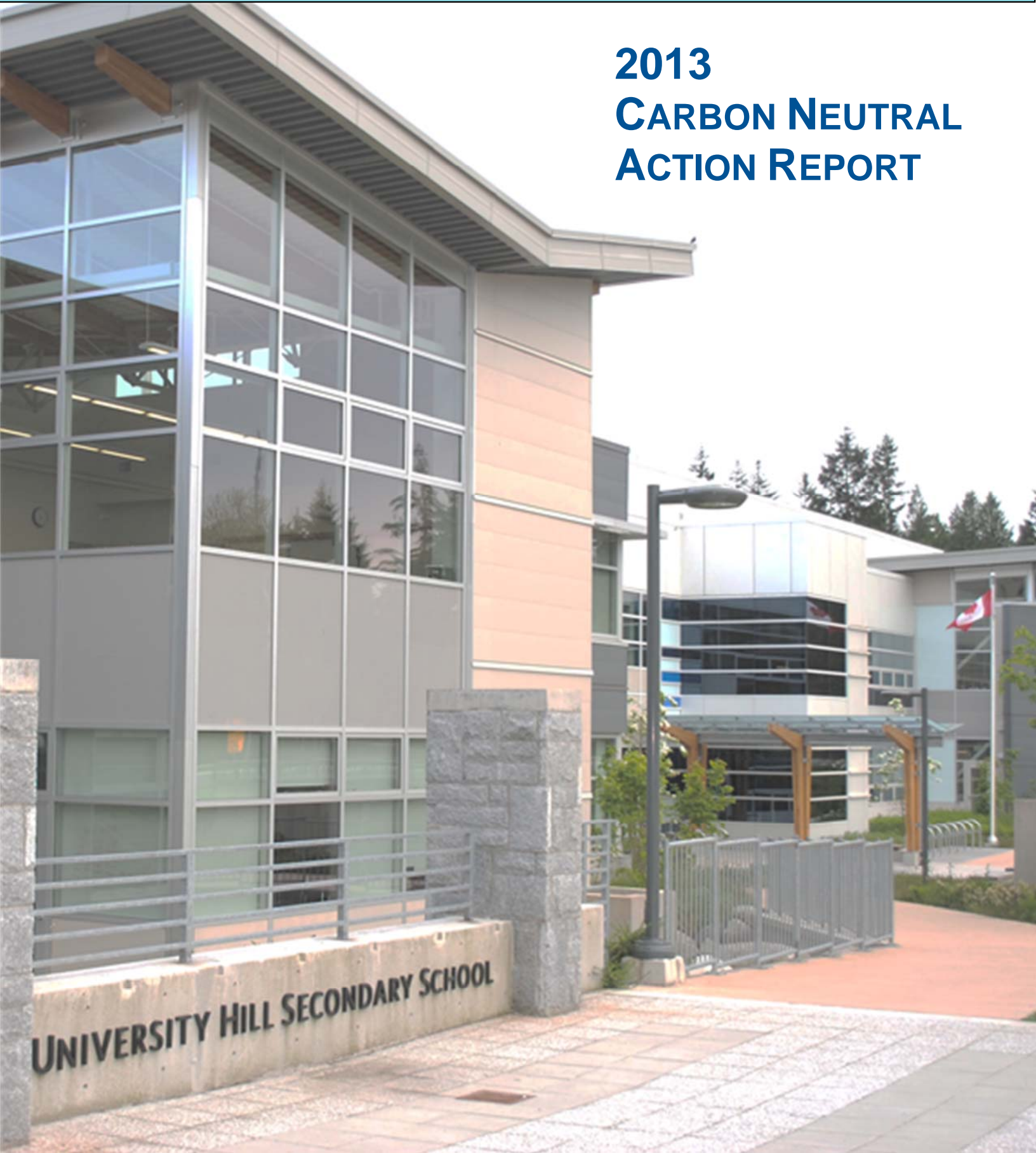


**2013
CARBON NEUTRAL
ACTION REPORT**



UNIVERSITY HILL SECONDARY SCHOOL

Executive Summary

The Vancouver Board of Education (SD#39) has a long standing commitment to sustainability. Students, teachers, and staff have initiated actions that address energy conservation, carbon emissions, food and natural systems, transportation and active commuting.

