

## Carbon Neutral Action Report School District No. 38 - Richmond

### Executive Summary

The Richmond School District has been a leader in the introduction of energy conservation measures and in the development of student leadership programs that promote behavioural change for environmental sustainability. In 2008 it formed a Sustainability Secretariat and an Environmental Sustainability Committee to consolidate and integrate existing programs while establishing a solid groundwork for an expansion of its efforts and more extensive implementation of its environmental stewardship policy.

As part of this policy the district is embarking on a number of initiatives to become carbon neutral. In accordance with the Board of Education's policy and the Board's 2008/2009 Developmental Objective, District staff has a responsibility to ensure that every effort is made to conserve energy and natural resources while exercising sound financial management.

It is hoped that every employee, student and school volunteer would contribute to energy efficiency with a key goal of reducing our greenhouse gas emissions. Implementation of this commitment shall be the joint responsibility of the School Board, administration, teachers, students, staff and volunteers. Its success shall be dependent on cooperation at all levels.

Each employee, student and school volunteer will be encouraged to actively participate in the district's energy conservation and efficiency programs. District facilities will be evaluated continually for efficient operation and cost effective modifications. The district is will apply for LEED Gold standard for Steveston-London Secondary school. Our maintenance department is engaged in lighting retrofits and boiler retrofits on an on-going basis to reduce energy consumption. Accurate records are kept of energy consumption, associated costs and greenhouse gas emissions.

The district is currently involved in a district-wide energy conservation awareness campaign with promotion and communication of carbon neutral goals through the district Environmental Stewardship website. The district is a BC Hydro PowerSmart Partner and has an Energy Management Action Plan in place with a BC Hydro sponsored Energy Manager. The district is also currently 5 years into a energy-reducing performance contract sponsored by BC Hydro.

### Objectives

- increase in awareness and social responsibility in regard to energy conservation and related greenhouse gas emissions
- reduced operating costs
- Reduction of energy consumption by 10% in comparison with base year (2007).
- conserve energy so that the instructional programs and support services can be effectively delivered while conserving energy dollars.
- the elimination of energy waste in our buildings while ensuring a comfortable and safe learning environment for all students and staff.
- reduction in energy to be achieved through energy efficient upgrade projects, continual maintenance and improvement of existing facility systems, and energy conservation awareness for staff and students.
- energy saving design will be incorporated for new construction.
- energy consumption analysis undertaken continuously for determining efficiency and costs

## Part 1: Actions Taken to Reduce Greenhouse Gas Emissions in 2008

### Overview

Two key district committees were formed in 2008. The Environmental Stewardship Committee is comprised of administrators, staff, students and parents providing a voice for school environmental issues and direction. The Sustainability Secretariat operates at the corporate level to meet the needs of the Environmental Stewardship Committee.

The maintenance department has engaged in energy retrofits focusing on lighting upgrades and boiler replacement. The maintenance department performed upgrades to reduced water consumption. The operations department undertook practical changes to reduce man-hours and material cost related to environment.

The district promoted a paper consumption awareness program in conjunction with the purchasing department. The purchasing department also expanded its scope in relation to the purchase of environmentally friendly products and services.

A district environmental stewardship website was created to communicate and provide support to all district stakeholders. The district began communications related to a district-wide energy conservation awareness program.

The final completion stages took place on a secondary school which will soon be LEED gold certified. The district was also part of a Canada Green Building Council energy study pilot program.

Finally, the district provided school sustainability grants to support school-based environmental sustainability initiatives, including energy conservation related.

