



BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

3700 WILLINGDON AVENUE
BURNABY, BRITISH COLUMBIA
CANADA V5G 3H2

bcit.ca

BCIT – 2011 Carbon Neutral Action Report

Overview

British Columbia Institute of Technology (BCIT) is Western Canada's largest polytechnic institute and a recognized leader in the field of technology education, trades certification and apprentice training.

BCIT's commitment to the economic, social and environmental prosperity of British Columbia has inspired the approach of integrating sustainability into BCIT's planning objectives. To ensure BCIT meets these objectives requires focus on initiatives that incorporate sustainability into curriculum, research, and facility operations. It is this focus that ensures BCIT long term commitment to the growth and development of the green economy in British Columbia.

Sustainability objectives are included as part of BCIT's Five Year Strategic Plan which defines BCIT's position on environmental sustainability by stating that BCIT "Provide a safe and healthy environment for our employees, students, and for the communities where we live and operate by integrating sound environmental practices into our business decisions; and by establishing quantifiable goals and accountabilities for environmental performance in accordance with the BC Climate Action plan;". BCIT's planning commitment ensures that the Institute meets sustainability objectives and moves toward carbon neutrality.

The "Greening Campus" initiatives are further indication of BCIT's commitment to sustainability through the creation of campuses that offer living laboratories that showcase environmental stewardship and sustainability practices. The "Greening Campus" strategic plan articulates goals such as being greenhouse gas neutral, becoming a net energy producer, working towards zero waste, the elimination of storm sewer discharge, and reducing or eliminating potable water purchases. "Greening Campus" initiatives are one more way that BCIT is working towards a better environment.

Sub-Committees

As part of promoting participation in BCIT's sustainability initiatives seven working groups or sub-committees focus on aspects that will assist the Sustainability Committee to meet its goals, these working groups and tasks are as follows:

1. Awareness and Behavioural Change (ABC Committee)
 - a. Shares and disseminates sustainability information.
 - b. Sharing sustainability stories
 - c. Sustainability campaigns and creating campus maps that focus on sustainability.





BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

3700 WILLINGDON AVENUE
BURNABY, BRITISH COLUMBIA
CANADA V5G 3H2

bcit.ca

2. Education and Research
 - a. Inventory faculty, research, and student success stories.
 - b. Raise awareness / support adoption of success stories.
 - c. "Pacific Spirit Project" training for faculty.
 - d. Integrate sustainability into both new & existing programs;
 - i. Strategic plan: Incorporate sustainability, interdisciplinary, internationalization, and citizenship into BCIT programming.
 - ii. Integrate into Education Council policies, processes, templates, resources.
 - iii. Incorporate into (New) program development process.
 - iv. Incorporate into (Existing) program review process.
3. Funding (Revolving Fund)
 - a. No interest loans that are to be repaid by project related reduction in utility consumption, waste removal and/or operating costs.
 - b. Eligibility through an application process supported by a business case that shows tangible sustainability gains.
4. Inventory Monitoring and Reporting
 - a. Measuring Tools & methodology to monitor sustainability at campuses.
 - b. SMARTTool reporting oversight.
5. Special Projects – Paperless Initiative
 - a. Identify opportunities /efficiencies in our current business practices and promote action in these areas.
 - b. Working on strategies to educate and train employees on software and technology that minimizes paper consumption.
6. Paperless Committee
 - a. Continue to ensure Course Outlines are available in online formats and not in paper format.
 - b. D2L, BCIT's online learning environment supports online learning for all programs.
7. Operations Group
 - a. Promotes the greening of campus operations.

2011 Greenhouse Gas Emissions and Offsets Applied to become Carbon Neutral

- 2011 CO₂e total emissions: 11249 tonnes (3 tonnes exempt)
- 2011 CO₂e offset purchase: 11246 tonnes
- 2011 CO₂e offset payment: 10872 tonnes
- 2010 CO₂e overpayment applied to 2011 offset purchase: 374 tonnes

2011 Initiatives to mitigate greenhouse gas emissions at BCIT

- Worked with Transit to make U-Passes available to full-time students to reduce single occupancy vehicles commuting to BCIT.
- Installation of Smart Metres to assist with real-time monitoring of key areas on campus.

