

Langara.

THE COLLEGE OF HIGHER LEARNING.

2011 CARBON NEUTRAL ACTION REPORT



Prepared by:

Patricia Baker
Langara College College Energy Manager

Date:

May 1, 2012

EXECUTIVE SUMMARY

Langara College has been working at reducing greenhouse gases and increasing sustainability for many years. This has come from both internal changes and policies 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 reporting their Energy Management Action Plan through the Canadian GHG Challenge Registry annually and has been recognized as a Gold Champion Level Reporter since 1999; this registry has recently closed. Langara's newest buildings on campus are built to LEED gold standard and certified. Langara continues to undertake improvements in energy efficiency to existing buildings through technical upgrades, occupant awareness, and metering & 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

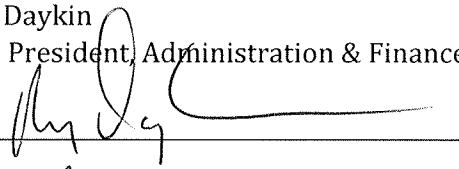
The college is proud of its efforts to reduce energy usage and greenhouse gases. Langara is committed to reducing energy on campus and has demonstrated this by including optimization of energy use on campus as a strategic initiative in their Strategic Plan 2009 - 2013 and also by signing the Association of Canadian Community Colleges "Pan-Canadian Protocol for Sustainability".

The energy reduction goal for 2009 - 2013 is to reduce energy usage by 15% over 5 years. We are currently meeting our target.

Executive Approval: Roy Daykin
Vice President, Administration & Finance

Date:

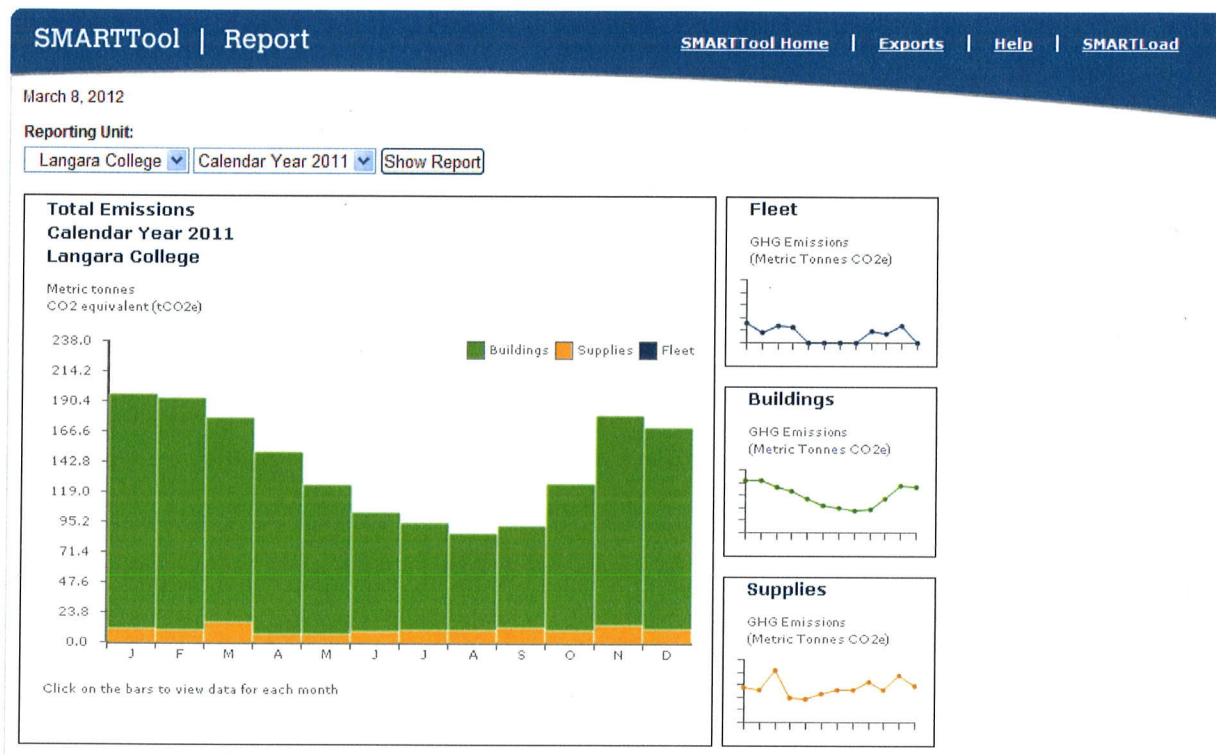
Signature:



May 2, 2012

2011 GREENHOUSE GAS EMISSIONS

There was a decrease in CO₂e (CO₂ equivalent) emitted from 1,985 tonnes in 2009 to 1,720 in 2011. The reducing in CO₂e is the result of efforts to reduce energy usage. The total emission offsets applied to become carbon neutral in 2011 is 1,720 tonnes. Langara College was required to pay \$48,132.00 inc. taxes in Carbon Offsets to become “carbon neutral”.



