

SFU Vancouver



SFU Burnaby



SFU Surrey



SFU

# Carbon Neutral Action Report 2009

# Simon Fraser University - 2009 Carbon Neutral Action Report

## Executive Summary

In 2009, Simon Fraser University (SFU) reduced its carbon footprint through energy upgrades of existing facilities and through behaviour change programs.

Energy projects implemented by **Facilities Services** focused on improving building systems automation for better monitoring and operational control of energy use. Through participation in BC Hydro's Continuous Optimization pilot program, emissions for two buildings (Applied Sciences and South Sciences Buildings) were each reduced by over 20%.

SFU's **Sustainability Advisory Committee (SAC)**, pursuing its 2009-2013 Strategic Action Plan (<http://www.sfu.ca/sustainability>), worked to advance sustainability in operations, curriculum and community engagement. Facilities Services hired a full-time Sustainability Coordinator to support the implementation of strategic plan objectives and to manage and continue to expand the behaviour change programs across SFU's three campuses. These programs helped to reduce energy and paper consumption and to raise awareness on sustainability issues.

SFU's **Faculty of Environment** opened in April 2009 and is a centre for environmental studies. The Faculty of Environment and SAC work collaboratively to support programs and events aimed at reducing consumption of resources and increasing awareness of sustainability issues and behaviours.

These combined efforts resulted in an impressive **6% reduction in total energy consumption** (Burnaby campus) over the previous year, equivalent to 970 tonnes of GHG emissions avoided in 2009.



Submitted by:

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

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Lee Gavel, MAIBC

Chief Facilities Officer / University Architect

Co-Chair, Sustainability Advisory Committee

## Overviews

### Actions Taken to Reduce Greenhouse Gas Emissions in 2009

#### Part A: Actions towards Carbon Neutrality

**Facilities Services** takes a planned approach to energy management, implementing viable projects incrementally every year as funding permits. Energy upgrade projects completed in 2009 include:

- Upgrade building controls to replace pneumatic systems with electronic ones, to change constant speed motors to variable speed motors, adding variable speed controls wherever possible.
- New direct digital control (DDC) systems allowed building control systems on the main campus to be integrated, making possible improved operational strategies to control energy and monitor environmental conditions in buildings.
- Studies of Cumulative Sum (CUSUM) trend lines for energy consumption in individual buildings were developed to help identify areas for energy improvements.
- Two buildings (Applied Sciences and South Sciences Buildings) were chosen to participate in the pilot phase of BC Hydro's Continuous Optimization program, and the energy measures identified were subsequently implemented by Facilities Services. Pulse meters allow these two buildings to be monitored in real-time to optimize energy performance.
- Lighting replacement programs continue to replace exterior lighting with LEDs and to change out fixtures from 32W to 28W for further savings.
- The Student Residence buildings underwent a major lighting retrofit to save electricity.

Apart from implementing energy projects and physical upgrades, the Major Renewal of Shrum Chemistry Building was launched in 2009, and the project is targeting LEED Gold certification.

The feasibility of a new district heating plant for Burnaby campus continued to be studied throughout the year. These plans are currently still under review, pending the availability of funding needed for implementation.

To ensure accurate inventorying of emissions for reporting on Smart Tool, Facilities Services developed a GHG Operations Manual that defines roles and responsibilities of departments and staff for data collection and reporting. This Manual will be regularly updated to support ongoing GHG data inventory protocols and help to ensure reported emissions data are accurate, complete and verifiable.

#### PART B: Actions to improve Sustainability and Carbon Neutrality

Sustainability networks focused on connecting community members to raise awareness on a variety of environmental sustainability issues, including energy conservation and paper use reduction. With the hiring of a full-time Sustainability Coordinator, SFU is able to expand the Sustainability Ambassador program across its three campuses, providing tools and education for the staff volunteers to engage others in behavioural change.

Targeted efforts to improve communications helped to raise the profile not only of energy issues, but for sustainability as a whole, and was well publicised through the main SFU Sustainability website (<http://www.sfu.ca/sustainability>) and

through new Green pages off SFU's front page (<http://www.sfu.ca/green>). Print media in SFU News also included at least one green feature article per month.

