

# **SD 44 North Vancouver - 2009 Carbon Neutral Action Report**

**30 April 2010**

## **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 currently developing designs for a new Environmental Learning Centre at the Outdoor School to continue promoting eco awareness in students for years to come.

## **Overviews**

### **Actions Taken to Reduce Greenhouse Gas Emissions in 2009**

Initiatives undertaken by SD 44 in 2009 to reduce our energy consumption and our corresponding carbon footprint include the following:

- Replacement of the old Highlands Elementary with a new energy efficient facility built to a "LEED Silver" standard.
- Extensive renovations started at Ridgeway Elementary. The new Ridgeway facility is targeting a "LEED Gold" standing.
- Upgrade to the roof insulation at Seycove Secondary as part of roof replacement project
- Upgrade windows and glazing at Carisbrooke and at Canyon Heights Elementary schools
- Upgrade of clerestory glazing at Handsworth Secondary to reduce solar gain during spring and fall. Rebalance and re-commission the mechanical system to distribute heat more evenly throughout the school during winter.

- Replacement of boilers at Queensbury Elementary with new high efficiency, condensing boilers and the installation of temperature controls that will reduce GHG emission while enhancing occupant comfort.
- Replacement of classroom lighting at Keith Lynn Alternate Secondary School with energy efficient T8 fluorescent fixtures salvaged from the old Ridgeway Elementary. This not only reduced electrical consumption, but also recycled existing light fixtures with remaining service life .
- Provision of bicycle racks at Highlands Elementary and at Handsworth Secondary to promote alternative transportation strategies for staff and students.
- Investigation of solar heated domestic hot water systems for Carson Graham Secondary renovation program.

### **Operational Changes in 2009**

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

- Investigation of Green Cleaning pilot program for one elementary and one secondary school.
- Consolidation and scheduling of interschool transport of supplies and equipment to reduce GHG emissions from vehicles used for deliveries.
- Tracking of recycled content of paper used by the district.
- Establishment of a District Green Team to develop and implement strategic behavioural initiatives throughout our school population.

### **Plans to Continue Reducing Greenhouse Gas Emissions 2010 – 2012**

Plans for the future include:

- Replacement of Carson Graham Secondary School with a new energy efficient facility targeting “LEED Gold” standing.
- Replacement of the existing School Board Office with a new “LEED Silver” rated Education Service Centre that will also include central meeting and art education space to replace current facilities operating in various locations throughout the district.
- 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%
- 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.

# SD 44 North Vancouver - 2009 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 (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
<b>Mobile Fuel Combustion (Fleet and other mobile equipment)</b>							
<b>Vehicle fuel efficiency</b>							
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	1990	No End Date (Continuous)
<b>Behaviour change program</b>							
Provide fleet driver training to reduce fuel use	Complete	90	% of current drivers are trained	Transportation experts were provided to deliver driver training tips to all NVSD driver / tradesmen.		2005	2009
<b>Other Mobile Fuel Combustion Actions</b>							
Reduce use of heavy duty vehicles for "on demand" interschool transfers of furniture, supplies and equipment	Ongoing/In Progress			Pilot program to consolidate and schedule interschool transport of supplies and equipment to reduce GHG emissions from vehicles used for deliveries.	Continue program if successful in 2009	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 program facilities are not available at each of our secondary schools. SD 44 has provided a shuttle bus for travel between schools rather than have kids drive individual cars.	Continue program	2008	No End Date (Continuous)
Reduce service vehicle fuel costs	Ongoing/In Progress			Organize work order assignments to minimize travel between sites.	Continue program	2008	No End Date (Continuous)
<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	15	% of buildings have a real time metering system installed	Real time metering installed at Argyle, Balmoral, Handsworth, Seymour, Sutherland, and Windsor Secondary schools.	Real time metering currently being installed at Highlands Elementary, and will be included in Ridgeway Elementary and Carson Graham Secondary renovations.	1998	No End Date (Continuous)
<b>Owned buildings</b>							
Establish energy performance baseline for owned buildings	Ongoing/In Progress	90	% of owned buildings have an established energy performance baseline	Energy modeling done for new facilities currently under construction: Ridgeway Elementary, Carson Graham Secondary	Energy modeling will be included in design development of Queen Mary Elementary, Education Services Centre and the Environmental Learning Centre projects.	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	Westview Elementary, Highlands Elementary and Sutherland Secondary all used integrated design process.	Ridgeway Elementary, Queen Mary Elementary, Carson Graham Secondary, Educational Services Centre and the Environmental Learning Centre projects developed using integrated design process. .	2007	No End Date (Continuous)

