissions has the same GWP as 21 tonnes of CO<sub>2</sub>. Thus 1 tonne of methane emissions can be expressed as 21 tonnes eCO<sub>2</sub>

University of Toronto - St. George Campus Net Annual Water Use - m<sup>3</sup>/m<sup>2</sup>

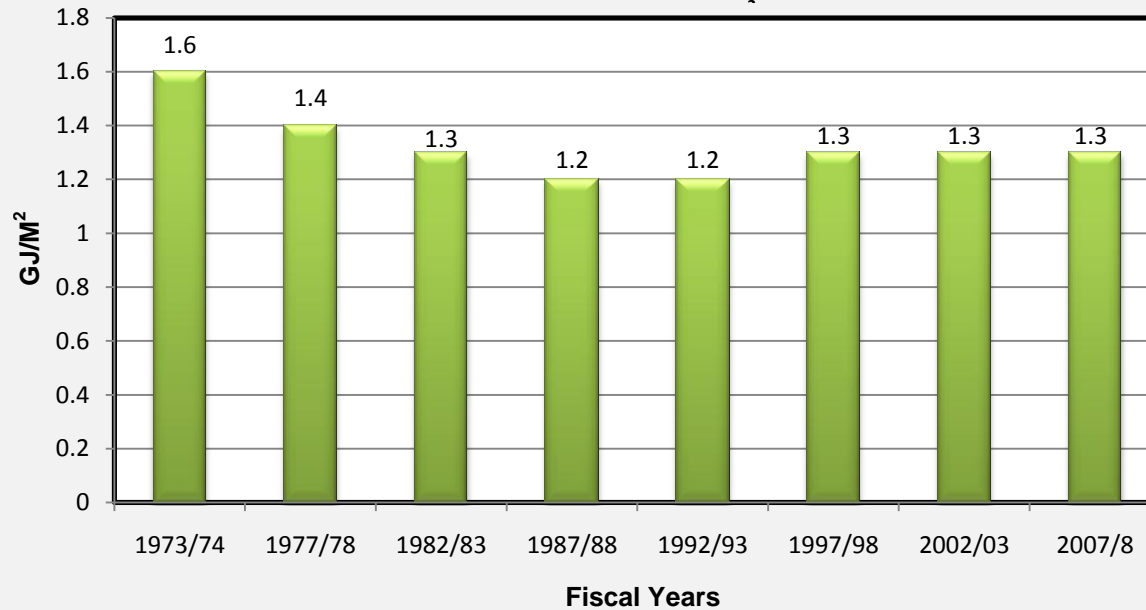


University of Toronto - St. George Campus Annual Water Use per St. George Student (FTE) - m<sup>3</sup>/St

