

2010

Simon Fraser University Carbon Neutral Action Report



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2010 Carbon Neutral Action Report



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Executive Summary

2010 was another strong year for **energy conservation action** at SFU, with ongoing energy projects implemented through Facilities Services and supported by a wide ranging program of **sustainability initiatives** under the guidance of the Sustainability Advisory Committee. SFU overall emissions were reduced by 8.4% (compared to 2007) despite a 7.5% growth in building area over the same period.

It was also a year of building new **partnerships**, collaborating with multiple groups across campus to align interests to work together on shared sustainability objectives. Partnerships were formed between the Sustainability Advisory Committee, Faculty of Environment, SFU Public Affairs and Media Relations, and Sustainable SFU (student group) in support of co-sponsored events such as the Sustainability Festival and to discuss new ways to collaborate on projects.

Two capital projects underway were registered for **LEED certification**, ensuring high energy standards would be incorporated in these new/renewed buildings.

In 2010, SFU also actively pursued plans for a new biomass **Central Heating Plant on** Burnaby Mountain, having identified this as the highest priority action to reduce Burnaby campus emissions by an estimated 50%. A partnership agreement was formed with SFU Community Trust and Corix Energy to jointly fund, develop and implement a district energy system that would serve the Burnaby Mountain community (both SFU and UniverCity residents). When implemented, the district heating system will support SFU's progress towards carbon neutrality as well as create an innovative model for building a sustainable community.

2010 SFU Greenhouse Gas Emissions

Source	2007 (tonnes)* Baseline year	2010 (tonnes)** Current year	2010 cf. to 2007	
			change	% change
Direct Emissions - Buildings	15,266	15,354		
Mobile emissions - fleet	940	288		
Indirect emissions- Buildings	2,847	1,808		
Office supplies	357	337		
Total	19,410	17,787		
Reduction GHG			(1,623)	(8.36)
Gross area m2	381,242	409,612	28,370	7.44
Reduction (tonnes / m2)	0.051	0.043	0.007	(14.71)

Figure 1: SFU Emissions Report 2010

*2007 baseline set from Willis Energy: SFU GHG inventory

**2010 Smart Tool as reported

In 2010, total (absolute) SFU emissions from all 3 campuses (Burnaby, Surrey and Vancouver) were **reduced by 8%** compared to the 2007 baseline¹, despite the **7% + growth in total building area** over the same period². These emissions reductions were led by SFU Burnaby main campus which posted a **20% reduction** over the 2007 baseline, well ahead of targets set by the BC government's province wide emission reduction targets in the GGRTA. Compared to the previous year (2009), the 2010 emissions from Burnaby campus were **reduced by 4.7%**, a reduction of **650 tonnes of CO₂e**.

Offsets Applied to Become Carbon Neutral in 2010

SFU purchased **17,778 tonnes³** of carbon offsets from Pacific Carbon Trust (**\$444,452 at \$25/tonne**).

¹ [Willis Energy: SFU GHG Inventory 2007](#)

² SFU emissions intensity was reduced from 0.051 tonnes/m² in 2007 to 0.043 tonnes/m² in 2010

³ An additional 9 tonnes of emissions reported were not required to be offset to achieve carbon neutral

Actions Taken to Reduce Greenhouse Gas Emissions in 2010

Credit for the steady decline in emissions can largely be attributed to the long standing energy management program at SFU. Through the systematic implementation of energy saving opportunities, Facilities Services carefully managed the retrofitting of older systems with more energy efficient technologies. These retrofit projects worked hand in hand with behavioral change programs to engage the campus community. Carried out with the help of the growing Sustainability Ambassador network of staff volunteers across all 3 campuses, the combined efforts helped build a community culture of sustainable practice in support of energy conservation.