In addition to targeted behaviour change programs and community wide outreach and communications programs, SFU participated in and promoted Earth Hour in 2009. This participation included shutting down lighting in all buildings on the Burnaby Mountain campus excluding sensitive research labs and encouraging community members to do the same in Residences and at home.

Students and faculty also got involved, and several graduating classes took on SFU carbon neutrality as class final projects, working in groups on carbon neutrality and a variety of sustainability issues. The Sustainability Advisory Committee provided a supportive forum for connecting and building an institution-wide network and to promote a broad understanding of the actions we can take to help reduce emissions and energy consumption.

The Sustainability Advisory Committee updated its 2009 Strategic Action Plan, with units reporting back at quarterly meetings on the strategic goals set. These included sustainability action goals for all areas of the university: operations, academic curriculum and in community sustainability (<http://www.sfu.ca/sustainability>).

### **Operational Changes in 2009**

In 2009, there were no major changes (additions/deletions) in total space.

### **Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012**

Facilities Services is actively pursuing a district heating system at SFU's main campus (Burnaby); this is the highest priority project for reducing emissions for SFU (close to 80% of SFU Burnaby's emissions arise from the existing heating plant). This has been identified as a priority project in the current capital plan.

Shrum Chemistry Major Renewal project (currently in construction) is targeting LEED Gold certification.

Facilities Services will make regular energy reports to senior administration on progress towards total energy reduction and will provide updates on the University's annual carbon costs.

The Carbon Neutral Action Plan is aligned with the Sustainability Strategic Action Plan (<http://www.sfu.ca/sustainability>). The Sustainability Advisory Committee will continue to act to meet the goal of reducing total energy consumption by 2% year over year. Further efforts are ongoing to increase community engagement, build collaborative internal and external networks to synergize efforts and further integrate sustainability (and climate action) into SFU's curriculum and into the Institutional Strategic Plan.

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## 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 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>							
<b>Vehicle fuel efficiency</b>							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	40	% of vehicles are fuel- efficient models	Review of fleet undertaken. Continue to monitor performance of the electric truck purchased in 2008	2010: Plans to add 2 more electric vehicles	2009	2012
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	4	% of vehicles down-sized since start year indicated	Review of fleet undertaken. Facilities Electric truck is a mini dumptruck designed to transport materials on campus as well as save fuel	Monitor operations and downsize fleet where possible	2008	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Ongoing preventative maintenance program	Continue with regular scheduled maintenance of fleet	1990	No End Date (Continuous)
Replace small maintenance vehicles with more fuel-efficient models	Ongoing/In Progress	42	% of small maintenance vehicles are fuel-efficient	Review of Facilities maintenance fleet undertaken	Implement an ongoing strategy to replace 2 oldest vehicles in the fleet with newer more fuel efficient vehicles every year	1990	No End Date (Continuous)
<b>Behaviour change program</b>							
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	1	% of current drivers are trained	Drivers for snow removal vehicles have received training	Continue to provide regular training as required	2009	No End Date (Continuous)
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress			Research materials and current practices	Implement awareness program for anti-idling	2009	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Ongoing/In Progress			Staff going to job site or to meetings on and off campus travel together to save on vehicle trips	Continue to encourage and model carpooling as standard practice	2008	No End Date (Continuous)
<b>Other Mobile Fuel Combustion Actions</b>							
Minimize university vehicle trips by having parts delivered to campus	Ongoing/In Progress			Coordinate with vendors for delivery of parts	Continue to minimize vehicle trips on and off campus	2009	No End Date (Continuous)
<b>Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)</b>							
<b>Planning/management</b>							
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	40	% of buildings have a real time metering system installed	Pulse meters of electrical systems in Applied Science and South Science Buildings have been tied into DDC systems for real-time display and monitoring. 30 Ion (electrical) submeters have also been connected to DDC systems to enable centralized controls.	2010 - 2011: Pulse meters on electrical systems in 2 more buildings (Academic Quadrangle and Gymnasium) will be connected into the DDC systems to enable real time display of electrical consumption. Continue to expand capability for real time monitoring and energy display as funding permits.	2008	No End Date (Continuous)
<b>Owned buildings</b>							
Establish energy performance baseline for owned buildings	Ongoing/In Progress	7	% of owned buildings have an established energy performance baseline	Through completion of the BC Hydro Continuous Optimization program, two buildings (Applied Science and South Science buildings) now have an established energy performance baseline	2010-2011: Establish the energy baseline for 2 more buildings (Academic Quadrangle and Gymnasium) i.e. 18% of all space will have an energy baseline. Continue to monitor energy performance.	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			26 core academic buildings have been certified to BOMA Best <a href="http://www.bomabest.com/buildings.html">http://www.bomabest.com/buildings.html</a>	Continue to support labelling where deemed to benefit energy performance	2008	No End Date (Continuous)