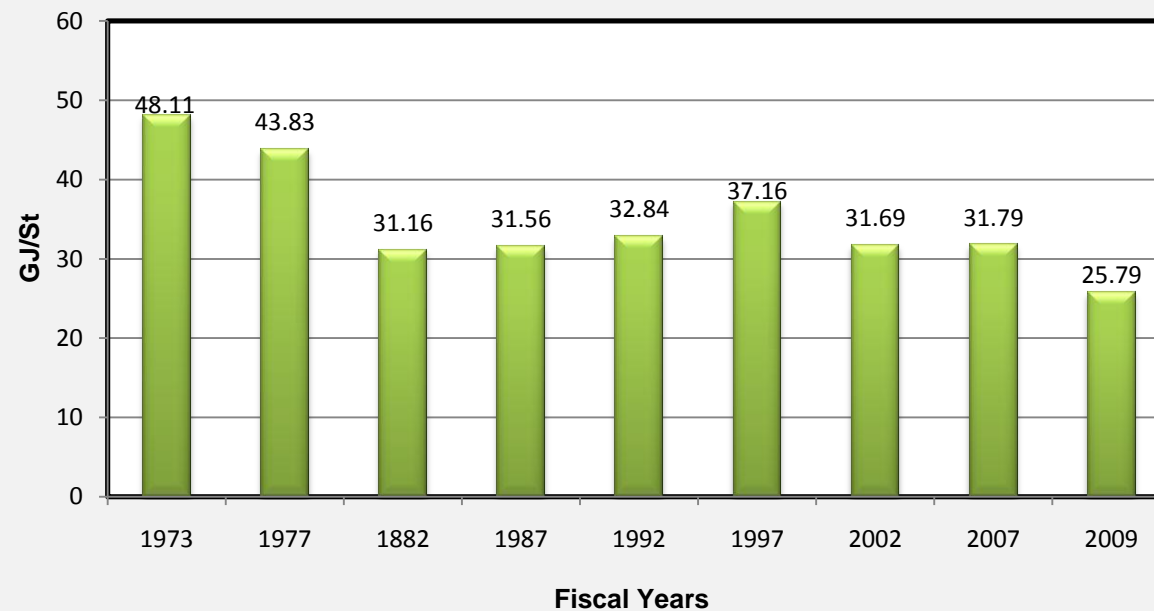


*Over the past four decades we have been able to save 60 billion litres of water at St. George despite the large increase in students and buildings. We actually use less water today than we did in 1973. Our intensities of water use have consistently trended down over the years as a result of many initiatives.*

University of Toronto - St. George Campus  
Net Annual Thermal Energy Use

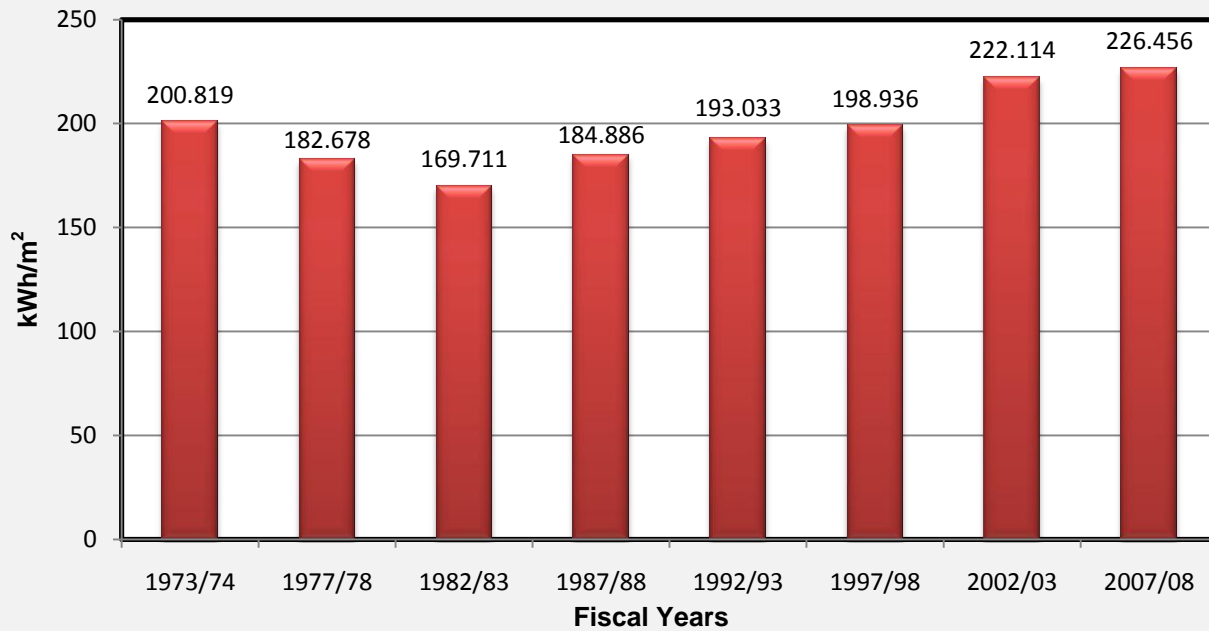


University of Toronto - St. George Campus  
Thermal Use per St. George Student (FTE) - GJ/St

