

SD 44 North Vancouver - 2010 Carbon Neutral Action Report

30 April 2011

Executive Summary

The North Vancouver School District's active pursuit of energy conservation measures over the past decade has placed it solidly on the path towards carbon neutrality. In 2003, NVSD 44 won a BC Hydro Power Smart Partner Excellence award in recognition of numerous eco-efficiency upgrades including lighting retrofits, mechanical upgrades, and the installation of a centralized building automation system. In 2005, our Energy Conservation Initiative Project resulted in even further reductions in electricity, natural gas and water consumption.

In more recent years, our ambitious capital replacement program has targeted the replacement of facilities at the end of their life cycles, with new or remodelled facilities featuring energy efficient mechanical systems and high performance building envelope assemblies.

Our pursuit of sustainable building and maintenance practices has been closely tied to operating costs. Proposed changes to our facilities, equipment, and operating procedures are evaluated on the basis of their return on investment as well as their "green" value. This results in what we believe money spent wisely, with an eye to the future.

In 2010, NVSD 44 celebrated 40 years of educating students throughout the lower mainland in environmental sustainability at the North Vancouver Outdoor School near Squamish. We have recently started site work for a new Environmental Learning Centre at the Outdoor School to continue promoting eco awareness in students for years to come.

Overview

2010 Greenhouse Gas Emissions

SD 44's Greenhouse gas (GHG) emissions from all sources covered by the Greenhouse Gas Reduction Targets Act, as reported in SMARTTool totalled 4728.24 tonnes of carbon dioxide equivalent.

Offsets Applied to Become Carbon Neutral in 2010

SD 44's offset investments totalled \$114,483.50 to become carbon neutral in 2010.

148.9 tonnes of carbon dioxide equivalent emissions from school buses have been recorded as part of the total greenhouse gas emissions, but offsets were not required under the Greenhouse Gas Reduction Targets Act.

Actions Taken to Reduce Greenhouse Gas Emissions in 2010

Initiatives undertaken by SD 44 in 2010 to reduce our energy consumption and our corresponding carbon footprint include the following:

- Construction has started on the replacement of the old Carson Graham Secondary School with a new energy efficient facility targeting a "LEED" Gold standard.

- Extensive renovations are continuing at Ridgeway Elementary. The new Ridgeway facility is also targeting a “LEED” Gold standing.
- Planning well underway for an extensive renovation of Queen Mary Elementary. The renewed facility will maintain its heritage status while targeting a “LEED” Gold rating.
- Construction has started on the new Artists for Kids facility combined with a new Education Services Centre. The new facility will consolidate various programs and departments in a central, energy efficient facility targeting a “LEED” Silver rating.
- Work has started on the site of the new Environmental Learning Centre at our Outdoor School facility near Squamish BC.
- A study has been commissioned to investigate the re-use of boilers salvaged from the Carson Graham demolition in one of our other facilities.
- Investigation continues into the use of solar heated domestic hot water systems for Carson Graham Secondary renovation program.
- A program has been initiated to connect exterior lighting fixtures to our Building Management system to provide more flexibility and reduce energy use during mid week holidays.

Operational Changes in 2010

Operational changes made in support of sustainability and GHG reductions included:

- With the support of BC Hydro, we have retained an Energy Manager to further develop a culture of energy efficiency and sustainability within our organization. The Energy Manager will develop a new Strategic Energy Management Plan that will provide direction for future programs and projects to reduce energy consumption.
- Consolidating student enrolment into schools operating at less than full capacity, allowing closure of two elementary schools.
- Pilot project to reduce waste by providing separate, in ground, garbage and recyclable containers at heavily used sports and recreational facilities.
- Implementation of Green Cleaning pilot program for one elementary and one secondary school.
- Further reductions in interschool transport of supplies and equipment to reduce GHG emissions from vehicles used for deliveries.

Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012

Plans for the future include:

- Continue with replacement of Carson Graham Secondary School with a new energy efficient facility targeting “LEED Gold” standing.

