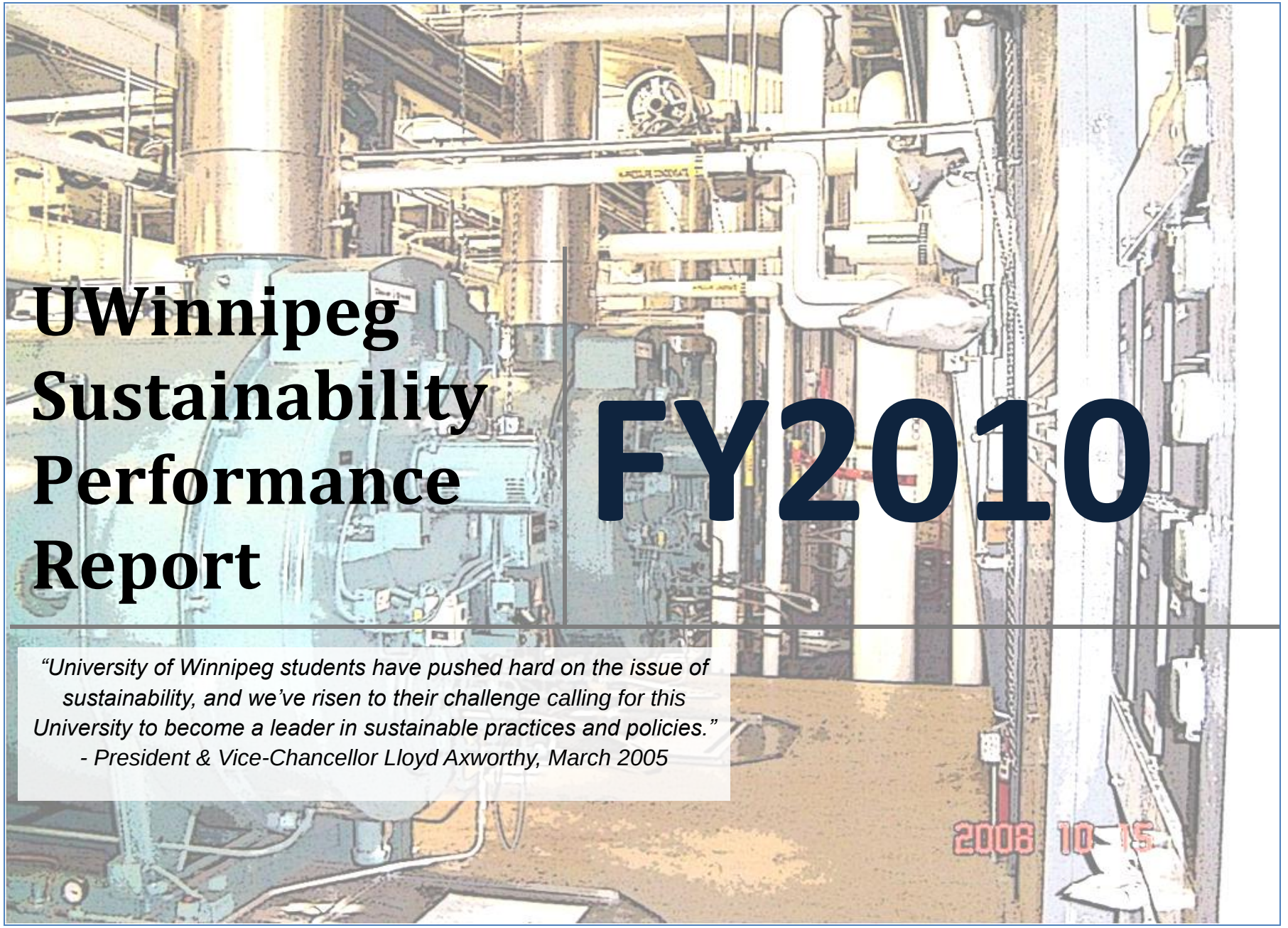


UWinnipeg Sustainability Performance Report

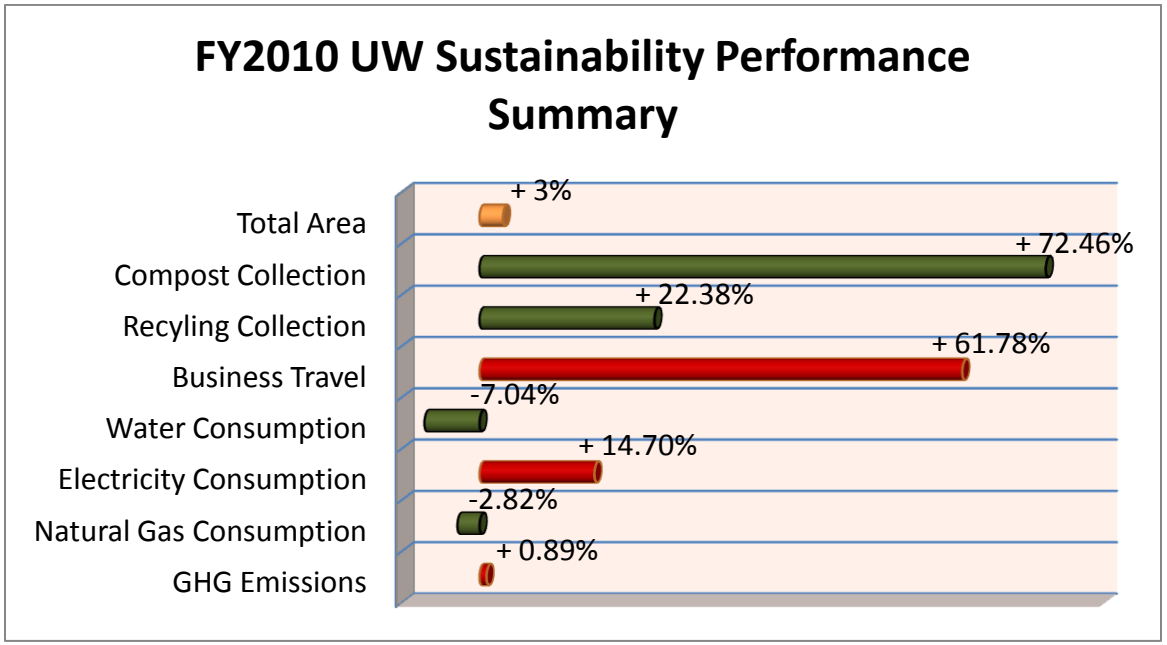
FY2010

"University of Winnipeg students have pushed hard on the issue of sustainability, and we've risen to their challenge calling for this University to become a leader in sustainable practices and policies."
- President & Vice-Chancellor Lloyd Axworthy, March 2005

Contents

1 Summary

1.1 Sustainability Performance



1.2 Key Achievements

Strategic Plan: The Campus Sustainability Office and Council began a strategic planning process. The aim of this process is to establish campus-wide quantifiable reduction targets for energy, water, waste, and greenhouse gas emissions, along with targets related to procurement, transportation, and sustainability teaching, learning, and research. The aim is to launch the plan in early 2012.

Hybrid heating system: The system consists of two electric boilers (one in Centennial Hall and one in Ashdown Hall) and new controls to enable UW to switch from Natural Gas to electric boilers at off-peak times. The boiler in Centennial was operational as of January 2011. The boiler in Ashdown Hall continues to experience challenges with its emergency release valve. It is not yet operational. Once fully operational, we can expect annual savings in the order of 1000 T CO2e relative to the campus heating system operating without the electric boilers.

Comprehensive facilities audit: Johnson Controls International was hired to conduct a sustainability audit of Ashdown, Bryce, Centennial, Graham, Lockhart, Manitoba, Riddell, HBO, Duckworth, Sparling, MacNamara, and Young buildings in summer 2010. Opportunities for energy and GHG savings were identified and UW's current water conservation strategy was reviewed. Based on audit results, JCI recommended a 24% reduction of GHG emissions and 27% energy reduction target for the buildings audited, with a payback period of approximately 15 years. We have begun implementing some recommended measures internally.

Water retrofit: UWinnipeg plumber Doug Foster introduced a bathroom fixture retrofit program that promises to save the University in excess of one million gallons of water per year. This initiative developed as a result of COPSE (Council on Post-Secondary Education) funding intended to improve the accessibility of washrooms. It has achieved this aim while also significantly reducing our demand for potable water. Mr. Foster was awarded the Campus Sustainability Recognition Award in recognition of this achievement.

Bike Lab: The UWSA Bike Lab/UWinnipeg Bike Hub project continues to inch its way forward. As of May 2011, a CCDC contract has been signed with contractors and construction is set to begin in earnest as soon as the lab site is available after spring convocation. Key financial contributors to the project include a private donor ($100,000), Ken Cranwell (shipping containers), the University of Winnipeg Students' Association (UWSA, $55,000), and the VP HR, Audit & Sustainability Office ($10,000).

Grass Routes Sustainability Festival: In February 2011, the Campus Sustainability Office and the UWSA held a week long celebration of the skills, creativity and community required for a more sustainable planet. On the basis of the success of the event, the CSO and UWSA hope to make this an annual event. In 2012, efforts will be make to include a stronger academic component to the festival.

Phase 1 integrated waste management project: With the help of grants from the Winnipeg Foundation and a provincial Waste Reduction and Pollution Prevention grant, the CSO undertook the first phase of an integrated waste management project. This included developing maps and databases of waste, compost, and recycling bins on campus, developing the CSO's education & outreach capacities, completing a compost machine feasibility study, establishing a single-stream recycling system, and re-designing waste-related posters throughout campus. Education and outreach activities appear to have had an impact - compost collection increased 72% through 2010/2011, while we collected on average 1 tonne more of recycling per month since the implementation of our augmented recycling system.

LEED Buildings: The UWSA Daycare and McFeetors Hall earned LEED Silver certification. The Buhler Centre, built over the summer of 2010, is targeting LEED Silver, while the new Science Building, to be completed by the end of June 2011, is aiming for LEED Gold.

1.3 Kyoto Compliance Forecast

UW's 2012 GHG emission reduction target of 6% below 1990 is still within reach, provided that a defined set of energy efficiency measures in existing buildings is carried out in order to offset the impact of new buildings. A further target of achieving emission reductions of 10% below 1990 levels by 2016 is also proposed for the Strategic Plan.

2 Introduction

2.1 Reporting Period and Scope

This report applies to FY2010 – April 1 2010-March 31 2011, and applies to the full scope of the University of Winnipeg's Sustainability Management System. This includes:

1. All physical facilities and buildings owned and managed by The University of Winnipeg including all future acquisitions of real properties which come to be owned and managed by The University.
2. All physical facilities and buildings, or spaces within facilities or buildings, leased or rented by The University of Winnipeg, and over which The University can reasonably influence the sustainability performance of the facility.
3. All routine activities, programs and operations of The University of Winnipeg, whether on or off campus, and including staff, faculty and student travel, both directly on behalf of the University in conducting its operations and programs, or commuting of staff, faculty and students to and from their places of residence for purposes of work, teaching, research, study, recreation or any other University activity.
4. All activities, programs or special events which may from time to time be hosted by The University of Winnipeg, or for which the University may provide physical facilities, active partnerships, or other support when such programs or events are offered by institutions, groups, corporations or organizations that are not formally recognized as part of the University community.
5. All "arms length" agencies, corporations, institutes, research centres or other entities, to which University policies may generally apply.

2.2 Sustainability Governance & Strategic Plan

Implementation of the University of Winnipeg's Sustainability Policy, along with its eight accompanying administrative policies is coordinated through the Campus Sustainability Office, with the help of the Campus Sustainability Council and its working groups. With the support of the Director of the Campus Sustainability Office, the VP HR, Audit & Sustainability champions sustainability-related issues at the University's senior level.

In FY2010, the University launched a sustainability strategic planning process, which should be complete early in 2012. The aim of this process is to update the vision and mission of UW's sustainability efforts; to update the organizational structure of UW's sustainability activities in order to achieve greater integration and coordination between all parts of the University with respect to sustainability; and to establish a set of measurable targets that will help the University meet the goals set down in its Sustainability Policy. The table below illustrates a draft target structure for the plan.

#	Targets	Phase 1 (2011-2014)	Phase 2 (2015-2018)	Policy Goal
1	Reduce GHG emissions.	X%	X%	Net 0
2	Reduce energy and water consumption.	X%	X%	Continuously reduce overall demand
3	Divert solid, hazardous, and electronic waste.	X%	X%	100%
4	Reduce solid, hazardous, and electronic waste.	X%	X%	Strive for zero net waste
5	New and existing buildings achieve green certification status.	all new buildings, X% existing	all new buildings, X% existing	all new buildings
6	University purchasing power supports sustainable communities.	Plan	Assessed against plan	Assessed against plan
7	Active culture of sustainability teaching, learning, research, and work.	Assessed at each phase through qualitative and quantitative measures.		
9	Continue to develop and simplify Sustainability Management System	Assessed at each phase through qualitative and quantitative measures.		

The University's first priority for FY2011 will be to complete its sustainability strategic plan. This is likely to include a careful consideration of the merits of participating in the STARS (Sustainability Tracking & Rating System) program, administered by the Association for the Advancement of Sustainability in Higher Education (AASHE).