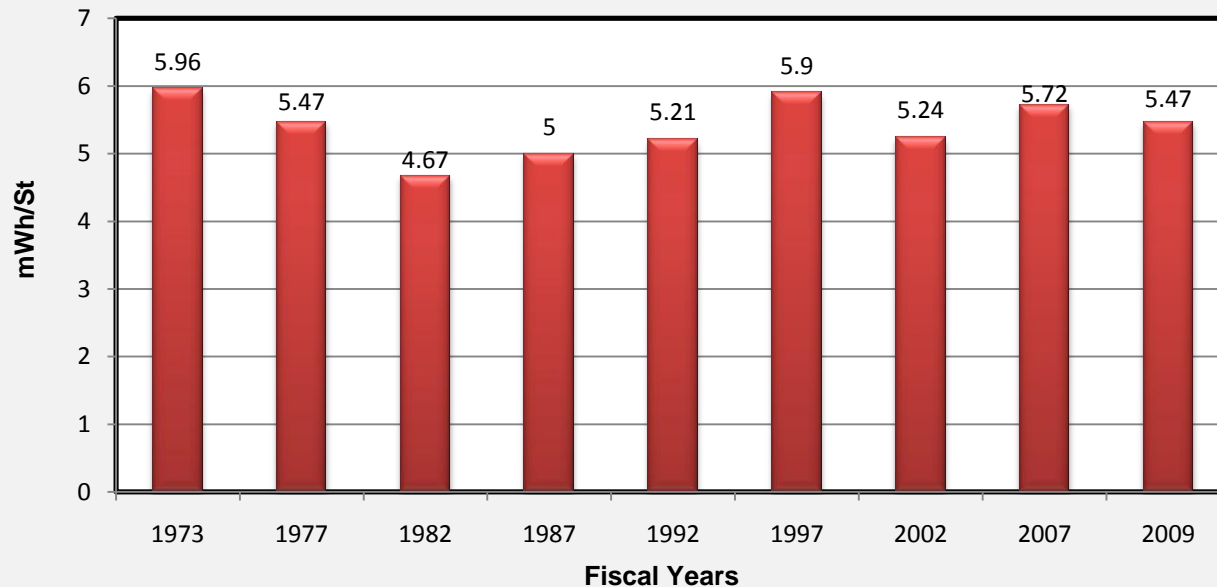


*Facilities and Services initiatives have saved over 13 gigajoules of natural gas since 1973. Our thermal intensity has remained flat on a square footage basis despite the energy intensive research buildings that have been added over the past two decades. As we accommodate more students on the campus, without a corresponding increase in building square footage, our intensity per student has trended down.*

University of Toronto - St. George Campus Net Annual Electricity Use per m<sup>2</sup> - kWh/m<sup>2</sup>



University of Toronto - St. George Campus Annual Electricity Use per St. George Student (FTE) - mWh/St



*Since 1973, our electrical conservation efforts have resulted in saving over 29 million kWh at St. George. Our intensity, on both a per square foot and student basis, has been trending upwards for decades. Factors which have affected this growth include the increase in research intensive buildings and the growth of building plug loads. Computers, printers and other electronic devices and equipment have permeated the campus buildings with a corresponding increase in electrical use.*

# Sustainability Report Card

The *College Sustainability Report Card*, published by The Sustainable Endowments Institute, is a comparative evaluation of campus sustainability activities at colleges and universities across North America.

The evaluation profiles 300 campuses and uses independent research as well as voluntary information from schools to assess each institution's performance.

Institutions are evaluated across forty-three indicators in nine categories and given a grade to reflect their efforts in sustainability.

The detailed report card on the following page is provided by [www.greenreportcard.org](http://www.greenreportcard.org).