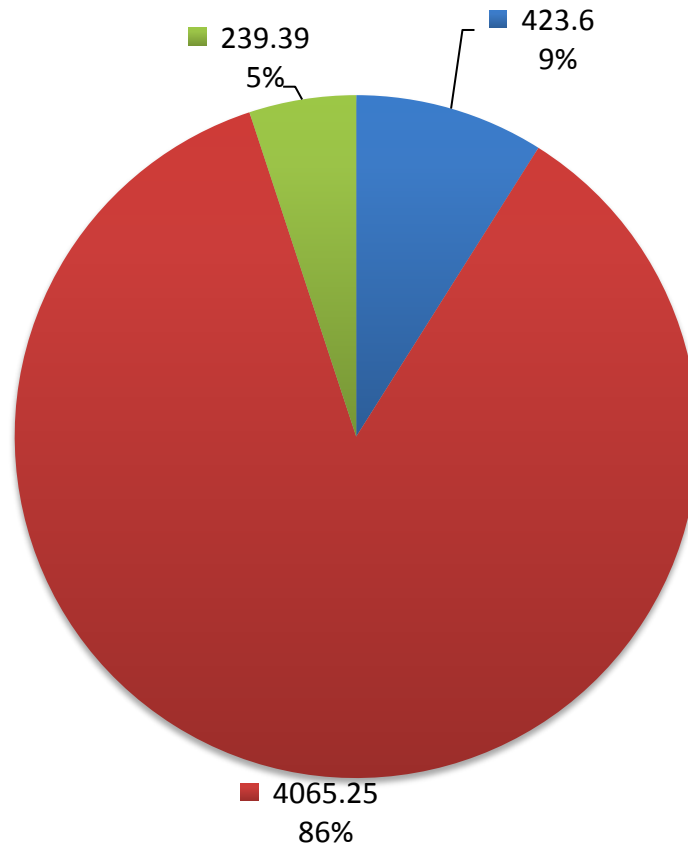
- Continue with replacement of the existing Artist for Kids and School Board administrative facilities with a new “LEED Silver” rated Education Service Centre.
- Upon completion of the new Education Service Centre, implement a Traffic Demand Management Plan to increase the use of public transportation and car pooling by 20%
- Continue with the construction of a new Environmental Learning Centre on our Outdoor School site near Squamish. A net-zero facility, targeting a “LEED Platinum” rating, the ELC is striving to become a truly carbon neutral facility, demonstrating the systems described by the “Living Building” program.
- Initiate a district wide classroom re-lamping program to reduce electrical consumption.
- In co-operation with BC Hydro, initiate Continuous Optimization Programs to re-commission building system controls in 4 secondary schools.



Irene Young
Secretary Treasurer
North Vancouver School District 44

School District 44 North Vancouver

Greenhouse Gas Emissions by Source for the 2010 Calendar Year (tCO₂e*)



Total Emissions: 4728.24

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion and Electricity (Buildings)
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2010

Total offsets purchased: **4579.34**. Total offset investment: **\$114,483.50**. Emissions which do not require offsets: **148.9** **

