



2012

carbon neutral action report

SIMON FRASER UNIVERSITY



ACKNOWLEDGEMENTS

This report was produced by Simon Fraser University. It supplements the Carbon Neutral Action Template and provides a high-level overview of the actions taken by the SFU campuses to reduce greenhouse gas emissions and promote a culture of sustainability.

For more information about sustainability at SFU, please visit our website:

www.sfu.ca/sustainability

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contents

1.0

EXECUTIVE SUMMARY

2.0

2012 GREENHOUSE GAS EMISSIONS

Offsets Applied to Become Carbon Neutral in 2012 2.1

Changes to Greenhouse Gas Emissions &
Offsets Reporting from Previous Years 2.2

3.0

ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS IN 2012

4.0

PLANS TO CONTINUE REDUCING GREENHOUSE GAS EMISSIONS: 2013 - 2015

5.0

ACTIONS TAKEN TO ADVANCE SUSTAINABILITY & CARBON NEUTRALITY

6.0

APPENDIX

- (A) Actions Towards Carbon Neutrality
- (B) Actions to Improve Sustainability
- (C) SFU Greenhouse Gas Emissions by Source



2012

CARBON NEUTRAL ACTION REPORT



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1.0 EXECUTIVE SUMMARY

Simon Fraser University's (SFU) sustainability goals are articulated in its Sustainability Policy GP 38 and in its Strategic Vision, where sustainability is one of the University's six guiding principles.

SFU demonstrated its commitment to sustainability in 2012 by funding a new Sustainability Office and establishing a Senior Sustainability Council. The Senior Sustainability Council is specifically tasked with creating an institution-wide Sustainability Strategic Plan and championing the Plan's implementation. Members of the Council are senior University officers reporting directly to the Vice Presidents.

In 2012, SFU focused on the development of its Sustainability Strategic Plan, which is intended to create a more sustainable culture through encouraging behaviour change, and extending awareness of and appreciation for sustainability through all VP portfolios and activities. We want sustainability to become "business as usual" at SFU. Greenhouse gas reduction activities are a part of this Plan.

SFU reduced greenhouse gas emissions by 4% from 2011, and has now achieved an 8% reduction in emissions since the baseline year of 2007, despite the growth in building footprint of over 13% in the same period.

In addition to emissions reductions, the collaborative work of the new SFU Sustainability Network has strengthened sustainability relationships on campus. The SFU Sustainability Network was launched in April 2012.

Facilities Services continued to operate the building stock in the most efficient manner possible, drawing on BC Hydro's Continuous Optimization Program to identify and implement retrofits and to maintain well tuned building functioning. The Energy Management Program carried out several energy efficiency projects across the Burnaby campus, and the renovation of the Discovery 1 building was completed to LEED Commercial Interiors standards.



Behaviour change programs deepened their roots and were prepared for expansion in 2013.

The Green Labs program entered its third year in operation, with the expansion of this program planned to take place across the campus in 2013. The Sustainability Peers program for students at SFU was piloted over the course of the year. The Green Office Certification Program also was piloted in preparation for expansion campus-wide through the Sustainability Ambassadors network in 2013.

The preparatory and maintenance work from 2012 has established a firm foundation upon which SFU can extend its energy reduction campaigns, the Zero Waste initiative, and the completion of other crucial sustainability-related strategic actions in 2013.

2.0 2011 GREENHOUSE GAS EMISSIONS

Total (absolute) GHG emissions for Simon Fraser University's operations in 2012 were 17,818 tonnes CO₂e. Emissions decreased by approximately 5% compared to 2011 levels, due at least partly to a warmer weather year. Between 2011 and 2012, university physical space increased slightly (0.4%). Emissions for 2012 are approximately 8% lower than the 2007 baseline (see **Table 1**). Overall, the university's physical space has increased 13% since 2007.

2.1 OFFSETS APPLIED TO BECOME CARBON NEUTRAL IN 2011

In 2012, as reported in the BC Provincial Government's SMARTTool, SFU purchased 17,520 tonnes of carbon offsets from Pacific Carbon Trust to become carbon neutral for the year 2011. At the price of \$25 per tonne, this amounted to \$459,900 of offsets after GST. An overpayment for 298 tonnes of carbon offsets in 2011 was reconciled in the 2012 repayment (the payment for 2012 being reduced by 298 tonnes below the 2012 emissions).

Eight tonnes of CO₂ equivalent emissions from the combustion of biomass fuels were reported as part of our total greenhouse gas emissions profile in 2012. As stated in the 2012 BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions, the carbon dioxide emissions resulting from the combustion of biogenic fuel sources must be reported but do not require offsets.



FIGURE 1

Simon Fraser University Greenhouse
Gas Emissions by Source per Year

SOURCE	2007 (tCO ₂ e) BASELINE YEAR*	2010 (tCO ₂ e)**	2011 (tCO ₂ e)**	2012 (tCO ₂ e)** CURRENT YEAR
Buildings – Stationary Fuel Combustion and Purchased Energy	18,113	17,079	18,133	17,312
Fleet – Mobile Fuel Combustion	940	288	283	245
Paper – Office Supplies	357	337	334	270
Carbon Neutral or Offset Exempt	N/A	-9	-9	-8
Total Emissions Calendar Year	19,410	17,695	18,741	17,818

2.2 CHANGES TO GREENHOUSE GAS EMISSIONS & OFFSETS REPORTING FROM PREVIOUS YEARS

Following the public release of Simon Fraser University's 2011 Carbon Neutral Action report it was determined that the total emissions for the 2011 calendar year were under-reported by 82 tonnes CO₂e. With a carried forward offset credit of 380 tonnes from previous years, the credit available for 2012 emissions was 298 tonnes (\$7,450). This surplus of offsets has been applied against our 2012 emissions offset payment.

