

Chilliwack School District - 2009 Carbon Neutral Action Report

Executive Summary

Since October of 2008, our Energy Manager has performed the role of assisting us reduce our greenhouse gas emissions. We have implemented a number of projects and initiatives including purchasing only Energy Star devices, replacing older furnaces and boilers with high-efficiency models and upgrading our lighting fixtures in many of our schools. Over the past year we have established our "Green Team" that is will continue to look at ways to reduce our emissions through various projects and from behavioural changes.

Overviews

Actions Taken to Reduce Greenhouse Gas Emissions in 2009

In 2009 we began to look at ways to better control our emissions. By giving consideration to consumption information, we made more informed decisions, whether the issue was replacement of vehicles or the installation of power management tools on devices. Our actions included:

- Lighting upgrades from T-12 to T-8 fixtures
- Replace all Metal Halide fixtures with T-5 fixtures
- Continual replacement old furnaces with high-efficiency spark-ignition furnaces
- Replace hot water tanks with on-demand hot water systems
- Began using Bio-diesel for school buses
- Double-side printing whenever possible
- Install heat-pump style roof-top units as District standard
- Use email and video conferencing as a virtual meeting procedure
- Initiated a Green Team with site representatives at each site
- Started a behavioral change program in all elementary, middle and secondary schools
- Installed automatic shut-down software on computers
- Installed real-time metering to monitor energy consumption and involve students and teachers

Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012

Over the next two to three years we will continue to reduce our emissions by implementing a number of projects including:

- Recycling program
- Working with Teachers and students to think "green" (turn off lights, devices etc) as a culture
- Begin a "Turn It Off" campaign
- Using the Superintendent's Memo as a paperless communications tool
- Invite guest speakers to talk about carbon neutrality on Professional Days or at assemblies.
- Continue with lighting retrofits or upgrades to reduce energy consumption
- Investigate the possibility of solar walls, photovoltaic cells, wind generation
- Use heat recovery wheels on air-handlers
- Increase cooling set point by 2 degrees for summer air conditioning
- Fine-tune digital controls to ensure proper procedures on HVAC systems

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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 12/31/09)	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 equipment)							
Vehicle fuel efficiency							
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	5	% of vehicles are fuel- efficient models	Purchased battery/diesel hybrid, started using bio-diesel.	Continue with bio-diesel and preventive maintenance on all vehicles (air filters, tire pressure, oil changes, tune-ups etc.	2008	No End Date (Continuous)
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	5	% of vehicles down-sized since start year indicated	Purchased 3 smart cars and one Ford Focus for Technology	Purchase fuel-efficient vehicles if/whe budget allows	2010	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Invoked scheduled maintenance program for all vehicles	Continue with bio-diesel and preventive maintenance on all vehicles (air filters, tire pressure, oil changes, tune-ups etc.	2009	No End Date (Continuous)
Replace small maintenance vehicles with more fuel-efficient models	In Development	5			Continue with bio-diesel and preventive maintenance on all vehicles (air filters, tire pressure, oil changes, tune-ups etc.	2009	No End Date (Continuous)
Behaviour change program							
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	100	% of current drivers are trained	Instructed drivers about the proper procedures when using roundabouts etc.	Provide on-going driver training program to become pro-active instead of re-active.	2009	No End Date (Continuous)
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Complete	100		Posted anti-idling signs and posters throughout the District	Increase driver awareness	2009	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)	Complete			Using Utility Manager Pro software to set benchmark of December 2008	Monitor and record energy consumption with real time metering	2009	No End Date (Continuous)
Reduce office space (square meters) per employee	In Development				May close facilities and relocate staff to existing office.	2010	2012
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	30	% of buildings have a real time metering system installed	Installed real-time monitoring DDC and custom designed software designed by energy manager.	Implement real-time monitoring in ALL sites	2009	2012
Owned buildings							
Establish energy performance baseline for owned buildings	Complete	100	% of owned buildings have an established energy performance baseline	Using Utility Manager Pro software to set benchmark of December 2008		2008	No End Date (Continuous)
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	In Development				Register for LEED rating of three new schools planned for 2010-12	2010	2012
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	In Development				Register for LEED rating of three new schools planned for 2010-12	2010	2012
Incorporate integrated design process into new construction or during renovations of owned buildings	In Development				Incorporate integrated design process for all new construction and renovations of buildings	2010	No End Date (Continuous)