A key element of the District's sustainability actions are efforts to reduce energy consumption and greenhouse gas (GHG) emissions that cause climate change.

In 2013 a number of projects were implemented including retrofitting old lighting systems at one secondary and six elementary schools and the replacement of three boiler plants. These projects will produce utility cost savings for years to come.

Climate change has links beyond our facility energy use and direct carbon footprint. It is affected by what we purchase, how we manage our waste, how we travel to and from school and our connections to the air, earth, and water of our local - and global - ecosystems. Students, staff, and teachers are taking action at their school and home level. New gardens have been created, fruit trees planted, composters implemented, walking and cycling routes to schools developed.

Education is our core function and we've seen students and teachers connect sustainability to their learning experiences. Throughout the District at dozens of schools - our community learned, thought, and acted on sustainability - from waste reduction, to ecosystems, to food gardens, to energy conservation. Students organized a Sustainability Conference in January to learn from leading thinkers in global sustainability, and the Windermere leadership program organized a Climate Change Conference (C3) - focused on mobilizing students for community action.

As part of the Provincial mandate for BC's public sector to be carbon neutral, the District tracks and offsets its greenhouse gas (GHG) emissions. For the 2013 calendar year, our offset-requiring emissions were 17,339 tonnes of CO₂. As required, we purchased certified carbon credits to offset these emissions.

Our efforts will continue in 2014. Recently announced funding (April 2013) for seismic upgrading will mean that over 40 of our schools will be upgraded over the next decade and many of these will present opportunities for improved energy performance.

In 2014 we are initiating a multi-year optimization initiative to review a number of our existing schools. Other projects identified include more classroom lighting retrofits, and a review of the opportunities to upgrade our exterior lighting systems with new LED technologies.

Our trustees have set a vision for our school district to be the "greenest, most sustainable school district in North America". Our action on carbon neutrality is one part of achieving this vision - and we are on our way!



Handwritten signature of Steve Cardwell

Steve Cardwell, EdD
Superintendent/CEO

1 Introduction

For many years the Vancouver Board of Education has implemented energy conservation activities and retrofits. These have reduced our utility bills, decreased our carbon footprint, and improved our operating practices. Teachers and students have led the way in their classrooms to incorporate sustainability into numerous components of our schools.

Provincial Policy

In 2007 the Province enacted the Greenhouse Gas Reduction Targets Act (GGRTA) also known as Bill 44 (2007). The GGRTA requires, among other things, that public sector organizations (PSOs) are required to be carbon neutral beginning in 2010, and for each year thereafter. The VBE is subject to this requirement.

Being carbon neutral requires that an organization:

- Take action to reduce its GHG emissions
- Measure and report it's carbon emissions (or carbon 'footprint') :
- Purchase carbon offsets for any remaining emissions in order to effectively 'neutralize' the environmental impact of these emissions.

The Province has defined criteria for reporting and has developed an internet-based system for tracking and reporting emissions.

VBE Policy and Action on Sustainability

In 2010, the VBE endorsed a "Sustainability Framework" which provides a set of key principles for District action, as well as identifying six 'key result areas' as themes for action. These key areas include resource conservation, reducing our carbon footprint, and connecting our sustainability efforts to education.

The VBE has been active in energy management for more than a decade. Reduction activities over this time have cumulatively resulted in energy savings of over \$500,000 annually.



2 Greenhouse Gas Emissions

The VBE uses the Provincial greenhouse gas emissions reporting system - 'SMARTTool' to track and report its emissions. This is required by the *Greenhouse Gas Reduction Targets Act (GGRTA, 2007)* for all public sector entities in BC.

Emissions Sources

Reportable sources of GHG emissions within the VBE are:

- Natural gas consumed to run heating and hot water systems
- Electricity consumption within facilities
- Vehicle fuel consumption of the VBE owned vehicles fleet
- Paper consumption ⁽¹⁾

2013 Emissions and Offsets

For the 2013 calendar year, our offset-requiring emissions were 17,340 tonnes of CO₂. As required, we purchased certified carbon credits to offset these emissions through the Pacific Carbon Trust - now part of the Ministry of Environment.