Energy initiatives and projects ongoing/completed in 2010 include:

- Continuous optimization of Gymnasium and Academic Quadrangle
- Monitoring of building energy performance through the DDC system and building energy real-time dashboards (implemented in South Science Building, Applied Science Building, Gymnasium and Academic Quadrangle) enabled prompt corrective action on day to day issues
- Ongoing internal support for energy management through monthly meetings of the Energy Committee to regularly review energy performance and generate new ideas for energy savings
- Administration signed a long term commitment (to 2015) with BC Hydro (BCH) to continue partnering on the Continuous Optimization Program, where SFU will implement all cost-effective retrofits identified through the BCH field audit process. In 2010, investigation & study phase commenced on 4 buildings: WMC, TASC1, TASC2 & MBC
- Energy Ideas contest invited input and fresh ideas for energy savings from the community
- Sustainability events across the campus were held: Earth Day, Bike to Work day, Sustainability Festival, etc.
- Participation in BC Hydro's Energy Awareness and Conservation campaign chose to focus on Green Labs as science labs used significant amounts of energy. In 2010, a detailed audit was done of plug in equipment in preparation for the planned campaign launch in 2011

An important capital project initiative to reduce GHG emissions was the proposed central heating plant for Burnaby campus, already identified as a high priority capital project. The proposal included fuel switching to biomass as the primary fuel. Discussions continued through 2010, resulting in a partnership agreement between SFU, SFU Community Trust and Corix Energy, to jointly develop a district heating plant that would serve not only SFU but also new residential development on Burnaby Mountain. The biomass central heating plant has the support of SFU senior administration and SFU Board of Governors. Currently, funding is actively being pursued through the Public Sector Energy Conservation Agreement (PSECA).

Work on the \$50M Shrum Chemistry major renew capital project begun in 2009 continued through 2010 and is set to be completed in 2011. This project is registered for LEED NC Gold certification. The other major capital project underway in 2010 was the Surrey Podium 2 Expansion, also registered for LEED CI Gold certification.

Senior administration through the VP Finance and Administration also lent support to energy conservation efforts through the signing of a public Energy Commitment⁴, setting formal goals for the institution to continue on a **2% reduction in energy consumption year over year** and to support the provincial targets set for reducing province wide emissions.

A major milestone in 2010 was marked with the **2010 BC Hydro Power Smart Leader Award** presented to SFU in recognition of its leadership in its sustained Energy Management Program and for sustainability initiatives taken to build a culture of conservation. Despite an aging asset portfolio, this integrated approach at SFU has proven itself in steady improvement not only in reducing SFU's carbon footprint through continuous improvement in energy performance, but also in helping to build a truly sustainable community.

⁴ http://www.sfu.ca/fs/Green-Services/Energy_Commitment.html

Actions Taken to advance sustainability and Carbon Neutrality

In 2010, the SFU Sustainability Advisory Committee worked with the Academic Subcommittee to start a review of sustainability curriculum, and to find ways to link teaching with campus operations and community engagement. Bringing together the various interest groups, key partnerships were formed between the Sustainability Advisory Committee, the Faculty of Environment, and the Pacific Institute for Climate Solutions (PICS) as well as student groups (Sustainable SFU). Regular cross-functional meetings were held to discuss cross-promotion of events and to explore ways for collaborating and working together. The successful SFU Sustainability Festival was jointly organized and co-funded by all parties.

SFU students voted to support a Sustainability levy to build a Sustainability Fund. The funds enabled the SFU Undergraduate Student Society (SFSS) to hire its first Sustainability Coordinator to coordinate and support student initiatives in sustainability. Preliminary project ideas now in discussion include free water dispensing units/water coolers, composting and community gardens.

The Sustainability Green Office Program was launched in 2010; the Program provides a toolkit and recognition program to Sustainability Ambassadors to support them towards fostering a conservation culture in their own departments.