In FY 2010, UW President and Vice-Chancellor Lloyd Axworthy also signed the *University and College Presidents' Climate Change Statement of Action for Canada*. This formalizes UW's commitment to join a national community of Universities that recognize their responsibility to advance knowledge for society and our obligation to demonstrate leadership in areas of community, national and global importance and that are committed to tracking, monitoring, and strategically reducing their greenhouse gas emissions.

2.3 Annual Demographic, Weather, and Space Variations

The number of people on campus, annual variations in weather, and changes in the campus footprint all have an impact on the University's sustainability performance. More people, cold winters, hot summers, and a larger footprint will all increase resource demand, while fewer people, warmer winters, cooler summers, and reductions in the University's footprint would have the opposite effect.

2.3.1 Area Under Operational Control

The University of Winnipeg's annual sustainability report reflects data on buildings that the University owns and/or that the University exercises some degree of control over utility consumption. Currently, 91% of the space occupied by the University's is represented in this report. The remaining 9% represents space over which the University does not have any operational control and does not have access to utility consumption data.

The table below summarizes campus area under operational control since 2006, along with the percent change in this area year over year.

UWinnipeg Area Under Operational Control (sq. m)		
FY2006	91750	**% change**
FY2007	91750	0%
FY2008	92950	1%
FY2009	101169	9%
FY2010	104148	3%

2.3.2 Campus Population & Operational Changes

There have been no significant changes in the number of people regularly on campus over FY2010, nor have there been significant changes to campus hours of operation or other building use patterns that may impact the resource use of the University.

UWinnipeg Student & Staff Population		
	FCE #	Staff #
FY2006	30180	NA
FY2007	30626	NA
FY2008	30160	NA
FY2009	34670	782
FY2010	33920	812

2.3.3 FY 2010 Weather

FY2010 was slightly colder through the winter and warmer through the summer than FY2009. We can expect this difference to cause a slight increase in the University's overall gross energy use, particularly in our hydroelectricity consumption. FY2010 was also significantly wetter than FY2009 (761 vs. 460 mm of precipitation over the year). We can expect this to have reduced demand for potable water use for the purpose of landscaping.

Winnipeg Weather Data*			
	HDD**	CDD***	Precipitation
FY2006	5443	NA	NA
FY2007	5897	NA	NA
FY2008	6002	NA	NA
FY2009	5464	119	460 mm
FY2010	5600	173	761 mm

*Richardson International Airport weather data

**Heating degree-days (HDD) for a given day are the number of Celsius degrees that the mean temperature is below 18°C.

*** Cooling degree-days (CDD) for a given day are the number of Celsius degrees that the mean temperature is above 18°C.

3 GHG Emissions & Air Quality

The University's greenhouse gas emissions and other air quality impacts are addressed in its Air Quality Management Policy and monitored on the basis of the indicators developed to reflect the goals set down in it.

3.1 GHG Emissions & Air Quality Key Initiatives

Hybrid heating system: The system consists of two electric boilers (one in Centennial Hall and one in Ashdown Hall) and new controls to enable UW to switch from Natural Gas to electric boilers at off-peak times. The boiler in Centennial was operational as of January 2011. The boiler in Ashdown Hall continues to experience challenges with its emergency release valve and is therefore not yet operational. Numerous fixes have been attempted without success, and efforts to make the boiler operational are ongoing. Once fully operational, we can expect annual savings in the order of 1000 T CO2e relative to the campus heating system operating without the electric boilers.

Comprehensive facilities audit: Johnson Controls International was hired to conduct a sustainability audit of Ashdown, Bryce, Centennial, Graham, Lockhart, Manitoba, Riddell, HBO, Duckworth, Sparling, MacNamara, and Young buildings. Opportunities for energy and GHG savings were identified and UW's current water conservation strategy was reviewed. Based on audit results, JCI recommended a 24% reduction of GHG emissions and 27% energy reduction target for the buildings audited, with a payback period of approximately 15 years.

Science Building and Richardson College for the Environment: This new building will add approximately 30% more space to the campus, which presents a challenge with respect to the university's total energy, water, and GHG performance. However, once open (summer of 2011), some of this added consumption will be offset by allowing the University to vacate some leased space over which it has little control over building systems. The University will also decommission several old, inefficient labs in core buildings. Converting these labs into basic classrooms and offices should help reduce energy consumption of core buildings, while the labs in the Science Building are among the most energy efficient in North America.

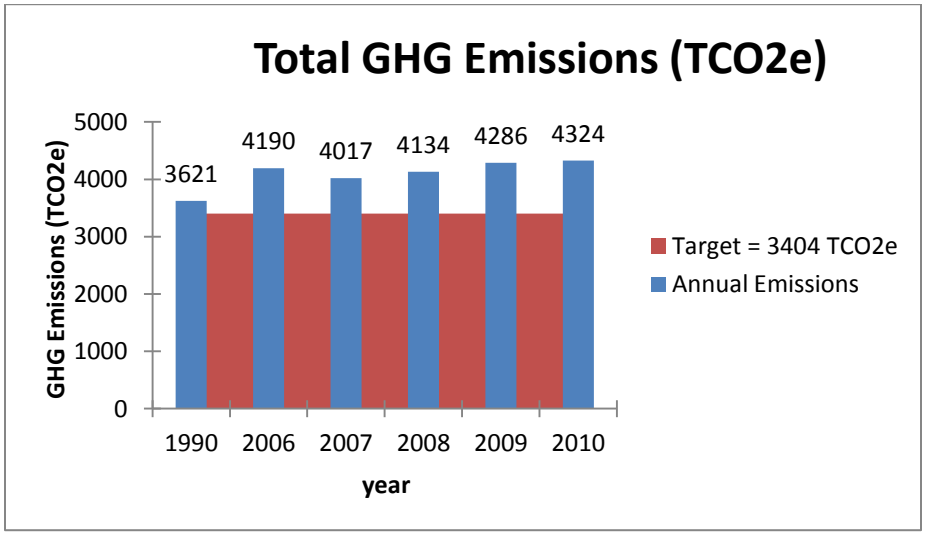
3.2 GHG Emissions & Air Quality Performance

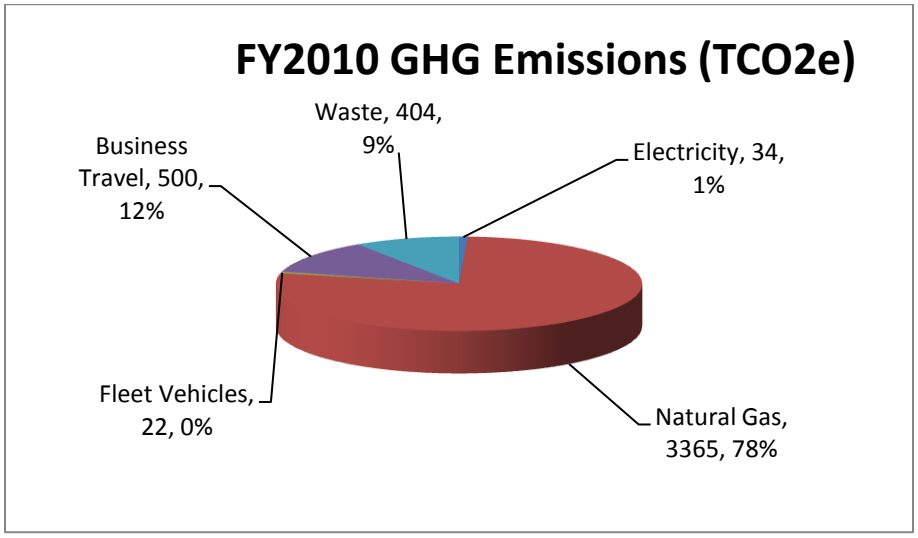
See Appendix for air quality performance indicators. In FY2010, University greenhouse gas emissions increased by 0.89%. Provincial and national data for 2010 emissions is not yet available. Total emissions in Manitoba in 2009 decreased 6.3%[1] and total emissions in Canada decreased 6% over the previous year.[2]

[1] http://news.gov.mb.ca/news/index.html?item=11511

[2] National Inventory Report Executive Summary, Environment Cadana: http://www.ec.gc.ca/Publications/A07097EF-8EE1-4FF0-9AFB-6C392078D1A9/NationalInventoryReportGreenhouseGasSourcesAndSinksInCanada19902009ExecutiveSummary.pdf

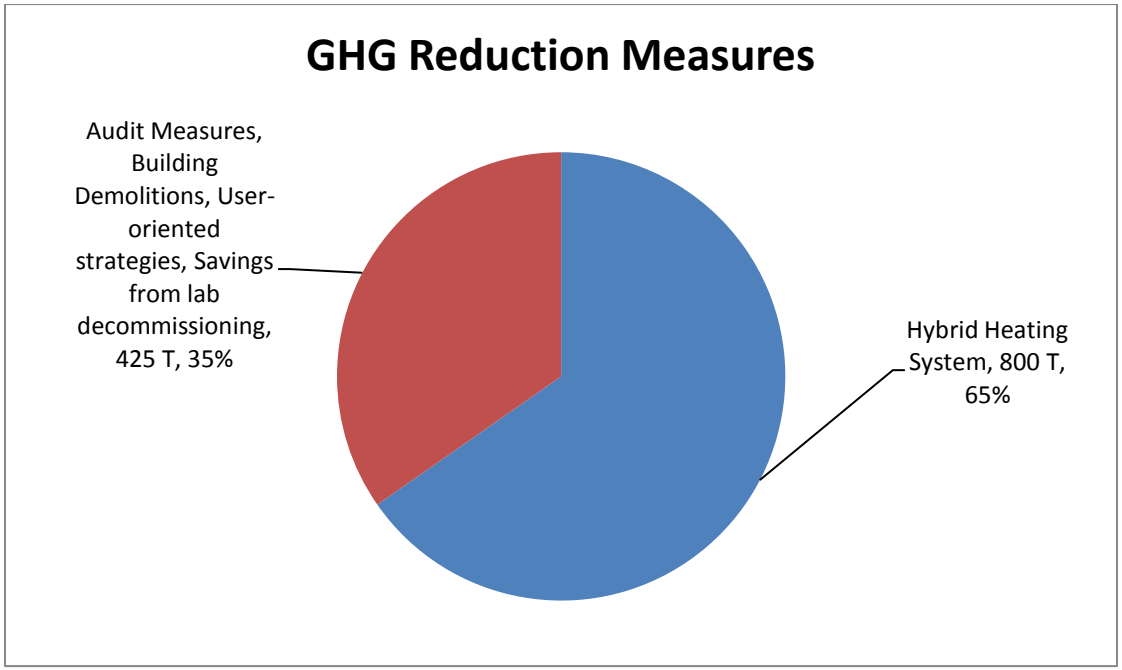
At UWinnipeg, reductions in emissions from lower natural gas consumption were offset by an increase in business travel (discussed further in the Transportation section below). The tables below outline total GHG emissions since 2006 as well as the distribution of campus GHG emissions FY2010.





3.3 Kyoto Target Forecast

UW's 2012 GHG emission reduction target of 6% below 1990 is still within reach, provided that a defined set of energy efficiency measures in existing buildings is carried out to offset the impact of new buildings. Based on the total projected area under university management in FY2011, the University will require a reduction of approximately 1,225T CO2e. This can be achieved primarily through the completion of the installation of a hybrid heating system and with the implementation of audit recommendations.



4 Energy

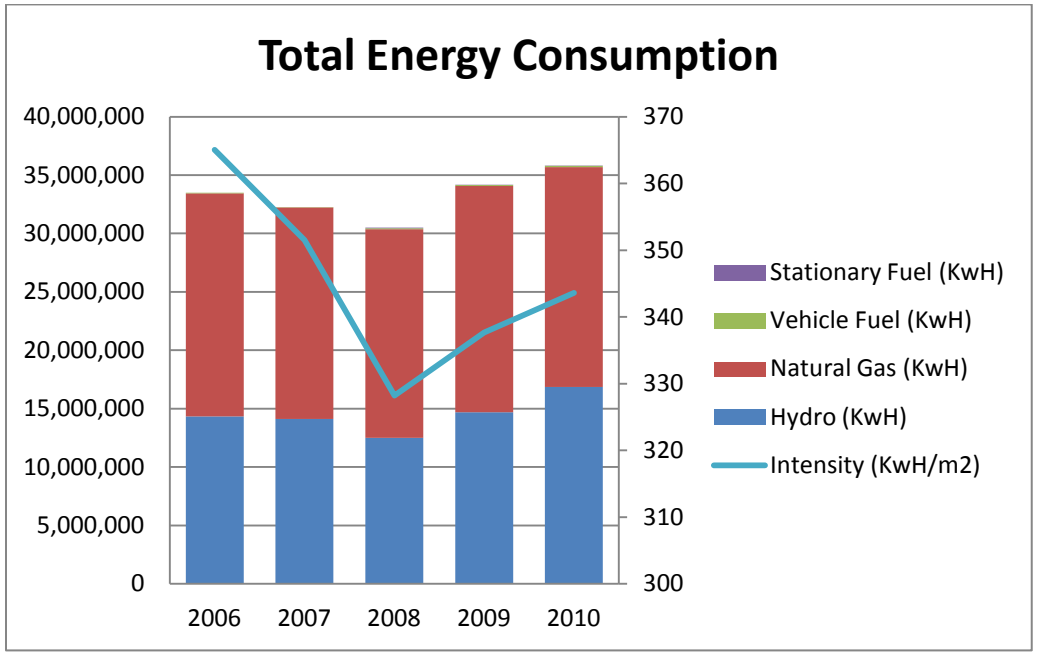
The University's energy impacts are addressed in its Energy Management Policy and monitored on the basis of the indicators developed to reflect the goals set down in it.