Greenhouse Gas Emissions and Offset Requirements for 2013 (tonnes of CO₂e)

Total GHG emissions in 2013	17,329
...minus biofuel component emissions	- 21
= Total 2013 Emissions for offset	17,307
...plus adjustments to previous year reporting	+ 33
Total Offset purchase for the 2013 Reporting Year:	17,339

Notes:

- (1) Greenhouse Gas (GHG) emissions are measured in tonnes of CO₂ equivalent (CO₂e)
- (2) Total GHG emissions includes the emissions from the biofuel component of vehicle fuels - which do not require the purchase of offsets.
- (3) There are commonly adjustments and correction to utility bill statements that occur following the offset calculations for each calendar year. These are reported as adjustments in the following year.
- (4) Values do not sum precisely due to rounding.

¹ Specific paper consumption and the reporting methodology is defined within the Greenhouse Gas Reduction Targets Act (GGRTA) also referred to as Bill 44- 2007.

3 Emissions Reduction Activities 2013

Actions Taken to Reduce Reportable Greenhouse Gas Emissions in 2013

A number of actions were taken in 2013 to reduce energy use, and GHG emissions including:

- Lighting system upgrades at one secondary and six elementary schools reducing electricity consumption by over 400,000 kWh.
- Lighting audits of 10 facilities to identify future retrofit opportunities.
- Re-joining the BC Hydro Energy Manager Program, and hiring a new Energy Manager.
- Initiating a Continuous Optimization (C.Op) program with support from BC Hydro. This will be a three to five year initiative to tune-up a number of buildings.
- Replacing several hot water heater and storage tank systems with on-demand (also called instantaneous) water heating systems.
- Implementing an aggressive air-leakage sealing pilot project at Thunderbird Elementary.
- Installing new high efficiency boiler plants at three schools.
- Acquiring three electric vehicles for the maintenance fleet to reduce personal vehicle use.
- Continuing to “crew up” vehicles - thereby reducing the use of personal vehicles for work purposes and combining into one vehicle.
- Beginning the “Green Fleet Certification’ process to improve the efficiency and performance of the VBE fleet.
- Reforming an internal Energy Management committee.
- Opening new schools opened in 2013 (University Hill Secondary, Douglas Elementary and Sexsmith Elementary). These facilities incorporate modern technologies and control systems to minimize energy consumption.



New classroom lighting improves the learning environment and saves on electricity costs.



A modern heating plant at Fraser Elementary has improved comfort and will reduce energy costs and greenhouse gas emissions.

The District has taken several steps to reduce emissions related to paper consumption including:

- A VBE Print Goal Strategy and Guidelines was implemented to establish an environmentally sustainable approach to printing.
- The VBE used 5% less paper than in the previous year and the purchase of 100% recycled paper increased 55% from 2012. Result increased the share of total paper purchases that are 100% recycled by 0.5%.
- Print device fleet reduction (electricity, supplies, delivery of supplies). Now utilizing multi-function devices.
- Deliveries of paper to sites have been reduced to 2 times weekly (consolidate and scheduled instead of daily).



The new Douglas Elementary school features innovative design aligned with "21st century learning" principles

Benefits

For the actions implemented in 2013, we anticipate benefits of:

- Reduced or avoided electricity use of over 500,000 kWh
- Reduction of natural gas usage by 500 GJ
- Reduction of CO₂e emissions of 30 tonnes per year
- Utility bill avoided costs of \$60,000 annually
- Improved building comfort
- Improved lighting within affected classrooms
- Improved seismic restraint of lighting fixtures within the District.

Actions Taken to Reduce Out-of-Scope GHG Emissions in 2013

The VBE has participated in a number of activities that reduce GHG emissions in the community that are not specifically “in scope” for our carbon neutral required reporting. These include:

- Installation of electric vehicle charging stations at University Hill Secondary, King George Secondary, and the Education Centre. These were assisted by grants from the Province and the City of Vancouver.
- All new schools will be developed to include electric vehicle charging capabilities.
- Expansion of a car sharing pilot program at the Education Centre to include a second vehicle (provided by Modo - the car share provider).



With partner grant funding, electric vehicle charging stations were installed at two schools.