In 2012, the total building area of the university grew by 0.4% with the acquisition of new space at the Surrey Campus and the completion of several small renovations. The Shrum Chemistry Renew on the Burnaby campus did not add significantly to the total building area.

3.0 ACTIONS TAKEN TO REDUCE GREENHOUSE GAS EMISSIONS IN 2011

SFU is a growing university. In the last five years the student (undergraduate and graduate) population has grown over 18%, with growth in staff, and faculty numbers as well. University building space, the most significant source of emissions in SFU's footprint, has increased to absorb this dramatic growth as well: 13.3% since 2007, but just 0.4% between 2011 and 2012.

Maintaining efficient buildings is key in to being able to manage the university's greenhouse gas emissions. SFU does this through the systematic "tuning-up" of buildings, implementing retrofits to older building systems (e.g., HVAC, lighting), and monitoring the energy performance of the existing buildings through the BC Hydro Continuous Optimization (C-Op) Program.

*2007 baseline set from Willis Energy: SFU GHG Inventory

**2010-2012 values as reported in SMARTTool. Please note that for simplicity, values with decimals have been rounded off.



Energy-efficiency improvements are made in conjunction with the expansion and improvement of behaviour change programs, which are designed to make students, faculty and staff better “energy tenants” in the campus buildings. The majority of emissions reductions in the 2012 calendar year were reductions in emissions from buildings.

In 2012, nine more buildings were connected to the Building Energy Dashboard display system, and energy performance baselines were created for four more buildings on the Burnaby campus (Library, Shrum Biology, Shrum Kinesiology and Shrum Physics). A total of 18 buildings on the Burnaby campus are now connected to energy dashboard display systems. Energy projects identified through the C-Op program were implemented in these same four buildings, including the installation of VFDs (Variable Frequency Drives) into existing fan systems and of carbon dioxide sensors in the fan systems to better control ventilation. Ongoing monitoring of the performance of the remaining SFU building footprint continued in 2012.

In addition to building retrofits, in 2012 SFU:

- Reduced emissions related to paper below 2011 levels by 20% from; 30% recycled paper became the standard for copiers, with 65% of 8.5 x 11, 90% of 11 x 17 and 100% of 8.5x14 paper having a minimum 30% recycled content.
- Continued the two-year expansion of the Green Labs program into the Shrum Chemistry Building.

- Piloted and refined the Green Office Certification Program for expansion in 2013.
- Created nine pilots for virtualizing activities between SFU’s three campuses, including: virtualizing classrooms so that students at multiple campuses can attend the same class; virtualizing executive and administrative committee meetings; and installing virtual capabilities in the Faculty of Education, the Library and Continuing Studies to facilitate virtual course attendance.
- Completed the Renovation for the Discovery 1 building to LEED Commercial Interior Standards. Our application for certification is pending.

4.0 PLANS TO CONTINUE REDUCING GREENHOUSE GAS EMISSIONS: 2012 - 2014

SFU has several short- and long-term plans to continue reducing its greenhouse gas emissions:. These are to:

- Continue to implement projects identified through the BC Hydro Continuous Optimization Program.



- Extend BC Hydro Continuous Optimization program to another six buildings: Blusson Hall, Saywell Hall, Strand Hall, Segal Centre, Education Building and Robert C. Brown Building.
- Expand the Green Labs program across the Burnaby campus through the Green Labs Certification Program.
- Expand the Green Office Certification Program across the Burnaby campus.
- Continue to implement lighting retrofits, including expanding the replacement of parkade and parking pole lights to LED, upgrading all underwater lights in the campus pool, and upgrading lighting in the Library and in several lecture theaters.
- Complete the University's Sustainability Strategic Plan.
- Expand the Sustainability Peers Program through on-campus partnerships.
- Continue the campus Zero Waste committee and complete the campus Zero Waste Plan.
- Establish campaigns to increase sustainable procurement for office supplies.

5.0

ACTIONS TAKEN TO ADVANCE SUSTAINABILITY & CARBON NEUTRALITY

SFU took significant steps to embed sustainability into the University's operations and business in 2012. In 2012, the SFU Sustainability Office was created, and a Senior Sustainability Council (SSC), composed of a senior representative from each Vice-Presidential portfolio, was established. The Council, supported by the Sustainability Office, began the development of a Sustainability Strategic Plan for the university that will address social, economic and environmental sustainability. The Plan is expected to be approved in 2013.

SFU strengthened the connections among students, faculty and staff through the launch of the Sustainability Network. The Network hosted the first Annual Sustainability Awards in April 2012, organized the first annual Sustainability Opportunities Week and collaborated on the Sustainability Network website.

The Sustainability Office's Green Office Certification Program was further expanded in 2012. Offices earn different Green Office 'Leaf' Certification (Green, Bronze, Silver, Gold) based on the range of sustainable initiatives they undertake. The Program is implemented by SFU's Sustainability Ambassadors, and promotes activities such as energy conservation (through turning off appliances, lights, computers when not in use), paper reduction (through double-sided printing, paperless meetings) and waste diversion (through improved recycling and composting programs).



