



School District 68 (Nanaimo-Ladysmith) - 2011 Carbon Neutral Action Report

Executive Summary

In 2011, School District 68 (Nanaimo-Ladysmith) continued with a busy schedule of energy reduction programs.

Lighting retrofits and boiler replacements remained the focus of energy efficiency related projects. The number of lighting retrofit projects doubled in 2011. Another boiler upgrade at an elementary school was accomplished with plans to double the number of sites upgraded each year to keep pace with aging equipment. Increased focus on operational practices were carried out to complement the student green teams activities on energy reduction measures and sustainability. The acquisition of a web based energy utility database program has increased the capability to take more immediate action on energy usage that goes astray.

Fleet vehicle renewal continued and the utilization of the on-board GPS units in each bus and fleet vehicle is in effect.

Energy Star rated equipment procurement training will lead to purchasing standards in the future for all equipment.

The pilot for a paperless classroom by the Information Systems department was completed and will now enter the feasibility and planning stage.

2011 Greenhouse Gas Emissions

The total annual Greenhouse Gas Emissions from all sources covered by the Greenhouse Gas Reduction Targets Act for 2011 was 4,928 tCO₂e

Offsets Applied to Become Carbon Neutral in 2011

The total emission offsets applied to become carbon neutral is 4,391 tCO₂e plus 106 tCO₂e offset for an asset adjustment to the 2011 reporting year.

Emissions of 537 tCO₂e resulting from the operation of school buses were not offset as they are out-of-scope under Section 4(2)(c) of the Carbon Neutral Government Regulation but were reported as part of the greenhouse gas emissions profile of 2011 as required by Section 5 of the regulation.

Emissions Reduction Activities

Actions Taken to Reduce Greenhouse Gas Emissions in 2011

A twelve school lighting retrofit/upgrade project was completed as part of the process of eliminating older inefficient lighting technology. This is double the scope of previous years. The remaining three to five percent of the old technology lighting will be eliminated by mid 2012. Planning and design for lighting upgrades was carried out and now include changing out of lighting that was retrofitted approximately 10 years ago to an even more efficient technology of today. This accelerated program results from the continual rise in electrical rates and the withdrawal of certain incentives. Besides the energy reduction the other benefit has been the significant drop in the frequency of lighting maintenance calls to almost zero due to these upgrades.

The main HVAC upgrade was again the installation of condensing boilers in an elementary school. Plans are in place to increase the number of schools per year for boiler replacement. This is due to the increasing number of boilers far surpassing their life expectancy and the highly efficient condensing boilers that are now standard equipment used for replacement. So, along with the asset upgrade and reduced maintenance costs the maximum reduction in natural gas consumption is possible.

The cooperative process between the energy manager's office and the maintenance department to monitor trends of the daily operation of buildings and identify the out-of-tolerance conditions has resulted in a shortening of the response and corrective action time, further reducing the waste of energy caused by fault conditions. This quicker action and consistency can now be tracked in more detail by the upgraded utility database system newly employed this year. It has also revealed a few long term conditions previously unnoticed in the operational process.

Student programs and actions again played a significant role in raising awareness of energy and sustainability with many elementary and secondary schools participating in a host of activities. Results from a poll show the three activities most favoured by the majority of students were "lights off" campaigns, recycling and composting. A fair number of schools planted flower and vegetable gardens with one school using vegetables from their garden for the school meals program, the waste of which is composted and used back in the vegetable garden. They also used compostable bowls to save well water due to the school's rural location.

Student teams from three secondary schools received \$1,000 grant each for their successful participation in the BC Hydro Energy Ambassador's program. The proceeds of these grants have been returned to the school in the form of more energy and sustainability initiatives.

A new, more comprehensive utility database system was brought on line this year. Other than the usual features of raw data and weather correction, more importantly, for on-going reduction of energy consumption trends, a CUSUM feature allows each facilities' utility consumption to be tracked against a baseline for faster detection of out-of-tolerance variances. The database was populated with historical data back to 2002 and has revealed that the district has saved energy consistently each year from this baseline year.

Fleet vehicle renewal continued with the replacement of five existing vehicles with more fuel efficient models. The addition of GPS units in each bus and maintenance vehicle now enables tracking, database collection and monitoring of efficient vehicle operation, streamlining of bus routes and adherence to the anti-idling policy.