Actions Taken to Enhance Overall Sustainability in 2013

The VBE has taken actions that improve the overall sustainability of our District and community. These include

- Students at Windermere Secondary organized and ran the third annual C3 Conference (Climate Change Conference) in November. This conference is open to all VBE and external secondary students and focuses on issues, actions and solutions to climate change issues.
- Students organized a district-wide Sustainability Conference to learn from leading sustainability thinkers in BC.
- A District Sustainability Advisory Committee consisting of teachers, students, parents, administrators, District staff was formed.
- Implementation of a sustainability grant to 15 secondary schools.
- Cost share funding for water bottle filling stations at secondary schools with students continuing to work to ban the sale of bottled water.



Modo has located two car-sharing vehicles at our head office - benefiting the public and staff that are members.

- A Market Garden Pilot has been established with Fresh Roots Urban Farm to grow food on school property at Vancouver Technical and David Thompson Secondary Schools.
- The VBE Food Garden Policy has been implemented with over 65 schools participating in the development of food gardens.
- Schools participated in BC Hydro education programs inspiring students to create a culture of conservation.
- Sustainability efforts are implemented at the school level by student directed Green Teams.
- Centralized Irrigation Computer System (CICS) installed in 25 sports fields to reduce water consumption.
- Fruit trees have been planted at over 30 school sites in partnership with the Vancouver Parks Board.
- Through the Learning Lab project the VBE looked at ways to increase the amount of local food that the VBE purchases.
- To encourage cycling to school for staff and students, bike racks have been installed at each site, and where possible, indoor bike storage and showers have been provided.



A working garden provides educational opportunities for students to understand food systems.

4 Future Activities

In 2014 a number of activities are underway to continue to reduce our energy use, carbon emissions, and overall sustainability.

Actions Planned to Reduce Reportable Greenhouse Gas Emissions in 2014

Action planned or proposed for 2014 include:

- Replacement of old lighting systems at several schools.
- Conducting lighting audits to evaluate opportunities for LED exterior lighting projects.
- Initiating Phase 1 (of three phases) of our participation in the BC Hydro Continuous Optimization program.
- Upgrades to DDC control and communications systems.
- Continued effort with new facility design to ensure low carbon, low cost, and low energy facilities become the standard for the VBE.
- Commissioning of the new Norma Rose Point School to ensure efficient operation from the outset.
- Participating in the FortisBC EnerTracker program by installing web-based energy management information software to help pinpoint inefficiencies and reduce natural gas consumption in the District.
- Building operators will be participating in “Spot the Energy Savings Workshop”, This provides ongoing training for building operators on school specific systems to increase energy performance.
- Continue with the “Green Fleet Certification” process to improve the efficiency and performance of the VBE fleet.
- Replacement of several hot water heater and storage tank systems with on-demand (also called instantaneous) water heating systems.

Actions Planned to Reduce Out-of-Scope GHG Emissions in 2014

A number of activities help reduce carbon emissions in our community that are not considered “in-scope” for our carbon neutral reporting requirements. These include:

- Addition of electric vehicle charging stations at all new schools - including Norma Rose Point in 2014.



Modern cycle storage facilities encourage active transportation

- Roll out of a new organics diversion initiative to meet the Regional organics ban from landfill.

Actions Planned to Enhance Overall Sustainability in 2014

Our trustees have set a vision for our school district to be the “greenest, most sustainable school district in North America”. Our action on carbon neutrality is one part of achieving this vision. A number of activities are underway to enhance our overall sustainability including:

- Initiation of a ‘sustainability audit’ to assess and understand our performance
- Development of a Sustainability Action Plan
- Continued implementation of the District’s urban garden program in partnership with many outside organizations including: developing a Food Action Plan aligned with City of Vancouver’s (CoV) new Food Strategy; developing a legacy for the five year research initiative “Think&Green@School”; completion of a Fruit Tree Partnership with the Vancouver Parks Board, and “Farm2school” which provides access to local produce for more than a thousand students at 4 schools.
- Working on a water conservation strategy to reduce water consumption across the District.
- Continue to build all new construction or major renovation to LEED Gold standards or equivalent standards.
- Continue to support student led sustainability initiatives to encourage focus on issues, actions and solutions to climate change issues and learn from sustainability leaders.

5 Closing

The VBE maintains its commitment to promoting sustainability within the District and our community.

We are working to reduce energy use and our GHG emissions. We continue to build on past efforts and work to incorporate sustainability into all aspects of our operations.