4.1 Key Energy Initiatives

As with the University's greenhouse gas performance, key energy-related initiatives for FY2010 consisted of the installation of a hybrid heating system, the completion of a comprehensive facilities audit, and the construction of the new Science Building. We can hope for energy consumption and energy intensity to decline as audit measures are implemented over the next few years.

4.2 Energy Performance

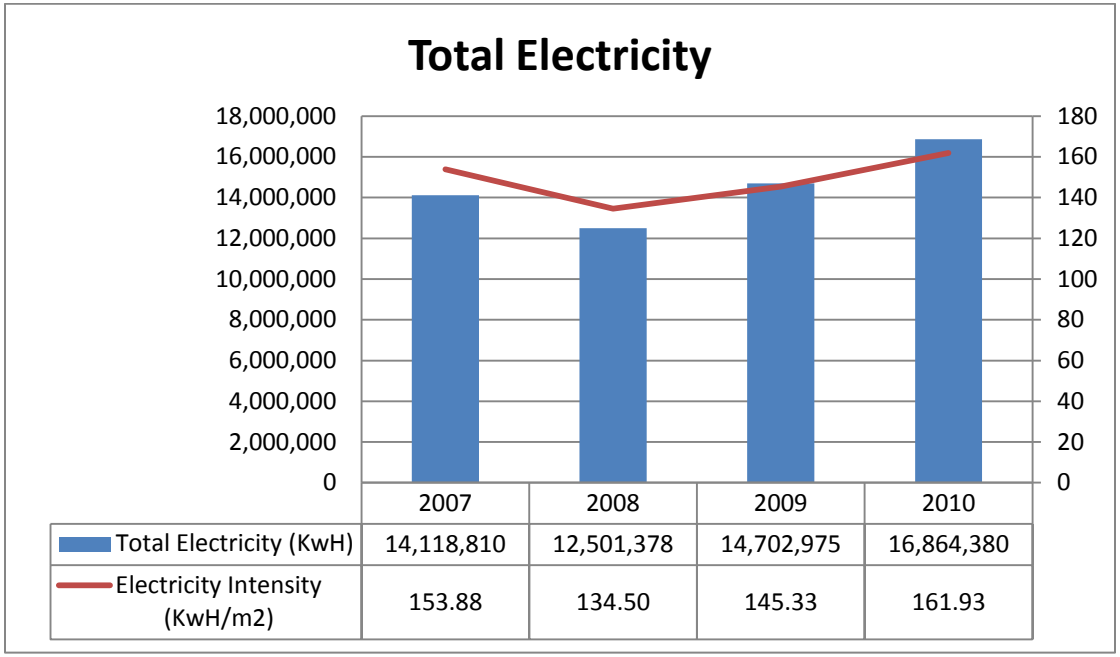
In FY2010 total energy consumption increased by 4.77%, while energy use per square meter of occupied space increased by 1.77%. Natural gas consumption decreased, electricity use increased, vehicle fuel use increased, and stationary fuel use remained unchanged. This overall increase in energy usage can be attributed to a slight increase in total occupied space, slightly more heating/cooling days in FY2010 over FY2009, and general variation in campus usage patterns.



Building-specific impacts in natural gas and electricity consumption over the year do reflect the installation of the first of two electric boilers as part of the hybrid system. This system is not expected to reduce total energy consumption; however it is expected to reduce natural gas consumption and the GHG emissions associated with it. It will also increase low-emission electricity consumption.

4.2.1 Hydro-electricity

In FY2010, total electricity consumption increased by 14.70% over FY2009. Electricity consumption per square meter of managed University space increased by 14.42%.



Electricity use and year over year changes according to building are summarized in the table below. Most changes reflect general shifts in building occupancy use. Exceptions include:

- A 10.96% (1,716,066 KwH) increase in electricity consumption metered in Manitoba Hall. This reflects the January installation of the first electric boiler associated with the hybrid heating system.
- The apparent 77.75% decrease in electricity use in McFeetors' Hall reflects the addition of a separate meter to monitor the electricity being drawn to power construction for the new Science Building.
- The 34.4% increase in electrical consumption at 520 Portage is a reflection of significantly improved data for this building, rather than of a significant increase in consumption.

2009 vs. 2010 electricity by building	KwH change	% change	2009 (KwH)	2010 (KwH)
370 Langside (McFeetors)	-636,117	-77.75%	818,171	182,054
511 Ellice	-18,919	-7.97%	237,492	218,573
342 Young	-13,683	-100.00%	13,683	0
Duckworth Centre	-13,570	-0.71%	1,923,570	1,910,000
440 Spence	-3,756	-100.00%	3,756	0
284 Balmoral	-2,110	-13.84%	15,243	13,133
359 Young	-1,920	-3.82%	50,220	48,300
MacNamara Hall	-1,800	-0.76%	236,880	235,080
270 Balmoral	-1,580	-13.66%	11,570	9,990
434 Spence	-1,080	-100.00%	1,080	0
266 Balmoral	76	1.24%	6,119	6,195
Garage	82	1.67%	4,903	4,985
449 Spence	894	15.08%	5,929	6,823
480 Portage	1,140	1.63%	70,020	71,160
278 Balmoral	1,373	10.38%	13,230	14,603
T21 (Theatre)	12,600	2.70%	467,280	479,880
Wesley Hall	15,120	2.37%	637,200	652,320
520 Portage	37,989	34.42%	110,355	148,344
Manitoba Hall	188,106	10.96%	1,716,066	1,904,172
Lockhart Hall	199,800	2.39%	8,360,208	8,560,008
Buhler	656,160	100.00%	0	656,160
370 Langside #2	1,742,600	100.00%	0	1,742,600
TOTAL	2,161,405	14.70%	14,702,975	16,864,380

red=campus building, green=residence building

In comparing the proportional area and the proportional electricity consumption for recently renovated or constructed buildings, we see that the Buhler building is consuming a larger proportion of electricity than its proportion of total campus area. This consumption is more than offset

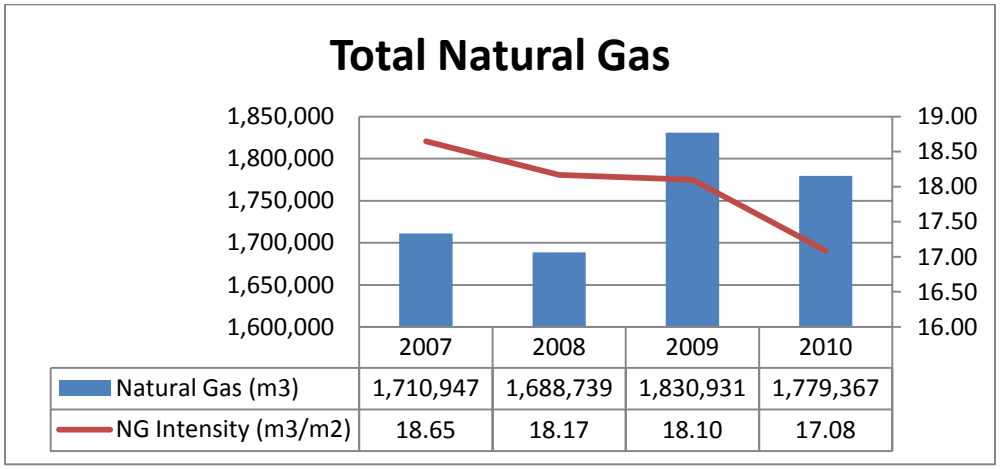
by its very low natural gas consumption (more below) – a reflection of our attempts at prioritising lower emitting energy sources in new construction. McFeetors Hall and the Daycare are performing efficiently.

% Consumption vs. % Total Area	% of total area	% of electricity consumption
T21 (Theatre)	4.33%	2.85%
370 Langside (McFeetors) & 548 Furby (Daycare)	7.84%	1.08%
Buhler*	4.28%	6.42%

* Buhler compared to total consumption over Sept-March to reflect occupancy date

4.2.2 Natural Gas

In FY2010, total natural gas consumption decreased by 2.82% over FY2009. Natural gas consumption per square meter of managed University space decreased by 5.60%.



Natural Gas use and year over year changes according to building are summarized in the table below. Most changes reflect general shifts in building occupancy use. An exception to this is the 15.94% (59,431 m^3) decrease in natural gas consumption metered in Lockhart Hall, which reflects reduced consumption for the gas boilers due to the installation of the first electric boiler associated with the hybrid heating system.

2009 vs. 2010 Natural Gas by Building	volume change (m3)	% change	2009 (m3)	2010 (m3)
Lockhart Hall	-59,431	-15.84%	375,286	315,855
Ashdown (F)	-11,246	-29.04%	38,724	27,478
T21 (Theatre)	-8,266	-8.99%	91,966	83,700
Duckworth Centre	-6,119	-9.98%	61,330	55,211
480 Portage	-4,276	-25.46%	16,798	12,522
370 Langside (McFeetors)	-3,486	-3.27%	106,471	102,985
548 Furby (Daycare)	-887	-4.91%	18,061	17,174
270 Balmoral	-753	-16.01%	4,701	3,948
440 Spence	-750	-100.00%	750	0
342 Young	-717	-100.00%	717	0
MacNamara Hall	-628	-5.33%	11,793	11,165
434 Spence	-604	-100.00%	604	0
266 Balmoral	-218	-6.99%	3,123	2,905
Wesley Hall	-187	-8.54%	2,191	2,004
Garage	119	6.47%	1,845	1,964
284 Balmoral	434	7.74%	5,602	6,036
359 Young	663	6.95%	9,542	10,205
511 Ellice	1,169	6.37%	18,345	19,514
278 Balmoral	1,273	29.39%	4,332	5,605
449 Spence	2,120	71.55%	2,963	5,083
Ashdown (I)	26,167	2.48%	1,055,787	1,081,954

*green= residence buildings, orange=campus buildings

In comparing the proportional area and the proportional natural gas consumption for recently renovated or constructed buildings, we see that the daycare and T21 are consuming a larger proportion of natural gas than their proportion of total campus area, while McFeetors Hall and the Buhler building are performing more efficiently. The reasons for higher natural gas consumption in the daycare and T21 are under investigation.

% Consumption vs. % Total Area	% of total area	% of natural gas consumption
T21 (Theatre)	4.33%	4.70%
370 Langside (McFeetors)	6.97%	5.79%
548 Furby (Daycare)	0.87%	0.97%
Buhler*	4.28%	0.90%

* Buhler compared to consumption over Sept-March to reflect occupancy date

The construction of the Buhler building made it possible to move the Division of Continuing Education out of leased space and into space owned by the university. At present, UWinnipeg does not have access to energy performance data for the majority of its leased space. It is likely that the building in which the Division of Continuing Education was housed prior to relocating to the Buhler building was significantly less energy efficient than its current home.

4.2.3 Fleet Vehicles

Campus fleet vehicles logged 18.03% more kilometres in FY2010 than in FY2009, while the total fuel consumed by fleet vehicles and equipment increased by 33%. Part of this increase can be attributed to better monitoring of fuel use for landscape machinery. The number and type of vehicles remained unchanged.

Campus Vehicle and Equipment Fuel Consumption (L)	FY2007	FY2008	FY2009	FY2010	% change 2009/2010
Other (Regular)	NA	NA	NA	332	NA
Other (Diesel)	NA	NA	NA	791	na
Bobcats (Diesel)	915	928	871	1,205	38%
Enrollment Services	1,160	824	1,131	955	-16%
Physical Plant Van	748	974	724	764	6%
Security Van**	3,288	4,992	5,109	5,200	2%
Total (Regular Fuel)	5,196	6,790	7,835	7,252	-7%
Total (Diesel Fuel)	915	928	871	1,996	129%**
Total (All Fuel)	**6,111**	**7,718**	**6,964**	**9,248**	**33%**

*Security Van for FY2010 is estimated

** Note artificial spike due to incomplete data for 'Other Diesel' fuel for previous years.

4.3 When can we expect our energy performance to improve?

The completion of the comprehensive facilities audit in FY2010 positions the University to achieve real energy efficiency improvements to core buildings in FY2011 and for years to come. The hiring of a new Controls Technician in the Physical Plant establishes the in-house capabilities required to undertake several audit measures internally. The potential for energy performance improvements forms an integral part of the university's sustainability strategic planning process. With these facts in mind, we can hope to see improvements in the University's energy efficiency in FY2011, while overall energy use reductions remain a goal upon which we can set our sights as we continue to pursue our sustainability goals.

