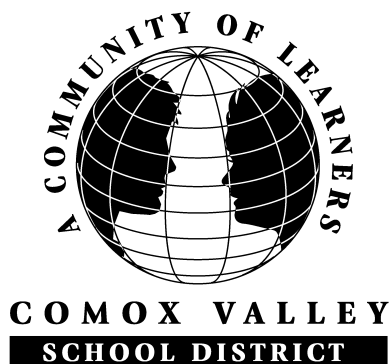


# Carbon Neutral Action Report (2012)

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**Aspen Park Elementary Solar Grid Tie Comox Valley SD71**



# Carbon Neutral Action Report (2012)

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## Executive Summary

The Comox Valley School District has been very successful in 3 key areas of sustainability in 2012.

- ✓ We have invested in new technologies in many of our buildings including lighting upgrades, heating plant changes and fleet operation improvements. With the approval and support of senior management and the board of trustees we secured funding to complete these “hard-wired” projects.
- ✓ We have created new staff and student awareness campaigns such as our ERIP incentives. SD71 was nominated for an environmental leadership award in 2012.
- ✓ Our conservation story is always woven into the educational curriculum. From re-cycling light-out lunch’s staff and students are involved in waste reduction campaigns. Our most recent 2kW solar power project at Aspen school will feature web based monitoring and an interactive lobby display.

## 2012 Greenhouse Gas Emissions

Greenhouse Gas Emissions for 2012 amounted to 2,510 tonnes of CO<sub>2</sub>e. Those emission sources included our fleet and other mobile equipment, building utilities and paper supplies. This represents a slight increase over the previous year of 6 tonnes. This increase can be partially related to a colder year requiring more energy for heating.

## Offsets Applied to Become Carbon Neutral

School District No. 71 is proud to proclaim we are Carbon Neutral for 2012. Through Pacific Carbon Trust<sup>1</sup> we purchased Carbon Offsets to the value of \$62,275 (before taxes) to allow the District to meet its obligations for carbon neutrality for 2012. The purchase of the offsets allows us to reduce our emissions to zero.

Our emissions included 207.9 t from fleet, 2,135.17 t from buildings, 7.94 t from paper supplies and 152.99 t from indirect sources. There were 5.81t of emissions that were carbon neutral. Therefore the total emissions included for carbon offsets were 2,504t.

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<sup>1</sup> Crown Corporation of the Government of BC, created to deliver quality made-in-BC greenhouse gas offsets to help clients reduce their carbon footprint and drive the growth of BC's low-carbon economy.  
<http://www.pacificcarbontrust.com/>

# Carbon Neutral Action Report (2012)

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## Emissions Reduction Activities

During the past 12 months we completed several major GHG reduction projects:

- Building Envelope upgrades  
During 2012 a significant portion of our capital budget was allotted to window replacements. Most of these projects provided for an upgrade from single glazing to code compliant sealed units with roll shutters. We also upgraded exterior doors and re-caulked tilt-up panel wall seals.
- DDC building control improvements  
This project added intelligent building control system to 2 schools. 4 other schools saw DDC system upgrades that included new occupancy sensing thermostats to better control outside air intake and CO2 mitigation.
- BC Hydro Power Smart/Full time Energy Manager  
Over 50 electrical energy savings projects were implemented last year. These included lighting upgrades, occupancy sensors and LED/induction lighting. These hardwired projects reduced our electrical consumption by over 250,000 kWh.
- New Energy Star facilities maintenance building  
After a 3 year wait SD71 finally completed a new 10,000 sq ft trades complex. This facility replaced 7 old 1950's buildings that were in poor condition. This new construction allows for a very energy efficient space with air source heat pumps, new lighting/controls and heat recovery ventilation.



New Facilities Office and Trades Shop

# Carbon Neutral Action Report (2012)

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## 2013-2014 Planned Emissions Reduction Activities

Several exciting “green” initiatives are planned for the next school year:

- HVAC upgrades  
Our heating and ventilation improvement plan will continue. Miracle beach and Royston schools will be upgrade with new boiler technology, new control systems and a heat pump plant. We are currently working with Fortis gas to convert our propane boilers to natural gas.
- Building Envelope  
Major window and door replacements will continue. This fenestration work will provide fuel and GHG savings, better air quality and provide our students with a much improved learning environment.
- CNCP Carbon Offset Investment  
As a result of our successful CNCP program grant (\$45K) we will be replacing some hot water boilers with state of the art condensing technologies. We hope to leverage this funding by using our capital allowance to replace a total of 9 heaters/boilers.
- Fleet Improvements  
SD71 will continue to upgrade its vehicle fleet with modern fuel efficient trucks and vans. We will complete implementation of a service truck GPS tracking system. This will provide “smarter” dispatch and reduce mileage driven.