2013 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

Created Tuesday, February 04, 2014

Updated Friday, April 25, 2014

<https://fluidsurveys.com/surveys/cas-z/2013-cnar-form-bps-actions/c9b3c6075aa06ecc2b433a609a028e05/>

Page 1

Please complete the following sections of the 2013 Carbon Neutral Action Report form. Save your work frequently to prevent it from being lost. You can also save a copy for your own use as either a WORD or PDF file using the buttons at the bottom of each page.

This is Part 2 of the Carbon Neutral Action Report form. This section reports on actions taken to reduce emissions during the 2013 calendar year. This information will be included in your final Carbon Neutral Action Report posted on the Ministry of Environment website.

When the form is complete press the submit button on the last page to automatically submit the information to the Climate Action Secretariat (CAS). Do not press submit before you are ready – this may result in a loss of work.

In addition to completing this survey (Part 1 2), you are required to submit your completed Overview (Executive Summary) and Self-Certification Checklist. The 2013 Overview template was included in the email sent and can also be found on the LiveSmart leaders Community.

Please ensure you meet the following reporting deadlines:

A DRAFT 2013 CNAR is due to CAS by March 31, 2014. The draft is comprised of the Overview ONLY (no executive sign-off required).

The FINAL 2013 CNAR is due to CAS by May 30, 2014. The final 2013 CNAR includes Part 1 Part 2 survey form and Overview.

The Self-Certification Checklist is due to CAS by May 15, 2014.

For more information about the Carbon Neutral Government process, please refer to *Becoming Carbon Neutral 2013*, or should you have any questions please contact climateactionsecretariat@gov.bc.ca.

Organization Name

Vancouver Board of Education (SD39)

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings):

Indicate which actions were taken in 2013:

Performed energy retrofits on existing buildings

Yes

Built or are building new LEED Gold or other "Green" buildings.

Yes

Undertook an evaluation of overall building energy use.

Yes

Please list any other actions taken to reduce emissions from Buildings:

- ongoing energy management training of building operators*
- student educational programs*
- creation of Strategic Energy Plan*

2) Mobile Fleet Combustion (Fleet and other vehicles):

Indicate which actions were taken in 2013:

Do you have a fleet?

Yes

Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)

No

Replaced existing vehicles with hybrid or electric vehicles

Yes

Reduced the overall number of fleet vehicles

No

Took steps to drive less than last year

Yes

Please list any other actions taken to reduce emission from fleet:

- continuing to "crew up" vehicles - thereby reducing the use of single occupant vehicle trips.

3) Supplies (Paper):

Indicate which actions were taken in 2013:

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes

Used alternate source paper (Bamboo, hemp, etc.)

No

Please list any other actions taken to reduce emissions from paper use:

- Feb 2013 Print Goal Strategy and Guidelines was sent to all Administrators and schools endorsed by Senior Mgmt.

- Use of 100% recycled paper: purchases increased 55% from 2012, result increased the share of total paper purchases that are 100%

recycled by 0.5%.

- Print device fleet reduction (electricity, supplies, delivery of supplies). Utilizing multi-function devices.*
- Deliveries of paper to sites have been reduced to 2 times weekly (consolidate and scheduled instead of daily)*

Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2014 and future years:

- *Spot the Energy Workshops and other energy mgmt training for building operators*
- *DDC Tune Ups*
- *WAN - DDC of additional schools*
- *Lighting system upgrades scheduled for 10 facilities*
- *Three schools participating in the BC Hydro Continuous Optimization program*
- *Replacing several hot water heater and storage tank systems with on-demand (also called instantaneous) water heating systems.*
- *continue to increase the recycled content of paper used in the district.*

If you wish to list any other "sustainability actions" outside of buildings, fleet, paper and travel check "yes". This reporting is optional.

Yes

Actions to Promote Sustainability and Conservation - Optional

The following are actions that fall outside the scope of the *Carbon Neutral Government Regulation*, but which many organizations still undertake and may wish to report on. This section is optional for reporting.

Business Travel

Created a low-carbon travel policy or travel reduction goal (Low-carbon: Lowest emission of greenhouse gases per kilometre per passenger)

No

Virtual Meeting Technology

Installed web-conferencing software (e.g., Live Meeting, Elluminate, etc.)