5 Water

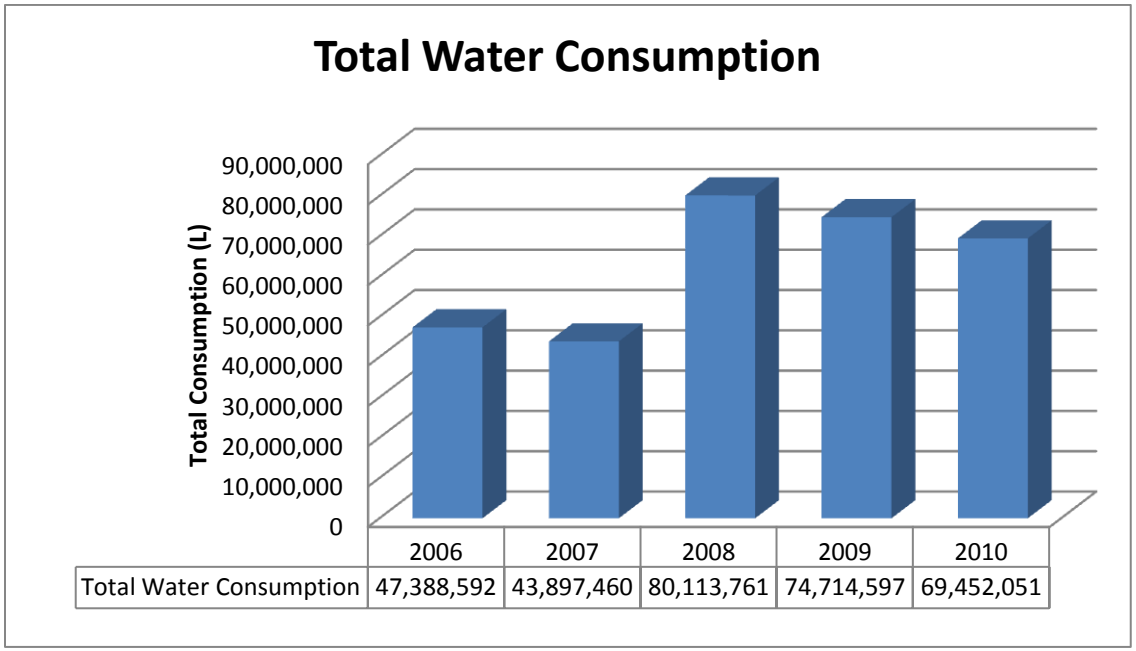
The University's water impacts are addressed in its Water Use Management Policy and monitored on the basis of the indicators developed to reflect the goals set down in it.

5.1 Key Water Initiatives

The University undertook an extensive water fixture retrofit project in FY2010, with approximately 45% of washrooms now outfitted with water conserving fixtures. The remaining washrooms are scheduled to be switched out in the coming year. The project was introduced by UWinnipeg plumber Mr. Doug Foster and developed as a result of COPSE funding intended to improve the accessibility of washrooms. It achieved this aim while also reducing demand for potable water and dramatically improving the cleanliness of washrooms. Targeted pre- and post- retrofit metering of washrooms suggests a cumulative saving in excess of one million gallons of water a year once all washrooms have been completed. Mr. Foster was awarded the Campus Sustainability Recognition Award in recognition of this achievement.

5.2 Water Performance

In FY2010 total recorded water use decreased by 7.04%, or 5,262,546 litres. Water use and year over year changes according to building are summarized in the tables below.



	2006	2007	2008	2009	2010
Total Water Consumption	47,388,592	43,897,460	80,113,761	74,714,597	69,452,051

2009 vs. 2010 water by building	Litres change	% change	2009 (Litres)	2010 (Litres)
370 Langside	-22,772,000	-89.54%	25,433,000	2,661,000
MacNamara Hall North	-257,200	-79.14%	325,000	67,800
440 Spence	-104,400	-100.00%	104,400	NA
MacNamara Hall South	-102,500	-12.17%	842,000	739,500
T21 (Theatre)	-84,000	-17.87%	470,000	386,000
449 Spence	-79,900	-15.51%	515,200	435,300
434 Spence	-76,500	-100.00%	76,500	NA
266 Balmoral	-65,891	-18.17%	362,691	296,800
359 Young	-46,100	-31.36%	147,000	100,900
284 Balmoral	0	0.00%	464,251	464,251
371/377 Langside	15,600	NA	NA	15,600
Garage	22,200	35.24%	63,000	85,200
Graham Hall	71,000	11.74%	605,000	676,000
270 Balmoral	139,122	21.57%	644,978	784,100
276 Balmoral	232,623	32.69%	711,577	944,200
480 Portage	262,700	66.84%	393,000	655,700
548 Furby	268,800	71.49%	376,000	644,800
Buhler	276,000	NA	NA	276,000
Lockhart Hall	276,000	0.91%	30,351,000	30,627,000
511 Ellice	398,200	61.36%	649,000	1,047,200
Wesley Hall	2,674,200	62.72%	4,264,000	6,938,200
Bryce Hall	3,239,500	210.08%	1,542,000	4,781,500
Duckworth Centre	10,450,000	163.92%	6,375,000	16,825,000
TOTAL	**-5,262,546**	**-7.04%**	**74,714,597**	**69,452,051**

red=campus building green=residence building

5.3 What accounts for the extreme variations in water consumption?

Variable water consumption data at the University continues to present challenges. Over the five years that UWinnipeg has compiled annual sustainability reports, total water consumption has tended to vary significantly and unpredictably from building to building. We continue to work to achieve a better understanding of the cause of these variations and to seek out ways of acquiring more precise water consumption data.

One reason for this variation may be quarterly estimated meter readings that can sometimes vary considerably from actual usage. If an estimated reading is adjusted against actual usage over two fiscal years, total consumption for each will be significantly skewed. This took place with McFeetors Hall over FY2009 and FY2010. Other variations in water consumption would reflect changes in the use and fixtures in washrooms, kitchens, laundry, and grounds keeping. They would also reflect changes in water use for heating and cooling, where annual variations in water use are affected by heating/cooling degree days and humidity. Finally, annual variation in water used for grounds keeping is affected by precipitation.

6 Waste

The University's waste impacts are addressed in its Waste Minimization Policy and monitored on the basis of the indicators developed to reflect the goals set down in it.

6.1 Key Waste Initiatives

Single stream recycling: Starting in September 2010, UW introduced a single stream recycling collection system that now accepts all materials accepted by the municipal system with the exception of glass. This switch also motivated the University to include the recycling stream in its annual waste audit to achieve estimates of source-separated recycling weights. This audit had the added benefit of enabling us to assess contamination rates in the recycling collection system.

Phase 1 integrated waste management project: With the help of grants from the Winnipeg Foundation and a provincial Waste Reduction and Pollution Prevention grant, the CSO undertook the first phase of an integrated waste management project. This included:

- developing maps and databases of waste, compost, and recycling bins on campus
- developing the CSO's education & outreach capacities
- completing an in-house compost machine feasibility study
- re-designing waste-related posters throughout campus.
- Establishing a bin-side waste stream education student volunteer team for peak-times in food-service areas

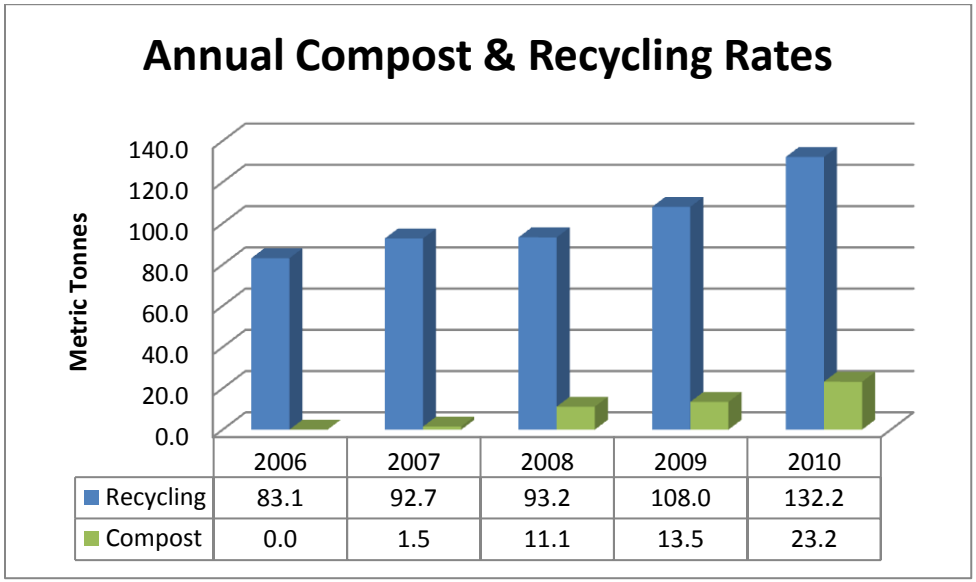
6.2 The Ongoing Challenge of Tracking Waste and Diversion Rates

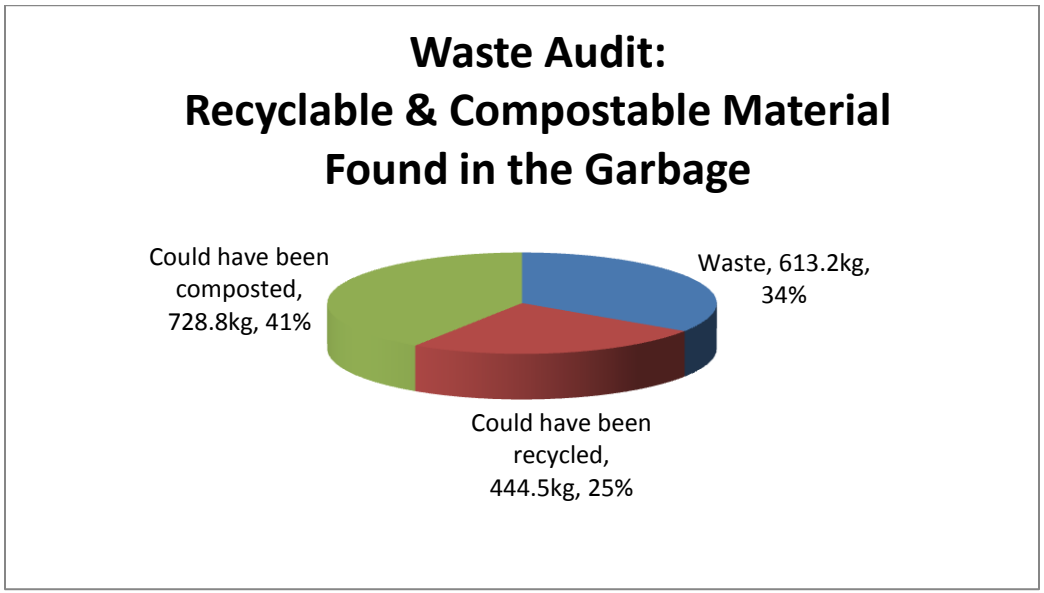
In FY2010, the University lost its capacity to monitor total waste to landfill, as its waste hauling contractor is no longer able to provide the University with the weights of the waste it collects from campus. Over the past five years, weights provided by our waste contractor have had very large margins of error and have varied wildly year over year with little explanation to account for significant reductions and increases in waste production other than poor data reporting/tracking. In this sense, this loss of solid waste-related data may be a truer representation of the accuracy of our solid waste knowledge than what has been reported in previous years. This difficulty related to data continues to present challenges and the University continues to search for solutions. The current situation limits the usefulness of any year-over-year comparisons that depends on waste to landfill data. Data for recycling, compost, and hazardous waste production remain consistent and reliable. The University's annual waste audit provides a snapshot of the University's waste stream. This snapshot allows us to gauge how much compostable and recyclable material is not being captured by our recycling and composting programs. It also allows us to address specific problem areas in recycling and composting publicity and education.

6.3 Performance

Waste audit data suggests that in FY2010, only 34% of University waste destined for the landfill could not be recycled or composted. Unless total waste produced increased significantly, this data contradicts recycling and compost data - compost collection increased 72.46% through

2010/2011, while recycling collection increased by 22.38%. These results would suggest improvements in diversion rates. This contradiction further highlights the need to establish reliable waste-to-landfill data. For data on hazardous and electronic waste, see waste indicators in appendix.





7 Transportation

The University's transportation impacts are addressed in its Sustainable Transportation Policy and monitored on the basis of the indicators developed to reflect the goals set down in it.

7.1 Key Transportation Initiatives

Bike Lab: The UWSA Bike Lab/UWinnipeg Bike Hub project continues to inch its way forward and should be operational on time for the start of the 2011/2012 academic year. Key financial contributors to the project include a private major donor ($100,000), Ken Cranwell (shipping containers), the UWSA ($55,000), and the VP HR, Audit & Sustainability Office ($10,000).

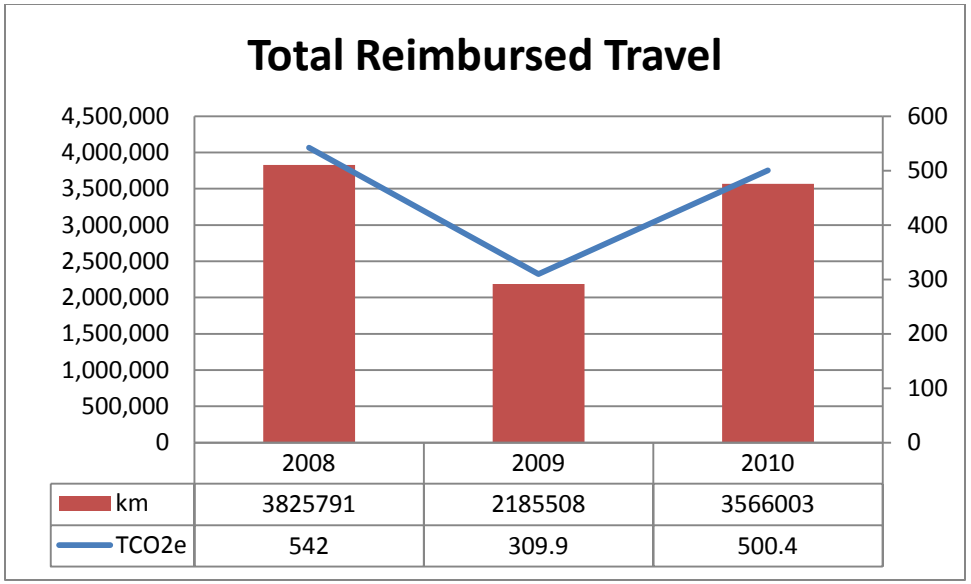
Ice Riders: Launched in the spring of 2010, the UWSA-run Ice Riders winter cycling team had an incredibly successful season. Membership ballooned from about 10 to over 50; regular bicycle maintenance workshops were held through the cold winter months, and the team produced a high-quality video about the Bike Lab. This momentum promises to propel programming in the Bike Lab once it is completed.