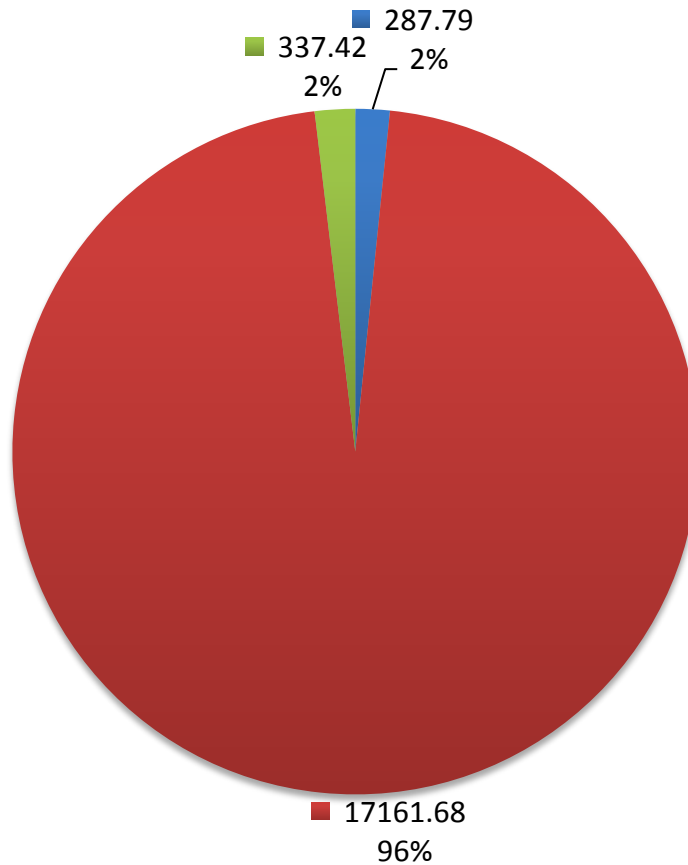
Operational Changes in 2010

In 2010, SFU added **15,383 SM** of building area, primarily in Vancouver campus where a new building for the School for Contemporary Arts was opened.

Plans to Continue Reducing Greenhouse Gas Emissions 2011-2013

- Implement projects identified through the Continuous Optimization Program (MBC, TASC1, TASC2 and WMC)
- Continue to plan for next phase of continuous optimization projects in 6 more buildings
- Implement lighting projects piloted in 2010: parkade lighting replacements, LED parking lot lighting, pool lighting replacement, installation of occupancy and day lighting sensors and DDC controls
- Launch the Green Labs challenge in South Science Building targeting a 7% electrical power reduction through behavior change
- Continue to expand the Green Office Program
- Implement enhanced commissioning procedures in handover of new LEED certified facilities (Shrum Chemistry Renew and Surrey Podium 2)
- Funding permitting, development and implementation of a new district heating plant on Burnaby campus
- Development of Green Building standards for design, construction and operations
- Continue to convert fleet to electric where feasible
- Continue to strengthen sustainability partnerships across campus
- Continue to reduce printing through the Print Management campaign and to continue to convert paper processes to digital

Simon Fraser University Greenhouse Gas Emissions by Source for the 2010 Calendar Year (tCO₂e*)



Total Emissions: 17786.89

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion and Electricity (Buildings)
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2010

Total offsets purchased: **17778.07**. Total offset investment: **\$444,451.75**. Emissions which do not require offsets: **8.82** **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** 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.

Simon Fraser University - 2010 Carbon Neutral Action Report

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 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	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	40 % of vehicles are fuel- efficient models	Plans to add 2 more electric vehicles in 2010 were delayed; waiting for selected vehicles to be certified for use	Purchase additional electric vehicles once they have received certification (planned acquisition of 2 per year)	2009	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	4 % of vehicles down-sized since start year indicated	Assessed overall fleet mix. Monitored performance and use of the 3 Facilities Services electric truck and electric vans to make recommendations on future electric vehicle acquisitions. Presented summary findings to Facilities Services Operations Director with key recommendations for optimizing fleet size and to implement phased conversion of fleet to electric vehicles	Continue to monitor fleet operations closely to optimize fleet size and mix and downsize 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 at least twice a year	Continue regular scheduled maintenance program for fleet	Started before 1995	No End Date (Continuous)
Replace small maintenance vehicles with more fuel-efficient models	Ongoing/In Progress	42 % of small maintenance vehicles are fuel-efficient	Facilities Services' fleet primarily consists of vans and small 1T trucks and some specialty vehicles (snow ploughs, etc.). The fleet management strategy has always been to retire/replace the 2 oldest vehicles every year to optimize fuel efficiency of the fleet. Vehicles older than 10 years are generally considered less fuel efficient. In 2010, we went further and assessed the overall fleet mix and presented summary findings to Facilities Administration; key recommendations were to implement a phased conversion of the fleet over to electric vehicles	Continue to monitor fleet operations closely to optimize fleet size and mix and downsize where possible	Started before 1995	No End Date (Continuous)
Behaviour change program						
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	50 % of current drivers are trained	Tips on driving habits that help conserve fuel was included in presentation to shop superintendents to pass on to their staff	Continue to provide driver training	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		Anti-idling discussed in presentation to shop superintendents	Continue to provide anti-idling training	2009	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Ongoing/In Progress		Fleet manager monitored fleet use to understand use patterns and to develop a plan to increase car sharing/carpooling to sites	Continue to encourage and model carpooling as a standard practice for travel to work sites	2008	No End Date (Continuous)
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress		Parking Services parking officers cycle around campus when checking for parking passes/tickers	Continue to explore options to incorporate active transportation options into everyday work and to promote benefits	2008	No End Date (Continuous)
Other Mobile Fuel Combustion Actions						
Minimize university vehicle trips by having spare parts delivered to campus	Ongoing/In Progress		SFU Central stores consolidated parts delivery so orders are delivered once or twice per week, to save on # of separate delivery trips to campus	Continue to find ways to reduce vehicle trips without compromising operations	2009	No End Date (Continuous)
Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)						
Planning/management						

