

SD 44 North Vancouver - 2011 Carbon Neutral Action Report

30 April 2012

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 are nearing completion of a new Environmental Learning Centre at the Outdoor School to continue promoting eco awareness by students for years to come.

Overview

2011 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 5138 tonnes of carbon dioxide equivalent.

Offsets Applied to Become Carbon Neutral in 2011

SD 44's offset investments totalled \$126,050 to become carbon neutral in 2011.

The overpayment on 23 tonnes of GHG emissions in 2010 has been corrected.

96 tonnes of carbon dioxide equivalent emissions from school buses and biogenic fuels 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 2011

Initiatives undertaken by SD 44 in 2011 to reduce our energy consumption and our corresponding carbon footprint include the following:

- Extensive renovations at Ridgeway Elementary were completed. The new Ridgeway facility is targeting a “LEED” Gold standing.
- Extensive renovations of Queen Mary Elementary were started. The renewed facility will maintain its heritage status while targeting a “LEED” Gold rating.
- Construction continued on the replacement of Carson Graham Secondary School with a new energy efficient facility targeting a “LEED” Gold standard.
- Construction continued 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” Gold rating.
- Construction continued on the new Environmental Learning Centre at our Outdoor School facility near Squamish BC. This facility is targeting a “LEED” Platinum rating.
- Boilers salvaged from the Carson Graham demolition were refitted and re-used in one of our other secondary school facilities.
- Installation of a solar heated domestic hot water system continues as part of the Carson Graham Secondary School project.

Operational Changes in 2011

Actions in support of sustainability and GHG reductions included:

- Renewal of the contract with our Energy Manager with the support of BC Hydro. The Strategic Energy Management Plan developed by the Energy Manager will further develop a culture of energy efficiency and sustainability within our organization and provide direction for future programs and projects to reduce energy consumption.
- Completion of a district wide classroom re-lamping program to improve lighting levels while reducing electrical consumption.
- Continuation of our program to reduce waste by providing separate, in ground, garbage and recyclable containers at heavily used sports and recreational facilities.
- Reductions in interschool transport of supplies and equipment to reduce GHG emissions from vehicles used for deliveries.

Plans to Continue Reducing Greenhouse Gas Emissions 2012 – 2013

Plans for the future include:

- Completion of Carson Graham Secondary School. Reductions in GHG emissions are anticipated as a result of its energy efficient operating systems and high performance building envelope assembly.
- Completion of the new Artists for Kids and School Board administrative facilities. This facility will use geothermal energy as its primary source of heating fuel.
- Completion of the 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.
- In co-operation with BC Hydro, continue with Continuous Optimization Programs to re-commission building system controls in 4 secondary schools.



