

Langara College – 2010 Carbon Neutral Action Report

Executive Summary

Langara College has been working at reducing green house gases and increasing sustainability for many years. This has come from both internal changes and polices and from incentive programs developed by BC Hydro, Office of Energy Efficiency, Natural Resources Canada, and the Association of Canadian Community Colleges. Langara College has been updating their Energy Management Action Plan for the Canadian GHG Challenge Registry annually and has been recognized as a Gold Champion Level Reporter since 1999. Langara has recently undertaken construction and renovation projects built to LEED gold standard and is continuing to undertake improvements in energy efficiency in existing buildings through technical upgrades, occupant awareness, and more precise monitoring.



As part of the college's commitment to reducing Green House Gas (GHG) Emissions, an Environmental Responsibility Policy (No A1011) was established in June 2001. The purpose of the board governance policy is as follows:

To provide direction to the College regarding the creation of a learning and working environment characterized by social responsibility, the Board is committed to:

- protecting and enhancing the environment for future generations, and
- using and managing its own physical environment more sustainably

Senior Executive: Deanna Douglas, Vice- President, Administration and Finance

2010 Greenhouse Gas Emissions

There was a decrease in CO₂e (CO₂ equivalent) emitted from 1,985 tonnes in 2009 to 1,762 in 2010. This improvement was in spite of accounting for additional emission sources from backup generator fuel.

Langara College was required to buy \$44,048.50 (pre-HST) of offsets for its 1,761.94 tonnes of CO₂ emitted in 2010.

It was estimated that stationary fugitive emissions from cooling do not comprise more than 0.01% of Langara's total emissions and to collect data for emissions from this source was not feasible. For this reason, emissions from this source have not been included in Langara's total greenhouse gas emissions profile.

Actions Taken to Reduce Greenhouse Gas Emissions in Calendar Year 2010

The following are highlights of continued and new actions taken in 2010 to reduce Greenhouse Gas Emissions.

- Extended commitment to BC Hydro's Energy Manager Program.
- As part of building further awareness and engaging campus students and staff, the Sustainability Website was enhanced with more information, an interactive building energy information kiosk was installed, and "Green Tips" were distributed through email, electronic newsletter, and the student newspaper.
- Building controls were upgraded in A&B buildings, including new zone valves and software version upgrades.
- Ongoing optimization of the newly renovated C Building and new Langara Students' Union buildings.

- Completion of majority of campus wide sub-metering for gas and electricity. This will allow more precise tracking of building energy use.
- Advancement of BC Hydro's Continuous Optimization program, with the Library building (Phase 1) in the investigation phase, and the process for A&B buildings (Phase 2) starting. Integral to the process is the monitoring of real time energy use for all buildings on campus to help to optimize control of buildings.
- Continuation of lighting retrofits and controls investigation; launched pilot project to assess lighting upgrades and monitored plug-loads of high energy-use electronics.
- Select exterior walkway lights were replaced with high-efficiency LEDs.
- An improved UPASS and promotion of alternative transportation has resulted in fewer cars coming to campus and allowed closure of the lower levels of the parking garage and plans to shut off associated lighting.
- Trials of water bottle re-fill station to reduce waste and replacement of paper towels with energy efficient hand dryers in high-use washrooms.
- Increased engagement of facilities and engineering staff in building operation through training and improved monitoring capabilities.
- Significant natural gas and electrical savings from maintenance on building air handling units.
- Built a business case for PC management.
- Investigated heating plan options.

Offsets Applied To Becoming Carbon Neutral In 2010

1761.94 tonnes CO₂e of emissions resulting from the operation of Langara College were reported as part of our greenhouse gas emissions profile in 2010.