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Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Register for performance labelling/certification for commercial interiors of owned buildings (e.g., LEED CI)	In Development			Evaluated Green Globes and LEED CI for potential application for Surrey Podium 2	2010-2012: Apply for certification of Surrey podium 2 project	2010	2012
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Ongoing/In Progress	0	% of owned buildings are certified LEED NC Gold or LEED NC Platinum	Registered Shrum Chemistry renew project for LEED NC certification (aim for Gold)	2010-2012: Submit LEED documentation at project completion and follow up	2009	2012
Incorporate integrated design process into new construction or during renovations of owned buildings	In Development	0		Reviewed current processes for possible introduction of IDP	2010-2012: Raise awareness of IDP benefits to incorporate IDP principles as part of standard project delivery practices	2009	No End Date (Continuous)
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	In Development	100	Fugitive emissions are being tracked and recorded	Fugitive emissions logged as part of GHG emissions Inventory with methodology documented in a GHG Operations Manual	2010-2012: Continue to monitor and track fugitive emissions. Limit space cooling requirements to reduce need chiller equipment that generate fugitive emissions	2008	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress	5	% of owned buildings have undergone energy retrofits since start year indicated	Implemented Energy projects: replace pneumatic systems with electronic, and variable speed motors, etc. where required, replace exterior lighting with LED, replace lighting at Residences, replace 32W fluorescents with 28W lamps for additional energy savings, auto sensors, etc	2010-2012: Continue to Retrofit buildings and building systems with latest energy saving technologies and as funding permits	2002	No End Date (Continuous)
<b>Retrofitting owned buildings</b>							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress			Implemented minor upgrades as part of maintenance work	2010-2011: Implement mechanical system upgrades in Shrum Chemistry Building Renewal project.	2002	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	60	% of retrofits (captured above) had lighting systems upgrades	Major lighting retrofit project completed in Residences. Installation of Light/occupancy sensor controls in public spaces, LED exterior street lighting program, and replacement of 32W with 28W fluorescent fixtures (ongoing)	Implement planned projects as funding is available including LED exterior lighting replacement, replacing pool and gymnasium lighting and monitoring of space usage to save energy through operational scheduling.	2002	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	90	% of retrofits (captured above) had control system upgrades or adjustments	Building automation continued to be upgraded with DDC improvements and integration of electrical meters into DDC system.	2010-21012: Through Continuous Optimization program, expand real time monitoring of electrical consumption in existing buildings. Integrate DDC systems in new buildings and major renewal.	1990	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	0	% of retrofits (captured above) had insulation improvements	Include window replacement and insulation upgrades as part of building renewal program for Shrum Chemistry building	2010-2011: Complete renewal of Shrum Chemistry building	2009	2011
Install an on-site renewable energy demonstration project	Ongoing/In Progress	0	% of retrofits (captured above) had on-site renewable energy components	Installed dashboard monitor to display and gauge performance of demonstration projects of photovoltaic panels and solar thermal panels (installed in 2008).	Evaluate other renewable energy sources for potential pilot application. Apply for funding for wider application of solar thermal to supply HW for the Gymnasium and Library.	2008	No End Date (Continuous)
<b>IT power management</b>							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress			Developed a management scheme which will allow us to shut down computers and wake them up only when required, typically for s/w maintenance outside of business hours. This power management strategy applies to Windows PCs only. Apple Macintosh machines are shutdown at the users discretion. Servers are not shutdown after business hours.	Deploy the tools which will shutdown Windows PCs outside of business hours. A similar scheme will be developed for Apple Macintosh computers and deployed in 2011. There are no plans for 2010 to develop a scheme to reduce the number of powered-up servers during non-peak times.	2009	2012
Implement server virtualization	Ongoing/In Progress	95	% of servers have been virtualized since start year indicated	Most servers which could be virtualized have been virtualized at IT Services in SFU.	Consolidation of virtualized servers will continue.	2005	No End Date (Continuous)

