

Executive Summary

British Columbia Transmission Corporation ("BCTC") is committed to operating, maintaining and planning the transmission system in an environmentally, socially and financially responsible manner. Our first environmental priority is to understand and manage the risks associated with our business and to anticipate and prevent impacts. If there are instances when operations do cause adverse impacts on the environment and on other uses of resources, we will work to reduce those impacts, enhance affected habitat and sustain resources over the long term. As a major contributor to the energy infrastructure of British Columbia, BCTC's operations will continue to play a pivotal role in enabling clean, renewable electricity to British Columbians. We strive to expand our understanding of the effects of our business as a means to manage environmental risks and to continually improve our environmental performance.

In 2009, BCTC launched several employee engagement-focussed programs designed to incite behavioural change and a conservation culture. Many IT upgrade projects were completed, replacing all workstation PCs with Energy Star products and deploying multi-function printer/scanner/copiers in place of standalone machines.

In addition, steps to reduce emissions from SF6 continued. While SF6 emissions are not covered under the Carbon Neutral Government requirements, they represent the largest source of emissions from BCTC's facilities; and, will be covered under proposed cap-and-trade legislation beginning in 2012. BCTC is exploring emission reduction opportunities through SF6 recycling, and an accelerated replacement program for SF6-containing circuit breakers. The new circuit breakers have near-zero leak rates, and utilize considerably less SF6 in their operation.

Both of BCTC's owned buildings, which are the Fraser Valley Office and Southern Interior Office, are high-efficiency buildings. They employ computerized lighting and high-efficiency fixtures, as well as motion detectors. BCTC's head office is in leased space in the Bentall Centre in Vancouver. Bentall is focused on energy savings, which include programs such as using the most efficient lights (T5s), computerized lighting systems, and regulated HVAC. Since 2006, water usage for the total building complex has decreased by 12% or 25,365,309 litres saved (BCTC occupies approximately 15 per cent of the building).

Overview

Actions Taken to Reduce Greenhouse Gas Emissions in 2009

BCTC has a TransLink Employer Pass Program, which is available to eligible employees residing in the Lower Mainland. This pass provides access to bus, Skytrain, Seabus and West Coast Express service for employees to commute between their home address and regular work location. BCTC pays for 75% of the cost of participating in the transit program. Employees are responsible for the remaining 25% of the cost. The average use for the year was 215 people per month for the Translink pass.

- BCTC reimburses Cycle Commuter Membership fees as part of the green commuting options. To be eligible, employees must commute to work by bicycle at least 10 days per calendar month. Eligible employees will have

their membership fees paid 100% by BCTC. In 2009, an average of 9 employees per month used the cycle commuter program.

- BCTC also offers a carpooling program by paying for parking if 3 or more employees share a car; however, in 2008 no employees took advantage of the program.

BCTC continued its program of replacing SF_6 -filled circuit breakers. Circuit breakers identified as leaking the high global warming potential gas were prioritized for replacement. New circuit breakers that contain far less SF_6 and are engineered to emit virtually none of the gas were installed. The program, initiated in 2003, will be complete in 2013. SF_6 is not covered under the Carbon Neutral Government Regulation, but is a significant source of greenhouse gas emissions. The circuit breaker replacement program will help the government attain its emission reduction goals.

BCTC, working with the Pembina Institute, introduced the One Less Tonne at Home employee campaign to help employees reduce their carbon footprint. In 2009, a group of 65 participating employees saved approximately 107 tonnes of greenhouse gas by making small changes to their daily routines, including decreased use of electricity and choosing to take transit instead of driving vehicles. As a behavioural change tool, it is expected that the One Less Tonne program will translate into an enhanced conservation culture while employees are at work.

BCTC continued its Think Before You Ink program in 2009. The program ran as a contest encouraging employees to reduce paper use by using double-sided printing, avoiding colour printing and, wherever possible, avoiding printing altogether. Following the contest phase of the program, BCTC created printer settings that defaulted to black and white, double-sided printing for all workstations. These settings would override any changes to an individual's print settings once per day.

BCTC's intranet includes a 'Swag Store' where employees can purchase BCTC-branded products such as clothing and office supplies. The Swag Store began offering environmentally responsible products in 2008, and continued its 'Eco' program in 2009.