Underground bicycle parking: In FY2010, indoor secure bicycle parking underground the Duckworth Centre was made available to students, faculty, and staff for $10 a month. All students, as well as faculty and staff with Duckworth Centre memberships, have easy access to Duckworth showers from this parking location. For an additional $2.00/month, faculty and staff without Duckworth Centre memberships can also access showers.

UWinnipeg Balmoral Transit Terminal: In FY2010, The University of Winnipeg partnered with Winnipeg Transit to redevelop the former Greyhound Bus depot into the new UWinnipeg Balmoral Transit Terminal, providing improved service to students and thousands of downtown commuters. Once the first phase of the Southwest Rapid Transit Corridor is completed in late 2011, the terminal will also make it possible for commuters to travel efficiently from neighbourhoods such as St. Norbert, Fort Garry, Fort Richmond, Waverley Heights and Linden Woods in the southwest end of the city to the UWinnipeg campus.

7.2 Transportation Performance

Though staff travel budgets decreased by 4% in FY2010 over FY2009, significantly more reimbursed travel took place (+61.48% T CO2e, +63.17% km). This increase likely reflects an increase in research-related travel, funded through external grants. Establishing means of minimizing research-related travel impacts remains a challenge. At present, the University is working to facilitate the substitution of travel with distance communication technologies by installing two Cisco TelePresence ™ video conference sites on campus.



Transportation Impacts	Units	FY2008	FY2009	FY2010	% Change (FY2010 vs FY2009)
Reimbursed Air Travel	km	3,599,160	2,054,975	3,393,691	65.15%
	# of trips/claims	462	340	486	42.94%
	TCO2e	489	279	461	65.15%
Reimbursed Automobile Travel	km	220,590	128,790	158,314	22.92%
	# of trips/claims	601	393	522	32.82%
	TCO2e	52	30	37	22.92%
Reimbursed Intra-City Bus Travel	km	5,851	632	8,956	1318.12%
	# of trips/claims	35	20	23	15.00%

	TCO2e	0.85	0.09	1.31	1318.12%
Other Reimbursed Travel (esp. rail, km)	km	190	1,111.5	5,042	353.62%
	# of trips/claims	30	24	10	-58.33%
	TCO2e	0.00	0.11	0.52	353.63%
Campus Fleet Vehicles	fuel L	7,717	7,835	9,248	18.03%
	TCO2e	18.22	18.49	21.83	18.03%
Totals	**km**	**3,825,791**	**2,185,508**	**3,566,003**	**63.17%**
	# of trips/claims	**1,128**	**777**	**1,041**	**33.98%**
	TCO2e	**542.0**	**309.9**	**500.4**	**61.48%**

7.3 Tracking & Monitoring: Future Transportation Priorities

UW currently tracks emissions and energy data related to University business travel and to fleet vehicles. We currently do not have the tools in place to monitor and track campus commuting habits. Key priorities related to transportation therefore include developing tracking and monitoring capabilities related to campus commuting habits and improving the precision of business travel tracking.

Other priorities include ensuring effective sustainable transportation amenities in new buildings; working to maximize sustainability benefits of Cisco TelePresence technology on campus; and developing a transportation demand management plan as part of the University's sustainability strategic plan.

8 Buildings and Land

Buildings and Land refers to the way in which campus grounds and buildings are maintained. This includes issues related to the application of chemicals for the purpose of pest control and cleaning, as well as to the use of landscaping and design techniques that maximize campus facilities' sustainability performance. Impacts related to these functions are handled in the University's Land Use and Property Management Policy and monitored on the basis of the indicators developed to reflect the goals set down in it.

8.1 Key Buildings and Land Initiatives

Lake Friendly: In FY2010, UW strengthened its commitment to the use of green cleaning products by signing on to the Lake Friendly initiative. The initiative seeks to raise awareness of the impact that daily procurement decisions in Manitoba institutions and households have on Lake Winnipeg.

Green Leases: As part of the green management of the Buhler building, UW negotiated a Green Lease with its food service tenant, to help ensure that tenants in University space operate in compliance with the University's Sustainability Policy.

LEED Buildings: Both new construction projects underway in FY2010 (the Buhler Centre and the new Science Building & Richardson College for the Environment) are targeting LEED certification – the Buhler Centre is seeking LEED Silver, while the RCFE will seek LEED Gold.

8.2 Buildings and Land Performance

See Appendix for details on Buildings & Land performance.

Along with maintaining ongoing xeriscaping landscape techniques and green cleaning procedures, the UWSA Daycare and McFeetors Hall earned formal LEED Silver certifications in FY2010.

8.3 New Buildings: can we keep building and still meet our sustainability goals?

UWinnipeg's growing campus is contributing to the densification and revitalization of our downtown – key elements of intelligent urban design for sustainable cities. Alongside these and other benefits, to date this growth has also represented a net increase in the university's ecological footprint. The greener building principles that sit at the core of current campus development help to mitigate the impacts of increased demand for natural gas and other natural resources. The challenge and opportunity for leadership ahead is to achieve the benefits of campus development in a manner that works to decrease, rather than increase, total net resource use. Seeking solutions to this challenge and creative approaches to seizing it as an opportunity for leadership is at the heart of the strategic planning process currently underway.

The key challenge and opportunity for leadership ahead is to work with public and private partners in maintaining the University's notable commitment to sustainable building practices for new development while at the same time attending to the sustainability performance of our

current building stock. In many respects, innovative building retrofits represent the future of truly progressive greener building. UWinnipeg is poised to lead the way here, pushing the boundaries of what can be achieved through ongoing commitment to marked improvements in the efficiency of existing buildings in Manitoba. Success in achieving the University's sustainability targets will undoubtedly draw on UWinnipeg's significant achievements in developing greener new buildings, just as it will require the same commitment and valued partnerships that made these achievements possible.

9 Procurement

The University's procurement impacts are addressed in its Green Procurement Policy and are meant to be monitored on the basis of the indicators developed to reflect the goals set down in it. Currently, the University's ability to gather data relative to green procurement is very limited.

9.1 Key Initiatives

Social Responsibility: In FY2010, UW purchasing agents worked to incorporate social responsibility requirements in RFP's alongside extant environmental requirements.

Provincial Procurement Initiative: Members of the University purchasing department continue to participate in the Province of Manitoba's sustainable procurement initiatives and activities.

9.2 Performance

The University's purchasing agents continue to put forward their best efforts under limited resources to support UW's green procurement goals. See indicators in appendix for further detail.

9.3 Comments

Sustainability language has been included in the University's Board-level policy; however, administrative policies require review in order to fully include sustainability into procurement decisions. There is also an ongoing need to develop mass/volume/materials based tracking and monitoring capabilities in order to support the purchase of more responsible goods and services and to reduce material inputs into the University.

10 Academics

While there is no policy related to the role that academics can play in the University's sustainability work, it is clear that the University's teaching, learning, and research has an important role to play both in educating the next generation of leaders for a more sustainable future and in contributing to the development of solutions to current sustainability challenges locally and globally.

10.1 Key Initiatives

Richardson College for the Environment (RCFE): Through FY2010, work continued on the development of the Richardson College for the Environment. College membership will include the Canada Research Chair in Indigenous Science Education and the Canada Research Chair in Inner City Issues and Community Learning and Engagement; the Institute of Urban Studies; the Master's in Development Practice program; the Indigenous Studies program; the CISCO Centre for Collaborative Technologies which includes a world-class TelePresence system and the endowed Cisco Chair for Collaborative Technology; the Campus Sustainability Office; the University's medical isotope initiative; and the UW Community Renewal Corporation. The College is intended to stimulate and support interdisciplinary scholarship that addresses concrete sustainability challenges from scientific, policy, and social science perspectives. Governance structures and supports to facilitate this activity are under development.

ELIN: The Experiential Learning Initiative Network's objectives are to support the development of community-service/experiential learning in all its aspects for the university, faculty, staff, prospective and current students and community partners. ELIN is comprised of dedicated, engaged and knowledgeable students, staff and faculty. In Spring 2008, ELIN was formed to coordinate initiatives developed through SUNSET (Sustainable University Now, Sustainable Earth Together), courses with practicum components, teach-ins offered through the Institute for Literacy and Transformative Learning , as well as university-wide PLAR (Prior Learning Assessment & Recognition) initiatives and consultations with Colin Russell, University Registrar. Experiential learning is an umbrella term used to describe the following: co-ops, internships, clinicals, service learning, practicums, student teaching, fieldwork and prior learning.

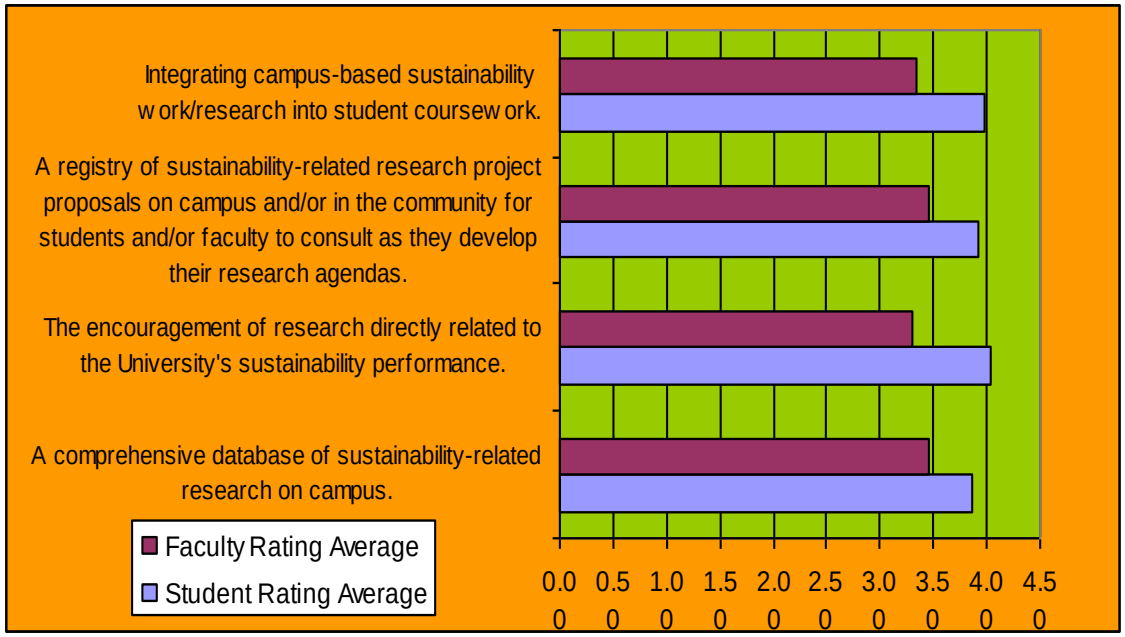
Research: UW faculty and students continue to undertake a range of research projects relevant to sustainability in Manitoba and in the world at large. A list of research project titles is included in Appendix C.

Student Projects: The Campus Sustainability Office continues to seek out ways to engage students in campus-based sustainability learning. In FY2010, the CSO developed a list of potential student projects, to be undertaken by students through honours thesis, directed readings, or major projects courses. Through the summer and fall of 2011, CSO staff will be meeting with individual departments to seek ways to make it possible for students to take on these projects.

10.2 What do students and faculty think about integrated sustainability teaching, learning, and research?

A better integration of teaching, learning, and research with campus sustainability performance remains a priority for staff in the Campus Sustainability Office; however, efforts at achieving this integration have to date met with very modest results. Many faculty members express support for the principle of integrating these types of educational experiences into research and students' academic work; however, it remains unclear what, if any, specific structures might better facilitate this process. Moreover, in a survey conducted as part of the University sustainability strategic planning process, student and faculty responses to questions related to the issue of integrating campus sustainability into academics demonstrated a gap in the degree of support for proposed mechanisms for achieving integration:

Several universities in North America seek to integrate academic teaching and research into their sustainability plans. How supportive would you be of (1 not supporting, 5 very supportive):



In FY 2010, the CSO will continue to work with faculty and students to seek out appropriate means of integrating the university's sustainability efforts with students' academic experience.