Mr. Fred McGregor (Manager of Energy Conservation)



Dr. Russell Horswill (Secretary Treasurer)

## School District 71 Comox Valley - 2012 Carbon Neutral Action Report

<b>Actions Towards Carbon Neutrality</b>					
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	Steps Taken	Steps Planned	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other)</b>					
<b>Behaviour change program</b>					
Provide fleet driver training to reduce fuel use	Ongoing/In Progress	Periodic training was undertaken to ask operators to consider their choice of routes and the reduction of miles driven.	Our Energy Manager has hosted a workshop on the impact of vehicles on GHG production. This along with the GPS tracking system implementation will help with driver "buy-in" The GPS data will help us to tune our workorder system to increase productivity by reducing travel time.	2013	No End Date (Continuous)
Introduce anti-idling policy and/or raise anti-idling awareness for fleet drivers (e.g., signs, stickers, messages)	Ongoing/In Progress	Anti-idling signs and stickers are posted throughout SD71. Drivers are reminded of our policy on this topic.	Anti-idling promotion and training will continue.	2009	No End Date (Continuous)
Encourage carpooling in fleet vehicles	In Development	No formal program for car-pooling has been implemented. For our service fleet this is not usually viable. Our management team does travel together to meetings and conferences much as possible.	Plans for a more formal implementation are under discussion.	2012	No End Date (Continuous)
<b>Other Mobile Fuel Combustion Actions</b>					
We still employ a number of vehicles powered by Propane. Although the new vehicles are not easily converted, we hope to keep our existing propane fleet intact.	Ongoing/In Progress	Propane vehicles continued in service	Propane vehicles will be phased out.	2008	No End Date (Continuous)
<b>Vehicle fuel efficiency</b>					
Replace vehicles with more fuel-efficient models	Ongoing/In Progress	In 2012 SD71 replaced 4 older service vehicles. 3 vans and 1-1 ton truck were retired from service. This new vehicles have more fuel efficient engines.	In 2013/2014 we have plans to replace 1: 3/4 ton and 3: 1/2 ton trucks with newer units. these will be ordered with smaller V-6 engines to reduce fleet fuel consumption.	2012	No End Date (Continuous)
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	Our routine vehicle maintenance is done in-house by our 2 mechanics. As such each vehicle is serviced regularly on a PM schedule. Each driver is required to check tire pressures monthly to ensure the best fuel economy possible.	Regular PM will continue in a new modern service garage. Our staff will be purchasing new diagnostic test equipment that will more accurately read fault codes and emmissions levels. In 2013 we equipped each vehicle in our fleet with GPS tracking. This monitoring system will help us to dispatch our trucks more efficiently. It will also provide valuable information about route planning choices, km driven and vehicle locations.	2012	No End Date (Continuous)
<b>Stationary Fuel Combustion, Electricity</b>					
<b>Behaviour change program</b>					
Help staff reduce personal energy use through ""workstation tune-ups""	In Development	None	Plans are underway to provide training and guidelines.	2012	No End Date (Continuous)
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress	Reminders are sent on a regular basis especially prior to Holiday breaks.	These campains will continue.	2010	No End Date (Continuous)
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Not Yet Evaluated				No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress	Custodial staff received in-service training to encourage powering down in the evenings and when they leave for the night.	This strategy will continue.	2010	2014
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress	Our Energy Reduction Incentive Program or ERIP was again in effect. This promotion runs throughout the school year and encourages conservation. The program rewards schools by awarding \$cash back to each school who earned it. Posters, memos and preformance charts are part of this program.	ERIP will continue in 2013/2014.	2010	No End Date (Continuous)