- Promotion of the ongoing "Lights Savers Campaign" throughout the year.
- Promotion of the ongoing "Heat Savers campaign" throughout the year.
- Water filling stations installed in select locations to reduce the use of bottled water.
- Mechanical upgrades to reduce energy consumption.



BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

3700 WILLINGDON AVENUE
BURNABY, BRITISH COLUMBIA
CANADA V5G 3H2

bcit.ca

Plans to Continue Reducing Greenhouse Gas Emissions 2012-2015

Key areas of greenhouse gas reduction that BCIT will be focusing on over the next three years.

- Continuing to identify sustainability initiatives that can be introduced into the day to day operations of the institute.
- Continue with communication of sustainability initiatives in the institute's lunch and learn presentations, newsletters, website, and other social media.
- Additional bike lockers and shower facilities are being provided to encourage biking to BCIT and reduce vehicle traffic.
- Additional electrical outlets for electric vehicles are planned at CARI campus to encourage the use of electric vehicles.
- Multi-functional printing devices strategically placed throughout the campus to replace any remaining stand-alone printer stations on campus.

Signature

A handwritten signature in black ink, appearing to read "L. O'Melinn". The signature is fluid and cursive, with a large initial "L" and "O".

L. O'Melinn

V.P. Finance and Administration

BC Institute of Technology (BCIT) - 2011 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 12/31/11)	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)							
Vehicle fuel efficiency							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	25	% of vehicles are fuel- efficient models	Replaced three older models with new fuel efficient models.	Replace older models with fuel efficient model as funding comes available.	2010	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	10	% of vehicles down-sized since start year indicated	Two small maintenace vans replaced with Ford Transits.	Identify oportunities to downsize on case by case senario when older models are replaced; funding dependant.	2012	No End Date (Continuous)
Perform regular fleet maintenance specifically to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Part of routine maintenance of vehicles.	Continue with the maintenance program.	2004	No End Date (Continuous)
Replace small maintenance vehicles with more fuel-efficient models	Ongoing/In Progress	80	% of small maintenance vehicles are fuel-efficient	Of eleven small maintenace vehicles nine are electric (golf carts) and two are gas (new Ford Transits).	Plans to install one additional electric charging station at the CARI campus.	2010	No End Date (Continuous)
Behaviour change program							
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	100	% of current drivers are trained	This has been common practice at BCIT prior to 2009.	Continue to conduct fleet driver training to reduce fuel use to new employees.	2004	No End Date (Continuous)
Encourage carpooling in fleet vehicles	Ongoing/In Progress			This has been common practice at BCIT prior to 2009.	Continue to encourage fleet car pooling.	2004	No End Date (Continuous)
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress			This has been common practice at BCIT prior to 2009.	Continue to promote alternative modes of transportation like BCIT's "Bike to Work Week".	2004	No End Date (Continuous)
Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)							
Planning/management							
Enrol in a building energy benchmarking program (e.g., GREEN UP)	Ongoing/In Progress			Continue to encourage participation on the Sustainability Committee at BCIT. Inventory, Monitoring and Reporting Subcommittee working towards reporting benchmarks for the institution.	Constant evaluation of reporting methods to determine if, and to what degree sustainability initiatives are proving successful.	2010	No End Date (Continuous)
Reduce office space (square meters) per employee	Ongoing/In Progress			Implemented Government Office Space Standards (GOSS) and relocted staff to new GOSS SW1 Gateway Building.	Implement GOSS to future developments and renovations.	2010	No End Date (Continuous)
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	85	% of buildings have a real time metering system installed	Continued replacement of meters with smart metres. Electricity producing PV panels on the SW1 Gateway Building. Wind turbine installed adjacent to the AFRESH building. Co-Gen turbine installed in SE8.	Royal Oak to be metered. SW1 is metered but not as yet online both Royal Oak and SW1 to completed on online prior to 2014 for 100% metering. Plans to consider full rooftop array of PV panels in one, as yet to be detemined roof top, at as yet to be determined campus site.	2010	No End Date (Continuous)
Owned buildings							
Establish energy performance baseline for owned buildings	Ongoing/In Progress			Identified buildings that will require metering to accommodate benchmarking in each building.	Establish benchmarks	2010	No End Date (Continuous)