11 Key Challenges

Campus development & planning: UWinnipeg's growing campus is contributing to the densification and revitalization of our downtown – key elements of intelligent urban design for sustainable cities. Alongside these and other benefits, to date this growth has also represented a net increase in the university's ecological footprint. The greener building principles that sit at the core of current campus development help to mitigate the impacts of increased demand for natural gas and other natural resources. The challenge and opportunity for leadership ahead is to achieve the benefits of campus development in a manner that works to decrease, rather than increase, total net resource use. Seeking solutions to this challenge and creative approaches to seizing it as an opportunity for leadership is at the heart of the strategic planning process currently underway. UWinnipeg has the opportunity to show decisive commitment and leadership in this respect by completing an energy retrofit to core buildings and by working with public and private partners to push the boundaries of economically feasible greener building in Manitoba even further than we already have.

Financing sustainability initiatives: The University continues to seek out financial resources and tools to enable substantive energy and GHG emission reduction measures in its core buildings. Solutions to this challenge are being explored during the strategic planning process.

Water use tracking: Considerable and unpredictable variance in year-over-year water use data limits the University's ability to accurately report on water use performance. Quarterly bills spanning over two reporting years alongside regularly estimated water bills appear to be the cause of this challenge. The CSO is working to ensure increased internal monitoring of water use as a first step in remedying this situation.

Waste Tracking: In FY2010, the University lost its capacity to monitor total waste to landfill, as its waste hauling contractor is no longer able to provide the University with the weights of the waste it collects from campus. Over the past five years, weights provided by our waste contractor have had very large margins of error and have varied wildly year over year with little explanation to account for significant reductions and increases in waste production other than poor data reporting/tracking. In this sense, this loss of solid waste-related data may be a truer representation of the accuracy of our solid waste knowledge than what has been reported in previous years. This difficulty related to data continues to present challenges and the University continues to search for solutions.

Procurement Tracking: While the University continues to recognize the importance of monitoring the mass, volume, and composition of the items purchased for campus use, current procurement indicators remain impossible to monitor and track. Through its sustainability strategic planning process, the University will seek to improve its ability to track procurement performance through a combination of indicator review and tracking capacity development.

Transportation Tracking/Impact: As with procurement, current transportation indicators related to commuting habits remain impossible to monitor and track. The strategic planning process presents the University with the opportunity to review indicators and to set transportation targets and action plans that reflect the University's real sphere of influence on commuting and business travel habits.

12 Conclusion – campus sustainability, campus growth & the bigger picture

The University of Winnipeg's core campus was initially built for a campus population approximately 66% smaller than its current enrolment and staff complement represents. This situation, along with the ongoing interest in attracting increasing numbers of students, contextualizes UWinnipeg campus expansion. This expansion can serve to rectify existing space restrictions and prepare UWinnipeg for future increases in enrolment. It can also help to revitalize and increase the density of Winnipeg's downtown.

Global energy and resource trends suggest the need to meet these goals by pursuing development strategies that respond to limited global supplies of natural resources and to global excesses of carbon emissions.

In January 2011, BP Oil published *BP Energy Outlook 2030: 60 years Statistical Review.*[3] According to its estimates, flattening population growth and energy demand in OECD countries, along with increasing populations, standards of living, and energy demands in non OECD countries, will cause global energy demand to continue to increase through to 2030.

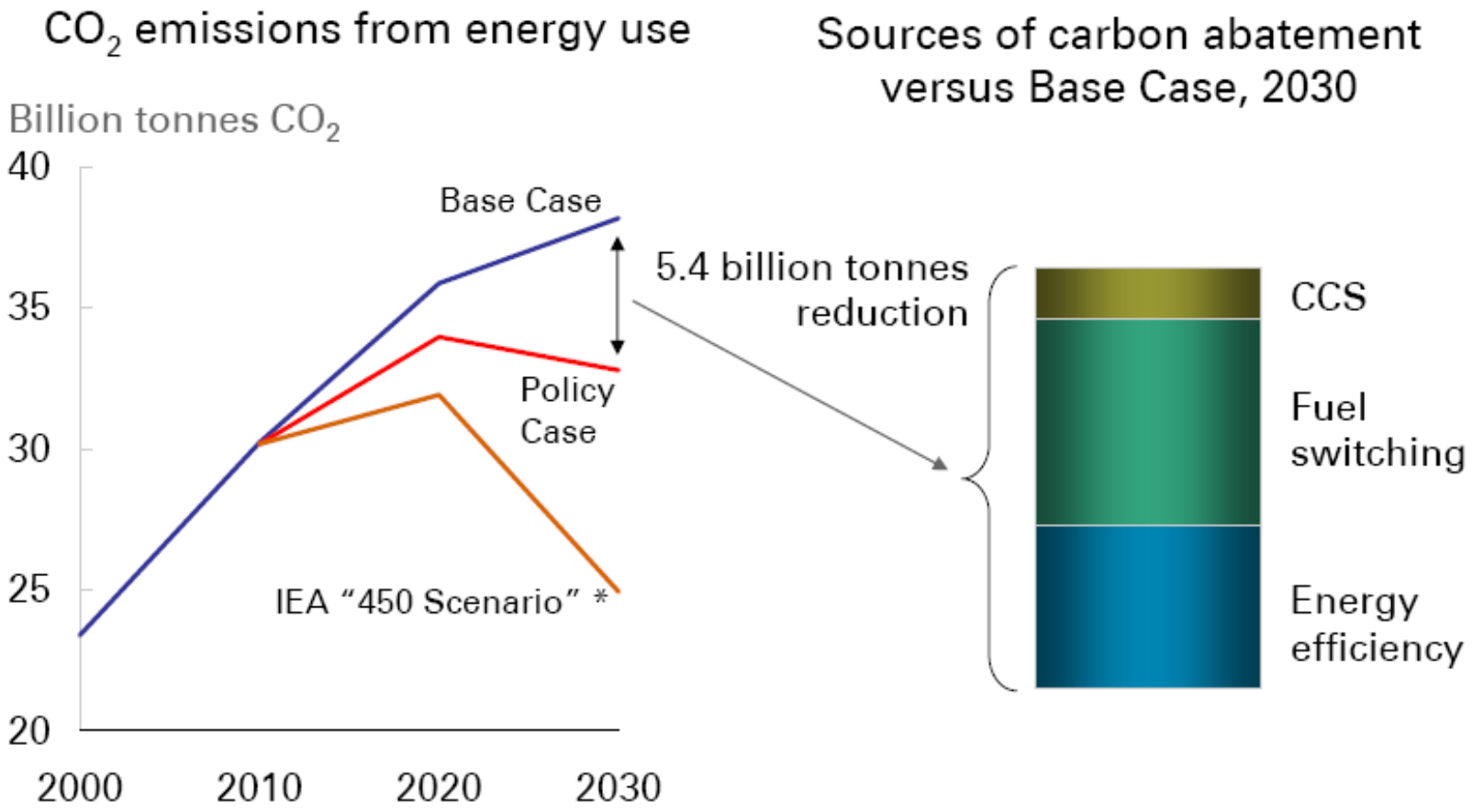
According to BP's survey of available energy sources, this increase in demand will imply an increase in energy-related GHG emissions that far exceeds 350 ppm of CO2e in the atmosphere – the level that is considered to be safe. Even the most aggressive climate change policies (which few countries are succeeding in successfully implementing) fail to deliver greenhouse gas emission reductions that approach these levels (see chart below).

This global challenge is characterized by a flattening OECD energy demand caused by improved efficiency and continued physical growth, along with the pressures of increased populations and standards of living elsewhere. UWinnipeg's difficulties in reconciling the space demands represented by its increased population and lifestyle expectations with the pressures that these demands place on its resource consumption are best understood within this global context.

As an academic institution with the intellectual resources to address the most pressing issues of the day and the mandate to continually improve its sustainability performance, UWinnipeg is well positioned to address this dynamic tension between continued growth and sustainability both academically and experientially. The potential this possibility represents in developing a living example of sustainability in action remains a vision upon which we can all set our sights.

[3] BP Oil. *BP Energy Outlook 2030: 60 years Statistical Review.* London: (available online).

BP Energy Forecast GHG projections for 2030 based on projected energy demand (p.66)



* a back-cast which illustrates what is required to stabilise greenhouse gas concentrations at 450 ppm from IEA, *World Energy Outlook 2010*

13 Appendix A – Performance Indicators

GHG & Air Indicators	Unit	Target	FY2006	FY2007	FY2008	FY2009	FY 2010
GHG emissions from electricity	T of CO2e	Diminishing annually to zero.	163.99	203.67	167.09	80.87	33.73
GHG emissions from Natural Gas	T of CO2e	Diminishing annually to zero.	3409.96	3223.88	3187.78	3462.42	3364.91
GHG emissions from Fleet Vehicles	T of CO2e	Diminishing annually to zero.	10.09	14.42	18.22	18.49	21.83
GHG emissions from Business Travel	T of CO2e	Diminishing annually to zero.	336.61	435.93	542.05	309.88	500.40

GHG emissions from Waste	T of CO2e	Diminishing annually to zero.	269.42	139.29	218.54	414.68	403.61
Total GHG emissions from all University operations in Tonnes CO_2e per annum for all gases and substances reportable under the CSA GHG reporting protocol	T of CO2e	Diminishing annually to zero.	4190	4017	4134	4286	4324
Total square meters of indoor space contaminated with asbestos which has potential to negatively impact human health	m^2	Diminishing annually to zero.	0	0	0	See report	See report
Total square meters of indoor space contaminated with mold which has potential to negatively impact human health	m^2	Diminishing annually to zero.	0	0	0	0	0
Number of air pollution incident reports or complaints received per fiscal year and documented evidence of the action taken to address them	number/ text	Zero air pollution incident reports or complaints per FY and/or document		Complaints – 15	Complaints – 9	Complaints - 5	NA
			no data	Complaints requiring testing – 7	Complaints requiring testing – 7	Complaints requiring testing - 4	NA

		ation of steps taken to address them.		Complaints still ongoing – 4	Complaints still ongoing - 3	Complaints still ongoing - 1	NA
Total amount of pesticides (including all types of plant and animal poisons) in grams used indoors each year, divided by the total square meters of interior space; multiply by 1000	g/m^2	0 g/1000 m2	No data	45.61	45.19	36.66	37.56
Total amount of pesticides in grams used indoors	g	0 g	No data	4185	4200	3709	3912
Total annual quantities of substances discharged to the air which exceed the thresholds listed with the National Pollution Release Inventory (NPRI) as reportable substances		Within NPRI tolerances .	No data	0	0	0	0
Total percentage of indoor space in square meters designated smoke-free	%	100	100	100	100	100	100

Total percentage of indoor space in square meters designated scent-free	%	100	0	0	0	0	0
Minutes or reports documenting decisions taken to rehabilitate economic, environmental or human health impacts arising from air pollution if such have occurred	text	Minutes or reports of full rehabilitation if damaging impacts have been incurred.	No occurrences	No occurrences.	No occurrences.	No occurences	No occurences
Number and short description of research projects or innovations implemented with the intent of improving air quality in University facilities or programs offered on or off-campus	number; text on file/in report	Non-zero positive number with short description of each.	No data	Included in CSO Annual Report	Included in CSO Annual Report	Included in CSO Annual Report	Included in CSO Annual Report

Energy Indicators	**Unit**	**Target**	**FY2006**	**FY2007**	**FY2008**	**FY2009**	**FY 2010**
Total energy use	KwH	Annual reductions to theoretical minimum.	33,490,941	32,253,322	30,507,144	34,158,051	35,786,939
Total energy cost	$		$1,447,027.83	$1,428,889.16	$1,388,785.52	$1,469,416.42	$1,495,579.55
Total energy intensity of operations of facilities	KwH/m2		365	352	328	338	344
Total energy intensity of operations	KwH/m2/CDD		0.067	0.060	0.055	0.060	0.060

Total energy intensity of operations	KwH/FCE/ CDD		0.204	0.179	0.169	0.180	0.183
Total annual electrical consumption in	KwH		14,347,029	14,118,810	12,501,378	14,702,975	16,864,380
Total annual electrical cost	$		$760,564.50	$770,608.66	$718,719.33	$839,021.19	$1,008,052.14
Energy intensity of electricity for facilities under management	KwH/m2	Derived	156	154	134	145	162
Energy intensity of electricity of facilities under management	KwH/m2/CDD	Derived	0.029	0.026	0.022	0.0260	0.0280
Energy intensity of electricity	KwH/ FCE /CDD	Derived	0.087	0.078	0.069	0.0760	0.0861
Total annual natural gas (KwH equivalent)	KwH equivalent	Annual reductions to theoretical minimum.	19,102,349	18,107,465	17,872,431	19,377,292	18,831,043
Total annual natural gas cost	$		$686,463.33	$651,473.71	$662,233.43	$622,004.03	$487,527.41
Energy intensity of natural gas of facilities under management	KwH/m2	Derived	208	197	192	192	181
Energy intensity of operations for natural gas of facilities under management	KwH/m2 / CDD	Derived	0.038	0.033	0.032	0.035	0.0313
Energy intensity for natural gas of operations	KwH/FCE/ CDD	Derived	0.116	0.100	0.099	0.102	0.0962
Total annual fleet vehicle fuel consumption	KwH equivalent	Replacement of fleet vehicles with zero emission models operated on renewable	41,563	27,047	75,015	76,159	89,891

		energy sources.					
Total annual fleet vehicle fuel consumption cost	$		no data	$6,806.79	$7,832.76	$8,391.20	$8214.67
Total estimated annual energy consumption incurred for intra-city transportation of students, staff, administration and faculty	KwH	Annual reductions to theoretical minimum.	no data	no data	no data	no data	no data
Total annual energy consumption incurred for extra-regional transportation of students, staff, faculty and administration which was reimbursed travel by the university	KwH	Annual reductions to theoretical minimum.	no data	no data	no data	no data	no data
Percent of annual energy obtained from renewable energy sources (hydro-electric, wind, solar thermal, solar PV, biomass, tidal, geothermal)	%	Increasing annually to 100%.	42.84%	43.77%	40.98%	43.04%	47.12%
Total annual stationary fuel consumption	KwH equivalent	Annual reductions to theoretical minimum.	no data	no data	58320	1625	1625
Total annual stationary fuel consumption cost			no data	no data	no data	no data	no data