Irene Young
Secretary Treasurer
North Vancouver School District 44

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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
Mobile Fuel Combustion (Fleet and other mobile equipment)							
Vehicle fuel efficiency							
Replace larger vehicles with smaller models according to fleet "right-sizing" principles	Ongoing/In Progress	4	% of vehicles down-sized since start year indicated	Replaced 1 Large van with a smaller 3/4 ton pick up truck	Continue the program	Started before 1995	No End Date (Continuous)
Perform regular fleet maintenance specifically to improve fuel-efficiency	Ongoing/In Progress	100	% of vehicles are subject to regular maintenance for fuel efficiency	Regular preventative maintenance service on all vehicles every 10,000 kms	Continue the 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	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	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	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)	Ongoing/In Progress	100	% of Heating Fuel and Electrical consumption monitored	Utility use data tracked with by "PUMA" (Prism Utility Monitoring and Analysis)	Continue tracking utility consumption. Use data to compare energy use between sites.	2010	No End Date (Continuous)
Install a real time metering system (e.g. Pulse, Reliable Controls, Houle Controls)	Ongoing/In Progress	20	% of buildings have a real time metering system installed	Real time metering installed at new Ridgeway Elementary	Installation of real time metering planned for new Carson Graham Secondary and new ESC/AFK building. New metering to be installed in Handsworth, Sutherland, Windsor, and Seycove Secondary schools as part of BC Hydro's Continuous Optimization Program.	1998	No End Date (Continuous)
Owned buildings							
Establish energy performance baseline for owned buildings	Completed in 2011	100	% of owned buildings have an established energy performance baseline	Benchmarking data collected by "PUMA"	Continue tracking utility consumption. Use data to compare energy use between sites and identify buildings for improvements	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 equivalent (non registered) targeted for new facilities currently under construction: Carson Graham Secondary; Education Services Centre / Artists for Kids; Queen Mary Elementary	LEED NC Platinequivalent (non registered) targeted for new Outdoor School facility currently under construction	2009	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
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	Queen Mary Elementary, Carson Graham Secondary, Education Services Centre/Artists for Kids Gallery and the Environmental Learning Centre projects were developed using integrated design process	Continue the process on capital projects	2007	No End Date (Continuous)
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)
Perform energy retrofits on existing, owned buildings	Completed in 2011	75	% of owned buildings have undergone energy retrofits since start year indicated	Upgraded classroom lighting to lower wattage, more efficient lamps		2011	2011
Retrofitting owned buildings							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	In Development	100	% of retrofits since start year indicated had heating, cooling, and ventilation systems upgrades	Replaced aging boiler in Argyle Secondary. Four secondary schools approved by BC Hydro to participate in Continuous Optimization program.	Replace aging boiler in Seymour Hts Elementary. Additional meters will be installed to monitor energy use patterns in schools participating in Continuous Optimization program	2010	No End Date (Continuous)
Upgrade lighting systems during retrofits	In Development	100	% of retrofits since start year indicated had lighting systems upgrades	During classroom lighting upgrades other opportunities for improved lighting performance were identified	Develop a plan to upgrade lighting in areas such as gyms and cafeterias	2011	2013
Upgrade/adjust control systems during retrofits	In Development			District wide review of DDC system controls	Update and realign DDC to Occupancy at 35 locations	2011	2013
Improve building insulation (including windows) during retrofits	Ongoing/In Progress	100	% of retrofits since start year indicated had insulation improvements	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)
Install an on-site renewable energy demonstration project	In Development			Solar hot water domestic heating project designed for Carson Graham Secondary	Installation of solar hot water demonstration project at Carson Graham	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. District wide "Green IT" survey commissioned	Continue with program. Implement recommendations of "Green IT" report.	2005	No End Date (Continuous)
Implement server virtualization	Ongoing/In Progress			School Board Office servers are 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			Planned participation in BC Hydro' Workplace Conservation Awareness program	Implement program post strike action	2009	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
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress			Planned participation in BC Hydro's Workplace Conservation Awareness program	Implement program post strike action	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.	2009	No End Date (Continuous)
Purchase 40% post-consumer recycled paper	In Development	0	% of total paper purchased contains 40% recycled content	Update previous cost analysis comparing cost of recycled paper to non recycled paper	Monitor changes in paper supply costs. Increase recycled content as cost of recycled paper drops.	2008	No End Date (Continuous)
Printer/document settings							
Switch networked printers and photocopiers to automatic double-sided	In Development			Initiated District wide study to assess photocopier equipment use and future needs.	Implement recommendations of study to provide photocopy services more efficiently	2011	2012
Electronic media in place of paper							
Use electronic document library for filing common documents	In Development			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		

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Actions to Reduce Provincial Emissions and Improve Sustainability