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Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress	100	% of computers have auto-sleep settings applied	100% of computer monitors have sleep settings, however CPUs presently used reduced power mode, not sleep mode.	In 2010 and 2011 all CPUs will use sleep mode.	2009	2011
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress	10	% reduction in printers, copiers, and/or fax machines since start year indicated	More departments started to rely on multifunction devices.	A project has been started in 2010 which will implement a managed print service, whose objective is to reduce number of devices and number of pages printed.	2010	2012
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress	50	% of devices have auto-sleep settings applied	Most printers and mutifunction devices have autosleep set already.	The Managed print services project will reduce significantly the number of dedicaged fax machines.	2005	2012
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	75	% of computers are ENERGY STAR rated	Replaced end of life machines with energy star machines	Continue to replace end of life machines with energy star machines	2007	2012
<b>Appliances and electronic devices</b>							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			Replaced end of life refrigerators with Energy Star equipment in Student Residences	Continue to incorporate Energy Star into future RFPs.	2009	No End Date (Continuous)
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			Add requirement into RFPs for new equipment to be Energy Star	Continue to incorporate into future RFPs wherever feasible	2009	No End Date (Continuous)
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			CFLs are already standard across campus	Continue to replace end of life 32W lamps with 28W lamps	2002	No End Date (Continuous)
<b>Behaviour change program</b>							
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress			Sustainability Ambassador Promotes energy conservation actions such as this for eight weeks each year	Campus wide campaign to conserve energy	2008	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress			Sustainability Ambassador Promotes energy conservation actions such as this for eight weeks each year	Campus wide campaign to conserve energy	2008	No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			Workplace energy conservation tips regularly highlighted on sustainability website	Campus wide campaign to conserve energy	2008	No End Date (Continuous)
Encourage use of stairs instead of elevators	Ongoing/In Progress			Workplace energy conservation tips regularly highlighted on sustainability website	Campus wide campaign to conserve energy	2008	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress			Sustainability Ambassador Promotes energy conservation actions such as this for eight weeks each year	Campus wide campaign to conserve energy	2008	No End Date (Continuous)
<b>Other Stationary Fuel Combustion and Electricity Actions</b>							
Expand the ambassador behaviour change program to support sustainability and raise awareness on individual actions that can be taken to support energy conservation	Ongoing/In Progress			Sustainability Ambassador Program supports energy conservation actions	Campus wide campaign to conserve energy	2008	No End Date (Continuous)
Study feasibility of solar hot water heating for the pool and Library	Ongoing/In Progress			Research applications, held discussions with potential funding partners and financial analysis	Implement solar HW heating in the pool and the library, pending funding availability	2009	2012
Pursue opportunities for building a new district heating plant using alternative/renewable fuels	Ongoing/In Progress			Study technologies, review potential funding models	Build a new heating plant, pending funding availability of this major infrastructure project	2008	No End Date (Continuous)
Review geoechange system for future connection to Shrum Chemistry	Ongoing/In Progress			Preliminary study of cost benefits and impact	Implement geoechange project, pending funding availability	2008	2012