In addition to high-level sustainability planning, SFU advanced sustainability (environmental, social, and economic) and carbon neutrality on each of SFU's campuses. Some of these actions are listed below:

- In 2012, SFU became the second Fair Trade Campus in Canada, meeting Fairtrade Canada's standards on availability of Fair Trade products, visibility of the concept of Fair Trade and the establishment of a campus Fair Trade Committee.
- In July of 2012, SFU's cleaning services expanded the LEED-EB compliant cleaning practices from the Shrum Chemistry building to all buildings and to all three campuses. The cleaning company is carbon-neutral certified; all cleaning supplies are Eco Certified and standardized to reduce packaging and carbon footprint for transportation.
- SFU's food system was overhauled in 2012. Foam containers and petroleum-based plastics have been eliminated from food services operations on campuses; these have been replaced by paperboard containers and corn-based plastics where take-out containers are absolutely necessary. Dine-in and catering services have converted to chinaware or melamine, glassware and metal cutlery.
- Food services have also adopted a focus on sourcing food that is fresh, local and sustainable, and have adopted "make-to-order" over "make-to-hold" practices to reduce energy use and decrease food waste.
- An innovative agreement was created with the on-campus print service to print custom textbooks for BC post-secondary institutions, reducing the carbon footprint associated with transporting these books from elsewhere.
- SFU continues to expand its offering of sustainability-focused and sustainability-related courses to meet the expanding demand by students. 2012 saw the launch of a new Certificate in Environmental Literacy. New courses related to sustainability that began in 2012 include Environmental Controversy, Change Lab, A World of Cities, Cities Transport and Infrastructure, Urban Food Systems, and Environmental Law. In addition, SFU's Certificate in Corporate Social Responsibility was modified to become a Certificate in Corporate Environmental and Social Responsibility.

(A) Actions Towards Carbon Neutrality

The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.

ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
MOBILE FUEL COMBUSTION (FLEET AND OTHER MOBILE EQUIPMENT)					
Vehicle Fuel Efficiency					
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	Building and Grounds-Purchased one newer, more fuel-efficient van. Campus Security Vehicles are currently leased. Towards the expiry of the lease in 2016 more fuel efficient vehicle alternatives that meet operational requirements will be considered.	Facilities Services: <ul style="list-style-type: none"> • 2 electric vehicles will be retired due to ongoing problems, and replaced by 2 fuel-efficient Transit vans • 1 half-ton pick-up will replace an older truck • 1 three-ton truck will replace a 1999 five-tonne truck Campus Security will replace fleet vehicles with more efficient vehicles over time, and shrink size of fleet where possible, continuing if a more fuel efficient vehicle will meet the specific requirements to support emergency response operations.	2008	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right sizing" principles	Ongoing/In Progress	Four specialized electric vehicles were purchased for Facilities but performance was ineffective for the job requirements. A more efficient 4 cylinder Ford Transit van was purchased to replace other vehicles. Drivers were encouraged to only carry necessary cargo/equipment on trips to increase vehicle fuel efficiency.	Continue to replace fleet vehicles with more efficient vehicles over time, and shrink size of fleet where possible.	2008	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	Facilities Services' Mechanical Section continues to perform scheduled preventative maintenance of the Facilities Operations vehicles every 6 months.	Regular (every 6 months) scheduled, preventative maintenance will continue into the future.	1995	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013-2015	START YEAR	END YEAR
Behaviour Change Program					
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	In Development	SFU Risk Management Driver's Manual includes a section on climate change, the importance of anti-idling and alternative transportation. A copy of these manuals is included in every university vehicle on campus.	Look in to creating an anti-idling policy for the university complete with appropriate communications and knowledge dissemination to fleet drivers, contractors, delivery vehicles and haulers (e.g., signage, stickers, messages).	2011	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Ongoing/In Progress	Drivers of the facilities fleet are regularly encouraged to share vehicles. In Facilities Services, a reduction in the size of the fleet has induced more sharing of vehicles (but also more trips back and forth).	Drivers will continue to be encouraged to reduce number of vehicles travelling trips to work sites by sharing vehicle trips.	2009	No End Date (Continuous)
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress	Facilities Services has an electric bike which is used instead of a vehicle for commuting between different parts of the Burnaby campus during day-to-day operations.	No new steps currently planned.	2011	No End Date (Continuous)
STATIONARY FUEL COMBUSTION, ELECTRICITY AND FUGITIVE EMISSIONS (BUILDINGS)					
Planning / Management					
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	Connected 9 more buildings into the Building Energy Dashboard display system. http://my.pulseenergy.com/sfu/dashboard	Connect Segal building at the Vancouver Campus to the Building Energy Dashboard display system. Continue monitoring the performance of buildings. Assess the effectiveness of the monitoring program and whether more buildings will be included in the future.	2008	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Owned Buildings					
Establish energy performance baseline for owned buildings	Ongoing/In Progress	Connect Segal building at the Vancouver Campus to the Building Energy Dashboard display system. Continue monitoring the performance of buildings. Assess the effectiveness of the monitoring program and whether more buildings will be included in the future.	Continue to monitor and track energy performance of individual buildings (8 existing and 4 new) against established benchmark. Add 6 more buildings to the program (Blusson, Saywell, the Education Building, RCB, Strand Hall and Segal).	2008	No End Date (Continuous)
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	Ongoing/In Progress	Obtained BOMA BEST certification for 25 buildings on Burnaby campus (60% of owned buildings) with 21 buildings achieving level 2 or above.	Continue to maintain and operate these certified buildings up to BOMA BEST certification standards. Re-certification is every 3 years, and will be required again in 2014/15.	2011	No End Date (Continuous)
Register for performance labelling/certification for commercial interiors of owned buildings (e.g., LEED CI)	Ongoing/In Progress	Applied for LEED CI Certification for Discovery 1 building. Waiting for results from the submission.	Continue to enhance energy management systems at Surrey and Burnaby campus.	2010	No End Date (Continuous)
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Ongoing/In Progress	New construction standard on campus is to build to LEED Gold. Not all buildings undergo LEED certification process. Waiting to hear whether the \$50M Major Renew capital project in Shrum Chemistry has obtained a LEED Gold Certification.	SFU will submit for LEED Gold certification for the Student Union Building on the Burnaby Campus if the student body approves the cost for certification.	2009	No End Date (Continuous)
Perform energy retrofits on existing, owned buildings.	Ongoing/In Progress	Four additional buildings (Library, Shrum Biology, Shrum Kinesiology and Shrum Physics) have implemented energy projects identified by BC Hydro continuous optimization program. These projects included the installation of VFDs into existing fan systems, and the installation of carbon dioxide sensors in the fan systems to better control the ventilation for the buildings. Ongoing monitoring of the performance of the initial eight buildings.	Extend BC Hydro C-Op Program to six other buildings: Blusson, Saywell, Strand Hall, Segal, EB and RCB.	2008	No End Date (Continuous)
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	Ongoing/In Progress	Record of refrigerant use are managed by SFU A/C Department and Refrigerant Contractors. This is part of the ongoing maintenance procedures.	Develop more comprehensive management plan and strategy for refrigerants. Report emissions for refrigerants in SMARTTool based on increases in cooling systems.	2008	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Retrofitting Owned Buildings					
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	Through the Continuous Optimization Program, energy retrofits were made to mechanical systems in four more buildings (Library, Shrum, Kinesiology and Physics).	Mechanical upgrades through continuous optimization program planned for six additional buildings (Blusson, Saywell, Strand Hall, Segal, EB and RCB).	2002	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	<p>Replaced existing lighting with more efficient lighting during classroom renovations in AQ and RC Brown Hall.</p> <p>Converted 7 smaller AQ lecture theatres ("7 Sisters") from incandescent to LED lighting, with new dimmers.</p> <p>More efficient lighting and control installed in renovation of the Advancement Office in Strand Hall and the FIC renovation in Discovery 1 building.</p> <p>Began pilot in Parking Lot B Block to convert existing pole HID light-fixtures to LED fixtures.</p> <p>Began conversion of underwater pool lighting from 300 watt incandescent to 70 watt metal halide.</p> <p>Replaced all old incandescent lighting in Images Theatre with new high end LED light fixtures, as part of the theatre upgrade.</p>	<p>Install more LED fixtures to replace HID on 23 ft parking lot poles.</p> <p>Convert Visitors parkade to LED, similar to that done in the Convocation parkade.</p> <p>Change out all of the lighting on Library floors 3, 4 and 5 to new, more efficient fixtures.</p> <p>Replace 1000 CFL light bulbs with 500 screw-in LED bulbs in AQ 3000, South and East side concourse.</p> <p>Replace all incandescent fixtures with LED lamps in the 3 main lecture theatres in Shrum Science building.</p> <p>Change the lighting in the centre gym from metal halide to LED (conversion for the rest of the building is dependant upon whether this building becomes the new Student Union Building).</p> <p>Complete underwater pool lighting upgrade.</p> <p>Continue to optimize/improve new lighting system in the Images Theatre for users. Continue lighting upgrades as other renovations occur.</p>	2009	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	<p>Adopted demand controlled ventilation strategy in the library by installing carbon dioxide sensors in the fan systems so that ventilation could be controlled based on occupancy.</p> <p>Migrated the building automation system of Discovery 1 and 2 to the SFU main system.</p> <p>Added lighting control motion sensors during renovations to classrooms in AQ and RC Brown Hall, and in the Advancement Offices in Strand Hall.