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.

EMISSIONS REDUCTION ACTIVITIES 2011

The following are highlights of continued and new actions taken in 2011 to reduce Greenhouse Gas Emissions.

- Extended commitment to BC Hydro's Energy Manager Program.
- Completed installation of building level metering, including installation of a live dashboard in Main Corridor to raise awareness of energy usage in buildings.
- Received LEED Gold certification for Library, C & LSU buildings.
- Optimization of Library building's energy usage; implemented measures resulted in over 40% electrical energy savings. Measures included controls optimization, coordination with cleaning and security to ensure lighting on floors and in parkade are off when not required, printer and computer settings optimization.
- Various other energy saving projects including daylighting and occupancy controls, summer and holiday hours scheduling, LED Post lights and sign installations, timers on water coolers/heaters and dish pit fan controls.
- Started investigation phase for A&B Building's controls optimization – BC Hydro's Continuous Optimization Program.
- Secured funding for Green IT study.
- New multifunctional devices are Energy Star capable of running additional programming to optimize energy and paper usage; new programs to be implemented in 2012.
- Awareness activities including:
 - Participation in "Sweater Day" which included turning the heat down in February.
 - New Green Buildings Kiosk and literature for C & LSU buildings to raise awareness and educate on Green features in Demonstration project.
 - Carried out a plug loads survey of Academic offices throughout campus; information will be used to develop an awareness campaign and develop strategies to reduce loads.
- Various continuing education classes related to Environment and Sustainability.
- Continued to purchase primarily 30% recycled paper.
- Installation of water fountains with water bottle refill station to reduce purchase of water.
- Added more lockers for staff and students for commuting by bike or foot.

PLANS TO CONTINUE REDUCING GREENHOUSE GAS EMISSIONS 2012 – 2014

The following actions are currently planned for the next three years (2012 - 2014).

- Complete A&B Buildings controls optimization investigation phase and implement findings resulting in < 2 year payback.
- Start investigation phase of C Building.
- Heating plant review.
- Various lighting and controls upgrades.
- Carryout Green IT study and implement measures that meet our project criteria for energy projects, including being operationally and financially feasible.
- Develop various operational guidelines related to campus energy management, green purchasing, waste management etc.
- Continue with general Awareness on Energy and Sustainability issues, including commuting.

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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 <i>Greenhouse Gas Reduction Targets Act</i> .							
Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	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 2011							
Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)							
Planning/management							
Enrol in a building energy benchmarking program (e.g., GREEN UP)	In Development			completion of building level metering,	review building level performance, consider applicability of benchmarking program	2009	No End Date (Continuous)
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Completed in 2011	100	% of buildings have a real time metering system installed	finished metering installations, installed live energy metering in main corridor for display to public		2009	2011
Owned buildings							
Establish energy performance baseline for owned buildings	Ongoing/In Progress	50	% of owned buildings have an established energy performance baseline	Energy usage baselines established for electricity for all buildings. Gas baselines in progress	finalize baselines	2009	2012
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Ongoing/In Progress	28	% of owned buildings are certified LEED NC Gold or LEED NC Platinum	2 of 7 buildings are LEED Gold, no new construction in 2011.	Potential new buildings require LEED NC Gold at a minimum	2007	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Ongoing/In Progress	100	% of buildings built or renovated since start year indicated used the integrated design process	not applicable, no new construction on campus	Proposed new buildings to conform	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)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress	100	% of owned buildings have undergone energy retrofits since start year indicated	Controls optimization of the Library Building, Various small lighting and controls projects	Controls optimization of A & B Buildings, Green IT study & implementation, Library lighting retrofits,... others as identified	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	controls optimization of Library building HVAC, various small upgrades throughout, heating plant evaluation	to be determined, studies for controls optimization of A & B ongoing	2000	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	100	% of retrofits since start year indicated had lighting systems upgrades	no major retrofits	Library lighting and possible relamping projects in A & B buildings	2000	No End Date (Continuous)