A group of BCTC employees formed an internal waste reduction committee, and developed the Plan for Office Waste Elimination and Reduction (P.O.W.E.R.) Project. During the course of the project, the committee estimated BCTC's Ecological Footprint, researched and prioritized 34 potential environmental initiatives, and presented its findings to different departments within the company. The project, which presented its initial findings in Spring 2009, made a number of recommendations with the objective of educating employees, allowing for strategic decision making with respect to sustainability initiatives, and implementing initiatives on a priority basis.

BCTC's Public Affairs department also publishes an annual Corporate Social Responsibility report that highlights programs that contribute to social and environmental enhancement. Beginning in 2010, BCTC will also begin development of a corporate sustainability strategy. This strategy will encompass employee engagement, hiring and labour practices, environmental footprint issues, procurement strategies, and public disclosure and reporting.

BCTC also has a variety of climate change / meteorological research and development programs ongoing to ensure climate change impacts are considered in decision making. A brief synopsis of three such projects is provided below.

1. BCTC is undertaking a project to investigate climate change adaptation from the perspective of the electrical transmission system. This project considers the direct impacts of climate change on high voltage transmission systems and suggests how utilities may need to alter their planning, operation and asset management practices to mitigate these risks.

One of the results is a set of thematic maps which show predictions of various weather characteristics and which can be overlaid over maps of the transmission system to identify areas prone to risk from adverse or extreme

weather. This information is currently being linked with asset data bases to assist in improving system reliability. The expected outcome is to be able to improve system reliability and reduce maintenance cost through identification of assets in high risk areas.

- 2. Pacific low pressure weather systems and Arctic fronts can produce very severe weather conditions. Wind-throw tree failure frequently causes power outages. Once the project is complete numerical weather prediction models will be validated with respect to their utility as predictive indicators. If deemed useful, the results will be implemented into operations with BCTC providing the ability to prioritize budget based on highest risk and areas of greatest concern. Implementation may consist of new procedures to reduce wind-throw, models incorporated into existing software, and revised work methods (design of cut blocks to reduce wind damage, for example).
- 3. One of BCTC's long term visions is to use unmanned autonomous robot technologies to conduct live line inspections and assist with line repairs. The first step toward this vision has been the application and enhancement of a remote control robot to conduct inspections of a critical over-head transmission line water-crossing. The LineScout robot was developed by IREQ (Hydro Quebec) and enhanced through R&D projects with BCTC. This approach to advanced condition assessment and data gathering contribute to asset life extension which in turn improves transmission system reliability.

While it is not expected that robotics technology will replace the use of helicopters in the near future, field trials and inspections have demonstrated that this technology is a viable supplement to current inspection methods, and is particularly attractive for critical and high risk inspections such as long water crossings. This technology is expected to become an essential tool for BCTC's Large Crossings inspection and refurbishment program.

Using robotic inspection of lines would reduce greenhouse gas emissions associated with helicopter use.

Operational Changes in 2009

BCTC's paper purchases increased in 2009 compared with 2008. This difference was due to reduced paper purchases in 2008 that resulted from an oversupply of paper due to the amalgamation of two control centres into one (BCTC's present Fraser Valley Operations centre) in late 2007. It is not clear whether paper purchases in 2009 were above or below a more 'typical' operating year.

Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012

BCTC introduced the One Less Tonne at Work program in early 2010 as a follow-up to the One Less Tonne at Home program described above. Approximately 55 employees committed to behaviour changes that should result in increased energy efficiency, and reduced waste and emissions.

BCTC will continue to replace fleet vehicles with smaller and/or more fuel efficient models as leases expire. Three more vehicles are expected to be replaced in the 2010-2012 period.

Employee participation in programs that encourage better environmentally sound forms of transportation increased by approximately 18 per cent in 2009, compared with 2008. It is expected that participation will continue to increase in 2010.

BCTC's program to reduce SF6 emissions through accelerated circuit-breaker replacements, and a potential SF6 recycling program, will all continue through the 2010 – 2012 period. Research and development into climate change adaptation, and large scale emission avoidance through advanced planning strategies will also continue.

Actions Towards Carbon Neutrality

The actions listed below contribute to a reduction in greenhouse gas emissions from sources for which public sector organizations are responsible under the carbon neutral government regulation of the Greenhouse Gas Reduction Targets Act.

