

2014

CARBON NEUTRAL ACTION REPORT

Executive Summary

The Vancouver Board of Education (VBE) - 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.

Education is our core function and our students and teachers connect sustainability to their learning experiences daily. Throughout the District, at dozens of schools, our community acts on sustainability - ranging from waste reduction, to ecosystems, to food gardens, to energy conservation. The District has taken substantial action to reduce energy consumption and associated greenhouse gas (GHG) emissions that cause climate change.

In 2014 a number of projects were implemented including retrofitting old lighting systems at several existing school sites, and completing construction of a new school that included a number of energy efficient features - thereby using less energy than a base-model school. These projects will produce utility cost savings for years to come.

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 2014 calendar year, our

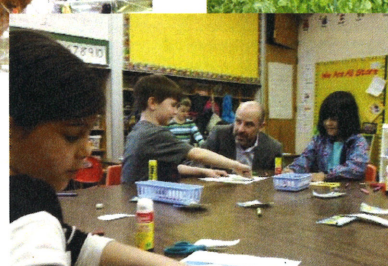
offset-requiring emissions were 15,620 tonnes of CO₂. As required by Provincial legislation, we purchased certified carbon credits to offset these emissions.

Our efforts will continue in 2015. We are initiating a multi-year building optimization initiative to review a number of our existing schools. Other projects include more classroom lighting retrofits, a review of the opportunities to upgrade our exterior lighting systems with new LED technologies, and an expansion of our heating control systems.

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!



Scott Robinson
Superintendent of Schools / CEO
Vancouver Board of Education



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. As well, 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) 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 its 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 provide a set of key principles for District action, and identify 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 \$700,000 annually. Many projects have been implemented through incentive programs of the utility companies - BC Hydro and Fortis Gas.



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 fleet vehicles
- Paper consumption ⁽¹⁾

2014 Emissions and Offsets

For the 2014 calendar year, our offset-requiring emissions were 15,608 tonnes of CO₂. As required, we purchase certified carbon credits to offset these emissions through the Ministry of Environment. Carbon offsets are currently priced at \$25 per tonne of CO₂, so this is a cost of \$390,500 (+ GST).

The VBE's GHG emissions were lower in 2014 than in previous years. This reflects lower building heating requirements due to the unseasonably warm winter heating season.

Greenhouse Gas Emissions and Offset Requirements for 2014 (tonnes of CO₂e)

Total GHG emissions in 2014	15,613
...minus biofuel component emissions	20
= Total 2014 Emissions for offset	15,593
...plus adjustments to previous year reporting	27
Total Offset purchase for the 2014 Reporting Year:	15,620

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 may 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 2014

A number of actions were taken in 2014 to reduce energy use, and GHG emissions including:

- Upgrading lighting systems at one secondary and portions of eight elementary schools, thereby reducing electricity consumption by over 505,000 kWh.
- Replacing several hot water heater and storage tank systems with on-demand (also called instantaneous) water heating systems.
- Installing energy efficient appliances in kitchen upgrades. Energy conservation is part of the purchase decision.
- Auditing nine facilities to identify future lighting retrofit opportunities.
- Opening a new school in 2014 (Norma Rose Point). This facility incorporated modern technologies and control systems to minimize energy consumption. The energy efficiency measures installed equate to over 160,000 kWh/yr of savings.



Norma Rose Point School includes energy efficient systems to reduce carbon emissions and improve the learning environment.

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

- Initiating a Print Reduction Strategy to reduce printing costs.
- Limiting the purchase from contracted suppliers of paper is to 30%, 50% or 100% recycled content reducing the availability of virgin paper.
- Reducing deliveries of paper to sites is to on two times weekly to reduce transport costs and emissions.

Benefits

For the actions implemented in 2014, we anticipate benefits of:

- Reduced or avoided electricity use of over 505,000 kWh.
- Utility bill avoided costs of over \$50,000 annually.
- Improved building comfort.
- Improved lighting within affected classrooms.
- Improved seismic restraint of lighting fixtures within the District.
- The VBE used 12% less paper in 2014 than in 2013 and the purchase of 100% recycled paper increased by 10% from 2013. Overall, 98% of total paper purchases have some recycled content.

Actions to Reduce Out-of-Scope (non-VBE) GHG Emissions in 2014

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 Norma Rose Point - benefiting staff and visitors.
- Plans for new schools will be developed to include electric vehicle charging capabilities.