Simon Fraser University - 2010 Carbon Neutral Action Report

Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Enrol in a building energy benchmarking program (e.g., GREEN UP)	In Development			Reviewed various building performance benchmarking programs including BOMA BEST http://www.bomabest.com/	Plans to enrol 28 existing buildings in BOMA BEST	2010	2013
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	Connected 2 more buildings (AQ and Gymnasium) into the Direct Digital Controls (DDC) system (total 4 completed). Identified buildings that did not yet have energy meters to develop a plan for meters to be installed	Isolate Gymanisum consumtpion data from Student Residences (downstream) in the future. 2011-2013: add 4 more buildings (MBC, WMC, TASC1 and TASC2) to real time metering for electricity (heating water will have one day lag)	2008	No End Date (Continuous)
Owned buildings							
Establish energy performance baseline for owned buildings	Ongoing/In Progress			Expand energy database by collecting and separating out energy consumption data for every building to set benchmark and allow performance of individual buildings to be looked at in more detail	Continue to monitor and track energy performance of individual buildings against established benchmark. Through BCH partnership in Continuous Optimization program, 14 future buildings (plus 4 completed/underway) will have energy baseline data as well as ongoing monitoring capability.	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	0	% of owned buildings have operations and maintenance labelling/certification	Reviewed various building performance benchmarking programs including BOMA BEST http://www.bomabest.com/	Enrol 28 buildings in BOMA BEST (Recertification required every 3 years)	2008	No End Date (Continuous)
Register for performance labelling/certification for commercial interiors of owned buildings (e.g., LEED CI)	Ongoing/In Progress	0	% of commercial interiors in owned buildings have labelling	Registered Surrey Podium 2 (capital TI project currently underway) for LEED CI, targeted for LEED CI Gold certification	2011: Submit LEED documentation to CaGBC for LEED certification	2010	No End Date (Continuous)
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	Shrum Chemistry (Major Renew \$50 M capital project) is under construction and being monitored for LEED NC compliance; LEED documentation underway	2011: Submit LEED documentation to CaGBC for LEED certification	2009	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	In Development			Developing a Green Development Guide to include IDP recommendations	2011-2013: Continue to raise awareness of IDP benefits to encourage wide adoption of IDP 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	Ongoing/In Progress			Continue to monitor and track fugitive emissions from chiller equipment that generate fugitive emissions for cooling needs	Promote natural ventilation strategies to take advantage of cooler ambient temperatures on Burnaby mountain campus and limit mechanical cooling to specific interior spaces (eg. research labs and environments that need controlled temperature) to reduce need for chiller equipment that generate fugitive emissions and save energy	2008	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress			Shrum Chemistry (Major Renew \$50 M capital project) is under construction. Ongoing small energy retrofits implemented through Facilities Operations Energy Management retrofit program include: controls systems, occupancy and light sensors, LED lighting replacement programs, etc	In partnership with BC Hydro, the continuous optimization program will implement cost-effective (2 year simple payback) energy retrofit projects in 8 more buildings by 2013 (program commitment extends to 2015)	2002	No End Date (Continuous)
Retrofitting owned buildings							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress			Through the Continuous Optimization program, energy retrofit projects were completed in the first 2 buildings (ASB, SSB) in the program and optimization projects started in 2 more buildings (AQ and Gym)	2011-2012: AQ (south west 5000 level) major mechanical upgrade	2002	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress			Testing various lighting options for the pool, gym and Images Theatre to retrofit with more efficient light fixtures	2011: LED lighting for parkades and for remainder of street lighting. Pilot LEDs for parking lot lighting	2002	No End Date (Continuous)