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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
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	In Development				Incorporate reffridgerant recovery program as part of building maintenance/management	2010	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress	75	% of owned buildings have undergone energy retrofits since start year indicated	Upgrade DDC controls, schedules, boiler programs etc.	Replace old furnaces with energy efficient ones, replace RTU's with heat-pump units etc. Replace all T-12 fixtures with T-8 or T-5	2009	No End Date (Continuous)
Retrofitting owned buildings							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	25	% of retrofits (captured above) had heating, cooling, and ventilation systems upgrades	Upgraded 10 sites with DDC upgrades (WAN upgrades, exterior lighting controls).	Review all sites to evaluate which schools have standing pilots, outdated boilers, old hot water tanks, storage tanks etc. Implement high-efficiency boilers, demand hot water etc.	2009	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	33	% of retrofits (captured above) had lighting systems upgrades	Used Hydro's Product Incentive Program as part of upgrades.	Remove / Replace all Metal Halide and T-12 fixtures in buildings	2009	2012
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	100	% of retrofits (captured above) had control system upgrades or adjustments	Upgrade all existing DDC controls to WAN instead of modem.	Annually inspect dampers, actuators and controls	2007	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	5	% of retrofits (captured above) had insulation improvements	Upgraded 2 sites with new double-paned windows	Upgrade windows when applicable	2005	No End Date (Continuous)
Install an on-site renewable energy demonstration project	In Development				Create "green" Greenhouse in Secondary school and energy savings pilot projects.	2010	No End Date (Continuous)
IT power management							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	75	% of computers shut down automatically outside of regular business hours	Installed Verdium software	Expand shutdown capability to all 2500+ machines	2009	No End Date (Continuous)
Implement server virtualization	Complete	30	% of servers have been virtualized since start year indicated	Virtualized Web Server and backup servers for all sites	Expand virtualization for as many servers as practical from elementary and middle schools. Secondary schools have on-site backup servers already in place.	2008	No End Date (Continuous)
Apply auto-sleep settings on computer monitors and CPUs	Complete	90	% of computers have auto-sleep settings applied	Auto-sleep mode enabled on all machines except servers	Enable auto sleep on all printers, photocopiers, laptops	2010	No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	In Development				Creating District Standard with known vendors with reliability and dependency being a high criteria	2009	No End Date (Continuous)
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress	75	% of devices have auto-sleep settings applied	Applied auto-sleep on most machines in office space	Implement auto-sleep on EVERY device	2009	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Complete	100	% of computers are ENERGY STAR rated	District standard now in place...almost an industry standard	Ensure all devices purchased MUST be energy star rated	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	50	% of fridges are ENERGY STAR rated	Set District standards to ensure all fridges and freezers are Energy Star rated	Enforce District standards	2008	No End Date (Continuous)

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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
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress		Ensure Purchasing Agent is buying stoves, washers / dryers etc. that are Energy Star or efficiency rated	Enforce District standards	2008	No End Date (Continuous)
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress		CFL is district standard replacement for pot lights, storage rooms, mechanical rooms, etc. Purchase of all lamps etc must be made through Purchasing Agent	Enforce District standards	2008	No End Date (Continuous)
Behaviour change program						
Help staff reduce personal energy use through "workstation tune-ups"	In Development			Planned for 2010 Professional Development Day in Fall	2010	2011
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress		Posted bulletins and posters in appropriate areas	Create awareness and behavioral campaign	2010	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress		Posted bulletins and posters in appropriate areas	Create awareness and behavioral campaign	2010	No End Date (Continuous)
Encourage staff to use air dry setting on dishwashers	Ongoing/In Progress		Posted stickers on dishwashers and provide bulletins	Create awareness and behavioral campaign	2010	No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	In Development			Award incentives or rewards as part of campaign	2010	No End Date (Continuous)
Encourage use of stairs instead of elevators	Ongoing/In Progress		Part of the Behavioral Change program being implemented	Raise awareness with posters beside elevators	2010	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Complete		Already in place	Replace stickers and posters on regular basis to elevate awareness	2010	No End Date (Continuous)
Supplies (Paper)						
Printer/document settings						
Reduce default margin size in standard document templates (e.g., letters, briefing notes, forms, etc.)	In Development			Will be District Standard settings	2010	No End Date (Continuous)
Electronic media in place of paper						
Use electronic document library for filing common documents	In Development			Begin using shared folders and drives	2010	No End Date (Continuous)
Post materials online that were previously printed	Complete		Began paperless memo procedures		2009	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	In Development			All departments to receive electronic payroll notification.	2009	2012
Behaviour change program						
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	In Development			Moving towards Live Meeting, video conferencing, powerpoint presentations etc. to become paperless.	2009	No End Date (Continuous)
Encourage re-use of scrap paper	Ongoing/In Progress		Use scrap paper for notepads for all departments	Encourage all staff to use scrap paper for desktop notepads.	2009	No End Date (Continuous)