Water Indicators	Unit	Target	FY2006	FY2007	FY2008	FY2009	FY 2010
Percentage of all water fixtures operating on campus which are water conserving models	%	Increasing annually to 100%.			5% (est.)	10%-15% (est.)	45%
Evidence of conformance with neutralization of toxic, chemically active, or biohazard substances before discharge to waste water stream	text	Periodic verification reports.			On file in Chem / Bio Depts.	On file	On File
Annual Total Cost of Water	$				$152,511.44	$176,042.70	$198,374.53
Total annual volume of potable water in liters consumed by the University	L	Report.			80,113,761	74,714,597	64,515,600
Percentage of total annual volume of water for which non-potable sources are acceptable (e.g., toilets, irrigation) supplied from grey water and/or storm water collected annually (in liters) that is reused on-site	%	Increasing annually to 100%.			0%	0%	0%
Total storm water recovered and treated / recycled (in liters)	%	Increasing annually to 100%.			0%	0%	0%
Summary of educational, professional development, and general awareness activities designed to encourage research and increase participation in water conservation	text	Anecdotal reports.			No data	No data	On File in CSO - Communications re: Campus Sustainability Recognition Award granted to UW plumber, Lake Friendly

activities, practices, and product choices							initiative
Participation in educational, professional development, and general awareness activities that encourage research and increase participation in water conservation activities, practices and product choices	text	Increasing year over year to practical maximum.			No data	No data	No data
Annual report of water use management performance	text	Tabled annually.			Done	Done	Done
Post Water Use Management Policy and performance reports to website	text	Policy and reports posted.			Done	Done	Done

Waste Indicators	**Unit**	**Target**	**FY2006**	**FY2007**	**FY2008**	**FY2009**	**FY2010**
Waste to landfill	T	Decreasing annually to theoretical minimum.	150.6	77.8	125.1	221.5	no data
Annual total weight of materials diverted from landfill and recycled (broken down below)	T	Increasing annually to theoretical maximum.	83.1	94.4	104.4	121.9	155.81
Organic Materials	T		0	1.5	11.1	13.5	23.2
Toner Cartridges	T		0	0.1	0.04	0.12	0.311
Batteries	T		0	0.1	0.04	0.04	0.096
Cardboard &	T		30.5	35.1	33.1	45.6	59.1

Boxboard							
Paper (2010 =confidential paper only)	T		49	51.4	49.4	43.2	15.2
PET drink containers/comingled	T		3.6	6.2	10.8	6.9	57.9
Percent change over previous year's waste production	%	derived	3.50%	-26.32%	60.50%	49.63%	no data
Total Waste Generated (trash, recycling, compost, Hazardous Waste & E-Waste)	T	Decreasing annually to theoretical minimum.	233.7	172.2	229.5	343.4	no data
Percentage change over previous year's waste to landfill	%		no data	-48.34%	60.80%	77.06%	no data
Percentage of the total weight (in kilograms) of waste destined for landfill or incineration comprised of recyclables (including organic wastes)	%	derived	No data	15.80%	14.30%	14% recycling; 32% compost	25% recycling; 41% compost
Annual total weight (in kilograms) of solid and liquid hazardous waste produced by or discharged from University facilities and operations	T of solids	Decreasing annually to theoretical minimum.	No data	0.65 T Solids	0.24T Solids	0.3T Solids	0.240
	L of liquids			1,000L Liquids	1,241L Liquids	1363 L liquids	650
Change in hazardous wastes produced by the University over previous year	%	derived	No data	Not calculable.	- 65.6% for solids	+24.5% Solids	-20.0% Solids
	%				+ 24.1% for liquids	+9.9% Liquids	-52.3% Liquids
Annual total weight (in	Kg	Increasing	No data	0T On campus.	0T On campus.	0T On campus	0T on campus

kilograms) of solid and liquid hazardous wastes recycled (either on- or off-campus)	Kg	annually to theoretical maximum.		Unknown off campus.	Unknown off campus.	Unknown off campus	Unknown off campus
Percentage of total annual weight (in kilograms) of solid and liquid hazardous waste recycled	%	derived	No data	No data	No data	No data	no data
Waste to landfill disposal cost	$		$32,400.00	$33,323.93	$34,613.87	$49,273.49	$91,687.72
Recycling collection fees	$		$5,000.00	$5,100.00	$5,000.00	$5,250.00	$5,245.99
Confidential paper shredding service	$		$4,258.06	$7,176.72	$7,445.81	$9,280.60	$11,191.13
Hazardous waste removal fees	$		$6,278.48	$15,000.00	$7,743.26	$4,775.19	$5,627.49
Compost collection fees	$		$0.00	$0.00	$0.00	$1,889.84	$4,842.06
Total waste management costs	$	derived	$47,936.54	$60,600.65	$54,802.94	$70,469.12	$118,594.39
Summary of educational, professional development, and general awareness activities designed to encourage research and increase participation in waste reduction activities, practices, and product choices	text	Anecdotal reports.	No data	On file in CSO.	On file in CSO.	On file in CSO	On file in CSO
Participation in educational, professional development, and general awareness activities that encourage research and increase participation in waste	text	Increasing year over year to practical maximum.	No data	No data	No data	No data	On file in CSO (Takeout Without)

reeducation activities, practices and product choices							

Transportation Indicators	Unit	Target	FY2006	FY2007	FY2008	FY2009	FY 2010
Total annual fossil fuel consumption for University fleet vehicles.	L	Reducing annually to theoretical minimum.		6,111	7,717	7,835	9,248
Total estimated annual fossil fuel consumption incurred from reimbursed air travel by University faculty, students or support staff	km	Reducing annually to theoretical minimum.		2,988,800	3,599,160	2,054,975	3,393,691
	L			104,608	125,971	71,924	118,785
Total estimated annual fossil fuel consumption incurred from reimbursed automobile travel by University faculty, students or support staff	L	Reducing annually to theoretical minimum.		12,589	22,059	12,879	15,831
Total estimated annual fossil fuel consumption incurred from reimbursed intra-city bus travel by University faculty, students or support staff	km	Reducing annually to theoretical minimum.		No data	5,851	631.54	8,956
	L				175	19	270
Total estimated annual fossil fuel consumption incurred from reimbursed inter-city bus travel by University faculty, students or	L	Reducing annually to theoretical minimum.		22.1	0	0	0

support staff							
Total estimated annual fossil fuel consumption incurred from reimbursed rail travel by University faculty, students or support staff	km	Reducing annually to theoretical minimum.		0	190	1111.5	5,042
Total estimated annual fossil fuel consumption incurred from intra-city bus travel from residence to campus and back by students, faculty and support staff		Reducing annually to theoretical minimum.		No data	No data	No data	No data
Total estimated annual fossil fuel consumption incurred automobile travel from residence to campus and back by students, faculty and support staff		Reducing annually to theoretical minimum.		No data	No data	No data	No data
Total estimated annual fossil fuel consumption incurred from carpooling and ride sharing travel from residence to campus and back by students, faculty and support staff		Reducing annually to theoretical minimum.		No data	No data	No data	No data
Percentage of total area of campus property devoted to parking lots, streets and lanes		Constant or reducing over time.		No data	No data	No data	No data
Total annual emission of GHGs incurred from use of fleet vehicles	T CO_2e	derived		14.4	18.2	18.5	21.8

Total annual emission of GHGs incurred from intra-city travel by all modes from residence to campus and back by students, faculty and support staff		derived		No data	No data	No data	No data
Total annual emission of GHGs incurred from reimbursed travel by all modes by students, faculty and support staff	T CO_2e	derived		435.9	542.1	309.88	500.4
Percentage of Transit buses with special access features to accommodate the needs of seniors, children, and the disabled		100%		No data	No data	No data	No data
Percentage of transportation-related facilities on campus with access features for seniors, children and disabled		100%		No data	100%	100%	100%
Cost of Transit fares as a percentage of annual income for students, faculty, and staff		derived		No data	No data	No data	No data
Adequacy of Transit service including air quality in buses and at stops/shelters; seating space per person within buses; scheduling of service; timely scheduling and routing information for Transit users; Transit user satisfaction ratings		Improving annually to practical maximum.		No data	No data	No data	No data

Attendance numbers for seminars, information events, and training sessions for students, faculty or support staff that address sustainable transportation literacy		Increasing annually to practical maximum.		No data	Campus Commuter Challenge - Unknown.	Campus Commuter Chalenge - Unknown	Campus Commuter Challenge - Unknown
					Workplace Commuter Challenge - 67.	Workplace Commuter Challenge - 57, or 7.5%	Workplace Commuter Challenge - 108, or 13.3%
					Walk for Wellness event - 89.		
Pre-training-post-training change scores measuring knowledge about and use of sustainable transportation modalities and services by students, faculty and support staff		Positive change values.		No data	No data	No data	No data
Anecdotal reports of information services, equipment, activities or events that promote sustainable transportation on campus		Reports tabled.		On file in CSO.	On file in CSO.	On file in CSO	On file in CSO
Percentage of students, faculty and support staff who regularly walk to campus		Increasing annually to practical maximum.		2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office
Percentage of students, faculty and support staff who regularly cycle to campus		Increasing annually to practical maximum.		2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office

Percentage of students, faculty and support staff who regularly use urban mass transit to travel to campus		Increasing annually to practical maximum.		2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office
Percentage of students, faculty and support staff who regularly use carpooling or ridesharing to travel to and from campus for work or classes		Increasing annually to practical maximum.		2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office	2005 Wpg Transit Study – CSO Office
Percentage of students, faculty and support staff who regularly drive single occupant vehicles to campus		Decreasing annually to practical minimum.		No data	No data	No data	No data
Participation rates for students, faculty and support staff in Resource Conservation Manitoba's Commuter Challenge		Increasing annually to practical maximum.		48	67	57	108
Avoided trips represented by distance-education course delivery, teleconferences, telecourse enrollments, etc.		Increasing annually to practical maximum.		No data	No data	No data	1953 registrants in distance/tele courses, 696 of whom attended class in person and 1257 of whom attended class remotely
Evidence that such measurement and monitoring system is in place		Document ed system.		Not in place.	Not in place.	Not in place	Not it place
Annual report of transportation activities		Tabled annually.		Done	Done	Done	Done
Post Sustainable Transportation Policy and performance reports to website		Policy and reports posted.		Done	Done	Done	Done

Land Use & Facilities Indicators	Unit	Target	FY2006	FY2007	FY2008	FY2009	FY 2010
Annual amount of chemical herbicide applied to University landscapes in liters	L	0 kgs. or 0 liters.	No data	0 L.	0 L.	14 L (Par 3; Roundup)	6.5 L Par 3; 2.5 L Roundup
Annual amount of artificial pesticide used on University landscapes in liters	Kg	0 kgs. or 0 liters.	No data	3.4 kgs.	3.4 kgs. (est.)	0	0
Annual amounts (in kgs., liters, g., etc) of chemicals applied to University landscapes for any purpose (e.g., chemical fertilizers, ice-melt compounds, dust control products, etc.)	Kg	Annual reductions to practical minimum.	No data (Mtn. Organic Ice Melt)	3,080 kg (Mtn. Organic Ice Melt)	3,600 kg (est.) (Mtn. Organic Ice Melt)	3.600 (est.) (Mtn. Organic Ice Melt)	17,500 Kg Summit safety salt; 175 lb urea; 90 lb potassium; 8 oz ferrous sulphate
Percentage of landscaping using xeriscaping techniques and materials	%	Increasing annually to 100%.	No data	70%	70%	100%	100%
Annual quantity in liters of fossil fuels consumed by grounds maintenance machinery and vehicles (mowers, snow blowers, sidewalk plows, etc.)	L	Decreasing year over year to practical minimum.	No data	915 L	928 L	225 L	332 L regular fuel, 791 L diesel
Percentage of yard wastes composted	%	Increasing annually to 100%.	0%	100%	100%	100%	100%
Percentage of grounds watering supplied from grey water / storm water recycling compared to use of city treated water	%	Increasing annually to 100%.	No data	0%	0%	0%	0%

Percentage of paper products (toilet paper, hand towels, etc.) consumed annually which are composed of 90% or more post-consumer recycled stock	%	100%	No data	100%	100%	100%	100%
Percentage of cleaning products defined as all purpose/hard surface, industrial cleaner, toilet bowl cleaner, floor cleaner/degreaser, glass, carpet cleaner, spot and stain remover, which meet the equivalent of, or be certified by, Standard CCD-146, CCD-147 and CCD-148 Environmental Choice	%	100%	No data	90%	90%	90%	90% (some products used in kitchens have no Environmental Choice alternatives)
Percentage of cleaning products defined as graffiti remover, drain cleaner and floor stripper for which the following information is disclosed to Property and Plant: -Hazardous ingredients present - Biodegradability of total product - Percent VOC in product - pH	%	100%	No data	1%	100%	100%	100%