Simon Fraser University - 2010 Carbon Neutral Action Report

Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Upgrade/adjust control systems during retrofits	Ongoing/In Progress			Continue to upgrade/adjust control systems	2011-2012: Through Continuous Optimization program, expand real time monitoring of electrical consumption in existing buildings. Integrate DDC systems in new buildings and major renewal.	Started before 1995	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Single glazed window are being replaced with sealed units in Shrum Chemistry (Major Renew \$50 M capital project)	Window replacement can only be undertaken with major retrofits and will be part of major renewal projects (as funding allows)	2009	No End Date (Continuous)
Install an on-site renewable energy demonstration project	Ongoing/In Progress			Looked for further funding opportunities including unsuccessful 2010 PSECA application for solar thermal installations at the Gym and LIB	Look for further funding opportunities	2008	No End Date (Continuous)
IT power management							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	0	% of computers shut down automatically outside of regular business hours	Finalised development of and piloted the management scheme 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 computers are shut down at the users discretion. Servers are not shutdown after business hours. The scheme is ready for a wider deployment for Administration users but workload priorities shifted the implementation of the changes to 2011.	Deploy the tools which will shutdown Windows PCs outside of business hours in Administration units. A similar scheme will be developed for Apple Macintosh computers and deployed in 2011/12. There are currently no plans 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 can be virtualized hae been virtualized at IT Services in SFU	Consolidation of virtualized servers will continue	2005	No End Date (Continuous)
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	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	Most departments started to shift to multifunction devices. In 2010, a project was started to implement a Managed Print Service. The objective is to reduce number of devices and number of pages printed.	2011-2012: The project which will select a Managed Print Service vendor for SFU is still in the selection mode. Expect selection and implementation to continue through to 2012	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 multifunction devices have autosleep set already. In 2010, a project was started to implement a Managed Print Service. The objective is to reduce number of devices and number of pages printed.	2011-2012: The project which will select a Managed Print Service vendor for SFU is still in the selection mode. Expect selection and implementation to continue through to 2012	2005	2012
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	80	% of computers are ENERGY STAR rated	Replaced end of life machines with Energy Star machines	Coninue to replace end of life machines with Energy Star machines. This is an ongoing process. Each year, oldest machines are replaced with new Energy Star rated machines	2007	2012
Appliances and electronic devices							
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			Criteria added to SFU Green office Program	Continue to incorporate into future RFPs wherever feasible. Expand Green office Program to all 3 campuses	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			Replaced end of life 32W lamps with 28W lamps (CFLs are already standard across campus). Criteria added to SFU Green Office Program	Continue to replace end of life 32W lamps with 28W lamps. Expand Green office Program to all 3 campuses	2002	No End Date (Continuous)

Simon Fraser University - 2010 Carbon Neutral Action Report

Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Behaviour change program							
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress	1	Number of teams/departments signed up for Green Office program	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	Expansion of Green Office Program to all 3 campuses	2008	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress	1	Number of teams/departments signed up for Green Office program	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	Expansion of Green Office Program to all 3 campuses	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			No action taken	Add as an action item for Green Office Program	2008	No End Date (Continuous)
Encourage use of stairs instead of elevators	Ongoing/In Progress			No action taken	Add as an action item for Green Office Program	2008	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	1	Number of teams/departments signed up for Green Office program	Development of Green Office and Green Labs Programs for Burnaby campus. The Programs give credit and recognize offices/departments that take these actions	Expansion of Green Office Program to all 3 campuses	2008	No End Date (Continuous)
Other Stationary Fuel Combustion and Electricity Actions							
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. In 2010, Initiated Green Office Program which gives credit to offices that take these actions	Expand Campus wide campaigns to conserve energy as part of Green Office program to all three SFU campuses	2008	No End Date (Continuous)
Implement Solar thermal hot water heating projects	Ongoing/In Progress			Submitted for PSECA /Solar BC funding application for solar thermal installations at the Gym(Pool) and Library	Continue to identify and scope out solar opportunities pending funding	2009	No End Date (Continuous)
Develop a business plan and obtain funding to develop a Biomass fueled central heating plant for Burnaby campus	Ongoing/In Progress	1	% complete of Biomass CHP project	Continue to pursue funding for a biomass district heating plant. Synergize SFU project with SFU Community Trust's project for a district heating system for UniverCity. Look for efficiencies of scale and partners	Proceed on project, pending funding approval	2008	No End Date (Continuous)
Develop a geoexchange system for connection to Shrum Chemistry	Ongoing/In Progress	0	% complete of geoexchange field project	Deferred due to lack of funding	Pursue funding for further study of feasibility of geoexchange for Shrum C	2008	No End Date (Continuous)
Expand LED lighting replacement program	Ongoing/In Progress			Continue to replace outdoor fixtures with LED fixtures.	Install LED parking lot lighting as a pilot. Monitor other LED lighting installations and performance and expand replacement program where possible	2009	No End Date (Continuous)
Energy Ideas contest	Ongoing/In Progress			Facilities Services completed the first Energy Ideas contest. Contestants were invited to submit energy saving ideas. Three prizes were awarded in Sept, 2010. Winning suggestions were to remove redundant air filters, clean refrigerator coils, and have security staff doing their nightly rounds include closing exterior windows and doors http://www.sfu.ca/fs/News_Releases/news1191001.html	Further develop the contest so it is an annual event and broadcast widely to engage the wider campus community in energy conservation	2009	No End Date (Continuous)
Establish an Energy Policy across the organisation	Ongoing/In Progress	50	Energy Commitment signed and SFU wide Energy Policy developed and approved by SFU senior administration and Board of Governors	VP Finance & Administration signed an Energy Commitment (includes energy conservation guidelines document)	Review SFU's existing Sustainability Policy GP 38 and if appropriate, highlight energy conservation issues. Develop an Energy Policy for the institution.	2010	2013