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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 12/31/09)	Performance to Date (as of 12/31/09)	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.)	In Development				2010	No End Date (Continuous)
Make desktop web-cameras available to staff	Ongoing/In Progress	2 % of staff have access to a desktop web-camera	Increasing awareness to pertinent staff members.	Make Live Meeting and video conferencing a district standard.	2010	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	In Development		Using laptops with external hardware when required	Use USB style webcams with built-in microphones for easy use.	2010	No End Date (Continuous)
Behaviour change program						
Train staff in web-conferencing	In Development			Increase awareness to staff.	2010	No End Date (Continuous)
Train staff in video-conferencing or provide technical support for video-conferencing set-up	In Development			Increase awareness to staff.	2010	No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	Ongoing/In Progress		Engaging staff to accept newer technologies.	Increase awareness to staff.	2010	No End Date (Continuous)
Other Business Travel Actions						
Carpooling is encouraged at all out-of-town meetings	Ongoing/In Progress		Carpooling is strongly recommended.	Insist on carpooling for all out-of-town meetings	2009	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 created in November of 2009.	Meet monthly and begin "energy conscious awareness" campaign and promote behavioural change.	2010	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress		Obtained volunteer from every site to be representative of the Green Team	Expand website to show monthly savings and energy consumption graphs and charts.	2010	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		Plans to meet with every site to promote behavioral change.	Use posters, graphs and charts to prove energy savings to each site.	2010	No End Date (Continuous)
Awards/Recognition						
Establish a sustainability/green awards or recognition program	In Development		Met with Hydro executives and received \$5000 grant towards recognition program and behavioral change rewards.	Begin reward program or incentive for "highest savings" site.	2010	No End Date (Continuous)
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		Still in the infancy stage.	Plans to meet with science and health teachers to raise awareness to students and staff.	2010	No End Date (Continuous)
Staff awareness/education						

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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 education to staff about the science of climate change	In Development		No steps taken in 2009.	Plans to populate the District website with information on climate change.	2010	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	In Development		No steps taken in 2009.	Plans to populate the District website with information on conservation of water and raw materials	2010	No End Date (Continuous)
Provide green tips on staff website or in newsletters	In Development		No steps taken in 2009.	Plans to provide newsletters and posters to the Green Team leaders and have them post it on staff bulleting boards and site's web site.	2010	No End Date (Continuous)
Client/public awareness/education						
Provide education to clients/public about the science of climate change	In Development		No steps taken in 2009	We'll use Workplace Awareness to promote education on the impact of climate change.	2010	No End Date (Continuous)
Provide education to clients/public about the conservation of water, energy, and raw materials	In Development			Plans to use the District website to promote conservation.	2010	No End Date (Continuous)
Provide green tips on client/public website or in newsletters	In Development			Plans to use the District website to promote green awareness.	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		Installed water restrictors/aerators on faucets and showers.	Install water restrictors/aerators on ALL faucets and showers.	2009	No End Date (Continuous)
Waste reduction/diversion						
Implement a hazardous waste reduction and disposal strategy	Ongoing/In Progress		Implemented hazardous waste reduction strategy.	Implemented hazardous waster reduction strategy in cooperation with municipality etc.	2009	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		Purchase recycled content on continuing basis.	Encourage recycled content to all end-users.	2009	No End Date (Continuous)
Establish green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)	In Development			Establish green standards with purchasing agent.	2010	No End Date (Continuous)
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	In Development			Establish green standards with Custodial Supervisor	2009	No End Date (Continuous)
Require a minimum purchase of sustainable, and organic food and beverages supplied by contracted food suppliers or caterers	In Development			Ensure caterers and vendors are aware of natural products.	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		Recycle and re-use materials from schools being renovated.	Continue to recycle and re-use materials from schools being renovated.	2010	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	In Development			Planned as part of construction of three new schools currently being constructed	2010	No End Date (Continuous)

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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
Indoor air quality						
Enforce a scent-free policy (e.g., no strong perfumes, deodorants, etc.)	Ongoing/In Progress		Notices posted in public areas.	Create public awareness through posters, signs etc.	2009	No End Date (Continuous)
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		Ensure purchases are based on organic compounds as a standard.	Purchasing agent/foreman to raise awareness.	2009	No End Date (Continuous)
Commuting to and from home						
Introduce telework/work from home policy	In Development			When practical....	2009	No End Date (Continuous)
Encourage commuting by foot, bicycle, carpool or public transit	Ongoing/In Progress		Encourage carpooling and bicycles when available.	Use District Website to increase awareness, posters on staff bulleting boards etc.	2009	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	Complete		Most facilities have provisions.		2009	No End Date (Continuous)