	Year	Overall Grade	Administration	Climate Change and Energy	Food and Recycling	Green Building	Student Involvement	Transportation	Endowment Transparency	Investment Priorities	Shareholder Engagement
University of Toronto	2011	A-	A	B	A	B	A	B	A	B	A
	2010	B	A	A	B	C	A	B	B	A	F
	2009	B-	B	C	A	C	B	B	A	A	F
	2008	B	A	B	A	B	--	B	A	C	F
	2007	B-	A	B	B	B	--	--	B	C	F

# A-

## “College Sustainability Leader”

<b>Administration</b>	<b>A</b>	The University of Toronto is committed to sustainability through a formal plan and components of its master plan. Three committees, the sustainability office, and a several staff members address campus environmental issues. Green purchasing is encouraged whenever possible, and all desktop computers purchased for the campus are Energy Star certified. The school has an alumni green fund.	<p>* With an overall grade of A-, the University of Toronto is among the top three universities in Canada with the highest grade, which designates us as a “College Sustainability Leader”.</p> <p>* This year’s report card shows significant improvements in the following categories: Food and Recycling, Green Building, Endowment Transparency and Shareholder Engagement.</p>
<b>Climate Change &amp; Energy</b>	<b>B</b>	The university has reduced greenhouse gas emissions 23 percent from 1973 levels. Energy-efficient technologies on campus include a district energy system with cogeneration and flue gas heat recovery, and a large solar thermal array. Studies have been conducted regarding the implementation of photovoltaics and geothermal energy systems.	
<b>Food &amp; Recycling</b>	<b>A</b>	The school spends over half its food budget on local items and offers a wide variety of organic foods. U of T purchases some vegetarian-fed meat, some hormone- and antibiotic-free beef and dairy, and some seafood that meets sustainability guidelines. Food for a student-run restaurant comes from a campus garden, and fair trade coffee is available in all dining locations. The school offers promotions for use of reusable containers. Pre- and postconsumer food scraps are composted at all meals.	
<b>Green Building</b>	<b>B</b>	All buildings must comply with the Toronto Green Development Standard. One campus building is LEED Gold certified and another is LEED Silver. Water consumption has been reduced through the installation of dual-flush toilets, efficient laundry machines, and leak detection on some equipment.	
<b>Student Involvement</b>	<b>A</b>	The Victoria Environmental House accommodates eco-minded students. New students are introduced to sustainability on campus through skits, presentations, and an open house. The school employs 33 paid student interns and eight volunteer interns, as well as numerous eco-reps. Student groups, such as the Sustainability Commission and Students Against Climate Change, actively promote campus sustainability initiatives.	
<b>Transportation</b>	<b>B</b>	The majority of the campus commutes using alternative transportation. U of T offers a discounted transit pass to all members of the campus community, and a free shuttle services local destinations. A bike-sharing program was started in 2007, and repairs are organized through a student-funded facility. U of T also partners with a car-sharing program. Some vehicles in the motor fleet are hybrid or run on natural gas.	
<b>Endowment Transparency</b>	<b>A</b>	The university makes a list of asset allocation, external managers, mutual funds, equity holdings, and fixed income holdings available to the public on the school website. A list of votes cast on proxy resolutions only by category is available to the general public upon request.	
<b>Investment Priorities</b>	<b>B</b>	The university aims to optimize investment returns and is exploring, but not currently invested in, renewable energy funds. The university also uses investment managers who consider environmental and sustainability factors.	
<b>Shareholder Engagement</b>	<b>A</b>	The university asks that its investment managers handle the details of proxy voting. A committee that includes student representatives makes recommendations to the investment managers.	