Simon Fraser University - 2010 Carbon Neutral Action Report

Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Develop green standards and Green design requirements	Ongoing/In Progress			Built in green requirements into standard Facilities Services Project Delivery Guide	Develop SFU specific Green Building Design and Operations standards including an online interface to promote wider awareness of SFU green standards and criteria in construction projects design and delivery; continue to integrate green standards as part of standard Project Delivery processes. Create an analysis model that integrates Life cycle costing during design decision making.	2010	No End Date (Continuous)
Use energy modelling to optimize mechanical systems with building envelope design	Ongoing/In Progress			Used energy modeling during design of Shrum Chemistry Renew, as part of fulfilling LEED requirements	Review and verify accuracy of energy modelling in Shrum C renew against actual use once building is occupied, to assess the benefits of energy modelling during design	2010	No End Date (Continuous)
Explore energy saving opportunities in Science labs (typically highest energy use on campus)	Ongoing/In Progress			Conducted a detailed audit for powered equipment and plug in devices to identify number, type and potential for energy reduction that can be effected through behaviour change in South Science building (SSB)	2011: Design and launch a Conservation Challenge to engage occupants of South Science Building (SSB) and change behaviour to save energy	2010	2012
Supplies (Paper)							
Paper Type							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	64	% of total paper purchased contains 30% recycled content	Promote use of 30% RC paper and reduced use of 100% bond paper	Plans to drop 100% bond paper for letter size, legal and tabloid choice from ordering online (estimated to remove a further 1%)	2008	No End Date (Continuous)
Printer/document settings							
Switch networked printers and photocopiers to automatic double-sided	In Development			Facilities Services defaulted printers to double sided	Continue to implement double sided as default setting on printers across campus	2009	No End Date (Continuous)
Electronic media in place of paper							
Use electronic document library for filing common documents	Completed in 2010			Facilities Services has fully implemented Xerox Docushare for electronic filing, saving paper and space while improving ability to search for documents	Continue to move away from paper copies to online processes to reduce necessity for printing	2009	2010
Post materials online that were previously printed	Completed in 2010			Facilities Services converted the work order system formerly a paper copy fax to an online service request system	Continue to convert paper processes to digital	2009	2010
Behaviour change program							
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress			Tried out various collaborative software for electronic editing (Google Docs, Sharepoint)	Continue to model and encourage others to use digital collaborative tools for editing (rather than hard copy mark ups)	2009	No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	Ongoing/In Progress			Decreasing use of paper agendas or handouts, with slides and minutes emailed out after the presentations	Continue to model behaviour in meetings or conferences and refuse to take unnecessary literature	2009	No End Date (Continuous)
Encourage re-use of scrap paper	Ongoing/In Progress			Assigned a paper tray for scrap paper (printed one side) to allow printing of draft copies onto used paper and reduce paper waste	Continue to find ways to use scrap paper (as desk top memo pads, or bound as writing pads)	2009	No End Date (Continuous)
Other Paper Supplies Actions							
Working with IT Services Managed Print Services Project to develop a Paper Conservation Education campaign	In Development			Worked with IT Services to get energy conservation and paper conservation requirement into Managed Print Services RFP	Develop an education campaign that the Sustainability Ambassadors will promote between October 2011 and May 2012 2010 No End Date (Continuous)	2010	No End Date (Continuous)