## SD 44 North Vancouver - 2009 Carbon Neutral Action Report

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	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 plan to convert to CO2 refrigerants	2010	No End Date (Continuous)
Complete energy retrofits on existing, owned buildings	Ongoing/In Progress	90	% of owned buildings have undergone energy retrofits since start year indicated	District wide Eco-Efficiency upgrades in connection with BC Hydro Power Smart program in 2003, and Energy Conservation Initiative program in 2005. Further retrofits at Queensbury, Keith Lynn, Handsworth, and Seycove during 2009	Pending funding	2003	No End Date (Continuous)
<b>Retrofitting owned buildings</b>							
Upgrade mechanical systems (heating, cooling, ventilation) during retrofits	Ongoing/In Progress			Boilers replaced at Queensbury Elementary in 2009; (Boilers replaced at Handsworth Secondary in 2007)	Pending funding	2007	2009
Upgrade lighting systems during retrofits	Ongoing/In Progress	90	% of retrofits (captured above) had lighting systems upgrades	Lighting replaced at Keith Lynn Alternate Secondary in 2009; (District wide lighting upgrades in 2003)	Pending funding	2003	2009
Upgrade/adjust control systems during retrofits	Ongoing/In Progress	90	% of retrofits (captured above) had control system upgrades or adjustments	Control system re-commissioned at Handsworth Secondary in 2009; (District wide BMS installed in 2003)	Pending funding	2003	2009
Improve building insulation (including windows) during retrofits	Ongoing/In Progress			Roof insulation increased at Seycove Secondary Window and Glazing unit upgrades at Canyon Hts and Carisbrooke Elementary in 2009	Pending funding	2009	2009
<b>IT power management</b>							
Install power management software which shuts down computers outside of regular business hours	Ongoing/In Progress	90	% of computers shut down automatically outside of regular business hours	Program ongoing from previous years	Continue with program	2005	No End Date (Continuous)
Implement server virtualization	Ongoing/In Progress	40	% of servers have been virtualized since start year indicated	Virtualized School Board Office servers	Continue to centralize and virtualize servers	2005	No End Date (Continuous)
Apply auto-sleep settings on computer monitors and CPUs	Ongoing/In Progress	90	% of computers have auto-sleep settings applied	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	20	% reduction in printers, copiers, and/or fax machines since start year indicated	Printers replaced at end of life cycle with MFD	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	90	% of devices have auto-sleep settings applied	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	80	% of computers are ENERGY STAR rated	Computers replaced at end of life cycle	Continue with program	2005	No End Date (Continuous)
<b>Behaviour change program</b>							
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 Teams report on energy reduction measures that can be undertaken by staff and students in schools.	Continue with programs	2009	No End Date (Continuous)

## SD 44 North Vancouver - 2009 Carbon Neutral Action Report

Action	Status (as of 12/31/09)	Performance to Date (as of 12/31/09)		Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
Ask staff to close blinds at end of work day to reduce heating/cooling demands	Ongoing/In Progress			Part of Destination Green and school Green Teams report on energy reduction measures that can be undertaken by staff and students in schools.	Continue with programs	2009	No End Date (Continuous)
Provide reminders for turning off lights (e.g., signs, stickers, messages)	Ongoing/In Progress			Part of Destination Green and school Green Teams report on energy reduction measures that can be undertaken by staff and students in schools.	Continue with programs	2009	No End Date (Continuous)
<b>Supplies (Paper)</b>							
<b>Paper Type</b>							
Purchase 30% post-consumer recycled paper	Ongoing/In Progress	25	% of total paper purchased contains 30% recycled content	Cost analysis comparing cost of recycled paper to non recycled paper	Monitor costs of recycled paper.	2008	No End Date (Continuous)
Purchase 100% post-consumer recycled paper	Ongoing/In Progress	0	% of total paper purchased contains 100% recycled content	Cost analysis comparing cost of recycled paper to non recycled paper	Monitor costs of recycled paper.	2009	No End Date (Continuous)
<b>Electronic media in place of paper</b>							
Use electronic document library for filing common documents	Ongoing/In Progress	25	% of Facility plans and specifications filed electronically.	Added electronic record documents for Highlands, Carisbrooke, and Canyon Hts Elementary, and for Sutherland Secondary	Continue to expand digital records of plans and specifications	2005	No End Date (Continuous)
Post materials online that were previously printed	Complete	100	% of Notices and Announcements posted on Novacom	This practice has been in place since 2001.	Continue to post announcements, forms, minutes of meetings etc on electronic conferences	2001	No End Date (Continuous)
Switch to an electronic payroll notification system in place of paper pay stubs	Complete	100	% of Payroll notices posted on Novacom	This practice has been in place since 2005.	Continue this practice	2005	No End Date (Continuous)

## SD 44 North Vancouver - 2009 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 12/31/09)	Performance to Date (as of 12/31/09)	Steps Taken in 2009	Steps Planned for 2010 -2012	Start Year	End Year
<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		Green teams developed at schools to enhance education program and foster environmental stewardship	Continue Green Team programs	2008	No End Date (Continuous)
<b>Other Sustainability Actions</b>						
<b>Water conservation</b>						
Introduce a stormwater management landscape strategy (e.g., vegetated roofs, permeable paving, rain gardens, bioswales)	Ongoing/In Progress		Stormwater management strategy included in designs of Westview Elementary and Sutherland Secondary completed in 2008. Projects under construction in 2009, Ridgeway Elementary and Carson Graham Secondary also include stormwater management strategies.	Alternative stormwater management strategies will continue to be included in development of new facilities as part of LEED Gold and LEED Platinum program requirements.	2008	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		Paper, Plastic and Metal recycling programs have been in place for a number of years at each of our Facilities.	Continue program.	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 new program to remove and recycle obsolete electronic equipment was set up in 2009 in connection with an annual "Clear the Clutter" campaign.	Continue program.	2009	No End Date (Continuous)
<b>Procurement (non-paper supplies)</b>						
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 in 2010.	2009	No End Date (Continuous)
<b>Building construction, renovation, and leasing</b>						
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 program at other schools of similar design, or incorporated into new schools under LEED NC programs.		
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 the program.	2007	No End Date (Continuous)
<b>Commuting to and from home</b>						
Provide secure bicycle storage	Ongoing/In Progress		Contributed to program to provide bicycle parking facility at Handsworth Secondary	Continue to support programs that promote alternative transportation strategies for staff and students	2009	No End Date (Continuous)