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Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Expand LED lighting replacement program	Ongoing/In Progress			Installed LED exterior street lights and bollards	Continue to expand LED fixtures where possible (in exterior street lighting, parkades, gym) as funding permits	2009	No End Date (Continuous)
Optimize local control for HVAC and Lighting in leased spaces and in facilities with shared energy systems (eg. property management)	Ongoing/In Progress			Study existing control systems to identify opportunities for optimization	Install local control systems where feasible	2009	2012
Establish an Energy Policy across the organisation	Ongoing/In Progress			Draft document under review	Propose the Energy Policy to senior administration for adoption	2009	2010
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	48	% of total paper purchased contains 30% recycled content	Sustainability Ambassador Program promoted use of 30% post consumer recycled paper for 8 weeks in 2009	Fall 12010 Ambassador Campaign will focus on a new managed print service program which will include the promotion of use of 30% post-consumer recycled content paper	2008	No End Date (Continuous)
<b>Printer/document settings</b>							
Switch networked printers and photocopiers to automatic double-sided	Ongoing/In Progress			Sustainability Ambassadors Program promoted automatic double-siding features and defaults for 8 weeks in 2009	RFPin development for managed printer services which will require all new printers and multi-function devices to print double-sided automatically	2008	No End Date (Continuous)
Reduce default margin size in standard document templates (e.g., letters, briefing notes, forms, etc.)	Ongoing/In Progress			SFU official Letterhead changed to decrease margins and leave more room for writing	Continue to adapt templates to reduce paper margins	2007	No End Date (Continuous)
<b>Electronic media in place of paper</b>							
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress			Word Review features routinely used for electronic editing.	Increase use and familiarity with electronic editing	2009	No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress			Facilities services implemented Xerox Docushare to centralize electronic filing, and reduce printing of multiple hard copies.	Plans to extend Docushare to more SFU departments, as funding permits	2009	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			Sustainability Advisory Committee Annual Report listed online only.	Redesign of sustainability website for SFU planned which will increase access to electronic documents. Facilities services new website will allow electronic submission of work orders and service status enquiries. Meeting minutes and agendas are posted online only.	2010	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Complete			Already in place		2005	No End Date (Continuous)
<b>Behaviour change program</b>							
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress			Facilities Services uses project wiki sandbox for internal collaboration on team projects. Xerox Docushare Sharepoints sites used for shared editing and collaboration on common documents.	Expand use of collaborative software to reduce need for printing	2009	No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress			SFU Sustainability Ambassador Program has a papersmart campaign that runs for eight weeks per year each year to promote this goal	Continue to reduce paper used in day to day activities	2008	No End Date (Continuous)
Encourage re-use of scrap paper	Ongoing/In Progress			SFU Sustainability Ambassador Program has a papersmart campaign that runs for eight weeks per year each year to promote this goal	Promotion of use of scrap paper will be included in the Fall 2010 managed printer services educational campaign	2008	No End Date (Continuous)



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## 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 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
<b>Business Travel</b>						
<b>Virtual meeting technology</b>						
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	In Development		Facilities Services ran trials of various software: Skype, LiveMeeting, WebEx, Elluminate	Promote web-conferencing as an option to attending in person at meetings, workshops	2010	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	In Development		Network Services and Learning and Instructional Development are reviewing software options	Encourage use of free software (Skype) while system wide application is sourced	2010	No End Date (Continuous)
<b>Behaviour change program</b>						
Train staff in web-conferencing	In Development		Facilities Services ran trials of various software: Skype, LiveMeeting, WebEx, Elluminate	Train staff to become comfortable with web-conferencing	2009	No End Date (Continuous)
Train staff in video-conferencing or provide technical support for video-conferencing set-up	In Development		Facilities Services ran trials of various software: Skype, LiveMeeting, WebEx, Elluminate	Train staff on software options. Where possible, Retrofit meeting rooms for web and video conferencing as funding permits.	2009	No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	In Development		Facilities services frequently holds webinars as educational events	Continue to raise awareness of travel emissions and to request/provide virtual attendance options for conference events	2009	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress		Sustainability Ambassador Program promotes these actions as part of an eight week campaign every year	Ongoing promotion and support for carpooling	2008	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress		Sustainability Ambassador Program promotes these actions as part of an eight week campaign every year	Review possibility of a shared bicycles network pilot program	2008	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>						
<b>Team-building</b>						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress		Sustainability Ambassador Program continued and improved from 2008			
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress		Sustainability Coordinator hired to coordinate and support Sustainability Ambassador Program			
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		As part of Sustainability Ambassador Program behavior change training was offered to staff members on campus	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)
<b>Awards/Recognition</b>						
Establish a sustainability/green awards or recognition program	In Development		Investigate current award programs to set up possible framework for green awards	Implement greenawards program if possible	2009	No End Date (Continuous)
<b>Staff awareness/education</b>						
Provide education to staff about the science of climate change	In Development		Research experts to speak on topics	Speaker series on climate change	2008	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	In Development		Sustainability Ambassador newsletter and SFU Sustainability Website provide green tips	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)

