

# Burnaby School District #41

## Carbon Neutral Action Report 2011


### Executive Summary

The Burnaby School District takes sustainability seriously. We are currently in our 12<sup>th</sup> year of energy conservation initiatives and were once again voted as one of BC Hydro's top ten power smart partners. We continue to aggressively pursue all of our environmental initiatives from recycling programs to energy and water management with the same goal; to make SD#41 the most sustainably operated school district possible.

During 2011 we continued to follow our long term strategic plan to upgrade our facilities. These projects include lighting retrofits, boiler replacements, solar power installations, building automation controls and water conservation efforts.

The new Burnaby Central Secondary opened in September 2011 to a flurry of excitement as our latest LEED Gold targeted building. This amazing new school will join our two other LEED projects, University Highlands Elementary and Brantford Elementary, as the standards from which we measure our other facilities.

**Burnaby Schools**  
**Smart About Power**


BC Hydro  **power smart**

**WE PUT LOTS OF ENERGY INTO SAVINGS**

**Q:** How does a school district save money and the environment?

**A:** Get smart about energy reduction! Over the last three years, energy efficiency initiatives have saved the Burnaby School District \$600,000 and reduced our energy consumption by 2.6 million kilowatt hours – that equals the energy required to power 25 elementary schools for a year.

We're proud to be a BC Hydro Top 10 Power Smart Partner.



BOARD OF EDUCATION  
**BURNABY**  
SCHOOL DISTRICT 41

## **Emissions Overview**

School District 41's Greenhouse Gas emission in 2011 totalled 6,647.63 tCO<sub>2</sub>e. The majority of which, 91.2% came from building heating and electrical consumption, with paper supplies accounting for 5.8% and fleet fuel use making up the remaining 3%.

## **Offsets applied to become Carbon Neutral in 2011**

The District purchased 6,638 carbon credits at a cost of \$165,950 in order to meet the Province of British Columbia's mandate for Carbon Neutrality in the calendar year 2011.

Due to amendments made by BC Hydro on billing from calendar year 2010 for a major construction site, we will be adding additional credits to this year's offset purchase. 6006 tCO<sub>2</sub>e were originally reported for calendar year 2012, when billing adjustments brought the final amount to 6019 tCO<sub>2</sub>e. Therefore an additional 13 tonnes will be added in our current offset purchase, bringing the total for this year to 6,651 at a cost of \$166,275.

## **Highlights from GHG reduction efforts in 2011**

- Ranked as the #1 School District in the province by BC Hydro's Power Smart Program
- Introduction of Green Teams across the majority of schools
- Food scrap bins at schools with hot lunch programs, diverting all food waste away from landfill
- Two Solar Photo Voltaic installations now online
- Water bottle filling stations have contributed to over 900,000 reusable bottle fill ups
- Third annual 'Do It Green' event organised by the Burnaby Youth Sustainability Network was a huge success

## Coming in 2012

- Large number of high efficiency boiler up grades will considerably reduce our natural gas consumption and carbon footprint
- Continue to work with our strategic partners on implementing behavioural change initiatives for energy and waste management
- Continue to build student managed food gardens at a number of schools
- Reduce domestic hot water storage with on-demand hot water systems
- Upgrade energy management software to better enable data analysis
- Build on our successful Energy Management program with multiple new energy efficiency upgrades to our facilities
- Explore opportunities to collaborate with other school districts on innovative sustainability initiatives

Signed;