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Mobile Fuel Combustion (Fleet and other mobile equip	oment)						
Vehicle fuel efficiency							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	42	% of vehicles are fuel- efficient models	No replacements in 2009; 5 of 12 fleet vehicles replaced in 2008.	3 trucks to be replaced 2010-2012	2008	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	In Development			No replacements in 2009; 5 of 12 fleet vehicles replaced in 2008.	3 trucks to be replaced 2010-2012	2008	No End Date (Continuous)
Behaviour change program							
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Ongoing/In Progress	55	% of BCTC staff used one or more of the offered green commuting options.	BCTC has a TransLink Employer Pass Program, which is available to eligible employees residing in the Lower Mainland. This pass provides access to bus, Skytrain, Seabus and West Coast Express service for employees to commute between their home address and regular work location. BCTC pays for 75% of the cost of participating in the transit program. Employees are responsible for the remaining 25% of the cost. The average use for the year was 215 people per month for the Translink pass. - BCTC reimburses Cycle Commuter Membership fees as part of the green commuting options. To be eligible, employees must commute to work by bicycle at least 10 days per calendar month. Eligible employees will have their membership fees paid 100% by BCTC. In 2009, an average of 9 employees per month used the cycle commuter program. - BCTC also offers a carpooling program by paying for parking if 3 or more employees share a car, however, in 2008 no employees took advantage of the program.	Employee participation is expected to increase in the 2010 - 2012 period.	2008	No End Date (Continuous)
Stationary Fuel Combustion, Electricity and Fugitive En	nissions (Buildings)					
Planning/management			1				
Enrol in a building energy benchmarking program (e.g., GREEN UP)	In Development				Owned building managers are members of Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), which is beginning to develop energy management plans and benchmarking programs	2009	No End Date (Continuous)
Owned buildings							
Establish energy performance baseline for owned buildings	In Development				Owned building managers are members of Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI), which is beginning to develop energy management plans and benchmarking programs	2009	No End Date (Continuous)
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	In Development				Northright benchmarking program to be introduced.	2009	No End Date (Continuous)

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Complete energy retrofits on existing, owned buildings	Complete	% of owned buildings have 100 undergone energy retrofits since start year indicated	No additional steps in 2009. Owned buildings are new (began operations approximately 2007) and were constructed with high efficiency energy systems.		2007	2009
Retrofitting owned buildings						
Upgrade lighting systems during retrofits	Complete		Owned buildings are new and use efficient lighting. Leased office space uses computerized lighting systems and T5 (high-efficiency) lighting. Start year unknown.		2009	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Complete		Owned buildings are new and use efficient systems. Leased office space use efficients system. Start year unknown.		2009	No End Date (Continuous)
IT power management						
Implement server virtualization	Ongoing/In Progress	% of servers have been 10 virtualized since start year indicated	Test, development, disaster recovery, and some production servers have been virtualized.	We have a server virtualization strategy developed. If application for capital is successful, will undertake a project with an objective of virtualizing a minimum of 80% of the BCTC server inventory (including new acquisitions) within the next 2-3 years with the platform being the corporate standard.	2008	2012
Apply auto-sleep settings on computer monitors and CPUs	In Development		Presently, reminders are sent out occassionally to staff. Windows 7 (see next cell) implementation in development.	Windows 7 build coming in F11 or F12; it is a managed desktop that will enforce some configuration rules on all networked equipment.	2008	No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Complete		Purchase of net new non MFD printers are permitted only by exemption by operations. All locations where multi-function devices are practical (iewhere security or other business concerns do not conflict with their use) have now been updated.		2008	2009
Replace computers with ENERGY STAR models during regular computer upgrades	Complete	100 % of computers are ENERGY STAR rated	Ongoing computer replacements. All computers are now Energy Star labelled.		2007	2009
Appliances and electronic devices						
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Complete		Refrigerators in (new) owned buildings are all Energy Star compliant.		2007	No End Date (Continuous)
Behaviour change program						
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress		One Less Tonne at Home program - see below Monitor Shutdown Contest held in spring 2009	One Less Tonne at Work program - see below Monitor Shutdown contest to be held again in 2010	2008	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	In Development		Reminders placed in some meeting rooms. No formal program or strategy.	Program to be developed more formally.	2003	No End Date (Continuous)
Other Stationary Fuel Combustion and Electricity Actions						
One Less Tonne at Home Program	Ongoing/In Progress	65 staff participated in program	One Less Tonne at home program encouraged staff to find ways to reduce their carbon emissions at home. An estimated 107 tonnes of greenhouse gases were avoided in 2009 as a result of this program	One Less Tonne At Work program introduced in 2010, with the objective of reducing energy and paper use at work, along with the associated greenhouse gases.	2009	2010