Actions to Enhance Overall Sustainability in 2014

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

- Completing a ‘sustainability audit’ to assess and understand our performance.
- Students at Windermere Secondary organized and ran the fourth annual C3 Conference (Climate Change Conference) in November. This conference 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.
- Roll out of a new organics diversion initiative to meet the Regional organics ban from landfill.
- Cost share funding for water bottle filling stations at secondary schools.
- Implementation of a sustainability grant to 15 secondary schools which challenged students to come up with innovative projects that advance sustainability in their schools and wider communities.
- The VBE Food Garden Policy has been implemented with over 65 schools participating in the development of food gardens.
- Fruit trees have been planted at over 30 school sites in partnership with the Vancouver Parks Board and school parent advisory committees (PACs).
- 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.



Students created a District-wide sustainability conference in April 2014 that attracted more than 200 attendees.

4 Future Activities

In 2015 and beyond, a number of activities are underway to continue to reduce our energy use and carbon emissions, and to improve the overall sustainability of our District.

Actions to Reduce Reportable Greenhouse Gas Emissions in 2015

Action planned or proposed for 2015 include:

- Replacement of old lighting systems at several schools.
- Conducting lighting audits to evaluate opportunities for LED exterior lighting projects.
- Initiating our participation in the BC Hydro Continuous Optimization program.
- Upgrades to heating 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.

Actions to Reduce Out-of-Scope GHG Emissions in 2015 and onward

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 new school sites.
- Promotion of active transportation initiatives like 'Bike to School' week.
- Working with the City of Vancouver through its Active Travel Planning initiative to increase awareness and understanding of active travel opportunities for students.



Actions to Enhance Overall Sustainability in 2015

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. These efforts will continue in 2015. Specific actions include:

- Development of a Sustainability Action Plan in 2015.
- Working to understand our water consumption levels and conservation opportunities. This could develop into a broader water conservation strategy.
- 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.



Superintendent Scott Robinson meets students engaging in an Iron Chef exhibition at L'Ecole Bilingue elementary.

2014 Carbon Neutral Action Report (CNAR)

- Part 2 ACTIONS

Organization Name

Vancouver School Board (SD#39)

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings):Indicate which actions were taken in 2014:

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:

(No response)

2) Mobile Fleet Combustion (Fleet and other vehicles):Indicate which actions were taken in 2014:

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:

(No response)

3) Supplies (Paper):Indicate which actions were taken in 2014:

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:

(No response)

Page 3

Actions Taken to Reduce Emissions - continued

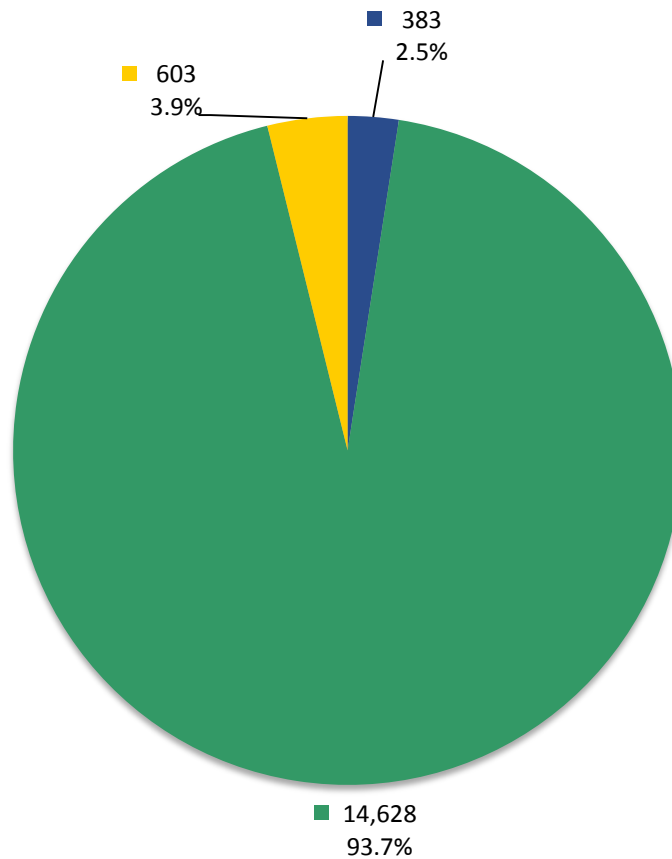
Explain how you plan to continue minimizing emissions in 2015 and future years:

- Continued efforts to change lighting to reduce electricity use.
- C. Opt. initiative with BC Hydro
- DDC controls and systems upgrades.

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

No

**School District 39 - Vancouver
Greenhouse Gas Emissions by Source
for the 2014 Calendar Year (tCO₂e*)**



Total Emissions: 15,613

- 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 2014 (Generated June 23, 2015 1:14 PM)

Total offsets required: **15,593**. Total offset investment: **\$389,825**. Emissions which do not require offsets: **20** **

*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.