Simon Fraser University - 2010 Carbon Neutral Action Report

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 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Business Travel						
Virtual meeting technology						
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	In Development		Testing of Skype, Google chat for small conference meetings were very successful	Continue to explore and promote web-conferencing to campus. Discuss if standard university software can be adopted to enhance compatibility and support wider adoption	2010	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	In Development		Testing of Skype, Google chat for small conference meetings were very successful. Various software (WebEx, Livemeeting) widely used in Facilities Services for video conference meetings	Continue to explore and promote video conferencing to campus. Discuss if standard university software can be adopted to enhance compatibility and support wider adoption	2010	No End Date (Continuous)
Behaviour change program						
Train staff in web-conferencing	In Development		Various software have been tested in Facilities Services for video conference meetings	Promote use of web conferencing for collaboration and off site meetings	2010	No End Date (Continuous)
Train staff in video-conferencing or provide technical support for video-conferencing set-up	In Development		Various software (WebEx, Livemeeting) widely used in Facilities Services for video conference meetings	Promote use of video conferencing for collaboration and off site meetings	2009	No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	Ongoing/In Progress		Facilities services regularly hosts webinars as a way of cost effective efficient way of attendance at events	Continue to support virtual attendance at conferences	2008	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress		Promoted as part of ongoing campaigns and support of carpooling	Continue to support carpooling	2008	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress		Reviewed feasibility for a shared bicycle network on Burnaby campus	Continue to promote and advocate for bicycle infrastructure, including a bike rental program where feasible	2008	No End Date (Continuous)
Other Business Travel Actions						
SFU Sustainability Change Management Team models virtual meetings in all it's projects through the use of Skype, phone conferencing and Gmail chat	Ongoing/In Progress		Tested out Skype and phone meetings for the planning of the Sustainability Education Across the Province (SEAP) faculty workshop event and the planning of the Sustainability Festival	Training of change management team in free easy to use virtual meeting software	2010	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		Sustainability Ambassador Program continued and expanded from 2009. Green teams added to team structure as part of Green Office Program	Expansion of Green office program to all three campuses	2008	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress		Sustainability Coordinator developed materials for semester long campaigns and continued to recruit and train Sustainability Ambassadors	Specialized modules to be developed for Sustainability Ambassadors and Green Teams	2008	No End Date (Continuous)
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)
Awards/Recognition						

Simon Fraser University - 2010 Carbon Neutral Action Report

Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Establish a sustainability/green awards or recognition program	In Development		Investigate current award programs to set up possible framework for green awards	Develop and implement a sustainability recognition program. Develop and implement a sustainability recognition program for all campuses and departments (currently the Green Office Program only applies to departments that have Sustainability Ambassadors)	2009	No End Date (Continuous)
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	In Development		Sustainability Coordinator attended AASHE Conference on sustainability in higher education	Sustainability Coordinator to continue to attend AASHE Conference and bring back lessons learned to change management team. Two members of the change management team attending the Cascadia Green Building Conference (April 2011)	2010	No End Date (Continuous)
Staff awareness/education						
Provide education to staff about the science of climate change	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions	Develop new website to provide more accessible materials and tools	2008	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions	Develop new website to provide more accessible materials and tools	2008	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions	Develop new website to provide more accessible materials and tools	2008	No End Date (Continuous)
Provide sustainability education during new staff orientation	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions. Sustainability Coordinator attended new employee orientations and provided new staff with information on sustainability at SFU	Develop new website to provide more accessible materials and tools. Continue to attend new employee orientations	2008	No End Date (Continuous)
Client/public awareness/education						
Provide education to clients/public about the science of climate change	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions	Develop new website to provide more accessible materials and tools	2008	No End Date (Continuous)
Provide education to clients/public about the conservation of water, energy, and raw materials	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions	Develop new website to provide more accessible materials and tools	2008	No End Date (Continuous)
Provide green tips on client/public website or in newsletters	Ongoing/In Progress		Continued to provide tools and information to support sustainability actions	Develop new website to provide more accessible materials and tools	2008	No End Date (Continuous)
Other Education, Awareness, and Engagement Actions						
Stories produced for the SFU News including an insert on sustainability at SFU	Ongoing/In Progress		Worked with SFU News to publish an insert on sustainability at SFU and many sustainability stories throughout the year	Will continue to work with SFU News to publish more inserts on specialty topics such as waste and to publish more stories on progress toward sustainability	2009	No End Date (Continuous)
Host the SFU Sustainability Festival annually	Ongoing/In Progress		SFU Sustainability Change Management Team hosted the first collaborative festival with Faculty of Environment and Sustainable SFU (student organization).	SFU Sustainability Change Management Team to host collaborative festival with Faculty of Environment, Sustainable SFU and Pacific Institute for Climate Solutions and expand festival (one day event) into a Sustainability Week	2009	No End Date (Continuous)
Other Sustainability Actions						
Water conservation						
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress		Monitor performance of vegetated roof on Blusson/Saywell Hall to evaluate performance and ways to improve system	Document applicable standards into Green Building Design Standards	2009	2013