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
SF6 Reduction Program	Ongoing/In Progress		Sulfur hexafluoride (SF6) is a compressed gas used to insulate various types of electrical equipment but has an extremely high global warming potential: it has 23,900 times greater global warming potential than carbon dioxide. In 2009, BCTC's steps to reduce emissions from SF6 continued. While SF6 emissions are not covered under the Carbon Neutral Government requirements, they represent the largest source of emissions from BCTC's facilities; and, will be covered under proposed capand-trade legislation beginning in 2012. BCTC is exploring emission reduction opportunities through SF6 recycling, and an accelerated replacement program for SF6-containing circuit breakers. The new circuit breakers have near-zero leak rates, and utilize considerably less SF6 in their operation.	Recycling program to be more clearly defined. Circuit breaker replacements to continue. Program to complete in 2012-2013	2003	2012
Supplies (Paper)						
Paper Type						
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	% of total paper purchased contains 30% recycled content	Paper purchased in this category is 50% recycled. Ongoing efforts to increase recycled content of all paper.	Programs to shift from no recycled content to 50% will continue. Where possible, 100% recycled will be chosen over lower recycled content paper.	2008	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	Ongoing/In Progress	% of total paper purchased contains 100% recycled content	Continued procurement of higher recycled-content paper. 100% Post- consumer paper is also Forest Stewardship Council certified, and is manufactured using 100% renewable biomass energy.	Programs to shift from no recycled content to 50% will continue. Where possible, 100% recycled will be chosen over lower recycled content paper.	2008	No End Date (Continuous)
Printer/document settings						
Switch networked printers and photocopiers to automatic double- sided	Complete	% of network printers or 100 photocopiers are set to automatic double-sided	All multi-function printers are reset to double-sided black and white printing for all users at noon daily to prevent unintentional colour printing and/or single sided printing.		2008	No End Date (Continuous)
Reduce default margin size in standard document templates (e.g., letters, briefing notes, forms, etc.)	In Development		Identified as a priority item in 2009	Work to implement into corporate templates and educate staff	2008	No End Date (Continuous)
Electronic media in place of paper						
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	100 % of staff workstations with software installed	All staff in BCTC have access to a variety of Sharepoint sites.	More Sharepoint sites in development. As corporate culture adjusts, file sharing is expected to expand.	2008	2010
Use electronic document library for filing common documents	Ongoing/In Progress		Sharepoint sites frequently used as shared document library within projects or programs. A certain amount of information is already shared on a network server; however, no formal, corporation-wide document library exists, due to security needs.	Use of Sharepoint as a collaborative tool to increase.	2008	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress		BCTC intranet provides access to newsletters and other corporate information that would previously would have been distributed in hard copy.	No specific plan.	2003	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Ongoing/In Progress	% of staff now use electronic paystubs instead of paper.	Ongoing electronic paystub program is voluntary.	Program to continue	2008	No End Date (Continuous)
Behaviour change program						
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress		Training on working with secure documents in Sharepoint offered in 2009. Online training for Sharepoint Portal available on demand.	Program to continue.	2009	No End Date (Continuous)

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Other Paper Supplies Actions						
PDF 'Printing' in place of paper printing	In Development		Adobe Acrobat available for a fee to computer users.	Use of less expensive (and therefore more universally applied) PDF 'printers' software from all desktops under investigation, to reduce the need for printing documents simply to convert to PDF format via scanning	2010	No End Date (Continuous)
Fax-to-desktop	In Development			Options to receive faxes as PDF documents at workstations to be investigated.	2010	2010
Encourage use of track changes instead of printing	Ongoing/In Progress		Staff continually urged to markup documents digitally instead of printing.	Program to continue.	2008	No End Date (Continuous)
Think Before You Ink Program	Complete		Contest to promote reductions in paper use. Tactics included electronic editing, using paperless meetings, and encouraging colleagues to reduce printing by placeing reminders in emails. Monthly prizes to floors with greatest reductions in printing. No specific end date planned at present.		2009	No End Date (Continuous)

Actions to Reduce Provincial Emissions and Improve Sustainability

The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the *Greenhouse Gas Reduction Targets Act.* Public sector organizations can optionally use this section to report on actions that will help British Columbia meet its provincial greenhouse gas reduction targets, engage the public, and improve environmental sustainability across all aspects of their organization.