### 1.1 Mobile Fuel Combustion

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Initiated new fleet maintenance program (could include – changing filters, checking tire pressure, regular check-ups)	In Progress		
Established anti-idling behaviour change program (e.g. signs, stickers, messages)	In Progress		Continuing to expand at schools with signs posted in school entrance waiting areas.
Carpet cleaning truck was replaced by a more efficient unit	Complete		

### 1.2 Stationary fuel combustion and electricity

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Replaced # computers with EnergyStar models	In Progress	Electrical consumption reduction in kWh	As computers come up for replacement
Asked staff to close blinds daily	In Progress	Natural gas consumption reduction in GJ	Retain heating or cooling in rooms
Turned off lights in unused rooms	In Progress	Electrical consumption reduction in kWh	Individual schools have initiated
Replaced standard bulbs with CFLs	In Progress	Electrical consumption reduction in kWh	Various site lighting upgrades
Installed motion activated lights	In Progress	Electrical consumption reduction in kWh	Various site lighting upgrades
Undertaken lighting retrofit	In Progress	Electrical consumption reduction in kWh	Byng Elementary Lighting/Controls upgrade 14005 kwh/yr savings  Talmei Elementary Lighting/Controls upgrade 7207 kwh/yr savings

Utilized desk-top power management settings on computer	In Progress	Electrical consumption reduction in kWh	Using Mac OS built in functions
Initiated corporate computer shut-down/wake-up for maintenance	In Progress	Electrical consumption reduction in kWh	Using Mac OS built in functions
Applied for LEED existing building rating	In Progress		Applied for LEED Gold on secondary school
Initiated or completed a building energy retrofit	Completed	Natural gas consumption reduction in GJ	Sea Island Elementary Boiler Replacement 526 GJ/yr savings
DDC Control system connection to lighting	In Progress	Electrical consumption reduction in kWh	
Time Clocks for lighting	In Progress	Electrical consumption reduction in kWh	
LED Exit Sign Replacement	In Progress	Electrical consumption reduction in kWh	

### 1.3 Supplies

Action	Action Taken	Outcome/Performance Measure	Notes Clarifying Action Taken
Committed to use 30% recycled paper	In Progress	Reduce use of virgin paper	Working with EDCO to reduce price differential to encourage users to order 30% paper.
Committed to use 100% recycled paper	In Progress	Need machines capable of using 100% recycled paper	Meeting with IKON International to discuss their R&D towards machines that will be capable of using 100% recycled paper
Initiated automatic double sided printing	In Progress	Reduction in paper consumption	Part of an ongoing district initiative for paper reduction
Changed document template margins	In Progress	Reduction in paper consumption	Part of an ongoing district initiative for paper reduction
Committed to hold paperless meetings	In Progress	Reduction in paper consumption	Initiated at district level meetings and continues
Developed document library (online and one printed copy) for large documents	In Progress	Reduction in paper consumption	Encourage used of PDF and virtual fax instead of paper by all users in the district
Used collaborative software to edit on-line	In Progress	Number of students in Distributed Learning Program	District developed Distributed Learning program which provides virtual classrooms. Students use collaborative software to work on group projects.
Re-used non-confidential scrap paper	In Progress	Reduction in paper consumption	Part of an ongoing district initiative for paper reduction
Used laptops/tablets	In Progress	Electrical consumption reduction in kWh	
Restructured a process to use less paper	In Progress	Reduction in paper consumption	Meeting minutes/agendas are now done electronically at district office meetings
Purchased cradle to cradle goods	Research	Reduce purchase of non-recycled goods	Ability to supply cradle-to-cradle products included in all RFPs and Tender Documents.
Chose "Green" items from Distribution Centre	In Progress	Reduce purchase of non "green" products	Currently part of our existing RFP and Tender processes.
Encouraged re-use of furniture and equipment	In Progress	Currently use as much as possible	Procedures have been in place for years to check inventory of used equipment before ordering new.
Reducing the use of waxes on floors	In Progress	Reduce product and man hours	Replacing wax finishes with floor restorer
Replacing gym floors with material that uses no floor finish	In Progress	Reduce product and man hours	
Carpet removal program undertaken utilizing resilient flooring made of natural fibres	In Progress		
Re-issuing custodial equipment instead of new purchasing	In Progress		