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Provide green tips on staff website or in newsletters	Ongoing/In Progress		Sustainability Ambassador newsletter and SFU Sustainability Website provide green tips	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)
Provide sustainability education during new staff orientation	Ongoing/In Progress		Attended all new staff orientations and provided an introduction to sustainability at SFU	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)
<b>Client/public awareness/education</b>						
Provide education to clients/public about the science of climate change	Ongoing/In Progress		SFU Sustainability website made this information available and SFU Faculty presented on this topic	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)
Provide education to clients/public about the conservation of water, energy, and raw materials	Ongoing/In Progress		SFU Sustainability website made this information available and SFU Faculty presented on this topic	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)
Provide green tips on client/public website or in newsletters	Ongoing/In Progress		SFU Sustainability website made this information available and SFU Faculty presented on this topic	Continue to provide tools and information to support sustainability actions	2008	No End Date (Continuous)
<b>Other Sustainability Actions</b>						
<b>Water conservation</b>						
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress		Monitor performance of green roofs in Blusson Hall and Saywell Hall.	Document applicable standards for Burnaby campus	2009	2012
<b>Waste reduction/diversion</b>						
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	In Development		Held discussions with the responsible department.	Incorporating requirements into competitive bid documents for Waste Management Services	2009	2011
Implement a hazardous waste reduction and disposal strategy	In Development		Held discussions with the responsible department.	Incorporating requirements into competitive bid documents for Waste Management Services	2009	2011
<b>Procurement (non-paper supplies)</b>						
Incorporate minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)	In Development		Reviewing current policy and consumption data.	Incorporate reduction strategies in competitive bid documents for Print Management Services	2009	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.)	In Development		Reviewing current practises.	Discuss issue with Ergonomic Committee	2009	No End Date (Continuous)
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	In Development		Discussion held with Contracted Food Supplier. Reviewing current practises with Contracted Janitorial Company.	Discuss issue with Janitorial Company.	2009	No End Date (Continuous)
Require a minimum purchase of sustainable, and organic food and beverages supplied by contracted food suppliers or caterers	In Development		Discussion held with Contracted Food Supplier.	Preparing requirements for new competitive bid to be issued in 2012.	2009	2012
<b>Building construction, renovation, and leasing</b>						
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress		Waste is sorted and diverted to recycling wherever possible.	Incorporate into Standard Practices wherever possible	2009	2010
<b>Indoor air quality</b>						

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Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		Implemented in Shrum Chemistry Renew project	Review performance in Shrum Chemsitry for wider adoption	2009	2012
<b>Commuting to and from home</b>						
Offer staff a compressed work week	Ongoing/In Progress		Union staff have compressed work week (9-day fortnights)	Continue to support the program and to keep the work schedule flexible	1990	No End Date (Continuous)
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress		Sustainability Ambassador Program promotes this action for 8 weeks each year	Continue to support	2009	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Complete		Facilities are available on Burnaby campus		2005	No End Date (Continuous)
Provide secure bicycle storage	In Development		Options and potential locations have been reviewed	Implementation as funding permits	2009	2012
Modify parking fees or parking availability for staff/students	Ongoing/In Progress		Parking rates have been increased for staff/students	Encourage carpooling, ride share, etc	2008	No End Date (Continuous)
<b>Other Sustainability Actions</b>						
Limit transportation emissions by suppliers coming to campus	In Development		Discussing reduction of deliveries with Stationery Supplier	Discuss with responsible department. Reduce delivery to once a week		
Encourage electronic filing	Ongoing/In Progress		Review alternative ways of filing documents - electronic vs printing paper	Reduce paper printing. Utilize electronic viewing/access.		