## School District 71 Comox Valley - 2012 Carbon Neutral Action Report

<b>Actions Towards Carbon Neutrality</b>					
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	Steps Taken	Steps Planned	Start Year	End Year
Promote hot water conservation	Ongoing/In Progress	Steps to control DHW waste continued. Reducing water temperatures scheduling circulation pumps continued. The hot water is shut off during days when school is closed.	7 new energy efficient DHW boilers will be retrofitted in 2013 using CNCP funding	2010	No End Date (Continuous)
<b>IT power management</b>					
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	PMS is installed on 90% of the district's computers.	This work will continue	2010	No End Date (Continuous)
Apply auto-sleep settings on computer monitors and CPUs	Not Yet Evaluated				No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices as part of a print management strategy	In Development	We have asked our IT department to study the feasibility of multi-function and "group" printers. Most of our photocopiers are networked for use a printers/scanners.	This work will continue to expand.	2012	No End Date (Continuous)
Apply auto-sleep settings on printers, fax machines, and/or multi-function devices	Not Yet Evaluated				No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress	SD71 has in the past been driven by the low cost of "used PC's" from computers for schools program. This limits our abilities to purchase energy star models.	A strategy is being looked at to replace all of our computers with leased units. These will be energy star treated.	2009	No End Date (Continuous)
<b>Owned buildings</b>					
Establish energy performance baseline for owned buildings	Ongoing/In Progress	Our energy manager continued to evaluate the BEPI for all our buildings. This information is presented to management and maintenance staff.	This work will continue.	2009	No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress	Numerous energy reduction/conservation retrofits were completed in 2012. Details are how in the next section of the CNAR.	Retrofits will continue in 2013/2014	2010	No End Date (Continuous)
<b>Planning/management</b>					
Reduce office space (square meters) per employee	Ongoing/In Progress	In 2012 SD71 constructed a new facilities support building. This structure houses administrative and trades shops. It replaces 6 old circa 1950's buildings. The new building was constructed with heat recovery ventilation, air source heat pumps and code compliant insulation. This project will allow us to de-commission 3 old inefficient heating boilers.	No additional space reductions are planned.	2012	2014
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	A power metering system was installed at Highland Secondary. This provides real-time kWh data and will help us schedule electrical start-ups to reduce demand charges.	None planned		No End Date (Continuous)
<b>Retrofit details for owned buildings</b>					
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress	In 2012 SD71 retrofitted the gym heating system at GP Vanier. new demand ventilation, occupancy CO2 sensing and a solar wall were installed. A 2kW photovoltaic system was added to Aspen Elementary.	2 mechanical upgrades will occur in 2013/2014. Miracle beach school will be upgraded from Propane boilers to natural gas and air source heat pumps. Royston elementary will see a mechanical upgrade. This will include new condensing boilers and air handlers. Through the CNCP program we will replace 8 hot water heating boilers.	2009	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress	SD71 is a BC Hydro Powersmart partner. This allows us to employ a full time energy manager. As a result of this we completed over 54 lighting projects in 2012. These combined to save in excess of 250,000 kWh by investing in new technologies and lighting controls.	Lighting and electrical projects will continue. These projects range from LED/induction installations to lighting occupancy controls. Daylight harvesting and de-lamping will also be implemented.	2009	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	3 DDC systems were upgraded in 2012. New controllers were installed and programmed. Occupancy sensors were added to better	We have approved budget for 2 additional DDC upgrades and one new installation at our School Board Office.	2009	No End Date (Continuous)

## School District 71 Comox Valley - 2012 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	Steps Taken	Steps Planned	Start Year	End Year
		control air quality and control outside air volumes. 2 schools had DDC systems added. These systems have shown a 38% decrease in electrical consumption at Hornby and Denman Island schools.			
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	Building envelope saw a great increase in funding in 2012. 70 window replacements were completed. 6 schools had doors replaced. Caulking was done on several schools to reduce drafts.	Additional efforts will be made to replace old single pane windows with sealed units. Our target is 75 units in 2013/2014. Weatherstripping will continue.	2011	No End Date (Continuous)
<b>Supplies (Paper)</b>					
<b>Behaviour change program</b>					
Train staff to use collaborative software for electronic editing (e.g. SharePoint, Groove, etc.)	In Development				No End Date (Continuous)
Encourage staff to hold paperless meetings or presentations (i.e., no handouts)	In Development	New projectors and Smart boards were installed in meeting rooms. This allows for presentations to be held without paper handouts.	This strategy will continue.	2010	No End Date (Continuous)
<b>Electronic media in place of paper</b>					
Use electronic document library for filing common documents	Not Yet Evaluated				No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Ongoing/In Progress	Payroll is now electronic as are all T4 and employment documents.	This strategy will continue to expand.	2011	No End Date (Continuous)
<b>Printer/document settings</b>					
Switch networked printers and photocopiers to automatic double-sided	In Development	Staff have been asked to use double sided printing as required.	Plans are underway to move to shared printing using photocopiers and eliminate personal printers. When this program starts we will re-program these printers to a double sided default setting.		No End Date (Continuous)