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Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	100	% of retrofits since start year indicated had control system upgrades or adjustments	Library controls optimization complete	A & B Buildings investigation and implementation, possible hardware upgrades, C Building optimization.	2000	2014
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	98	% of retrofits since start year indicated had insulation improvements	none	improve when replacement is required	2005	No End Date (Continuous)
Install an on-site renewable energy demonstration project	Completed in 2011			C Building & Kiosk showing Thermenex system		2007	2011
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	Windows 7 planning process	Complete windows 7 installation and programming for computer shutdown; 60% complete by April 2013, 80% by end of Calendar year 2013.	2009	2013
Implement server virtualization	Ongoing/In Progress	60	% of servers have been virtualized since start year indicated	Continued to virtualize servers, including addition of blade servers	Green IT study, develop implementation plan based on findings and continue with current plan	2009	2014
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress			Investigation, including virtual desktop implications	Continue citrix and windows 7 investigations.	2009	2014
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress			new multifuction devices are energy star	additional software upgrades planned, policy on standalone printers required.	2009	No End Date (Continuous)
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	new multifuction devices are energy star	additional software upgrades planned, policy on standalone printers required.	2009	2014
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	75	% of computers are ENERGY STAR rated	ongoing, also citrix virtual desktop planning	ongoing planning and implementation.	2009	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			ongoing	formalize guidelines for purchasing	2010	2012
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			Carried out survey of offices,	Analysis of survey, plan for action.	2010	2012
Behaviour change program							
Help staff reduce personal energy use through "workstation tune-ups"	In Development				Planning and resources required for Awareness initiatives	2009	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	In Development				Planning and resources required for Awareness initiatives	2009	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	In Development				Planning and resources required for Awareness initiatives	2009	No End Date (Continuous)
Encourage staff to use air dry setting on dishwashers	In Development				Planning and resources required for Awareness initiatives	2009	No End Date (Continuous)

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Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			tips provided in employee newsletter,	Planning and resources required for Awareness initiatives	2009	No End Date (Continuous)
Encourage use of stairs instead of elevators	In Development				Planning and resources required for Awareness initiatives	2009	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	In Development				Planning and resources required for Awareness initiatives	2009	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	new paper supplier	ongoing work with college purchasing group to source the best options with most recycled content (that works in devices).	2009	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	Ongoing/In Progress	0	% of total paper purchased contains 100% recycled content	none	ongoing work with college purchasing group to source the best options with most recycled content (that works in devices).	2011	2013
Printer/document settings							
Switch networked printers and photocopiers to automatic double-sided	Ongoing/In Progress	25	% of network printers or photocopiers are set to automatic double-sided	new devices	additional software implementation	2009	2013
Apply "print and hold" settings to networked printers to eliminate unclaimed print jobs	Ongoing/In Progress	10	% of network printers have 'print and hold' settings applied	currently in labs	additional software implementation	2009	2013
Electronic media in place of paper							
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress			Investigation phase	further investigations	2011	No End Date (Continuous)
Use electronic document library for filing common documents	Ongoing/In Progress			Investigation phase	further investigations	2009	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			more items each year	review print materials and evaluate online options	2009	2014
Switch to an electronic payroll notification system in place of paper pay stubs	Completed in 2011			completed		2009	2011