Plans to Continue Reducing Greenhouse Gas Emissions 2011-2013

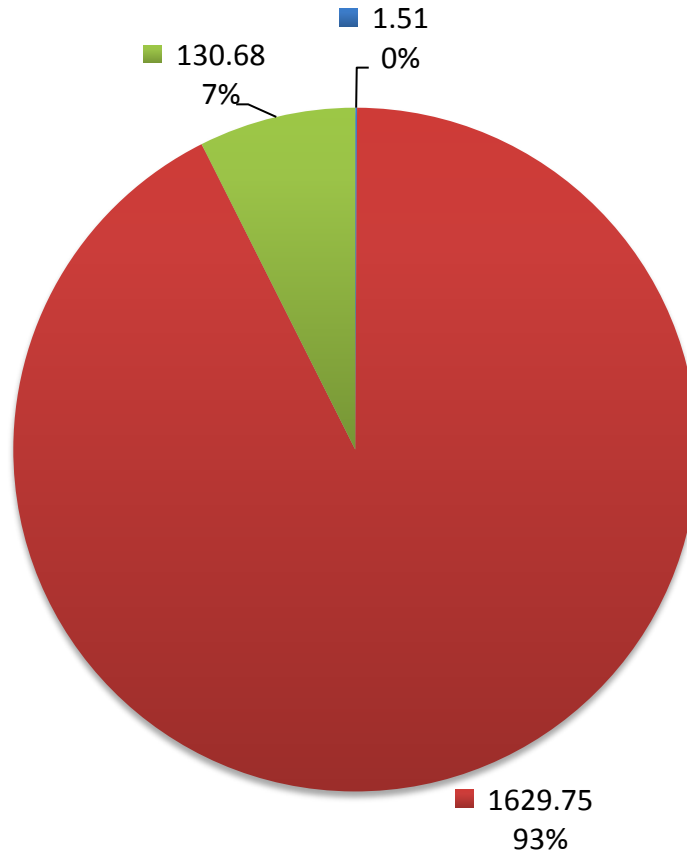
The following actions are currently included in Langara's Strategic Energy Management Action Plan:

- | | |
|------------|---|
| 2011: | implementation of Library building COP improvement recommendations with < 2 year payback. |
| 2011: | Installation of plug-load energy control devices. |
| 2011: | Improved efficiency and monitoring of energy from DDC graphic upgrades and PUSLE monitoring. |
| 2011: | Increased awareness campaigns related to individual energy use and more public display of building energy use . |
| 2011-2013: | Carry out Continuous Optimization investigation phase on A&B and C buildings |
| 2011-2013: | Develop various operational guidelines related to campus energy management, green purchasing, waste management etc. |

Please include your organisation name and "FINAL 2010 CNAR" in the subject line and submit your CNAR overview and your completed CNAR Actions template by e-mail to the Climate Action Secretariat (climateactionsecretariat@gov.bc.ca) and copy Rheannon Harriman (Rheannon.Harriman@gov.bc.ca) - a Sustainability Project Officer who supports both the Ministry of Regional Economic & Skills Development and the Ministry of Science and Universities

Langara College

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



Total Emissions: 1761.94

- 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: **1761.94**. Total offset investment: **\$44,048.50**. Emissions which do not require offsets: **0** **

*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.

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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 12/31/10)	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)						
This section is either not applicable, not yet evaluated, or was completed before 2010						
Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)						
Planning/management						
Enrol in a building energy benchmarking program (e.g., GREEN UP)	In Development		carried out internal benchmarking of campus buildings post construction of new buildings	will investigate benchmarking programs for performance comparison	2009	No End Date (Continuous)
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	65 % of buildings have a real time metering system installed	installation of majority of sub-meters, preliminary Pulse set-up	continue to connect meters and fully set up Pulse system	2009	2011
Owned buildings						
Establish energy performance baseline for owned buildings	Ongoing/In Progress	0 % of owned buildings have an established energy performance baseline	Langara currently uses a campus level baseline. Baseline adjustments were made to old baseline to account for new buildings. New submetering will help establish building level benchmarking	sub- meter baselines being established where new meters exist	2009	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	Two new buildings designed to LEED Gold, registration ongoing	continue to pursue certification	2005	No End Date (Continuous)
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	In Development			Create inventory of fugitive emissions	2009	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress	100 % of owned buildings have undergone energy retrofits since start year indicated	Controls Optimization Campus wide - BC Hydro COP program for Library started, DDC review, See Strategic Energy Management Plan, start pilot program for A&B lighting upgrade with energy savings T8s	Start BC Hydro COP program for A,&B buildings, pilot program for A & B lighting upgrade with energy savings T8s and new ballasts, lighting and plug load controls, See Strategic Energy Management Plan	2000	No End Date (Continuous)
Retrofitting owned buildings						
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	100 % of retrofits since start year indicated had heating, cooling, and ventilation systems upgrades	B Building Air Handling Unit cooling valves	continue to evaluate feasibility of main heating plant retrofit, various air handling unit upgrades, including projects identified in BC Hydro COP program	2000	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	100 % of retrofits since start year indicated had lighting systems upgrades	investigated various lighting, switching & controls upgrades throughout the campus, Exterior LED demonstration project, began pilot on T8 lamp upgrades in B bldg	Implement identified lighting projects, A & B buildings new ballast and relamp project or through regular maintenance initiative, implement lamp upgrades and pilot ballast replacements	2000	2012
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	100 % of retrofits since start year indicated had control system upgrades or adjustments	BC Hydro COP program for Library commenced, began campus DDC system review	Begin BC Hydro COP program for A, B, & C buildings, fine tune controls for C and LSU buildings, DDC interface upgrades project.	2011	2013