- Fragrance - Type of dye - Oral toxicity of product - Presence of optical brightener - Third party certification (if available)							
Percentage of cleaning products used annually that contain: - Any known or suspected carcinogens/teratogens/mutagens as per IARC, ACGIH - Endocrine disrupters - Phosphates - Substances listed on CEPA toxic substance lists	%	0%	No data	0%	0%	0%	0%
Percentage of cleaning products used annually the unused portions of which are designated as hazardous wastes (as defined by CEPA or Federal Transportation of Dangerous Goods Act.)	%	0%	No data	0%	0%	0%	0%

If landscape design and construction has occurred since the last reporting period, documented evidence that xeriscaping / permaculture and organic maintenance regimes have been employed	text	Document as required.	No data	Report on file in CSO.	No projects in FY2008.	No projects in FY2009	No projects in FY2010
Documented evidence from RFPs that LEED standards or better have been specified for bidders	%	Document as required.	No data	100% (Provincial Policy)	100% (Provincial Policy.)	100% (Provincial Policy)	100% (Provincial Policy)
Measurement and record systems established and maintained	text	Record system in place.	Under develop-ment	Done	Done	Done	Done
Annual report of land use and property management performance	text	Tabled annually.	CSO annual report	CSO annual report	CSO annual report	CSO annual report	CSO annual report
Post Land Use and Property Management Policy and performance reports to website	text	Policy and reports posted.	Done	Done	Done	Done	Done

Procurment Indicators	**Unit**	**Target**	**FY2006**	**FY2007**	**FY2008**	**FY2009**	**FY 2010**
Documentation that each procurement decision involving the purchase of $X or more of a good, material, product or service, has included a needs assessment as well as a demand-reduction plan whenever possible	text	All procureme nt decisions include a needs analysis and demand reduction				No data - Procurement decisions are normally made by individual departments. Gently-used alternatives are regularly offered as an option to reduce demand,	No data - Procurement decisions are normally made by individual departments. Gently-used alternatives are regularly offered as an option to reduce demand,

		plan.				but most demand reduction is driven by budgetary considerations. Needs assessments are performed as required, on an office-by-office basis.	but most demand reduction is driven by budgetary considerations. Needs assessments are performed as required, on an office-by-office basis.
Percentage of total annual dollar value of equipment purchases for which life-cycle cost analysis was applied	text	Increasing annually to 100%.				No data - Applying formal life cycle costs analysis would require more procedures than the purchasing department currently has time, resources, and training to implement and develop. Purchasing agents do take into consideration long-term costs, both environmental and financial, when making purchasing decisions – buying things that have specific certifications, production location and shipping	No data - Applying formal life cycle costs analysis would require more procedures than the purchasing department currently has time, resources, and training to implement and develop. Purchasing agents do take into consideration long-term costs, both environmental and financial, when making purchasing decisions – buying things that have specific certifications, production location and shipping

						distances, extensive warranties so that items can b repaired and reused rather than rebought.	distances, extensive warranties so that items can be repaired and reused rather than rebought.
Total number of goods, materials, products or services procured by the University that contain or use toxic or carcinogenic compounds, or the use of which may pose a threat to human health or well-being	text	Decreasing annually to zero.				No data - All purchase orders are kept on file for three years along with all associated documentation, including data sheets and email/snail mail conversations. The end user is informed of any issues relating to toxicity or possible health or environmental risks due to the purchase and use of the product.	No data - All purchase orders are kept on file for three years along with all associated documentation, including data sheets and email/snail mail conversations. The end user is informed of any issues relating to toxicity or possible health or environmental risks due to the purchase and use of the product.
Documentation that when goods, materials, products or services are procured that contain toxic ingredients or components, a thorough review of alternatives was undertaken and included in the procurement decision	text	All toxic product procurement is accompanied by alternative search / review				The University does not buy products that use toxic compounds unless there are no reasonably priced alternatives available. The definition of	The University does not buy products that use toxic compounds unless there are no reasonably priced alternatives available. The definition of

		reports.				reasonably priced is somewhat fluid, but generally hovers around 150% of the less desireable product. In the case of specific equipment required by researchers, there are instances in which no alternatives are available.	reasonably priced is somewhat fluid, but generally hovers around 150% of the less desireable product. In the case of specific equipment required by researchers, there are instances in which no alternatives are available.
Percentage of total annual dollar value of all goods, materials and services procured from local and neighbourhood suppliers	text	Increasing annually to theoretical maximum.				No data - The University does not track how many purchases are locally sourced – again, this sort of tracking would require more resources than currently available. Every effort is made to buy within 100 miles of the City of Winnipeg, then nationally, then internationally. Efforts are also made not to buy products produced overseas.	No data - The University does not track how many purchases are locally sourced – again, this sort of tracking would require more resources than currently available. Every effort is made to buy within 100 miles of the City of Winnipeg, then nationally, then internationally. Efforts are also made not to buy products produced overseas.

Percentage of goods, services and materials procured annually that are approved / certified as environmentally friendly / sustainable	text	Year over year increase in %age to practical maximum.				No data - Purchasing agents ensure that they pick the “greenest” products they can and attempt to steer end-users towards the most sustainable choice possible.	No data - Purchasing agents ensure that they pick the “greenest” products they can and attempt to steer end-users towards the most sustainable choice possible.
Percentage of goods, services and materials procured annually that are sourced from certified / approved environmentally friendly suppliers	text	Year over year increase in %age to practical maximum.				No data - Almost all furniture purchases are made from certified environmentally friendly suppliers. All paper is 30% post-consumer recycled and is FSC certified. All services have environmental protection clauses in them that state the work has to be done in the most “green” manner possible. The purchase of recycled or used equipment is encouraged.	No data - Almost all furniture purchases are made from certified environmentally friendly suppliers. All paper is 30% post-consumer recycled and is FSC certified. All services have environmental protection clauses in them that state the work has to be done in the most “green” manner possible. The purchase of recycled or used equipment is encouraged.

Total annual weight (in kilograms) of metals and / or metal products procured by the University	text	Decreasing annually to theoretical minimum.				No data	No data
Total annual weight (in kilograms) of metals and / or metal products procured by the University from recycled sources	text	Increasing annually to 100% of consumption.				No data	No data
Total annual weight (in kilograms) of wood and paper products procured by the University	text	Decreasing annually to theoretical minimum.				No data	No data
Total annual weight (in kilograms) of wood and paper products procured by the University from recycled sources	text	Increasing annually to 100% of consumption.				No data	No data
Percentage of total number of goods, materials and products that contain recycled material content	text	Positive year over year increase as products become available, approaching 100%.				No data - see above	No data - see above
Total annual embodied energy of the products, materials, goods, and services procured by the University	text	Year over year decrease.				No data	No data

Summary of educational, professional development, and general awareness activities designed to encourage research and increase participation in green procurement activities, practices, and product choices	text	Anecdotal reports & number (increase to some opti-mum?)				No data	Purchasing Services participates in the Manitoba public sector "Going Green" Working Group. Resources limit the amount of workshops and seminars attended, but Purchasing Services makes all efforts to attend any possible sessions.
Percentage of RFPs, tenders and supplier contracts that included the University's green procurement policy	%	100%				100%	100%
Evidence that mass / volume-based measurements are being made of all materials and products procured by the University	text	Mass measurement system in place.				Under development.	Under development.
Annual report of green procurement performance	text	Tabled annually.				Done	Done
Post Green Procurement Policy and performance reports to website	text	Policy and reports posted.				Done	Done

14 Appendix B – List of Committee Members & Focus Group Participants

Staff

Jodene Baccus (Community Learning)	Campus Sustainability Council
Len Cann (Physical Plant)	Campus Sustainability Council, Materials Conservation Working Group
Steve Coppinger (Retired)	Campus Sustainability Council
Michael Dudley (Institute of Urban Studies)	Campus Sustainability Council
Michael Emslie (Financial Services)	Campus Sustainability Council
Laurel Repski (VP-Sustainability.)	Campus Sustainability Council
Mark Burch (Retired)	Campus Sustainability Council
Kisti Thomas(CSO)	All
Lydia Warkentin (UWCRC)	Campus Sustainability Council, Materials Conservation Working Group
Alana Lajoie-O'Malley(CSO)	All
Chris Harwood (Student Housing)	Materials Conservation Working Group
Karin Krueger (ELP)	Sustainable Campus Life
Kathleen Legris (Student Services)	Sustainable Campus Life
Melissa Dupuis (President's Office)	Sustainable Campus Life, Focus Group
Suzanne Martin (Education)	Sustainable Campus Life
Cathleen Jeanson (Human Resources)	Sustainable Campus Life, Focus Group
Cathleen Hjalmarson (Rhetoric, Writing & Communications)	Focus Group
Sharon Leonard (Marketing & Communications)	Focus Group
Premal Modha (Student Recruitment)	Focus Group

Faculty

Schnitzer, Debbie (English)	Campus Sustainability Council
Diduck, Alan (Environmental Studies)	Campus Sustainability Council, Academic Initiatives Working Group, Focus Group
Charleton, Kimberly (Chemistry)	Campus Sustainability Council, Academic Initiatives Working Group
Bill Buhay (Geography)	Materials Conservation Working Group
Ernest Prokopchuk (Chemistry)	Materials Conservation Working Group
Darshani Kumaragamage	Academic Initiatives Working Group
Don Metz (Education)	Academic Initiatives Working Group
Danny Blair (Geography)	Academic Initiatives Working Group
Joanne Boucher (Politics)	Focus Group
Sandra Tomsons (Philosophy)	Focus Group
Rod Hanley (Dean of Science)	Focus Group

Students

William Ring (EcoPIA)	Campus Sustainability Council
Ava Jerao (UWSA)	Campus Sustainability Council
Matt Morison	Academic Initiatives Working Group
Andree Forest	Volunteer
Jordan Janisse	Volunteer
Avery Artimowich	Volunteer
Caleigh Christie	Volunteer
Marlowe Brownlee	Focus Group
Andrea Globa	Focus Group
Katie Haig-Anderson	Focus Group
Ginger Boyer	Focus Group
Katrina Derbecker	Focus Group
Christopher Clacio	Focus Group
Kaeleigh Ayre	Focus Group

15 Appendix C – Sustainability-Related Research at UWinnipeg

Biology

German Avila Sakar - Restoration of quarry lands through compost amendment of soil.

Scott Forbes - Development of Sustainable Inland Fisheries; Developing Organic Fertilizers from Fishery Waste.

Paul Holloway – Natural Products as a Biocontrol Method for Freshwater Fouling.

Andy Park – Comparing cumulative growth, stand biomass, and carbon storage among fire-origin and planted stands of Red and Jack pine in Sandilands Provincial Forest, Manitoba; A framework for managed relocation of forest trees in southeast Manitoba.

Jacques Tardif – Gap Dynamics in Trembling Aspen Stands, Dendroclimatology of Jack Pine and Tree-Ring Anomalies in Conifers from Manitoba.

Richard Westwood - Growth & diversity of Pine/Spruce plantations in Manitoba.

Craig Willis - Ecological Energetics of Small, Wild Animals: From Flexibility to Fitness; Artifical Thermal Refugia and White Nose Syndrome.

Chemistry

Athar Ata - Phytochemical Studies on Medicinally Important Plants (creating natural pharmaceuticals).

Charles Wong – Limiting phosphorous and contaminant loading to Lake Winnipeg from the Grindstone Park cottage development by optimizing nutrient sequestration and recycling in a lagoon - wetland wastewater treatment system.

Enviromental Studies

Alan Diduck – Resource Management and Community Development.

Darshani Kumaragamage – Investigating phosphorus release from waterlogged soils in Manitoba to facilitate design standards and operational protocols for drainage systems.

Geography

Danny Blair – Infrastructure for Wide Market Adoption of PHEV (Plug-in Hybrid Electric Vehicles); Assessment of climate change and variability in Manitoba/Western Interior; Impacts of climate change on transportation in the Western Interior.

Bill Buhay – Methane and Nitrous Oxide cycling in the Red River, Manitoba: Implications for a pollution instigated greenhouse gas emissions from an anthropogencially impacted river; Morden's Community Lead Environmental Action on Nutrient Elimination and Removal (CLEANER) in Dead Horse Creek.

Jino Distasio – Churchill Sustainability Planning Framework (through the Institute of Urban Studies).

Patricia Fitzpatrick - Government and Voluntary Policies for Mining Sustainability: Development, Implementation and Learning in Canada and Brazil; Silos and Systems, Development and Sustainability: Catalytic Forces in Mineral Policy?

Other

Samantha Arnold (Politics) – Climate Change and Commercial Shipping Developments in the Arctic.

SSHRC Aid to Small Universities – Environment, Sustainability and Health. This grant was awarded to the University and had three streams: Urban, Rural and Northern. Approximately 6 faculty were awarded seed grants from here and a number of students were supported.

Government of Canada Northern Scientific Training Program – two senior undergraduates participated in this program, working with adjunct faculty member LeeAnn Fishback at the Churchill Northern Studies Centre during the summer on projects that are related to the tundra and boreal forest near Churchill.