</p> <p>Began pilot project in 2 South Science labs, converting these labs to motion-sensor controlled lighting. Tied lighting control systems into building automation systems (3-4 buildings since 2008).</p>	<p>Install carbon dioxide sensors in the AQ building for improved ventilation.</p> <p>Install motion control sensors in the Library stacks, and connect lighting control on floors 6 and 7 of the Library to the building automation system.</p> <p>Continue with South Science building pilot for converting labs to motion sensors.</p> <p>Add daylight controls to Centre Gym while changing lighting.</p> <p>Tie lighting control systems into building automation systems for 1-2 more buildings.</p> <p>Continue to add motion sensors during renovation projects, particularly for washrooms, offices, classrooms.</p>	2008	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	<p>Completed Shrum Chemistry renewal including insulation and window replacement.</p> <p>Completed sections of the Theatre roofing (partial) and the ASB atrium (skylight - partial replacement) renewal work.</p>	<p>Where funding allows, complete the remaining Theatre roofing and ASB atrium skylight replacements, and undertake roofing replacement for Strand Hall, Education building and the Transportation Centre, which will include insulation upgrades.</p>	2009	No End Date (Continuous)
Leased Buildings					
Establish energy performance baseline for lease buildings	In Development	No steps taken.	The Segal Building will be added to the BC Hydro Continuous Optimization Program in 2013.	2013	No End Date (Continuous)
Lease space with commercial interiors performance labelling/certification (e.g. LEED CI)	Ongoing/In Progress	Applied for LEED CI Certification for Surrey Campus-Podium 2. Waiting for results from the submission.	No steps currently planned.	2010	No End Date (Continuous)
IT Power Management					
Install power management software which shuts down computers outside of regular business hours		Ran pilot of software that will allow users to shut down their computers. Previous pilot wasn't successful.	Deploy the tools which will shutdown PCs outside of business hours in Administration Units. Modernize operating systems.	2012	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Implement server virtualization	Ongoing/In Progress	85% for Central IT Services servers have been virtualized.	More virtualization for central IT. Provide on-demand load management-consolidate virtual machines.	2009	2014
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress	All new systems have auto-sleep settings. Old computers that are incapable of having auto-sleep settings are being replaced.	Continue to replace older systems to ensure that all computers are capable of having auto-sleep settings.	2008	No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices as part of a print management strategy.	Ongoing/In Progress	IT has seen a 20% decrease in printing since 2009. Main projects to reduce stand-alone printers is underway.	Managed Print Services initiative will complete the project to remove stand-alone printers, copiers and fax machines. Completion is expected in 2013; what remains of the stand-alone printers, fax machines and copiers will be made redundant and disposed of over the next 2-3 years as the assets depreciate.	2011	2014
Apply auto-sleep settings on printers, fax-machines, and/or multi-function devices	Ongoing/In Progress	Default setting for all peripheral devices is through the auto-sleep settings.	Maintain auto-sleep settings for all peripheral devices.	2008	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	95% of campus computers are ENERGY STAR compliant.	The remaining 5% of computers that are not ENERGY STAR compliant are old and aging machines that will be replaced over time; these devices are usually kept for specialized purposes.	2008	No End Date (Continuous)
Behaviour Change Program					
Help staff reduce personal energy use through "workstation tune-ups"	Ongoing/In Progress	This action is part of the 'Green Office Certification Program', which was further piloted and revised in 2012.	<p>The Green Office Certification Program will be expanded to the entire campus community. This will encourage more offices to become aware of energy efficiency and waste.</p> <p>In particular the program will be applied to the move of an entire department to a new building guiding decision making on all areas of energy conservation, waste, purchasing, and other sustainability-related actions.</p>	2011	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress	<p>This action is part of the 'Green Office Certification Program', which was further piloted and revised in 2012.</p> <p>Lab users in two buildings on the Burnaby campus were encouraged to unplug and turn off equipment through SFU's Green Labs Program.</p>	Both the Green Office Certification Program and the Green Labs Program will be expanded to all buildings in 2013/2014.	2011	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress	Actions are part of development of Green Office and Green Labs Programs for Burnaby campus. The Programs give credit and recognize offices/ departments that take these actions.	Both the Green Office Certification Program and the Green Labs Program will be expanded to all buildings in 2013/2014.	2011	No End Date (Continuous)
Encourage staff to use air dry settings on dishwashers	Ongoing/In Progress	This action is part of the 'Green Office Certification Program', which was further piloted and revised in 2012.	Both the Green Office Certification Program and the Green Labs Program will be expanded to all buildings in 2013/2014.	2011	No End Date (Continuous)
Encourage use of stairs instead of elevators	Completed (in Reporting Year)	Installed visual reminders (stickers) throughout campus to encourage the use of stairs rather than elevators. These stickers were a 'runner' up in the annual campus-wide "Kill-a-Watt" Energy Saving Idea competition.		2012	2012
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	Stickers are in place across the Burnaby campus to remind community members to turn off lights.	Reminders to turn off lights as part of the 'Green Office Certification Program' will be sent out to the community.	2011	No End Date (Continuous)
Other Stationary Fuel Combustion, Electricity, and Fugitive Emissions Actions					
Replace aging transformers with more efficient transformers to improve energy efficiency	Ongoing/In Progress	As they age, replace aging step-down distribution transformers with premium, more efficient transformers. Made transformer high-efficiency transformers the standard across campus.	Continue to replace 10 transformers per year (during major and minor renovations) with new campus standard transformers, concentrating on buildings with 45 year-old electrical components.	2009	No End Date (Continuous)
Reduce use of personal electric heaters in offices	Future Action	Identify electric heater use as energy sink.	Add actions/solutions to SFU Sustainability Office "Green Office Certification Program" which reduce the need for personal electric heaters in offices.	2013	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
SUPPLIES (PAPER)					
Paper Type					
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	<p>In 2012 67.5% of total paper purchased by the campus was 30% recycled content paper.</p> <p>2012 also saw the completion of the phase-out of all 100% bond paper for size, legal, and tabloid paper options from online ordering. 100% bond 8.5X11 paper is still offered.</p> <p>Since 2008, purchasing orders have decreased by approximately 25%.</p>	Present clients ordering paper with no recycled content (100% bond) with paper alternatives that do include recycled content.	2008	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	Completed (in Reporting Year)	A pilot project with 100% recycled content Xerox paper was carried out. Results were not in favour of 100% recycled content paper for use for everyday photocopying. The alternative, completing a pilot with Spicers paper, is substantially more expensive for everyday use.		2012	2012
Electronic Media in Place of Paper					
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	Various departments use collaborative software such as SharePoint, DocuShare, etc.	Expand use of collaborative software incrementally where appropriate.	2005	No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress	Assist users to leverage electronic filing systems. Example: HR moved to electronic distribution of job bulletins and applicant resumes.	Expand usage where appropriate.	2005	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Ongoing/In Progress	Payroll now provides an option to have T4 slips sent to employees electronically.	Continue to encourage this option every year and increase number of users	2008	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013- 2015	START YEAR	END YEAR
Behaviour Change Program					
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	Various departments use collaborative software such as SharePoint, DocuShare, etc.	Expand use of collaborative software incrementally where appropriate.	200	2012