BC Institute of Technology (BCIT) - 2011 Carbon Neutral Action Report

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
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	Ongoing/In Progress		SW1 LEED Gold	Maintain GOSS for future building	2010	No End Date (Continuous)
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Ongoing/In Progress		Completion of SW1 LEED Gold.	Comply with required minimum LEED Gold Standard for new buildings.	2010	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Ongoing/In Progress		Recently completed SW1 building used Integrated Design Process	Continued use of Integrated Design Process for future projects	2009	No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress		Continued lighting retrofits. High efficiency boiler replacement for SE41. Cooling tower replacement SE1.	Plan and develop replacement schedule specific to addressing deferred maintenance issues around upgrading HVAC mechanical systems.	2010	No End Date (Continuous)
Retrofitting owned buildings						
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress		Identify, fund and hire a Manager of Maintenance, Planning to identify and move forward HVAC projects.	Undertake work identified in replacement schedule specific to upgrading HVAC mechanical systems.	2010	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress		Completed lighting retrofit in SE50, continued lighting retrofit program in NE16 and NE18. LED parking lights project initiated. Upgrade 200 exit signs in Housing to LED from incandescent.	Continuation of lighting retrofit program.	2010	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress		Installation of DDC at North Vancouver Marine Campus and at Burnaby CARI Campus.	Continuation of DDC as funding permits	2009	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress		Identify, fund and hire a Manager of Maintenance, Planning to identify and move forward envelope projects.	Undertake work identified in replacement schedule specific to upgrading building envelope.	2010	No End Date (Continuous)
Install an on-site renewable energy demonstration project	Ongoing/In Progress		2011 installed wind turbine, co-gen plant and PV panels	Planning process underway to install more PV panels	2010	No End Date (Continuous)
IT power management						
Install power management software which shuts down computers outside of regular business hours	Completed in 2011		Commissioning and testing undertaken. Program to reduce idle operating computers at work; "Desktop to Laptop".		2009	2011
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress		Replaced older printer models with new multi-function. One hundred and fifty single line fax-machines removed from service.	All models are current, as new models are needed they will be the most up-to-date technology	2009	2012
Appliances and electronic devices						
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress		All replacement models are Energy Star. Replaced food service freezers in NE7 and SE12 with efficient models. All vending machines with cooling upgraded campus-wide.	Replace older models with new.	2010	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		All replacement models are Energy Star.	Replace older models with new.	2010	No End Date (Continuous)
Behaviour change program						
Help staff reduce personal energy use through "workstation tune-ups"	Ongoing/In Progress		Identified through e-mails, newsletters how staff can help to reduce energy consumption at their workstations.	Continue with the messaging to and helpful tips in e-mails, newsletters, lunch and learns, etc.	2010	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress		Continuation of the light saver program. Student Housing" REAR" energy conservation program competition.	Continuation of the light saver program.	2009	No End Date (Continuous)