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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
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	98	% of retrofits since start year indicated had insulation improvements	none	improve when replacement required	2005	No End Date (Continuous)
Install an on-site renewable energy demonstration project	Ongoing/In Progress			Investigated feasibility of installing Solar Hot Water system, Installation of interactive display describing C Buidling Thermenex system, completed commissioning of C bldg	Create posters etc highlighting geoexchange system in Library	2005	No End Date (Continuous)
IT power management							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	60	% of computers shut down automatically outside of regular business hours	Evaluated software options and build business case.	Evaluate Windows 7 energy mngmt capability	2005	2012
Implement server virtualization	Ongoing/In Progress	60	% of servers have been virtualized since start year indicated	Continue to virtualize servers, including addition of blade servers	Continue to virtualize servers, including addition of blade servers	2006	2012
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress	80	% of computers have auto-sleep settings applied	included in power management software evaluation	Evaluate Windows 7 energy mngmt capability	2009	2011
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress			Awarded tender	Evaluate savings, survey to identify electronic devices in offices	2009	2011
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress	80	% of devices have auto-sleep settings applied	Awarded tender	Evaluate savings, new software will enable this to be centrally managed.	2009	2011
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	75	% of computers are ENERGY STAR rated	replaced old computers as required	ongoing - replace old computers as required	2006	No End Date (Continuous)
Appliances and electronic devices							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress	60	% of fridges are ENERGY STAR rated	ongoing	formalize guidelines for purchasing	2010	2012
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress			monitoring of specific appliances to idenify energy use	formalize guidelines for purchasing, upgrade appliances at end of life, conduct office survey of electronics	2010	2012
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			created office survey - identified, > 150 desk lamps	will offer occupanst CFLs where appropriate light type	2010	2012
Behaviour change program							
Help staff reduce personal energy use through "workstation tune-ups"	In Development			ongoing research and inquiries into available tools/Windows energy mngmt capabilities - in "Green tips"	Fall/2011 campaign depending on technoolgy options	2010	2011
Ask staff to unplug electrical equipment or switch off power bars when not in use	In Development			research power bar options for this	Included in monthly green tips , Fall awareness campaign - staff newspaper, posters	2010	2011
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress			informal observations of blind positions	July Awareness campaign - again in October	2005	2011
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			bi-weekly tip included in staff new letter, facebook, campus newspaper, and green pledge email	incorporate into awareness campaign	2005	2011
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress			included in staff "Green tips"	Fall 2011 - awareness campaign	2005	No End Date (Continuous)

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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
Promote hot water conservation	In Development			general awareness campaign development	Cover in "Green tips:"	2010	No End Date (Continuous)
Supplies (Paper)							
Paper Type							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	96	% of total paper purchased contains 30% recycled content	purchasing preference for recycled content	evaluate areas where more recycled products can be used	2008	2011
Purchase 100% post-consumer recycled paper	Ongoing/In Progress	0	% of total paper purchased contains 100% recycled content	none	evaluate cost and functionality	2009	No End Date (Continuous)
Printer/document settings							
Switch networked printers and photocopiers to automatic double-sided	Ongoing/In Progress	10	% of network printers or photocopiers are set to automatic double-sided	printer tender awarded, print shop default is double-sided	advise staff and implement double sided print settings	2009	2011
Apply "print and hold" settings to networked printers to eliminate unclaimed print jobs	Ongoing/In Progress	30	% of network printers have 'print and hold' settings applied	used for students and faculty shared printing	on-going, Digital Store Front software will require codes and allow individual consumption tracking	2000	No End Date (Continuous)
Electronic media in place of paper							
Use electronic document library for filing common documents	Ongoing/In Progress			on going scanning - Contact Records Manager	continue to scan documents, raise awareness and refine processes.	2008	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			many forms now online rather than photocopying	raise awareness and provide training and tools, develop operating guidelines	2005	No End Date (Continuous)
Behaviour change program							
Encourage re-use of scrap paper	In Development			none	investigate methods for increased reusing of scrap paper on campus	2009	2012
Other Paper Supplies Actions							
Course Ware materials online....	In Development			none	survey to understand acceptance of electronic versions	2011	2013