Simon Fraser University - 2010 Carbon Neutral Action Report

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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		Zero Waste committee created to examine waste management and take action to reduce waste across campus	Continue to meet to support ways of reducing waste and increasing recycling	2009	2013
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		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.)	Ongoing/In Progress		Adopted Calstone Furniture as the standard for office casework because of their strong environmental programs including take back of used Calstone furniture to the plant for remanufacturing into new furniture pieces	Include green products choices and green certification labelling as part of Facilities Services Green Design and Operations Standards	2009	No End Date (Continuous)
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	Ongoing/In Progress		Develop Green Housekeeping program as a pilot for Shrum Chemistry to be implemented once the building is occupied	Implement the Green Housekeeping pilot program in Shrum Chemistry. Continue to follow up with Custodial manager on use of green cleaning products	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		Preparing requirements for new competitive bid to be issued in 2012.	Incorporate as part of RFP for food supplier/vendor to be issued in 2012	2009	2013
Building construction, renovation, and leasing						
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress		ECT demolition succeeded in diverting 85% of the materials away from landfill. Shrum Chemistry renew is requiring and implementing a broad Construction Waste Management Program on site	Incorporate into Project development Standard Practices wherever possible.	2009	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	In Development		Investigate principles and set up working team to explore life cycle costing applications	Provide training and tools for applying life cycle costing in evaluating between equipment choices	2010	2013
Indoor air quality						
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 Major Renew project	Review performance to evaluate and adopt where feasible	2009	No End Date (Continuous)
Commuting to and from home						
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress		Green Office Program promotes this action	Continue to expand as part of the Green Office Program	2009	No End Date (Continuous)
Provide secure bicycle storage	In Development		Evaluated available bike lockers to select supplier	Continue to expand cycling infrastructure with secured bike storage on Burnaby campus. Install bike lockers as a pilot program to assess demand. Consider business partnerships with bike locker service providers	2009	No End Date (Continuous)
Modify parking fees or parking availability for staff/students	Ongoing/In Progress		Parking rates continue to be increased for staff and students	Encourage carpooling and ride share programs or public transit. Continue to reduce available parking while increasing rates.	2008	No End Date (Continuous)
Other Sustainability Actions						

Simon Fraser University - 2010 Carbon Neutral Action Report

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Developing a composting program, battery recycling pick up and plastics/tin recycling programs	In Development		Research into feasibility of programs completed	Implement composting for pre-consumer materials in dining service locations, offer battery recycling and pick-up o all Burnaby departments, offer free recycling bins for lunch rooms for plastic, glass and tin and provide better signage and bins to pick up.	2010	2011
Charter member of the AASHE STARS program to evaluate overall sustainability measures	Ongoing/In Progress		Signed up for STARS as a charter member	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)
Developing a five year sustainability change management plan proposal to better integrate current efforts with long term goals	Ongoing/In Progress		Discussions with partnerships and stakeholders	Conduct research, develop plan and submit for review approval and initial implementation	2010	2012
Support TransLink Gondola proposal to Burnaby campus (from Production Way Skytrain station to SFU Burnaby)	In Development		SFU support for joint initiative between TransLink and SFU Community Trust to investigate feasibility (engineering and business case) of a gondola.	Continue to support the gondola study to advance implementation date	2010	2013