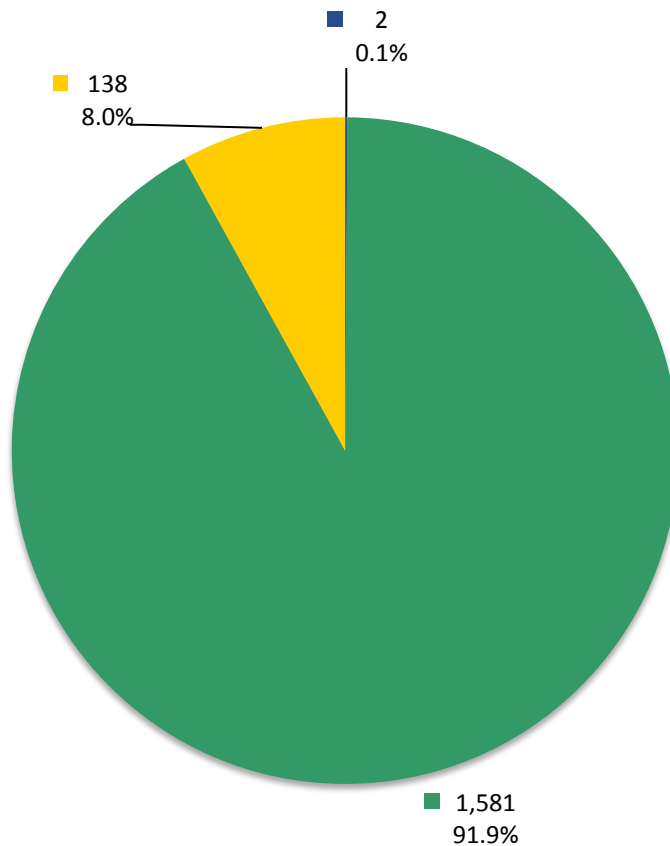
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Actions to Reduce Provincial Emissions and Improve Sustainability							
The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the <i>Greenhouse Gas Reduction Targets Act</i> . 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 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	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			Conduct Energy Team meeting once per semester	continue with meetings, to incorporate GHGs in goals	2009	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress			Plan to hire in-house Operations/Energy Manager	Hire new in-house Operations/Energy Manager	2011	2012
Providing behaviour change education/training to teams (e.g., community-based social marketing)	In Development			none	to be determined	2011	2013
Staff Professional Development							
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress			Various courses/lectures through LEDC	to be determined, continue with courses for staff development	2011	2013
Staff awareness/education							
Provide education to staff about the science of climate change	In Development				to be determined	2010	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress			Energy tips in newsletters, facebook, etc. New energy monitoring dashboard.	water and materials to be incorporated, new resource will have more time to head this up... plan to be determined	2010	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress			Energy tips in newsletters, facebook, etc. New energy monitoring dashboard.	new resource will have more time to head this up... plan to be determined	2010	No End Date (Continuous)
Client/public awareness/education							
Provide education to clients/public about the science of climate change	Ongoing/In Progress			various continuing education classes	New energy manager to develop awareness plan and coordinate	2010	2013
Provide education to clients/public about the conservation of water, energy, and raw materials	Ongoing/In Progress			various continuing education classes, new energy monitoring dashboard in main foyer	New energy manager to develop awareness plan and coordinate	2010	2013
Provide green tips on client/public website or in newsletters	Ongoing/In Progress			website, facebook, twitter, etc	New energy manager to develop awareness plan and coordinate	2010	2013
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	80	% low flow and automatic	Installation of water fountains with water bottle refill station to reduce purchase of water.	formalize policy, water audit	2009	2014
Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features	Ongoing/In Progress	60	% low flow toilet fixtures and automatic	ongoing	formalize policy, water audit	2011	2014
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	In Development			was incorporated into the library building, rain water harvesting, bioswales, rain water irrigation	formalize policy	2008	2013

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Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Waste reduction/diversion							
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	In Development				New tender for waste	2011	2013
Implement a hazardous waste reduction and disposal strategy	In Development				New tender for waste	2011	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				formalize policy	2009	2013
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			high level discussion	Draft up standard	2009	No End Date (Continuous)
Require a minimum purchase of sustainable, and organic food and beverages supplied by contracted food suppliers or caterers	Ongoing/In Progress			biodegradable containers	evaluation phase	2009	No End Date (Continuous)
Building construction, renovation, and leasing							
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	Ongoing/In Progress			as per LEED Gold as required	as per LEED Gold as required	2007	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress			as per LEED Gold as required	as per LEED Gold as required	2007	No End Date (Continuous)
Indoor air quality							
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	In Development			as per LEED Gold as required	review with purchasing policy guidelines	2009	No End Date (Continuous)
Commuting to and from home							
Offer staff a compressed work week	Ongoing/In Progress			available to unionized staff	no plan	Started before 1995	No End Date (Continuous)
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress			added more lockers for staff and students	plan for covered shelter for bike parking, lobby to keep Upass	2007	2014
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Ongoing/In Progress			added more lockers for staff and students	plan to improve existing shower facilities	2007	No End Date (Continuous)
Modify parking fees or parking availability for staff/students	Ongoing/In Progress			none	May 1st, to increase rates	2007	No End Date (Continuous)

**Langara College
Greenhouse Gas Emissions by Source
for the 2011 Calendar Year (tCO₂e*)**



Total Emissions: 1,720

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2011 (Generated May 18, 2012 11:10 AM)

Total offsets required: **1,720**. Total offset investment: **\$43,000**. 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.