# Awards & RECOGNITIONS



U of T wins the City of Toronto's Environmental Award of Excellence for our solar thermal and LED lighting projects and is a finalist for the city's **Green Toronto Award for Conservation**

2010

**Attila Keszei**, Facilities & Services' Manager of Sustainability Initiatives, receives U of T's annual **Chancellor's Award** under the Influential Leader category for his long-standing commitment to sustainability



2007

U of T won the City of Toronto's **Environmental Award of Excellence**, for our \$20 million energy reduction project

Facilities & Services won the **Waste Minimization Award** from the Recycling Council of Ontario for our leadership and dedication to the environment

1993 & 1992

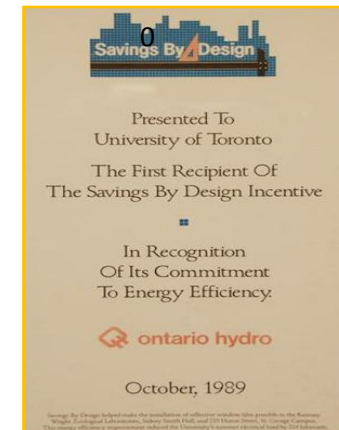


2009

University won the **3<sup>rd</sup> national prize in the Quality and Productivity Awards** presented by the Canadian Association of University Business Officers (CAUBO) for "Rewire", a behavioural change campaign developed by students, Facilities and Services and the Sustainability Office

The University is awarded the **Natural Resources of Canada Energy Innovators Award** for our commitment to energy efficiency and reducing GHG emissions

2003



1989

U of T won the first **Saving by Design Award** from Ontario Hydro

Facilities & Services received the University's first **LEED Gold Certification** for our premises at 255 McCaul Street on the St. George campus





# UofT's

# COMMITMENTS

## University Environment Protection Policy 1994 & 2010

Recognizing the need to protect the environment for the University's future, the University of Toronto enacted the *University Environment Protection Policy* (UEPP) in 1994. The policy ensures that the University takes responsible measures to minimize negative impacts on the environment while conserving natural resources and respecting biodiversity.

Since 1994, the University of Toronto's many sustainability projects have soared to new heights. As we continue to grow and learn, the University has recognized the importance of enacting a new protection policy; one that encompasses our commitment to our progressively innovative initiatives and our continuous responsibility to protect the environment.

On April 26, 2010 the UEPP was revised in recognition of new and important initiatives:

### *Objectives from the 2010 University Environmental Protection Policy*

- \* Minimize the use of energy, water and other resources, through efficient design, management and practice
- \* Minimize waste generation and actively manage the impact of waste, emissions, & effluents generated by University activities
- \* Minimize noise and odour pollution from University activities
- \* Manage the use of chemicals or toxic substances in accordance with regulatory requirements and established environmental practises, including scientific research practises
- \* Include biodiversity and environmental concerns in planning and landscape decisions and minimize negative impacts of University activities on biodiversity and natural spaces

## Sustainability Office: St. George Campus



The Sustainability Office was launched in 2004. The University of Toronto's Sustainability Office reports to the Assistant Vice-President of Facilities & Services. They develop and support projects, policies, and initiatives that reduce consumption of resources while enhancing social engagement. The Office works with students and faculty to embed sustainability into the fabric of the St. George campus by linking research, teaching and practice.

After the success of the energy conservation project “Rewire”, which focuses on first-year students in ‘traditional residence’, the Office of Sustainability is currently working to launch its newest energy conservation project, “Start Green”. The project, much like “Rewire” aims to inspire students to make energy-conscious decisions in their residences. This time the program branches out to upper year students who have moved off campus into apartments and shared housing.

## Sustainability Board



The University of Toronto's three campuses are unique in a number of ways. Each campus has taken a slightly different approach to sustainability and as a result, there exists a rich array of projects, programs and partnerships. Recognizing the importance of diverse initiatives along with the need for collaboration, the University established a Sustainability Board, bringing together representatives from each campus.

The Board promotes communication and mutual support for related sustainability initiatives in different sites and divisions of the University. While the individual campuses set their own agendas and determine their own priorities, the Sustainability Board helps to find opportunities where the three campuses can coordinate with one another on University-wide initiatives. The Board reviews annual reports and strategic plans developed by all three campuses to monitor the progress of their sustainability efforts.

## Universities Committed to a Greener World

The University of Toronto is a signatory of the sustainability pledge, *Ontario's Universities Committed to a Greener World*. The pledge reinforces the University's commitment to preserve and protect the environment and the future well-being of the province.