Training took place on the procurement of Energy Star rated equipment. IT equipment purchasing standards already include this rating and incorporating this into all equipment purchases is planned to become standard practice.

Plans to Continue Reducing Greenhouse Gas Emissions 2012 – 2014

Behaviour change will continue to be the focus through education and incentive programs offered by BC Hydro. Any incentives received from these programs will be funneled back into future sustainability programs and initiatives.

Application approvals are now in place for the re-commissioning of 2 larger facilities' HVAC systems. Baseline monitoring will take place in 2012 and 2013 and energy efficiency measures implemented in 2013/2014. The focus will be on the calibration of the entire HVAC system's equipment and controls and the revision of control strategies for fan run time reduction during regular school hours and lighting level reduction in unoccupied areas such as corridors.

Handheld devices such as tablets could become more of a reality for the paperless classroom concept which is to be expanded in 2012. Results will be measured to determine if this expansion will continue in the years to come.



Phil Turin, Secretary-Treasurer

**Phil Turin, CGA
Secretary-Treasurer
School District 68
(Nanaimo-Ladysmith)**

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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 <i>Greenhouse Gas Reduction Targets Act</i> .							
Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Mobile Fuel Combustion (Fleet and other mobile equipment)							
Vehicle fuel efficiency							
Replace vehicles with more fuel-efficient models	Completed in 2011	6	% of vehicles are fuel- efficient models	Fleet replacement/upgrade	Implemented as standard purchasing practice	2011	No End Date (Continuous)
Replace small maintenance vehicles with more fuel-efficient models	Ongoing/In Progress	2	% of small maintenance vehicles are fuel-efficient	Fleet replacement/upgrade	Implemented as standard purchasing practice	2009	No End Date (Continuous)
Stationary Fuel Combustion, Electricity and Fugitive Emissions (Buildings)							
Planning/management							
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	In Development	1	% of buildings have a real time metering system installed	Application for re-commissioning of 2 secondary schools	Gather data and initiate resulting EM measures	2011	2014
Owned buildings							
Establish energy performance baseline for owned buildings	Completed in 2011			New utility database program started - base lined to 2002	Utilize results for reporting to executive and day-to-day operation of buildings	2011	No End Date (Continuous)
Perform energy retrofits on existing, owned buildings	Ongoing/In Progress	24	% of owned buildings have undergone energy retrofits since start year indicated	Lighting Retrofit projects to 11 buildings	Lighting retrofits to 11 buildings	Started before 1995	2014
Retrofitting owned buildings							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress			Boiler retrofit to condensing boilers to 1 elementary school	Boiler retrofit to condensing for 1 elementary school	2009	No End Date (Continuous)
Upgrade lighting systems during retrofits	Ongoing/In Progress			Lighting retrofits included in boiler upgrade projects	On-going action	2009	No End Date (Continuous)
Upgrade/adjust control systems during retrofits	Ongoing/In Progress			DDC system upgrade as part of boiler upgrade scope of work	On-going action	2009	No End Date (Continuous)
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Student pilot project	Completion of pilot	2011	2012
IT power management							
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress			On-going process	On-going process	2009	No End Date (Continuous)
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Completed in 2011			Introduced with new photo copy fleet	None	2010	2011
Replace computers with ENERGY STAR models during regular computer upgrades	Completed in 2011			Project completed	None	2010	2011
Appliances and electronic devices							
Replace refrigerators with ENERGY STAR models or source ENERGY STAR models for future purchases	In Development				Introduction of purchasing guidelines	2012	2012