Action	Status (as of 12/31/09)	Performance (as of 12/3	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Business Travel						
Virtual meeting technology						
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Complete		WebEx is BCTC's standard web conferencing portal, and is fully accessible from all BCTC work stations.	Continued use of web conferencing.	2008	2009
Behaviour change program						
Train staff in video-conferencing or provide technical support for video-conferencing set-up	Ongoing/In Progress		Technical support is available through Accenture and IT services	No change.	2008	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress		Team meetings held in off-site locations encourage staff to carpool.	Program to continue.	2003	No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Ongoing/In Progress		Transit passes, cycle commuting and other programs described in section A. Head office is located at a transit hub.	Programs to continue.	2008	No End Date (Continuous)
Education, Awareness, and Engagement						
Team-building						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	In Development			-Sustainability strategy to be developed in 2010. This will include task groups to apply the strategy throughout the organization. -EMS Task Group to be created in 2010 to increase effectiveness of EMS implementation and to ensure appropriate standards and training are ingrained in corporate culture.	2009	No End Date (Continuous)
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		A variety of seminars and workshops (primarily as 'lunch-and-learns' were provided through 2009.	Education-themed workshops are not planned long-term, but will continue as issues & opportunities arise.	2003	No End Date (Continuous)
Staff awareness/education						
Provide education to staff about the science of climate change	Ongoing/In Progress		Lunch-and-learn meetings held to educate staff on a voluntary basis, including One Less Tonne at Home program. Corporate newsletter, distributed quarterly, includes environmental / sustainability awareness articles, including energy conservation tips.	Programs & newsletter to continue.	2003	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress		Lunch-and-learn meetings held to educate staff on a voluntary basis. Corporate newsletter, distributed quarterly, includes environmental / sustainability awareness articles, including energy conservation tips.	Programs & newsletter to continue.	2003	No End Date (Continuous)

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Provide green tips on staff website or in newsletters	Ongoing/In Progress		An environment & safety newsletter is produced every quarter, and includes a variety of environment & sustainability tips. The newsletter is available on the corporate intranet, with printed versions also distributed.	Newsletter to continue.	2003	No End Date (Continuous)
Provide sustainability education during new staff orientation	Ongoing/In Progress		Basic information on environmental policy and green commuting options is provided during orientation.	Program will likely expand as sustainability strategy is developed, but specific tactics not yet identified.	2003	No End Date (Continuous)
Other Education, Awareness, and Engagement Actions						
Corporate Social Responsibility Report	Ongoing/In Progress		BCTC's Public Affairs department publishes an annual Corporate Social Responsibility report that highlights programs that contribute to social and environmental enhancement.	CSR Report to continue.	2008	No End Date (Continuous)
Sustainability Strategy	In Development			Beginning in 2010, BCTC will begin development of a corporate sustainability strategy. This strategy will public disclosure and reporting, and employee engagement and education concerns	2010	No End Date (Continuous)
Other Sustainability Actions	•					
Commuting to and from home						
Introduce telework/work from home policy	Complete	t CO2e saved over the 173 day pilot	10 employees participated in a 6-month pilot project from September 15/08 to March 13/09. Each participant was required to enter their telework information on the Teletrips website.		2008	2009
Encourage commuting by foot, bicycle, carpool or public transit	Complete	% of staff using one or more green travel incentives.	BCTC has a TransLink Employer Pass Program, which is available to eligible employees residing in the Lower Mainland. This pass provides access to bus, Skytrain, Seabus and West Coast Express service for employees to commute between their home address and regular work location. BCTC pays for 75% of the cost of participating in the transit program. Employees are responsible for the remaining 25% of the cost. The average use for the year was 215 people per month for the Translink pass. - BCTC reimburses Cycle Commuter Membership fees as part of the green commuting options. To be eligible, employees must commute to work by bicycle at least 10 days per calendar month. Eligible employees will have their membership fees paid 100% by BCTC. In 2009, an average of 9 employees per month used the cycle commuter program. - BCTC also offers a carpooling program by paying for parking if 3 or more employees share a car, however, in 2008 no employees took advantage of the program.	Programs to continue, with increased participation by employees expected.	2003	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Complete		Bentall employees have access, through the program listed above, to full shower, towel service and changeroom facilities.		2003	No End Date (Continuous)
Provide secure bicycle storage	Complete		BCTC reimburses Cycle Commuter Membership fees as part of the green commuting options. This program includes secure bike lockers.		2003	No End Date (Continuous)
Other Sustainability Actions						
Replace disposable dishes with reusable.	Ongoing/In Progress		Kitchens in Bentall office were fully stocked with reusable cutlery and dishes.	Employees are encouraged to bring in unwanted dishes and cutlery to keep stocks of reusable items up.	2008	No End Date (Continuous)