On November 26, 2009, the executive heads of twenty Ontario universities presented Premier Dalton McGuinty the pledge that includes signatories of twenty-two campuses across Ontario. President David Naylor signed the pledge, showing U of T's commitment to continue practising the three Rs (reduce, reuse, recycle) and to invest in being environmentally sustainable. As a signatory of the pledge, the University of Toronto is committed to:

- Develop and implement multi-pronged strategies to reduce energy consumption.
- Promote reuse and recycling in all aspects of our operations.
- Transition purchasing decisions toward producers and suppliers who have adopted environmentally responsible practices
- Ensure the availability of locally grown and fair-trade foods and beverages on our campuses
- Build new facilities in accordance with principles of sustainability and energy efficiency
- Renovate existing facilities to improve energy efficiency and reduce waste
- Seek to preserve green space on our campuses wherever possible
- Share information across campuses regarding best practices from the standpoint of sustainability and environmental impact
- Develop institutional environmental sustainability plans with measurable objectives
- Publish an annual report documenting the efforts of all Ontario universities to modify their operations in ways that are responsive to the threats of global climate change and environmental degradation



FACILITIES  
&  
SERVICES

is committed to a greener world

# Going Forward:

## OPERATIONAL AREAS OF FOCUS

The department of Facilities and Services has honoured the ten commitments outlined by the sustainability pledge, *Ontario Universities Committed to a Greener World* by taking the following strides to help the University preserve green space on campus and renovate existing facilities to improve energy efficiency and reduce waste:

### Develop and implement multi-pronged strategies to reduce energy consumption

#### Reduce Electrical Use

Recently Completed Projects:

- OISE parking garage lights converted to T8 lamps with occupancy sensors
- Replaced exterior lighting with LEDs/ induction lighting

Planned Projects:

- More energy efficient lighting for high-bay spaces and exterior lights
- Occupancy sensors for areas that operate twenty-four hours a day and seven days a week
- Support research for new solar film options
- Building operations electronic meter installation and scheduling of buildings
- Re-commission older buildings - 246 Bloor Street will be a pilot project
- Consider solar voltaic array
- Review potential for long life/ more efficient T8s
- Install solar film at OISE

#### Reduce Thermal

Recently Completed Projects:

- Solar thermal array installation at the Warren Stevens Building
- Cool Roof installation at the Warren Stevens Building and Massey College



Planned Projects:

- Use Cool Roof Standard on all re-roofing and new buildings
- Retrofit steam radiators in buildings to water radiators

## Reduce Water

Recently Completed Projects:

- Piloted a weather controlled irrigation system
- Installed a cistern to capture rain water for irrigation in the Mining Building (a cistern is a waterproof receptacle to catch and store rainwater to effectively form covered reservoirs )
- Replaced domestic water cooling equipments with efficient direct expansion units that use less water
- Diverted down spouts to gardens
- Irrigation is applied according to weather conditions
- Replaced hard surfaces with water permeable materials to reduce storm water runoff into drains

Planned Projects:

- Renovate washrooms with high efficiency washroom fixtures in new and retrofitted buildings
- Install more cisterns on campus buildings

## Reduce Gasoline

Recently Completed Project:

- Supported alternative transportation: provided secured/covered bike lock-ups, introduced Sustainability Office's bike chain program
- Provided Facilities and Services' staff with bikes
- Purchased another hybrid vehicle

Planned Projects:

- Promote Bixi Bike, a pilot program with the City of Toronto
- Alter fleet vehicle purchases to low pollution option where available option exists



## Promote reuse and recycling in all aspects of our operations

### Recently Completed Projects:

- Implemented green cleaning Microfiber cloth method (a microfiber cloth is made out of a special material that does not need chemicals to clean, and can be washed and reused many times)
- Introduced U-compost: a compost program that provides composting bins in campus cafeterias
- Placed recycling receptacles in parking garages

## Transition purchasing decisions towards producers and suppliers who have adopted environmentally responsible practices