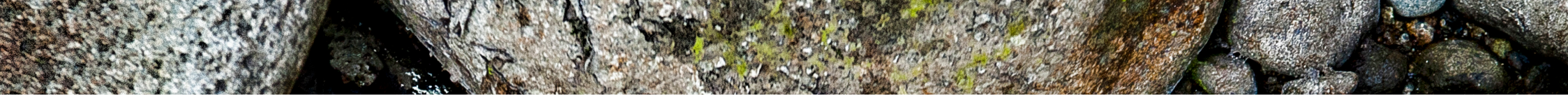
(B) Actions to Reduce Provincial Emissions and Improve Sustainability

The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act. Public sector organizations can optionally use this section to report on actions that will help British Columbia meet its provincial greenhouse gas reduction targets, engage the public, and improve environmental sustainability across all aspects of their organization.

ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
BUSINESS TRAVEL					
Virtual Meeting Technology					
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress	After a successful pilot in 2011, Blue Jeans Network was established as a general purpose video-conferencing platform and everyone in the university has access to it. Adequate technical support was put in place with the program.	Continue to provide technical support for the Blue Jeans Network. Provide more education for the program in future years.	2011	No End Date (Continuous)
Make desktop web-cameras available to staff	Ongoing/In Progress	Mobile units are available (light version for easy video-conferencing) for all to book and use. Many staff now have built-in cameras in their computers as well.	Encourage the use of webcams and similar equipment for video-conferencing through the Green office program and IT services programs.	2011	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Ongoing/In Progress	Made 34 efficient (LED LCD screens) mobile video-conferencing units available for staff and faculty. Increased percentage of meeting rooms with installed video-conferencing equipment.	The continued expansion of installed video-conferencing units is planned. As rooms are renovated, clients will be provided with the option to install appropriate video-conferencing units in these rooms.	2011	2014



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Behaviour Change Program					
Train staff in web-conferencing	Ongoing/In Progress	As units are installed, staff who support the rooms with video-conferencing technology are trained.	Provide more hands on training based on usage and demand.	2011	2012
Encourage staff to consider virtual attendance/presentation at events where possible.	Ongoing/In Progress	Created 9 pilots for virtualizing activities between SFU's three campuses, including virtualizing classrooms so that students at multiple campus can attend a class, virtualizing executive and administrative committee meetings, and installing virtual capabilities in the Faculty of Education, the library and continuing studies to facilitate virtual attendance.	Continue with the 9 previous pilot and expand the number of classrooms and meeting rooms with appropriate technology.	2011	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress	This action is part of the 'Green Office Certification Program', which was piloted and revised in 2012.	The Green Office Certification Program will be expanded to the entire campus community.	2008	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress	Facilities Services has an electric bike used instead of a vehicle for commuting between different parts of the Burnaby campus during day-to-day operations.	No new steps currently planned.	2008	No End Date (Continuous)
EDUCATION, AWARENESS, AND ENGAGEMENT					
Team-Building					
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress	Green Teams are supported through the Green Office Certification Program. The Sustainability Ambassadors (SA) program for campus staff has been operating for 4 years. Participants need supervisor approval to participate.	Encourage participation in the SA program so that by the end of 2014, there is at least one Sustainability Ambassador in each department.	2008	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress	<p>There are one FTE staff and one part-time staff responsible for coordinating activities related to sustainability team building.</p> <p>About 20% of the full-time position was dedicated to the Sustainability Ambassador program and 70% of the part-time position was dedicated to the Green Labs Program.</p>	<p>There will be the same staffing levels for the Sustainability Ambassador Program, Green Office Certification Program and Green Labs Program in 2013.</p> <p>This will amount to one FTE to coordinate team building and engagement activities. We are hoping to be able to dedicate additional capacity to these projects if funding is approved in April 2014.</p>	2008	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress	Behaviour change training, based on CBSM strategies, were provided to the SAs on a bi-annual basis.	Behaviour change and culture change training for teams and community members will likely be expanded as a regular part of professional development training at SFU starting in the fall of 2013.	2008	No End Date (Continuous)
Awards/Recognition					
Establish a sustainability/green awards or recognition program	Ongoing/In Progress	The first Annual Sustainability Awards for staff, students, faculty and community members were handed out at SFU in March 2012. There were 13 award recipients in 6 award categories.	In 2013-2014 the Annual Sustainability Awards program and event will continue, with more rigorous award recipient selection criteria. (Outstanding Leadership, Outstanding Initiative, Outstanding Volunteerism, Leadership and Sustainability Education, Excellence in Research on Sustainability, Sustainable SFU Award on Outstanding Volunteerism)	2012	No End Date (Continuous)
Staff Professional Development					
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress	The Director and Associate Director of SFU's Sustainability Office received training in sustainability leadership in July 2012.	The SFU Sustainability Office will continue to provide staff with professional development opportunities in 2013 and beyond as well as potentially facilitating professional development opportunities for all SFU staff.	2008	No End Date (Continuous)
Staff Awareness / Education					
Provide education to staff about the science of climate change	Ongoing/In Progress	Worked with the Pacific Institute for Climate Solutions (PICS) coordinator to advertise monthly educational events related to climate change. These events are open to staff, faculty, and students.	We will continue to support PICS events.	2010	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress	Through the SA program, we have educated a handful of staff on conservation issues. The focus in 2012 was on reducing waste by expanding recycling and composting programs at SFU.	The Green Office Certification Program and the Staff Sustainability Ambassador Program will continue to expand and offer opportunities for education about conservation topics. The Sustainability Office will launch its "Talking Sustainability" Project intended to raise awareness and improve understanding of the concept of sustainability and related topics.	2008	No End Date (Continuous)