<b>1.4 Travel</b>			
<b>Action</b>	<b>Action Taken</b>	<b>Outcome/Performance Measure</b>	<b>Notes Clarifying Action Taken</b>
Installed Video Conferencing facilities	In Progress	Number of users using iChat	Where possible, Macintosh users use iChat for audio and video conferencing
<b>1.5 Employee Engagement</b>			
<b>Action</b>	<b>Action Taken</b>	<b>Outcome/Performance Measure</b>	<b>Notes Clarifying Action Taken</b>
Provided climate change education	In Progress	Number of visits to specific web page	Communicated through district website with district staff support
Provided conservation education	In Progress	Number of workshops provided and number of to specific web page	Communicated through district website with district staff support
Held contests to change behaviour/make pledges	In Progress		School-based green team challenges
Developed Green Teams	In Progress		School based green teams supported with sustainability grants
Provided green tips	In Progress		Communicated through district website and email
Supported professional development	In Progress		Direct support from sustainability committees and district staff
Non-toxic glues and adhesives used in repairs and renovations	In Progress		
Latex based paints with low or no volatile organic compounds (voc) are used	In Progress		
LEED (Leadership in Energy and Environmental Design) standard materials used wherever available and possible	In Progress		Applied for LEED Gold on a secondary school and participating in LEED EB
Energy conservation awareness campaign	In Progress	Natural gas consumption reduction in GJ and Electricity consumption reduction in kWh	District wide initiative
<b>1.6 Sustainability Actions (others)</b>			
<b>Action</b>	<b>Action Taken</b>	<b>Outcome/Performance Measure</b>	<b>Notes Clarifying Action Taken</b>
Took water conservation measures – low flow showers or toilets, fix leaks	In Progress	Reduced water consumption	
Supported composting	In Progress	Reduced waste	Individual schools have composting initiatives as part of their green programs
Purchased green cleaning products	In Progress		
Used green (low-e paints)	In Progress		
Adopted low-carbon contracting practices	In Progress		
Timed Faucets	In Progress	Reduced water consumption	
Low Flow Faucets	In Progress	Reduced water consumption	
Motion Activated Urinals	Completed	Reduced water consumption	
Time Clock on Science Lab Water Distillers	In Progress	Reduced water consumption	
Pressure Reducing Valves on Main Water Lines	Completed	Reduced water consumption	

## Part 2: Plans to Continue Reducing Greenhouse Gas Emissions 2009 -- 2011

### Overview

The maintenance department will continue its energy retrofit program to include boiler replacement and lighting upgrades. In addition, the maintenance department will continue with HVAC improvements such as controls upgrades, roof top AC upgrades, and heat recovering ventilation units. In the transportation department, an NRCAN driver training course for reducing fuel consumption will be conducted. The operations department intends to support a full recycling program next year.

The district will continue with a paper consumption awareness program and the purchasing department will expand the use of paper duplicators with low energy consumption, which are 100% recycle paper capable. The purchasing department will continue to expand its scope in relation to the purchase of environmentally friendly products and services and encourage the re-use of equipment as an alternative to purchasing new equipment

The district will expand the district-wide energy conservation awareness program introducing pilot schools into a more intensive energy conservation program. The manager of facility and the district administrator for energy and sustainability will continue to work with the Canada Green Building Council to expand the scope of the energy data collection for our district. The IT department will proceed with the virtualization of servers and installation of power management software in 5500 workstations.

The district will continue to provide school sustainability grants to support school-based environmental sustainability. The development of school-based green teams for school-based environmental initiatives will be strongly encouraged.

### 2.1 Mobile Fuel Combustion

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Provide driver training to reduce fuel use	Planned	Number of bus drivers trained	Training all bus drivers in 2009	1 year
Initiate new fleet maintenance program (could include – changing filters, checking tire pressure, regular check-ups)	In Progress		Includes all fleet vehicles	Ongoing
Establish anti-idling behaviour change program (e.g. signs, stickers, messages)	In Progress		Continuing to expand at schools with signs posted in school entrance waiting areas.	Ongoing

### 2.2 Stationary Fuel Combustion (including electricity)

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Undertaken Monitor turn-off challenge	Planned	Electrical consumption reduction in kWh	Part of district energy conservation program	6 months
Replace # computers with EnergyStar models	In Progress	Electrical consumption reduction in kWh		Ongoing
Ask staff to close blinds daily	In Progress	Natural gas consumption reduction in GJ	Retain heating or cooling in rooms	Ongoing
Encourage staff to use stairs	Planned	Electrical consumption reduction in kWh	Only applicable at our administration bldg.	Ongoing
Turn off lights in unused rooms	In Progress	Electrical consumption reduction in kWh	Part of district energy conservation program	Ongoing
Replace standard bulbs with CFLs	In Progress	Electrical consumption reduction in kWh		2 Years