BC Institute of Technology (BCIT) - 2011 Carbon Neutral Action Report

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
Promote hot water conservation	Ongoing/In Progress			Installed two low-flow dishwashers in SE2 food services	Continue to identify possible improvement.	2010	No End Date (Continuous)
Supplies (Paper)							
Paper Type							
Purchase 30% post-consumer recycled paper	Completed in 2011	25	% of total paper purchased contains 30% recycled content	Paper at BCIT is nearing 100% from Forest Stewardship Council (FSC) or Sustainable Forest Initiative (SFI) sources.		2008	No End Date (Continuous)
Printer/document settings							
Apply "print and hold" settings to networked printers to eliminate unclaimed print jobs	Ongoing/In Progress			New multi-function print station shave tins functionality	None	2009	2012
Reduce default margin size in standard document templates (e.g., letters, briefing notes, forms, etc.)	Ongoing/In Progress			Pilot program in School of Construction	Review pilot program.	2011	No End Date (Continuous)
Electronic media in place of paper							
Use electronic document library for filing common documents	Ongoing/In Progress			School of Construction utilizes common e-storage	Review and determine campus wide validity of program	2009	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			This currently done.	Continued use of online service.	2005	No End Date (Continuous)
Behaviour change program							
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress			Continue to train new staff with this type of collaborative editing process.	Continue to train new staff with this type of collaborative editing process.	2005	No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	In Development			Paperless Commiitte reviews status.	Continue to move towards paperless campus.	2009	No End Date (Continuous)

BC Institute of Technology (BCIT) - 2011 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 12/31/11)	Performance to Date (as of 12/31/11)	Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Business Travel						
Policy and budgeting						
Create a low-carbon travel policy or travel reduction goal	Ongoing/In Progress		Alternate means of communication encouraged instead of travel.	Continuation of travel reduction review and processes for development of travel alternatives.	2009	No End Date (Continuous)
Virtual meeting technology						
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress		Encouraging the use of video conferencing technology wherever possible. Including the technology for student instruction.	Continue with the promotion of the technology to staff and faculty.	2008	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Ongoing/In Progress		Supply of mobile VC units.	Continue with the promotion of the technology to staff and faculty.	2008	No End Date (Continuous)
Behaviour change program						
Train staff in web-conferencing	In Development		Self supporting through Outlook based application.	Continued self support of teleconferencing.	2011	No End Date (Continuous)
Train staff in video-conferencing or provide technical support for video-conferencing set-up	In Development		Pilot project using "skyp" through "Bluejean"	Improve the availability of software and promote staff use.	2011	No End Date (Continuous)
Encourage carpooling to meetings	In Development			Assess and review.	2009	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress		Continued with the Bike to Work Week Promotion.	Continue with the Bike to Work Week Promotion.	2008	No End Date (Continuous)
Education, Awareness, and Engagement						
Team-building						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress		"Green Team" increase committee membership to forty.	Establish KPI's to monitor increase in participation. Develop marketing and communication plans.	2007	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	In Development			Source funding	2011	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		Executive committee created.	Move initiatives forward.	2011	No End Date (Continuous)
Awards/Recognition						
Establish a sustainability/green awards or recognition program	Ongoing/In Progress		On hold.	Move to reinstate "GREEN APPLE" Award.	2007	No End Date (Continuous)
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		Education committee workshops held.	Committee to develop online "Climate Science Literacy" course for staff.	2009	No End Date (Continuous)
Staff awareness/education						

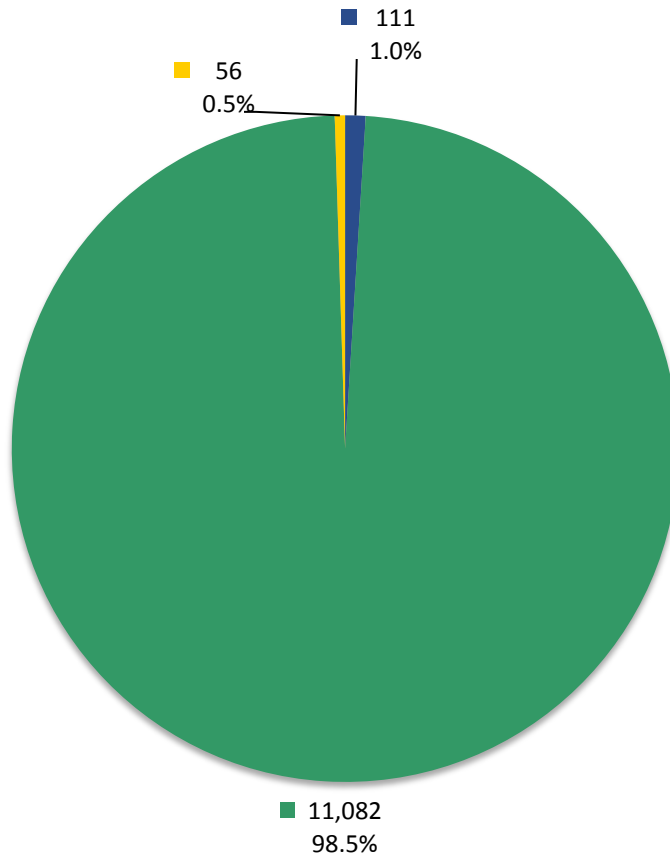
BC Institute of Technology (BCIT) - 2011 Carbon Neutral Action Report