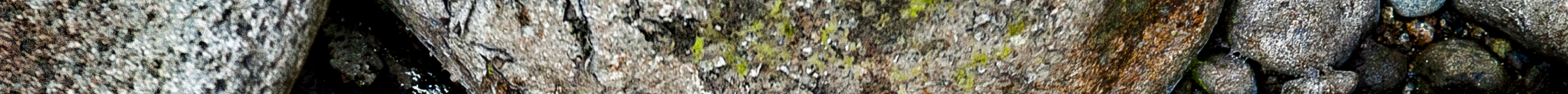
ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Provide green tips on staff website or in newsletters	Ongoing/In Progress	Green Tips are available online through the new SFU Sustainability Office website, including extensive e-Resource lists. The SFU Sustainability Office provides content ideas and contact information for bi-weekly sustainability-focused stories in the university newspaper SFU News.	The Sustainability Office will continue to offer tips through it's website, through SFU News stories and in a new newsletter to be launched in May 2013.	2008	No End Date (Continuous)
Provide sustainability education during new staff orientation	Ongoing/In Progress	Sustainability Education is provided at new staff orientation monthly; the allotted time for this module was expanded from 10 to 15 minutes in 2012.	Sustainability Office staff will continue to educate new staff members at monthly staff orientation sessions.	2008	No End Date (Continuous)
Other Education, Awareness, and Engagement Actions					
Sustainability Opportunities Week	Ongoing/In Progress	Festival was moved to early 2013	In 2013, we hope to expand the one day festival to a week-long event and include all three campuses	2005	No End Date (Continuous)
National Sweater Day	Ongoing/In Progress	SFU participated in the WWF National Sweater day in 2011 and 2012	We plan to participate in this event again in future years	2011	No End Date (Continuous)
OTHER SUSTAINABILITY ACTIONS					
Water Conservation					
Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features	Ongoing/In Progress	The majority of the Burnaby campus is not irrigated. Native Plant material is used in landscaping throughout the Burnaby campus, and was selected in order to reduce the need for irrigation.	Continue to select Native Plants for landscaping and eliminate the need for irrigation. New building landscaping will follow LEED standards.	2008	No End Date (Continuous)
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress	Continued to monitor the performance of the vegetated roof on Blusson/Saywell Hall to evaluate performance and identify ways to improve system.	Continue to maintain vegetated roof.	2009	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Waste Reduction / Diversion					
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	Ongoing/In Progress	The zero waste committee was renewed and a zero waste action plan was drafted.	The zero waste committee will develop a more comprehensive and extensive zero waste plan to contribute to the sustainability strategic plan. The zero waste committee will likely become formalized and policies will be developed to support the goals within the plan.	2011	No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Ongoing/In Progress				
Procurement (non paper supplies)					
Incorporate minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)	In Development	Obtained bench-marking data from office supplies vendor regarding order size & delivery frequency, % green products purchased, and end-of-life planning.	Run competition to promote awareness of supplies containing recycled content and to improve the use of these products over conventional consumables.	2012	No End Date (Continuous)
Establish green standards for goods that are replaced infrequently and/ or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	Ongoing/In Progress	<p>New procurement contracts include changed language and evaluation that weights sustainability as part of the "best value" of products purchased.</p> <p>Facilities selects goods that are replaced infrequently with the longevity of the good in mind. Prior to new purchases facilities considers the option to refurbish existing goods (e.g., tables and chairs during dining hall renovations, re-covering soft furnishing).</p> <p>Examples of such goods include the Interface carpet tiles used in buildings on campus (100% recyclable), the purchase of Calstone Furniture which recycles 100% of used furniture to build new furniture, and the use of materials that are more expensive but that withstand the intense daily use of a university campus well (i.e. fabric will 1 million double rubs, rubber products, roof systems that have 20 year rather than a 2-5 year life span).</p>	Follow up with discussion and develop formal documentation-product evaluation/justification that would include sustainable considerations.	2012	No End Date (Continuous)