Yes

Made desktop web-cameras available to staff

No

Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)

Yes

Encourage carpooling to meetings

Yes

Education and Awareness

Have created Green, Sustainability, Energy Conservation, or Climate Action Teams.

Yes

Provided resources and/or dedicated staff to support these teams

Yes

Provided behaviour change education/training for these teams (e.g., community-based social marketing)

Yes

Established a sustainability/green awards or recognition program

No

Support green professional development (e.g., workshops, conferences, training)

Yes

Planning for Climate Change

Have assessed whether extreme weather events and/or long term changes in climate will affect our organization's business areas

No

Long term changes in climate have been incorporated into our organization's decision making.

No

Actions to Promote Sustainability and Conservation - Optional (continued)

Staff Awareness and Education

Provided education to staff about the science of climate change

No

Provided education to staff about the conservation of water, energy, and raw materials

Yes

Provided green tips on staff website or in newsletters

Yes

Alternate Work/Commuting Options

Allow for telework/working from home

No

Staff have the option of a compressed work week

No

Commuting by foot, bicycle, carpool or public transit is encouraged

Yes

Shower or locker facilities are provided for staff/students who commute by foot or by bicycle

Yes

Secure bicycle storage is provided

Yes

Other Sustainability Actions

Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models

No

Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features

No

Have put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities

Yes

Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)

Yes

Have incorporated minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)

No

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)

No

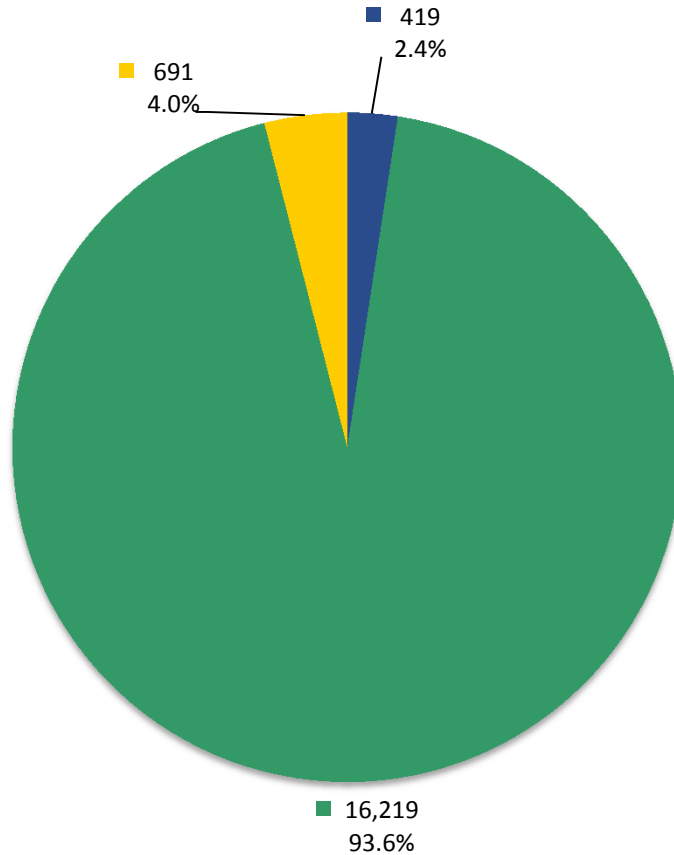
Incorporated lifecycle costing into new construction or renovations

No

Please list and other sustainability actions you wish to report not included in the previous list.

- Partnership agreement with two Urban Farmers to grow food on VSB school land.
- VSB Food Garden Policy has been implemented. Over 65 schools participating in the development of food gardens.
- 118 Fruit Trees have been planted at over 30 school sites in Partnership with the Vancouver Parks Board
- Farm2school – through the Learning Lab project we are looking at ways to increase the amount of local food that the VSB purchases.
- Think&Green@School – 5 year research project with UBC that supports schools in designing, planning and caring for school gardens. Makes curriculum connections with teachers
- Food Action Plan: develop a plan to address all aspects of school food systems.

**School District 39 - Vancouver
Greenhouse Gas Emissions by Source
for the 2013 Calendar Year (tCO₂e*)**



Total Emissions: 17,329

- 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 2013 (Generated May 21, 2014 3:39 PM)

Total offsets required: **17,307**. Total offset investment: **\$432,675**. Emissions which do not require offsets: **21** **

*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.