Install motion activated lights	In Progress	Electrical consumption reduction in kWh		2 Years
Undertake lighting retrofit	In Progress	Electrical consumption reduction in kWh		2 Years
Implement server virtualization	In Progress	Electrical consumption reduction in kWh	Using VMWare Virtualization	6 months
Utilize desk-top power management settings on computer	In Progress	Electrical consumption reduction in kWh	Using Faronics PowerSave software for both PC and Mac	6 months
Initiate corporate computer shut-down/wake-up for maintenance	In Progress	Electrical consumption reduction in kWh	Using Faronics PowerSave software for both PC and Mac	6 months
Unplug unused equipment	In Progress	Electrical consumption reduction in kWh	Part of district energy conservation program	Ongoing
Apply for LEED existing building rating	In Progress		Applied for LEED Gold on new secondary school and working on LEED EB for existing schools	Ongoing
Undertake building energy audit at LOCATION(s)	Planned		As part of our energy program, energy audits will take place at specific sites	Ongoing
Initiate or complete a building energy retrofit	Planned	Natural gas consumption reduction in GJ	Boiler Replacement at Boyd Secondary	1 year
LED Exit Sign Replacement	In Progress	Electrical consumption reduction in kWh		2 Years
Time Clocks for lighting	In Progress	Electrical consumption reduction in kWh		2 Years

## 2.3 Supplies

Action	Action Planned	Outcome/Performance Measure	Notes Clarifying Action Taken	Timeframe
Commit to use 30% recycled paper	In Progress	Reduce use of virgin paper	Working with EDCO to reduce price differential to encourage users to order 30% paper.	Ongoing
Commit to use 100% recycled paper	Research	Need machines capable of using 100% recycled paper	Meeting with IKON International to discuss their R&D towards machines that will be capable of using 100% recycled paper	3 - 5 years
Initiate automatic double sided printing	In Progress	Reduction in paper consumption	Part of an ongoing district initiative for paper reduction	Ongoing
Change document template margins	In Progress	Reduction in paper consumption	Part of an ongoing district initiative for paper reduction	Ongoing
Commit to hold paperless meetings	In Progress	Reduction in paper consumption	Initiated at district level meetings and continues	Ongoing
Develop document library (online and one printed copy) for large documents	In Progress	Reduction in paper consumption	Encourage use of PDF and virtual fax instead of paper by all users in the district	Ongoing
Use collaborative software to edit on-line	In Progress	Number of students in distributed learning	District developed Distributed Learning program which provides virtual classrooms. Students use collaborative software to work on group projects.	Ongoing
Re-use non-confidential scrap paper	In Progress	Reduction in paper consumption	Part of an ongoing district initiative for paper reduction	Ongoing
Use laptops/tablets	In Progress	Electrical consumption reduction in kWh		Ongoing
Restructure a process to use less paper	In Progress	Reduction in paper consumption	Meeting minutes/agendas are now done electronically at district office meetings	Ongoing
Purchase cradle to cradle goods	In Progress			Ongoing
Choose "Green" items from Distribution Centre	In Progress			Ongoing
Encourage re-use of furniture and equipment	In Progress			Ongoing
Dispensing of green cleaners to be standardized and packaging reduced	Planned	Amount of containers saved		6 months
Reducing the use of waxes on floors	In Progress	Reduce product and man hours	Replacing wax finishes with floor restorer	Ongoing
Replacing gym floors with material that uses no floor finish	In Progress	Reduce product and man hours		Ongoing
Carpet removal program undertaken utilizing resilient flooring made of natural fibres	In Progress			Ongoing