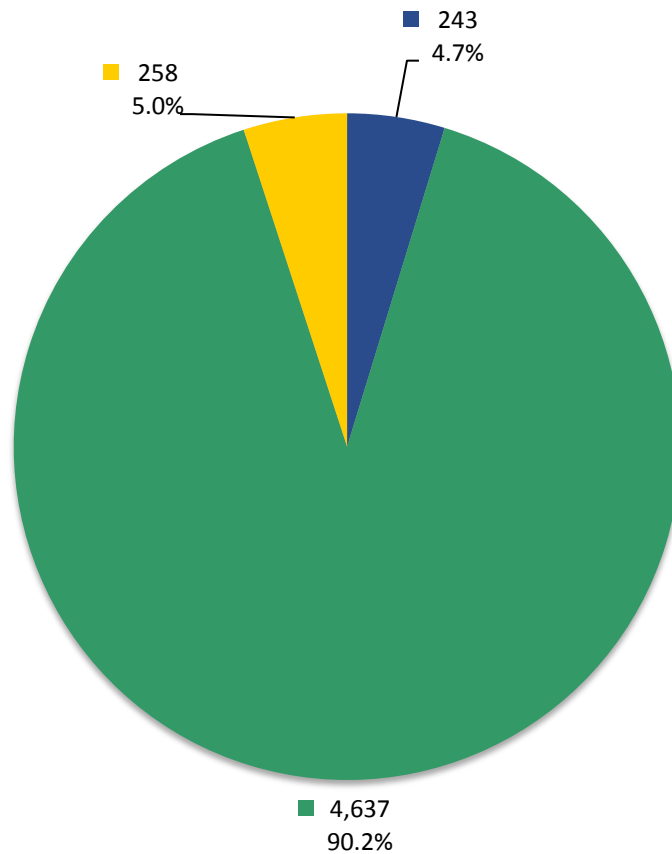
The actions listed below contribute to a reduction in greenhouse gas emissions from sources that fall outside of the reporting requirements defined in the carbon neutral government regulation of the *Greenhouse Gas Reduction Targets Act*. Public sector organizations can optionally use this section to 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 12/31/11)	Performance to Date (as of 12/31/11)	Steps Taken in 2011	Steps Planned for 2012 -2014	Start Year	End Year
Education, Awareness, and Engagement						
Team-building						
Create Green, Sustainability, Energy Conservation, or Climate Action Teams with executive endorsement	Completed in 2011		The need of behaviour change recognized and included in the Strategic Energy Management Plan developed in partnership with BC Hydro.	Develop and encourage sustainability initiatives at all schools.	2011	No End Date (Continuous)
Provide resources and/or dedicated staff to support teams	Ongoing/In Progress		A part time position was created to facilitate behavioural change with a primary focus on energy conservation and sustainability.	Sustainability Leadership position filled	2011	No End Date (Continuous)
Providing behaviour change education/training to teams (e.g., community-based social marketing)	Ongoing/In Progress		Develop communication opportunities through GreenScreen Blog, in-service programs, sustainability leadership teams and social media	Continue to expand participation in sustainability issues.	2011	No End Date (Continuous)
Awards/Recognition						
Establish a sustainability/green awards or recognition program	In Development		Evaluate variety of energy use monitors for installation in Secondary Schools to communicate and compare energy use in schools	Trial installation in Carson Graham Secondary. Retrofit of monitor in existing schools as budget allows.	2011	No End Date (Continuous)
Staff Professional Development						
Support green professional development (e.g., workshops, conferences, training)	Ongoing/In Progress		Encourage staff participation in Pro D topics with focus on sustainability and energy conservation	Continue to emphasize importance of sustainability training opportunities to maintenance and to teaching staff	2010	No End Date (Continuous)
Staff awareness/education						
Provide education to staff about the conservation of water, energy, and raw materials	In Development		10 year Strategic Plan was released, identifying high level goal to "provide leadership in environmental education and sustainability practice"	Support environmental education and sustainability initiatives	2010	No End Date (Continuous)
Provide green tips on staff website or in newsletters	Ongoing/In Progress		GreenScreen blog developed. Green Fair held to celebrate student achievements in conservation and sustainability	Use GreenScreen blog, Student Leadership Council, and Destination Conservation meetings to further develop sustainability issues.	2010	No End Date (Continuous)
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, Highlands and Ridgeway	Stormwater management strategy are included in plans for Queen Mary Elementary, Carson Graham Secondary, 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. Program to install in ground storage containers for waste and recycled materials was continued.	Continue program to install in ground waste and recycling containers. This program continues to reduce frequency /use of heavy vehicles for pick ups	2000	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
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 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 is investigating a "green clean" program	Pilot program planned for 2 schools	2009	2013
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 Queen Mary 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 programs	2007	No End Date (Continuous)
Indoor air quality						
Incorporate low volatile organic compounds (VOCs) standards into procurement policy for products such as paints, carpets, and furniture	Ongoing/In Progress		Low VOC coatings specified for gym floor refinishing. Interior painting projects use low VOC based products.	Continue the programs	2009	No End Date (Continuous)
Commuting to and from home						
Encourage commuting by foot, bicycle, carpool or public transit	In Development		Safe Routes to School studies encouraged walking, bicycling, and public transit for commuting to schools.	Minor infrastructure changes to encourage use of alternate transportation modes	2010	No End Date (Continuous)
Provide shower or locker facilities for staff/students who commute by foot or by bicycle	In Development		Shower and locker facilities are being built in new Education Services Centre	Encourage staff to bicycle to work	2010	No End Date (Continuous)
Provide secure bicycle storage	In Development		Secure bicycle parking is being built in new Education Services Centre	Provide better bicycle racks at schools	2010	No End Date (Continuous)

School District 44 - North Vancouver Greenhouse Gas Emissions by Source for the 2011 Calendar Year (tCO₂e*)



Total Emissions: 5,138

- 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 2011 (Generated May 18, 2012 12:12 PM)

Total offsets required: **5,042**. Total offset investment: **\$126,050**. Emissions which do not require offsets: **96** **

*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.