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 education to staff about the science of climate change	Ongoing/In Progress		Commitment to "Climate Science Literacy" course.	Committee to develop online "Climate Science Literacy" course for staff.	2009	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress		Provide employee's with "Energy Checklist".	Continue with energy savings education initiatives and info-programs.	2009	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress		Monthly features on sustainability initiatives on the website and newsletter.	Monthly features on sustainability initiatives on the website and newsletter.	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	In Development		Installed waterless urinals in specific test locations SW1.	Monitor and evaluate waterless urinal SW1 results	2010	No End Date (Continuous)
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		Installed cooling tower in SE1	Continue to identify and upgrade systems as funding allows.	2011	No End Date (Continuous)
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	In Development		NE3 storm water capture for use in School of Construction program. SW1 landscaping uses street runoff as watering source before water enters storm.	Continue to identify and upgrade systems as funding allows.	2010	No End Date (Continuous)
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		Recycling has been in place at BCIT for over 10 years. Reduced the size of the garbage cans in offices to encourage more recycling. Styrofoam containers and serverware have been replaced with paper biodegradable and compostible products.	Continue to identify and upgrade recycling options as recycling streams materialize or are mandated by Metro.	2000	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		Monitor, review and reevaluate.	Monitor, review and reevaluate.	2000	No End Date (Continuous)
Establish green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	In Development			Product standards will be established.	2011	No End Date (Continuous)
Require a minimum purchase of sustainable, and organic food and beverages supplied by contracted food suppliers or caterers	In Development			Food service provider will be establishing a standard.	2011	No End Date (Continuous)
Building construction, renovation, and leasing						
Establish a policy to reuse materials where possible and divert construction and demolition debris from landfills and incineration facilities	In Development			Minimum requirement standard will be established to encourage reuse of materials.	2009	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	In Development			Establishing a standard to incorporate the lifecycling elements in a building.	2010	No End Date (Continuous)
Indoor air quality						

BC Institute of Technology (BCIT) - 2011 Carbon Neutral Action Report

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
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	In Development			Develop a standard to minimize access to the site.	2010	No End Date (Continuous)
Commuting to and from home						
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress		Promote annual "Bike to Work Week".	Promote annual "Bike to Work Week".	2010	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Ongoing/In Progress		Additional shower at SW1.	Planning included in future developments.	2011	No End Date (Continuous)
Provide secure bicycle storage	Ongoing/In Progress		New bike lockers installed at SW1 building.	More lockers planned.	2010	No End Date (Continuous)
Modify parking fees or parking availability for staff/students	Ongoing/In Progress		Removing parking spaces from the inventory.	Removing parking spaces from the inventory.	2010	No End Date (Continuous)

**British Columbia Institute of Technology
Greenhouse Gas Emissions by Source
for the 2011 Calendar Year (tCO₂e*)**



Total Emissions: 11,249

- 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 11:04 AM)

Total offsets required: **11,246**. Total offset investment: **\$281,150**. Emissions which do not require offsets: **3** **

*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.