### Recently Completed Projects:

- Purchased Energy Star copiers, computer equipments and appliances for 255 McCaul Street offices
- Eliminated bottled water purchases for Facilities & Services' administrative offices
- Purchased a new hybrid vehicle for Campus Police
- Purchased Ecoseal products for the Caretaking department

### Planned Projects:

- Replace fleet vehicles, where a reasonable alternative exists, with ultra high efficient vehicles
- Support Procurement department's move to a sustainable procurement program

## Ensure the availability of locally grown and fair-trade foods and beverages on our campuses

There are twenty-seven organic, local, Local Food Plus-certified and fair trade eateries and fifteen grocery stores surrounding the St. George campus in addition to the University's six on-campus eateries: →



The Chestnut Tree  
89 Chestnut Residence

Howard Ferguson Dining Hall Morrison Hall  
75 St. George Street

Medical Services Café  
1 King's College Circle

New College Cafeteria, Wilson Hall  
40 Willcocks Street

Robarts Library Café  
130 St. George Street

Sammy's Student Exchange,  
Hart House

## **Build new facilities and renovate old buildings in accordance with principles of sustainability and energy efficiency and reduce waste**

### Recently Completed Projects:

- 255 McCaul Street: first LEED gold certified project

### Planned Projects:

- Anticipated LEED GOLD: Mining Building
- Anticipated LEED SILVER: Rotman School of Management building
- Anticipated LEED certified: Munk School for Global Affairs
- Implement new sustainable design standards

## **Share information across campuses regarding best practices from the standpoint of sustainability and environmental impact**

### Planned Projects:

- Undertake projects which promote education/conservation within the University community
- Create more Sustainable Information Kiosks
- Continue to work with the Sustainability Office on “Rewire” and paper reduction

## **Develop institutional environmental sustainability plans with measurable objectives**

### Recently Completed Projects:

- Completed a greenhouse gas inventory (see page 12)

### Planned Projects:

- Create an Energy Reduction Plan for the St. George campus
- Install electronic meters in buildings to better understand usage and available opportunities to save energy
- Utilize Energy Star building evaluation software to assess applicable building performance

*See Appendix for a link to the Council of Ontario Universities' Annual Report*



# Towards 2030



**As the University grows so will energy use and greenhouse gas emissions.**

**In 2027**, the University of Toronto will celebrate its two hundred year anniversary. To continue our success into and beyond our second centennial, President David Naylor launched ‘Towards 2030’, a long-term planning initiative to address the question: how can the University reach new levels of excellence as we move into the future?

The plan outlines the University’s long-term priorities and develops a strategic framework to achieve our future goals. One of those priorities is to increase the University’s research activity and attend to the growing demand of graduate and professional degree enrolment. According to the initiative, “A presumptive goal is that, by 2030, on-site graduate enrolments will comprise at least 35% of the student head-count on the St. George

campus [which will happen] through a blend of modest reductions in undergraduate enrolment and growth in graduate numbers” (Naylor, 2008).

Increasing graduate growth will not only intensify and enhance the quality of the University’s research and scholarship, but a modest decrease in undergraduate enrolment will also improve student-to-faculty ratios and strengthen the classroom experience. Also, a decrease in undergraduate enrolment will allow departments to spend more resources on graduate students by providing more teaching assistant positions. Giving a higher number of graduate students the opportunity to teach and mentor, in effect, shrinks class and tutorial sizes and enriches the academic experience for undergraduate, graduate students and faculty alike.

**How will the Academic Plan affect the St. George campus?** The future emphasis on research and graduate students at the St. George campus will necessitate changes in the fabric of the St. George buildings. These activities, while central to the institution’s future, require both more space and space that is more energy intensive than undergraduate or teaching space.

Coupled with this forward direction, we recognize that the St. George campus is presently well below the Council of Ontario Universities (COU) space standards. In fact, the St. George campus is likely to grow in both building square footage and in intensity of utilities per square foot. Ultimately, as the University expands in square footage and moves to more graduate research intensive space, so too will energy and water use.