**Claudio Morelli**  
**Superintendent of Schools**



<http://www.sd41.bc.ca/environment/index.htm>

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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 12/31/11)	Performance to Date (as of 12/31/11)	Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>						
<b>Vehicle fuel efficiency</b>						
Replace vehicles with more fuel-efficient models	In Development	0 % of vehicles are fuel- efficient models	Efficient vehicles are being considered for all new purchases. High purchasing costs are currently an obstacle.	Work on Life Cycle Costing analysis to build case supporting the need for higher efficiency fleet	2012	No End Date (Continuous)
<b>Behaviour change program</b>						
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Completed in 2011		Anti-idling policy is in place and GPS tracking system on our facilities vehicles can also report amount of time each vehicle sits still while running		2010	2011
Promote alternatives to fleet vehicle travel where possible (e.g., bicycles, public transit, walking)	Completed in 2011		All of our sites have bicycle racks for locking bikes safely		2001	2011
<b>Other Mobile Fuel Combustion Actions</b>						
Bio-Diesel and Ethanol Truck conversions	Completed in 2011		Our largest vehicle, a Ford F-650, is operated with Bio-Diesel		2011	2011
<b>Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)</b>						
<b>Planning/management</b>						
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	11 % of buildings have a real time metering system installed	Real Time metering has been included as a requirement to new construction and retrofits. The district has also installed real time metering in 6 of our existing buildings as part of a pilot program.	Working to develop a live interactive dashboard in schools that shows the buildings performance in terms that the students can understand. Currently have this installed in our three LEED buildings	2010	No End Date (Continuous)
<b>Owned buildings</b>						
Register for performance labelling/certification for operations and maintenance of owned buildings (e.g., LEED EB:O&M)	In Development	0 % of owned buildings have operations and maintenance labelling/certification	SD41 is looking to continue to LEED EB:O&M once LEED certification of our new sites is obtained	Develop O&M guidelines in accordance with LEED and have them ready for post-certification	2010	No End Date (Continuous)
Achieve LEED NC Gold certification at a minimum for new construction or major renovations	Ongoing/In Progress	0 % of owned buildings are certified LEED NC Gold or LEED NC Platinum	Three projects are completed and awaiting final certification for LEED Gold. One is completely new, the two others are major renovations	Continue with the certification process on our current sites, and continue to use LEED certification guidelines in all future projects	2009	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Ongoing/In Progress	5 % of buildings built or renovated since start year indicated used the integrated design process	Incorporated in the LEED certification approach.	No major capital projects are planned for 2012. Continue with the certification process on our current sites, and continue to use LEED certification guidelines in all future projects	2009	No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress	90 % of owned buildings have undergone energy retrofits since start year indicated	The vast majority of our sites have undergone T12 to T8 lighting conversions. Energy retrofit projects are continuously being added to our maintenance program	This years Annual Facilities Grant holds numerous energy related upgrades across a number of facilities.	2001	No End Date (Continuous)
<b>Retrofitting owned buildings</b>						

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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 mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	35	% of retrofits since start year indicated had heating, cooling, and ventilation systems upgrades	In 2011 - Major mechanical upgrades done at one Secondary School. 2 LEED retrofits also included mechanical system.	Approval for 2012 projects include three sites that will be undergoing major boiler upgrades in the coming months.	2001	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	90	% of retrofits since start year indicated had lighting systems upgrades	44 of our 56 buildings have had T12 to T8 lighting retrofits	The remaining balance of our sites will be undergoing lighting retrofit projects in the 2012-2014 period	2001	2013
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	100	% of retrofits since start year indicated had control system upgrades or adjustments	Every School in the district has some form of automated controls	Building automation upgrades are part of every retrofit and renovation	2001	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	40	% of retrofits since start year indicated had insulation improvements	Most schools have been retrofitted for insulation. Routinely include insulation upgrades to any maintenance service which involves building envelope	Continue to retrofit insulation for schools according to capital planning and other retrofit projects. Our ongoing roofing repair/ugrade program addresses problem areas each summer and insulation value to R40 is added during these re-roofing projects	2001	No End Date (Continuous)
Install an on-site renewable energy demonstration project	Ongoing/In Progress	5	% of retrofits since start year indicated had on-site renewable energy components	2 Solar Photo Voltaic. 1 Solar Hot Water preheat for boiler	We continue to seek funding for renewable energy projects, but the demise of SolarBC funding has crippled our efforts	2008	No End Date (Continuous)
<b>IT power management</b>							
Implement server virtualization	Ongoing/In Progress	10	% of servers have been virtualized since start year indicated	IT department has begun to move certain processes to virtual servers. Potential for more to follow in the coming year	Consult with other school districts regarding their experience with server virtualization	2009	No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress	50	% reduction in printers, copiers, and/or fax machines since start year indicated	The District removes stand-alone printers, copiers and fax machines in offices as the space is reassigned.	Continue to replace stand-alone devices as part of our standing reassignment protocol	2009	No End Date (Continuous)
<b>Appliances and electronic devices</b>							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	Ongoing/In Progress	10	% of fridges are ENERGY STAR rated	Following purchasing guidelines, Energy Star appliances were included in the design of new construction buildings within the District.	Update purchasing protocol to state that all new purchases of appliances are Energy Star certified	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	90	% of our computers are Energy Star rated	Following purchasing guidelines, all computer equipment is now energy star rated.	Update purchasing protocol to state that all new purchases of appliances are Energy Star certified	2008	No End Date (Continuous)
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 100% post-consumer recycled paper	Ongoing/In Progress			The district uses paper products that are 100% recycled content where possible, this amount is currently very small	Look for solutions to issues where 100% recycled paper is jamming printing equipment	2009	No End Date (Continuous)
<b>Printer/document settings</b>							
Switch networked printers and photocopiers to automatic double-sided	In Development			The Board office is studying the possibility of implementing pre-set double side printing. Some of our schools have implemented the measure as part of their sustainability efforts.	Review effectiveness of the sites where double sided printing has been made automatic	2010	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
Apply "print and hold" settings to networked printers to eliminate unclaimed print jobs	In Development			The IT department is currently adapting compatible technology in order to introduce the "print and hold" feature within the District's network	Introduce the Print and Hold feature as a pilot program to gauge its effectiveness		
<b>Electronic media in place of paper</b>							
Install collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	Ongoing/In Progress	5	% of staff workstations with software installed	Shared central folders allow for collaboration across various sites	Continue to find ways innovative technologies that help increase productivity and reduce travel	2009	No End Date (Continuous)
Post materials online that were previously printed	Ongoing/In Progress			Many District wide communications such as newsletters and memos are now distributed via e-mail instead of print media	Continue to work towards a minimal paper work environment	2009	No End Date (Continuous)
<b>Behaviour change program</b>							
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	In Development			Shared central folders allow for collaboration across various sites	Continue to find ways innovative technologies that help increase productivity and reduce travel	2009	No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	In Development			Different groups within the board office are holding paperless meetings: the board of trustees, the sustainability steering committee, among others.	Promote paperless meetings across the entire District	2010	No End Date (Continuous)