<b>2.4 Travel</b>				
<b>Action</b>	<b>Action Planned</b>	<b>Outcome/Performance Measure</b>	<b>Notes Clarifying Action Taken</b>	<b>Timeframe</b>
Install Video Conferencing facilities	In Progress	Number of users using iChat	Where possible, Macintosh users use iChat for audio and video conferencing	Ongoing
<b>2.5 Employee Engagement</b>				
<b>Action</b>	<b>Action Planned</b>	<b>Outcome/Performance Measure</b>	<b>Notes Clarifying Action Taken</b>	<b>Timeframe</b>
Provide climate change education	In Progress	Number of initiatives offered in a year	Communicated through district website with district staff support	Ongoing
Provide conservation education	In Progress	Number of teachers engaged	Communicated through district website with district staff support	Ongoing
Hold contests to change behaviour/make pledge	In Progress		School-based green team challenges	Ongoing
Develop Green Teams	In Progress	Number of green teams formed in a school year	School based green teams supported with sustainability grants	Ongoing
Provide green tips	In Progress		Communicated through district website and email	Ongoing
Support professional development	In Progress	Number of teachers engaged	Direct support from sustainability committees and district staff	Ongoing
Non-toxic glues and adhesives used in repairs and renovations	In Progress			Ongoing
Latex based paints with low or no volatile organic compounds (voc) are used	In Progress			Ongoing
LEED (Leadership in Energy and Environmental Design) standard materials used wherever available and possible	In Progress			Ongoing
Carpet removal program undertaken utilizing resilient flooring made of natural fibres	In Progress			Ongoing
Energy conservation awareness campaign	In Progress	Natural gas consumption reduction in GJ and Electricity consumption reduction in kWh	District wide initiative	Ongoing
<b>2.6 Sustainability Actions (others)</b>				
<b>Action</b>	<b>Action Planned</b>	<b>Outcome/Performance Measure</b>	<b>Notes Clarifying Action Taken</b>	<b>Timeframe</b>
Take water conservation measures – low flow showers or toilets, fix leaks	In Progress	Reduced water consumption		5 years
Improve recycling measures	Planned	Reduction of total waste at facilities		2 years
Purchase green cleaning products	In Progress			Ongoing
Use green (low-e paints)	In Progress			Ongoing
Adopt low-carbon contracting practices	In Progress			Ongoing
Timed Faucets	In Progress	Reduced water consumption		5 years
Low Flow Faucets	In Progress	Reduced water consumption		5 years
Time Clock on Science Lab Water Distillers	In Progress	Reduced water consumption		2 years
Re-issuing custodial equipment instead of new purchases 1.3 / 2.3	In Progress			Ongoing
100% degradable garbage used throughout district 1.3 / 2.3	In Progress			Ongoing
100% recycled toilet paper and paper towel used throughout the district 1.3 / 2.3	In Progress			Ongoing
High efficiency boilers utilized in upgrade projects 1.2/2.2	In Progress	Natural gas consumption reduction in GJ		Ongoing
Programmable thermostats upgrades 1.2/2.2	In Progress			Ongoing
Roof top air conditioning (ac) units upgraded complete with free air cooling 1.2/2.2	In Progress	Electrical consumption reduction in kWh		Ongoing

Heat recovery ventilation units installed in classrooms 1.2/2.2	In Progress	Natural gas consumption reduction in GJ	Ongoing
Direct digital control (ddc) systems installed to regulate/schedule heating, cooling and lighting through the use of occupancy sensors and programming 1.2/2.2	In Progress	Natural gas consumption reduction in GJ and Electricity consumption reduction in kWh	Ongoing
Interior lighting tied into lighting schedule utilizing the direct digital control (ddc) system 1.2/2.2	In Progress	Electrical consumption reduction in kWh	Ongoing
Environmentally friendly refrigerants used for air conditioning systems 1.6/2.6	In Progress		On-going
LEED (Leadership in Energy and Environmental Design) standard materials used wherever available and possible 1.6/2.6	In Progress		On-going
District paper and cardboard recycling 1.6	Complete		
District container recycling 2.6	Planned	Over the next year we will expand from paper/cardboard recycling to full container recycling	1 Year
Purchase of Paper Duplicators with low energy consumption and 100% recycle paper capable	Planned	Electrical consumption reduction in kWh and increased use of 100% recycled paper	