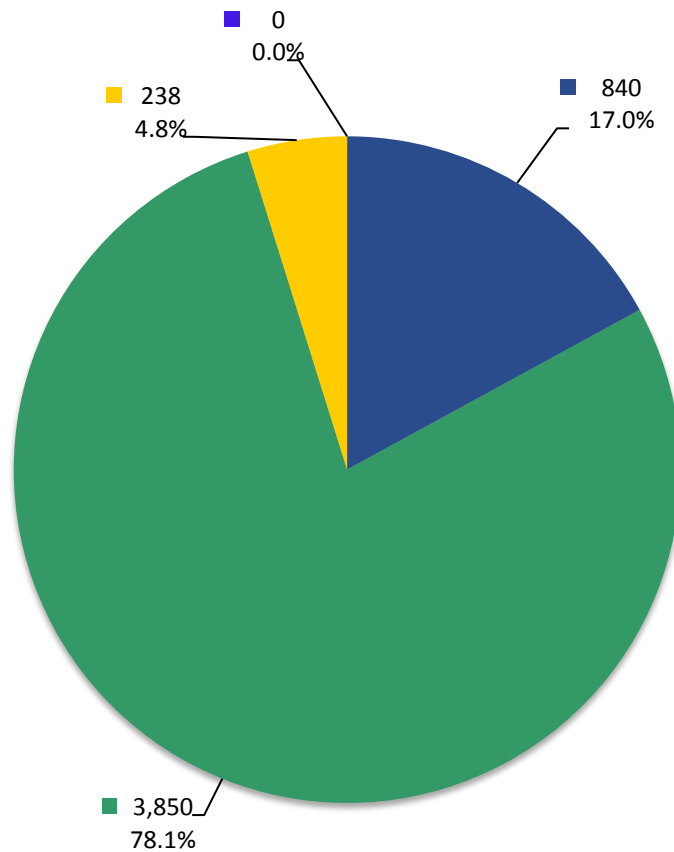
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Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Replace other appliances or electronic devices with ENERGY STAR models or source ENERGY STAR models for future purchases	In Development			Discussion with purchasing department	Training session	2011	2012
Replace desk lamp incandescent bulbs with compact fluorescent (CFL) bulbs or source more efficient desk lamps for future purchases	Ongoing/In Progress			Incandescent replaced continuously by maintenance and during lighting retrofit projects	On-going action	2009	No End Date (Continuous)
Behavior change program							
Ask staff to unplug electrical equipment or switch off power bars when not in use	Ongoing/In Progress			Part of student participation	On-going action	2009	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	In Development			Include in student programs	Include in student programs	2009	No End Date (Continuous)
Supplies (Paper)							
Paper Type							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	8	% of total paper purchased contains 30% recycled content	None	On-going	2009	No End Date (Continuous)
Printer/document settings							
Switch networked printers and photocopiers to automatic double-sided	In Development				Technical setup to be investigated	2012	2013

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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 <i>Greenhouse Gas Reduction Targets Act</i> . Public sector organizations can optionally use this section to report on actions that will help British Columbia meet its provincial greenhouse gas reduction targets, engage the public, and improve environmental sustainability across all aspects of their organization.							
Action	Status (as of 12/31/11)	Performance to Date (as of 12/31/11)		Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Business Travel							
Virtual meeting technology							
Install web-conferencing software (e.g., Live Meeting, Illuminate, etc.)	In Development				Discussions with IT department	2011	2012
Education, Awareness, and Engagement							
Team-building							
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Ongoing/In Progress			Regular On-going Student Programs	On-going	2009	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress			Full time Energy Manager	On-going	2010	No End Date (Continuous)
Providing behavior change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress			Instruction and Support for Student Teams	On-going	2009	No End Date (Continuous)
Staff awareness/education							
Provide education to staff about the science of climate change	Ongoing/In Progress			Presentations to Board and Executive	Continued	2010	No End Date (Continuous)
Provide education to staff about the conservation of water, energy, and raw materials	Ongoing/In Progress			Presentations to Board and Executive	Continued	2010	No End Date (Continuous)
Client/public awareness/education							
Provide green tips on client/public website or in newsletters	In Development			Website phase 1 development (off-line)	Bring website on line	2011	2012
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			Normal maintenance practice	On-going	2009	No End Date (Continuous)
Waste reduction/diversion							
Put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities	Completed in 2011			Green bin program introduced		2011	No End Date (Continuous)

School District 68 - Nanaimo-Ladysmith Greenhouse Gas Emissions by Source for the 2011 Calendar Year (tCO₂e*)



Total Emissions: 4,928

- 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 12:28 PM)

Total offsets required: **4,391**. Total offset investment: **\$109,775**. Emissions which do not require offsets: **537** **

*Tonnes of carbon dioxide equivalent (tCO₂e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

** Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.