Although the department of Facilities and Services will continue to rise to the challenge of making environmentally conscious decisions, we recognize that greenhouse gas emissions will echo our institution's growth.

Our department's sustainable milestones and continuous efforts outlined throughout this report show areas of great achievement, as well as areas for improvement. Implementing an Energy Reduction Plan for the St. George campus, promoting more projects that improve sustainability education, such as the "Did You Know" information kiosk, providing support to community based projects like the "Sustainability Fund", and continuing to achieve LEED certification for more of our buildings, are just some of Facilities and Services' planned projects.

Sustainability is a community effort and even though Facilities and Services will continue to carry out our commitment of providing a sustainable environment for the University community, the efforts of everyone – students, faculty and staff – are crucial to reach our goals.

## ***We need your help to further sustainability at the University of Toronto's St. George campus. How can you get involved?***

### **STUDENTS**

- Submit sustainable project ideas to your faculty or the Office of Sustainability.
- Reduce your residence's footprint by using less water, electricity and adjusting your thermostat.
- Join a student group dedicated to sustainability and environmental action - for a full list of groups visit: [http://sustainability.utoronto.ca/participate/Student\\_Groups.htm](http://sustainability.utoronto.ca/participate/Student_Groups.htm) .

### **FACULTY / STAFF**

- Join (or start) the Sustainability committee within your faculty.
- Be sure to turn off lights and equipment after use.
- Bring sustainability to your office by reducing your paper footprint. Distribute documents electronically when possible, set printers to print double-sided by default and set your computer to sleep when not in use.
- Submit sustainable project ideas to your faculty or to the Office of Sustainability.
- Avoid running extra appliances - desk fans, portable heaters, whenever possible.

### **EVERYONE**

- Develop habits to use energy and water responsibly (i.e. use energy efficient lighting at home).
- Print hard copies only when necessary. Set your printer to default to a double-sided print.
- Purchase Energy Star appliances equipment and recycled products whenever possible.
- Consider using alternate means of transportation other than using your car.
- Use the recycling collection bins around campus for toner and ink cartridges, batteries, cell phones, CDs and more traditional recycling materials.
- Stay informed by subscribing to the Sustainability Office's listserv for email updates and attend sustainability events on campus.

# Appendix: REFERENCES, LINKS AND CREDITS

---

**Citations:** Page 4: United Nations. (1987, December) Report of the World Commission on Environment and Development. *General Assembly Resolution*. 42 (187). Retrieved from: <http://www.un.org/documents/ga/res/42/ares42-187.htm>.

Page 25: Naylor, David. (2008) Towards 2030: A Long-Term Planning Framework for the University of Toronto. 3.

To read the full document, “Towards 2030: A Third Century of Excellence at the University of Toronto” see: <http://www.towards2030.utoronto.ca/>

**Links:** \* Sustainability Office Report, PDF download available from: <http://sustainability.utoronto.ca/reports/annual.htm>

\* Sustainability Office, University of Toronto: [www.sustainability.utoronto.ca](http://www.sustainability.utoronto.ca)

\* Council of Ontario Universities’ Annual Report, PDF download available from: <http://www.cou.on.ca/Issues-Resources/Student Resources/Publications.aspx>

\* Facilities and Services, University of Toronto [www.fs.utoronto.ca](http://www.fs.utoronto.ca)

**Photography:** \* Michael Baker [michael.baker@utoronto.ca]: Pg. 2, 11, 12, 18, 33

\* Sam Javanrouh [sam@topleftpixel.com]: Pg. 1

\* Andrea Shabbar [a.shabbar@utoronto.ca]: Pg. 4, 5, 6, 17, 26, 28, 29, 30, 32

\* Stock Images provided by freedigitalphotos.net: Pg. 13, 14, 16, 23, 24

**Document Design:** \* Andrea Shabbar [a.shabbar@utoronto.ca]