## Burnaby School District #41 - 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
<b>Business Travel</b>						
<b>Virtual meeting technology</b>						
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	In Development		A number of higher level management as well as some speciality offices use video conferencing regularly	Review ability to expand this program to all those who would utilise it	2009	No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Ongoing/In Progress		Some large conference rooms have video conferencing ability. Including the Center for Dialogue at Byrne Creek Secondary which hosts students from around the province to video based meetings and debates with other schools around the world.	Expand this program where possible, also ensure it is being used to its full capability	2010	No End Date (Continuous)
<b>Behaviour change program</b>						
Train staff in video-conferencing or provide technical support for video-conferencing set-up	In Development		Certain IT department staff are available to help set up those rooms that have the video conferencing hardware	Review potential to train non-IT staff in operation of video conferencing in order to increase usage	2009	No End Date (Continuous)
Encourage carpooling to meetings	Ongoing/In Progress		Staff are always encouraged to car pool where possible	No formal initiative is planned for car pooling	2009	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>						
<b>Team-building</b>						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress		The Green Team Steering Committee is made up of facilities and administrative staff and meets every week with a mandate to support the individual Green Teams at each school and to direct the district wide sustainability initiatives.	Continue to develop innovative programs and foster sustainable change across all of our sites	2009	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress		Our Fortis funded Energy Specialist is available for support on all sustainability related topics	Leverage the expertise of the entire GTSC for support across the wide variety of projects that SD41 has in store for 2012	2010	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		Held a our third annual Do It Green event on April 20th at Burnaby South Secondary. Around 200 students attended a day of speakers and workshops on sustainability	Continue to expand our events and plan to bring in additional speakers throughout the year to present to those not already interested in sustainability	2010	No End Date (Continuous)
<b>Awards/Recognition</b>						
Establish a sustainability/green awards or recognition program	Ongoing/In Progress		The Green Team Steering Committee has drafted a plan to roll out a district wide award program for students who show leadership in sustainable practice. There will be a prize for both an elementary and secondary level student each year.	The nomination forms have been distributed to all schools, the first awards will given this June	2010	No End Date (Continuous)
<b>Staff Professional Development</b>						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		As a result of the job action taken by the BCTF this year it has been all extra curricular training has been suspended	With a return to normal school operating conditions we hope to deliver a series of speakers to our high schools as well as offer sustainability related training session on certain district professional development days	2010	No End Date (Continuous)
<b>Staff awareness/education</b>						