## School District 71 Comox Valley - 2012 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

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
<b>Business Travel</b>					
<b>Behaviour change program</b>					
Train staff in web-conferencing	Not Yet Evaluated				No End Date (Continuous)
Encourage staff to consider virtual attendance/presentation at events where possible	Ongoing/In Progress	Some meetings are attended remotely through video conferencing. In particular energy amangement presentations with BC Hydro.	This practice will be encouraged.	2010	No End Date (Continuous)
Encourage carpooling to meetings	Not Yet Evaluated				No End Date (Continuous)
Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)	Not Yet Evaluated				No End Date (Continuous)
<b>Policy and budgeting</b>					
Create a low-carbon travel policy or travel reduction goal	Not Yet Evaluated				No End Date (Continuous)
<b>Virtual meeting technology</b>					
Install web-conferencing software (e.g., Live Meeting, Elluminate, etc.)	Ongoing/In Progress	Live meeting was installed in meeting rooms.	Promotion of webinar and live meetings will continue.	2011	No End Date (Continuous)
Make desktop web-cameras available to staff	Not Yet Evaluated				No End Date (Continuous)
Install video-conferencing units in meeting rooms or provide mobile video-conferencing units	Ongoing/In Progress	Video equipment is installed in our school board office meeting and board rooms.	We are evaluating the value of video conferencing for school sites.	2013	No End Date (Continuous)
<b>Education, Awareness, and Engagement</b>					
<b>Awards/Recognition</b>					
Establish a sustainability/green awards or recognition program	Ongoing/In Progress	The ERIP program pays cash awards for school who save energy. SD71 was nominated for an environmental Leadership award by the Comox Valley Chamber of Commerce in 2012.	Continuation of recognition programs.	2012	2013
<b>Staff Professional Development</b>					
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress	Our energy manager attended several workshops and webinars related to green programs and startegies.	We will attend the Power Smart forum this fall.	2010	No End Date (Continuous)
Include green options in employee performance measurement system	Not Yet Evaluated				No End Date (Continuous)
<b>Staff awareness/education</b>					
Provide education to staff about the science of climate change	Not Yet Evaluated				No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Not Yet Evaluated				No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress	The Energy bear news is published throughout the year. It talks about our conservation succeses and programs.	We hope to continue this work next school year.	2011	No End Date (Continuous)
Provide sustainability education during new staff orientation	Ongoing/In Progress	New employees are briefed on conservation and sustainability.	This will continue.	2011	No End Date (Continuous)
<b>Team-building</b>					
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress	Green teams are active in 5 schools. BC Hydro energy ambassadors are working at Isfeld and Vanier secondary schools. They have been awarded conservation grants for the last 2 years.	We plan to expand these programs.	2011	No End Date (Continuous)



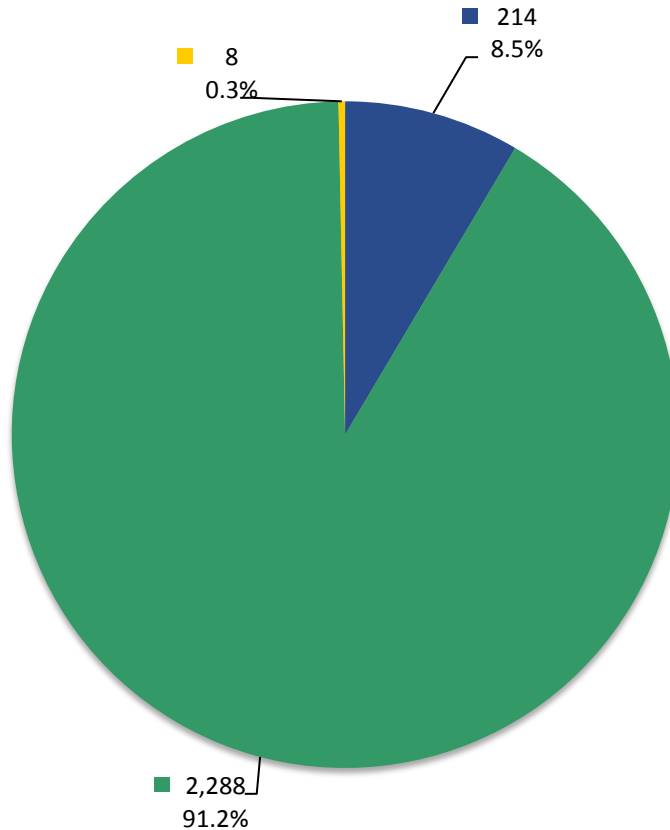
## School District 71 Comox Valley - 2012 Carbon Neutral Action Report

### 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

Action	Status	Steps Taken	Steps Planned	Start Year	End Year
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress	Our energy manager supports our conservation policy and communicates regularly to all staff about our "zero waste" ERIP program	Staff support activities will continue.	2009	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	In Development	The Energy Reduction Incentive Program continued.	The ERIP program will expand to include paper, water and waste reduction.	2010	2014
<b>Other Sustainability Actions</b>					
<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	All schools have recycling programs in place.	Composting in schools is expanding to include gardens.	2010	No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Not Yet Evaluated				No End Date (Continuous)
<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	Most toilets have been upgraded to low flush units.	We have plans to upgrade washrooms with auto sensing flush valves and faucets.	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	Not Yet Evaluated				No End Date (Continuous)

**School District 71 - Comox Valley  
Greenhouse Gas Emissions by Source  
for the 2012 Calendar Year (tCO<sub>2</sub>e\*)**



**Total Emissions: 2,510**

- 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 2012 (Generated May 31, 2013 12:05 PM)**

Total offsets required: **2,504**. Total offset investment: **\$62,600**. Emissions which do not require offsets: **6** \*\*

\*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.