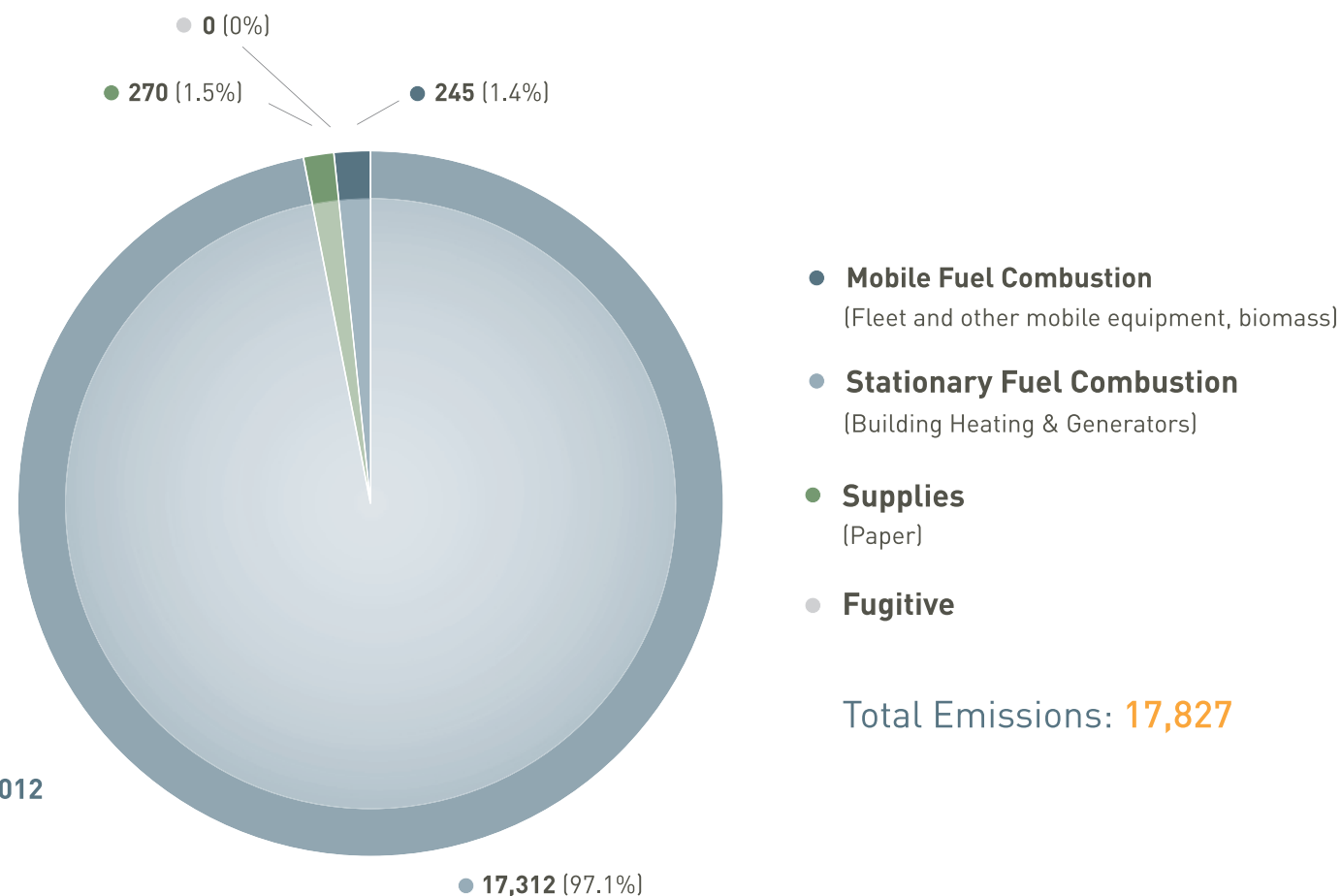
ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Ongoing/In Progress	Cleaning service vendor contract expanded LEED-EB cleaning practices from Chemistry building to the entire Burnaby campus. Utility paper dispensers (toilet and paper towel) were standardized across all three campuses to allow for minimum recycled-content requirements in upcoming contracts.	Janitorial compliance data (on LEED-EB to be monitored and reported by facilities. Procurement to follow up with Vendor if contract issue arises. Request for Qualification has been issued for utility paper supplies and includes recycled content stipulations. Long-term intent is to move towards higher recycled content / lower material weight products.	2012	No End Date (Continuous)
Building Construction, Renovation, and Leasing					
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	In Development	Where possible, reuse materials and divert construction and demolition debris. No policy established yet.	Incorporate into project development Standard Practices wherever possible	2009	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations.	In Development	Lifecycle costing principles applied in design and construction of buildings wherever possible. E.g., buildings are upgraded/reinforced seismically rather than demolished and built new again.	Continue to investigate principles to explore life cycle costing.	2011	No End Date (Continuous)
Commuting to and from Home					
Introduce telework/work from home policy	Completed (In Previous Year)	Telework and work from home scenarios are addressed on a case-by-case basis and are evaluated depending on the requirements of the job.			
Offer staff a compressed work week	Completed (In Previous Year)	Many staff participate in a Modified Work Week that allows them to work longer days and take an extra day off bi-weekly. This provision appears in the CUPE collective agreement and in policies governing administrative and professional appointments.			
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress	Organized a Bike to Work Week "celebration station" for all three of the SFU Campuses (Burnaby, Surrey and Vancouver) May and another in October at the Burnaby Campus.	Continue actively participating in Bike to Work Week. Explore Ride Share options to address staff, student and faculty commuting to Campus. Install three electric vehicle charging stations on campus.	2010	No End Date (Continuous)



ACTION	STATUS (as of 12/31/12)	STEPS TAKEN IN 2012	STEPS PLANNED FOR 2013 - 2015	START YEAR	END YEAR
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Ongoing/In Progress	Shower facilities are located in various locations on the Burnaby campus, with at least one set of showers in each building.	Continue to expand cycling infrastructure on Burnaby campus.	2009	No End Date (Continuous)
Provide secure bicycle storage	Ongoing/In Progress		Continue to expand cycling infrastructure with secured bike storage on Burnaby campus.	2008	No End Date (Continuous)
Other Sustainability Actions					
Charter member of the AASHE STARS program to evaluate overall sustainability measures	Ongoing/In Progress	SFU is now a charter member of STARS. Sustainability Coordinator, staff and faculty attended STARS conference in Pittsburg in October 2011, bringing back helpful material for implementing and enhancing sustainability initiatives.	Collecting data and submitting data as part of the program. Using STARS headings and indicators to encourage better collection of data on campus and better integration of sustainability indicators into SFU Accreditation process, strategic plans and budgets.	2010	No End Date (Continuous)

6.0 APPENDIX

(C) Greenhouse Gas Emissions by Source for the 2012 Calendar Year (tCO₂e)



Offsets applied to Become Carbon Neutral in 2012

Total offsets required: **17,818**

Total offset investment: **\$445,450**

Emissions which do not require offsets: **8***

*Under the Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.