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

** Under the *Carbon Government Neutral 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.

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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 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Mobile Fuel Combustion (Fleet and other mobile equipment)							
Vehicle fuel efficiency							
Perform regular fleet maintenance to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Regular preventative maintenance service on fleet vehicles every 10,000 kms	Continue regular preventative maintenance program	Started before 1995	No End Date (Continuous)
Other Mobile Fuel Combustion Actions							
Reduce use of heavy duty vehicles for "on demand" interschool transfers of furniture, supplies and equipment	Ongoing/In Progress			Continuing a program to consolidate and schedule interschool transport of supplies and equipment. Program has resulted in operating efficiencies and a reduction in GHG emissions from vehicles used for deliveries.	Continue the program in 2011	2009	No End Date (Continuous)
Reduce use of personal vehicles by students by providing shuttle buses between schools offering specific programs	Ongoing/In Progress			Comparable shop programs and facilities are not available at each of our secondary schools. SD 44 has provided a shuttle bus for travel between schools rather than have students drive individual cars between facilities.	Continue the program in 2011	2008	No End Date (Continuous)
Reduce service vehicle fuel costs	Ongoing/In Progress			Organize work order assignments to minimize travel between facilities	Continue the program in 2011	2008	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)	In Development			Participated in Energy Management Assessment program with BC Hydro	Appointment of an Energy Management Consultant	2011	2012
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	15	% of buildings have a real time metering system installed	Real time metering previously installed at Argyle, Balmoral, Handsworth, Seycove, Sutherland and Windsor Secondary schools and at Highlands Elementary	Installation of real time metering planned for Ridgeway Elementary and Carson Graham Secondary	1998	No End Date (Continuous)
Owned buildings							
Establish energy performance baseline for owned buildings	Ongoing/In Progress	90	% of owned buildings have an established energy performance baseline	Energy modeling included in the design development of Queen Mary Elementary, Education Services Centre and the Environmental Learning Centre projects.	Further actions will be based on the Strategic Energy Management Plan being prepared by Energy Management Consultant	1998	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	LEED NC Gold certification targeted for new facilities currently under construction: Ridgeway Elementary; Carson Graham Secondary	LEED NC Gold certification targeted for Queen Mary renovation project and for Education services Centre. LEED NC Platinum certification targeted for Environmental Learning Centre at Outdoor School.	2009	No End Date (Continuous)
Incorporate integrated design process into new construction or during renovations of owned buildings	Ongoing/In Progress	100	% of buildings built or renovated since start year indicated used the integrated design process	Ridgeway Elementary, Queen Mary Elementary, Carson Graham Secondary and the Environmental Learning Centre projects were developed using integrated design process	Continue the process on capital projects.	2007	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Incorporate a refrigerant management strategy into regular building management/maintenance to reduce fugitive emissions	In Development			Our existing schools do not use refrigerant. Westview, Sutherland, Highlands, Ridgeway and Carson Graham facilities however, will have refrigerant in heat pumps and a refrigerant management strategy will be required	Develop a plan to convert to CO2 refrigerants.	2010	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	In Development			Planning initiated to upgrade classroom lighting (district wide) with more energy efficient lamps	Future actions will be based on the Strategic Energy Management Plan being prepared by Energy Management Consultant	2003	No End Date (Continuous)
Retrofitting owned buildings							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	In Development			Planning initiated to replace low efficiency boiler at Argyle Secondary with mid efficiency boilers salvaged from Carson Graham capital upgrade project.	Applications also submitted to BC Hydro for 4 secondary schools to have mechanical systems recommissioned under the Continuous Optimization Programs	2010	2012
Upgrade lighting systems during retrofits	In Development			Planning initiated for District wide classroom relamping	District wide classroom relamping to be tendered	2010	2011
Upgrade/adjust control systems during retrofits	In Development			Investigated operating efficiency of our existing centralized digital building control system	Applications submitted to BC Hydro for 4 secondary schools to have mechanical systems recommissioned under the Continuous Optimization Programs	2010	2012
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Improved thermal performance of wall assemblies and glazing was part of integrated approach to re-design of Ridgeway, Carson Graham and Education Services Centre	Improved thermal performance of wall assemblies and glazing will be part of integrated approach to re-design of Queen Mary	2009	No End Date (Continuous)
Leased buildings							
Establish energy performance baseline for leased buildings	In Development				Future actions will be based on the Strategic Energy Management Plan being prepared by Energy Management Consultant	2011	2012
IT power management							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress			Program ongoing from previous years	Continue with program	2005	No End Date (Continuous)
Implement server virtualization	Ongoing/In Progress			School Board Office servers virtualized	Continue to centralize and virtualize servers in new Education Service Centre	2005	No End Date (Continuous)