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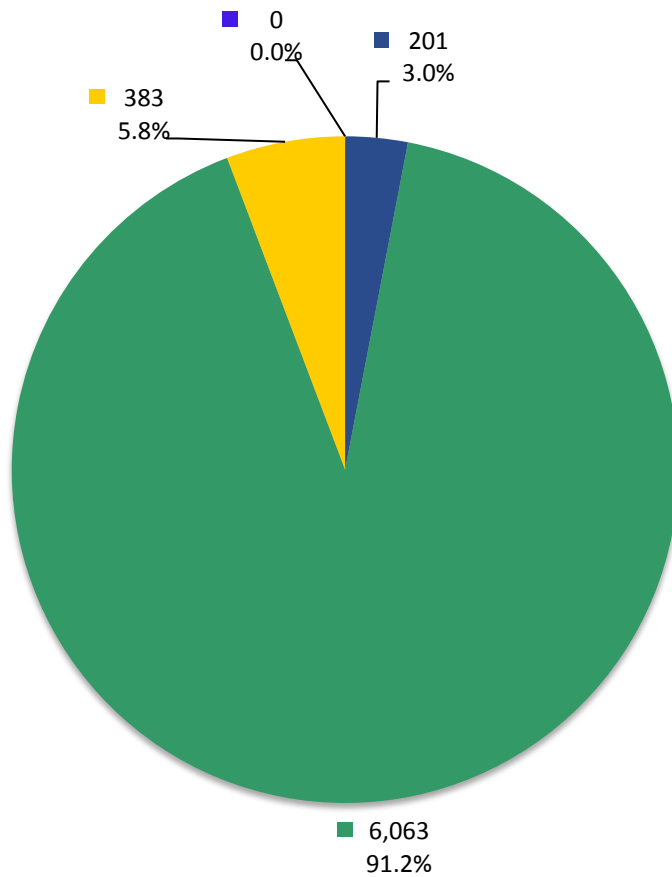
Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Provide education to staff about the science of climate change	Ongoing/In Progress			Our school based green teams support education and awareness campaigns, but again, this year has held certain difficulties and some of these projects have been put on hold	We plan to create a standardised sustainability program that can be delivered to each school and rolled out by the individual Green Teams. It will be based on waste reduction, recycling, energy conservation and water related issues	2009	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress			Our school based green teams support education and awareness campaigns, but again, this year has held certain difficulties and some of these projects have been put on hold	We plan to create a standardised sustainability program that can be delivered to each school and rolled out by the individual Green Teams. It will be based on waste reduction, recycling, energy conservation and water related issues	2009	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress			Drafting of a newsletter that will be sent electronically to each schools Green Team leader for distribution	Our first district wide sustainability newsletter will be sent out in mid May 2012. We plan to continue at regular intervals for years to come	2011	No End Date (Continuous)
Provide sustainability education during new staff orientation	In Development			Plans to include sustainability education during new staff orientation has been tabled and is awaiting approval	Hope to roll out program in 2012	2010	No End Date (Continuous)
<b>Other Sustainability Actions</b>							
<b>Water conservation</b>							
Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models	Ongoing/In Progress	100%	Of Schools will have water meters installed by August 2012	Water Meters are being installed in all SD41 schools, with the objective of measuring and baselining, and benchmarking water use in our buildings.	Identify and implement potential water conservation measure in the schools, including replacement of water fixtures.	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			Water Meters are being installed in all SD41 schools, with the objective of measuring and baselining, and benchmarking water use in our buildings.	Identify and implement potential water conservation measure in the schools, including replacement of water fixtures.	2010	No End Date (Continuous)
Introduce a storm water management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress			Storm water management landscape strategy is being introduced as part of new construction requirements.	Evaluate the performance of storm water management strategy in the new schools, to later duplicate in other schools where applicable	2010	No End Date (Continuous)
<b>Waste reduction/diversion</b>							
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	Ongoing/In Progress			Staged transition to waste separation practices are being introduced in SD41 schools. Introduction to bag-less waste in the schools.	Initiate waste separation programs with the corresponding municipality in charge of waste pick-up. Educate students and staff. Reduce garbage bags use in the School Board Office. Continue with the expansion of our Food Scrap Collection Program	2009	No End Date (Continuous)
<b>Procurement (non-paper supplies)</b>							
Incorporate minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)	In Development			Practices have been incorporated for the purchasing of office supplies.	Follow up with implementation and measurement of impact of the purchasing guidelines.	2010	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			Practices have been incorporated for the purchasing of flooring and office furniture's.	Follow up with implementation and measurement of impact of the purchasing guidelines.	2010	No End Date (Continuous)
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	In Development			The District is purchasing only bio-degradable plastic bags as part of the new waste management program. The new construction sites are following LEED standards for cleaning products.	Develop case and implement use of low impact cleaning products district wide.	2010	2013
<b>Indoor air quality</b>							



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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
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		All Paints are low VOC	Introduce guidelines for carpets and furniture.	2009	2014

**School District 41 - Burnaby  
Greenhouse Gas Emissions by Source  
for the 2011 Calendar Year (tCO<sub>2</sub>e\*)**



**Total Emissions: 6,648**

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

**Offsets Applied to Become Carbon Neutral in 2011 (Generated May 18, 2012 12:10 PM)**

Total offsets required: **6,638**. Total offset investment: **\$165,950**. Emissions which do not require offsets: **10** \*\*

\*Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) 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.