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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 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Education, Awareness, and Engagement						
Team-building						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress		Energy Manager term continued, Communicaitons departement active in highlighting energy saving measures, energy committee meetings included director of facilities	Regular energy management team meetings, incorporate GHGs in energy plan.	2009	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress		Energy Manager dedicated to program	Get commitment from other team/areas of the college to commit time to Energy and GHG mandate	2009	2010
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		Energy Manager dedicated to program, communicaiton dept. Involved in awareness work	Get commitment from other team/areas of the college to commit time to Energy and GHG mandate	2009	No End Date (Continuous)
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	In Development	0	none	plan sustainability speakers	2009	No End Date (Continuous)
Staff awareness/education						
Provide education to staff about the conservation of water, energy, and raw materials	In Development		General Awareness Campaign development	incorporate into an awareness campaign	2009	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress		bi weekly energy tip in employee newsletter, new sustainability website	continue with tips, additional awareness activities	2005	No End Date (Continuous)
Client/public awareness/education						
Provide education to clients/public about the conservation of water, energy, and raw materials	Ongoing/In Progress		bi-weekly tip included in staff new letter, facebook, campus newspaper, and green pledge email	continue with tips, additional awareness activities	2010	No End Date (Continuous)
Provide green tips on client/public website or in newsletters	Ongoing/In Progress		bi-weekly tip included in staff new letter, facebook, and website	continue with tips, additional awareness activities	2010	No End Date (Continuous)
Other Education, Awareness, and Engagement Actions						
Booth at Langara Days anniversary event	Completed in 2010		Signed up students and staff to receive green tips via email		2010	No End Date (Continuous)
Interactive kiosk for C Bldg heating/cooling system	Completed in 2010		Installed kiosk		2010	No End Date (Continuous)
Other Sustainability Actions						
Water conservation						
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Ongoing/In Progress		retrofitted C Bldg has water saving faucets and toilets, tested Gym showers for water use	determine baseline, carryout water audit on campus	2010	No End Date (Continuous)
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	In Development		New buildings incorporate stormwater management	formalize poilicy	2005	2012
Waste reduction/diversion						

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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
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	In Development		ongoing recycling, additional compost depots and signage, pilot water bottle refill station to reduce bottled water use, handdryers in busy washrooms reduced paper towel use	review and formalize policies, new waste contract to be awarded	2005	No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Ongoing/In Progress		Paints, chemicals, are collected and disposed of through a certified contractor - disposal receipt issued to college, a company collects and recycles all lightbulbs that contain mercury, batteries collected and recycled, computers are donated, sold off, or recycled	compile contractors and waste types in one document	2010	No End Date (Continuous)
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.)	Ongoing/In Progress		unofficial policy - printing contractor re-fills toner cartridge	review other goods and work to incorporate recycled content	2011	2012
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		New buildings designed to LEED Gold, renovation bin available to sort waste. Extra materials re-purposed for student programs	formalize college operations guidelines	2010	2012
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress		New buildings and major renovations include C Building	formalize college operations guidelines	2005	2012
Indoor air quality						
Enforce a scent-free policy (e.g., no strong perfumes, deodorants, etc.)	In Development		signs posted throughout the college	formalize college guidelines	2009	2012
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		general guideline for campus bldgs but specifically done for LEED designed bldg	formalize college guidelines	2005	2012
Commuting to and from home						
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress		Some bike racks under cover	covered bicycle parking. Program awareness. Workshops seminars, awareness campaign	2005	No End Date (Continuous)
Other Sustainability Actions						
Pilot to replace paper towels with energy efficient hand dryers	Ongoing/In Progress		Monitored paper use before and after installations	Install more handdryers	2010	2012