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress			Program ongoing from previous years	Continue with program	2005	No End Date (Continuous)
Remove stand-alone printers, copiers, and/or fax machines and install multi-function devices	Ongoing/In Progress			Printers at end of their life cycle have been replaced with MFD's	Continue with program	2008	No End Date (Continuous)
Apply auto-sleep settings on printers, copiers, fax machines, and/or multi-function devices	Ongoing/In Progress			Program ongoing from previous years	Continue with program	2005	No End Date (Continuous)
Replace computers with ENERGY STAR models during regular computer upgrades	Ongoing/In Progress			Computers replaced at the end of their life cycle with Energy Star rated models	Continue with program	2005	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			Part of Destination Green and school Green Team reports on energy reduction measures that can be undertaken by staff and students in schools.	Continue with programs	2009	No End Date (Continuous)
Provide tips to staff on saving energy in the office while working outside of regular business hours	Ongoing/In Progress			Heat and ventilation systems transition to night setback mode after regular school hours.	Continue with program	2009	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)		Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress			Part of Destination Green and school Green Team reports on energy reduction measures that can be undertaken by staff and students in schools.	Continue with programs	2009	No End Date (Continuous)
Supplies (Paper)							
Paper Type							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	25	% of total paper purchased contains 30% recycled content	Update previous cost analysis comparing cost of recycled paper to non recycled paper	Continue with program, and monitor any changes in paper supply costs.	2008	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	In Development	0	% of total paper purchased contains 100% recycled content	Review cost analysis comparing cost of recycled paper to non recycled paper	Continue with program of purchasing 30% recycled paper. Monitor any changes in 100% recycled content paper costs.	2008	No End Date (Continuous)
Electronic media in place of paper							
Use electronic document library for filing common documents	Ongoing/In Progress			Sites on intranet for posting of notices, documents and shared resources: NVSD Media, Manager Central, Employee Central	Records Management program started to transition from paper to electronic record keeping	2005	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 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Education, Awareness, and Engagement						
Team-building						
Providing behaviour change education/training to teams (e.g., community-based social marketing)	In Development			Energy Management Consultant to include training programs in Strategic Energy Management Plan	2011	2012
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		Staff encouraged to attend Professional Development programs highlighting new ideas in Sustainability and Energy Management	Continue with the program. Additional direction to be provided as part of Strategic Energy Management Plan	2009	No End Date (Continuous)
Staff awareness/education						
Provide education to staff about the conservation of water, energy, and raw materials	In Development			Energy Management Consultant to motivate staff and management to increase their energy management efforts by providing feedback on the results of energy initiatives.	2011	2013
Other Sustainability Actions						
Water conservation						
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress		Stormwater management strategies have been included in all new projects since 2008, including Westview, Sutherland and Highlands	Stormwater management strategy will be included in plans for Ridgeway, Carson Graham , and the Environmental Learning Centre.	2008	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	Ongoing/In Progress		Paper, Plastic and Metal recycling programs have been in place for a number of years at each of our facilities	In ground storage containers will be introduced on a pilot program to reduce frequency of pick up required for waste and recycled materials.	2000	No End Date (Continuous)
Implement a hazardous waste reduction and disposal strategy	Ongoing/In Progress		SD 44 has an annual program to identify and remove hazardous wastes collected in our schools during the year. A program to remove and recycle obsolete electronic equipment was set up in 2009 in connection with an annual "Clear the Clutter" campaign.	Continue with the programs	2009	No End Date (Continuous)
Procurement (non-paper supplies)						
Implement sustainable purchasing program for cleaning products, disposable paper products and trash bags	In Development		Custodial Department investigating a "green clean" program	Pilot program planned for 2 schools	2009	2012
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		Lumber, millwork, valves, light fixtures, pumps, boilers and even mechanical control panels were salvaged from schools demolished as part of capital programs at Ridgeway, Carson Graham and Highlands schools	Salvaged materials will be recycled as part of maintenance programs at other schools or, incorporated into new schools under the LEED NC programs.	2009	No End Date (Continuous)
Incorporate lifecycle costing into new construction or renovations	Ongoing/In Progress		Lifecycle costing and payback analysis included in integrated design process for projects targeting LEED NC ratings	Continue with the programs	2007	No End Date (Continuous)

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Action	Status (as of 12/31/10)	Performance to Date (as of 12/31/10)	Steps Taken in 2010	Steps Planned for 2011 -2013	Start Year	End Year
Commuting to and from home						
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	In Development			Shower and locker facilities to be included in Education Services Centre	2010	No End Date (Continuous)
Provide secure bicycle storage	In Development		Covered bicycle parking facility provided at Handsworth Secondary	Storage room in underground parking facility to be included in Education Services Centre.	2010	No End Date (Continuous)