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## 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 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 2017 a number of projects were implemented including retrofitting old lighting systems at several existing school sites and replacing old heating plants with modern efficient equipment. These projects improve the comfort and learning environment and will save on utility costs 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 2017 calendar year, our offset-requiring emissions were 17,187

tonnes of CO<sub>2</sub>e. As required by Provincial legislation, the District purchases certified carbon credits to offset these emissions.

Our efforts will continue in 2018. We are initiating 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 District has set a vision for our school district to be the "greenest, most sustainable school district in North America". In 2018 we are launching an Environmental Sustainability Plan which supports sustainability education, resource conservation, and climate action.

As the Superintendent of Schools, I am pleased with the District's progress and am appreciative of the diligent work on the part of VSBE staff and students.



Suzanne Hoffman  
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 our schools.

## Provincial Policy

In 2007 the Province enacted the *Greenhouse Gas Reduction Targets Act* (GGRTA 2007) 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 it's carbon emissions (or carbon 'footprint'), and
- 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 approved a "Sustainability Framework" which provides a set of key principles for District action, and identifies themes for action. These 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 15 years. Reduction activities over the past decade result in energy savings of over \$800,000 annually. Many projects have received incentive grants from our energy utility providers.



## 2 Greenhouse Gas Emissions

The VBE uses the Provincial greenhouse gas emissions reporting system 'SMARTTool' to track and report its emissions as required by legislation (the BC 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 <sup>(1)</sup>

### 2017 Emissions and Offsets

For the 2017 calendar year, our offset-requiring emissions were 17,187 tonnes of CO<sub>2</sub>. 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 CO<sub>2</sub>, so including adjustments from the previous year, this is a cost of \$429,400 (+ GST).

#### Greenhouse Gas Emissions and Offset Requirements for 2017

Item [Notes 1, 2]	GHG emissions (tonnes of CO <sub>2</sub> e)
Total Emissions of carbon (all types) (tCO <sub>2</sub> e) [Note 3]	17,211
Total Emissions requiring offset purchase (tCO <sub>2</sub> e) [Note 3]	17,187
...plus adjustments to previous year reporting [Note 4]	-11
<b>Grand Total Offset purchase for the 2017 Reporting Year:</b>	<b>17,176</b>

Notes:

- (1) Greenhouse Gas (GHG) emissions are measured in tonnes of CO<sub>2</sub> 'equivalent' (t CO<sub>2</sub>e).
- (2) The table presentation format is as per Provincial reporting requirements.
- (3) Total GHG emissions includes the emissions from the biofuel component of vehicle fuels - which do not require the purchase of offsets. Offsets are only purchased for the fossil fuel component of emissions.
- (4) There may be 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.

### Declaration Statement:

This Carbon Neutral Action Report for the period January 1<sup>st</sup>, 2017 to December 31<sup>st</sup>, 2017 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2017 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2018 and beyond.

By June 30, 2018 the VBE's final Carbon Neutral Action Report will be posted on our website at [www.vsb.bc.ca](http://www.vsb.bc.ca).

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<sup>1</sup> Specific paper consumption and the reporting methodology is defined within the Greenhouse Gas Reduction Targets Act (GGRTA).

### 3 Emissions Reduction Activities 2017

#### Actions to Reduce Reportable Emissions in 2017

A number of actions were taken in 2017 to reduce energy use, and GHG emissions including:

- Upgrading lighting systems at 13 school sites.
- Auditing 11 facilities to identify future lighting retrofit opportunities.
- Implementing a heating plant upgrade at McBride Elementary and installing a high efficiency boiler in the Strathcona Elementary seismic project.
- Upgrading computer controls hardware at 14 sites to more proactively manage operations, maintenance and energy consumption.
- Opening three new schools – two through the seismic risk mitigation process. These facilities incorporated modern technologies and control systems to minimize energy consumption.

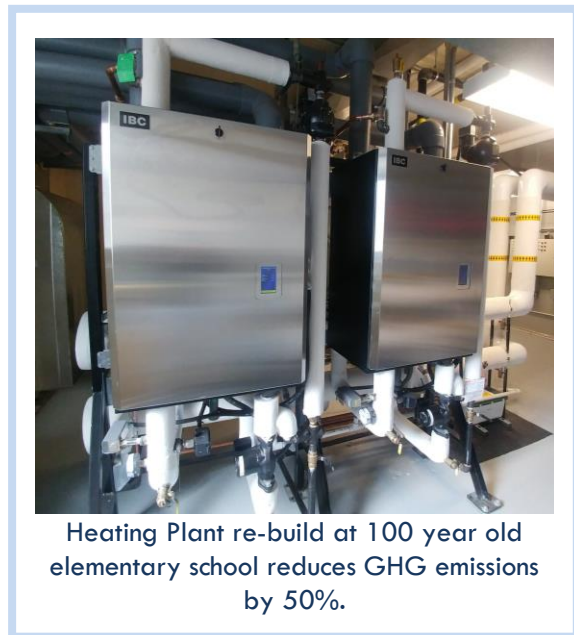


The District has taken several steps to reduce emissions related to paper consumption including:

- Continuing to roll out a Print Reduction Strategy to all VBE locations to reduce printing costs.
- Limiting the purchase from contracted suppliers of paper to 30%, 50% or 100% recycled content reducing the availability of virgin paper.
- Reduced deliveries of paper to sites to two times weekly to reduce transport costs and emissions.

For the actions implemented in 2017, we anticipate benefits of:

- Electricity savings through retrofits of 430,000 kWh annually.
- Avoided electricity consumption at new construction sites of up to 700,000 kWh through energy efficient design.
- 50% reduction in NG consumption at site where boilers upgrades were implemented.
- Avoided utility bill costs of over \$100,000 annually.
- Improved occupancy/building comfort.
- Improved lighting within affected classrooms.
- Improved seismic restraint of lighting fixtures within the District.



## Actions to Reduce Out-of-Scope (non-VBE) GHG Emissions in 2017

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 typically focus on transportation of staff and students and include: new schools that were designed to include electric vehicle charging capabilities, and continued work with the City of Vancouver to support active transportation.

## Actions to Enhance Overall Sustainability in 2017

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

- Completion of the Environmental Sustainability Action Plan.
- Developed a teacher Pro-D and resource guide to facilitate the use of school gardens as outdoor classrooms.
- Students at Windermere Secondary organized and ran the annual C3 Conference (Climate Change Conference) in November. This conference focused on issues, actions and solutions to climate change issues.
- Students organized a district-wide Sustainability Conference (VSBSC) to learn from leading sustainability thinkers in BC.
- The District has participated with the City on initiatives to encourage active transportation to and from school by staff and students.



*Teachers participate in a Professional Development event about implementing teaching gardens at schools*

## 4 Future Activities

In 2018 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 2018

Actions planned or proposed for 2018 include:

- Replacing old lighting systems at several schools.
- Conducting lighting audits to evaluate opportunities for further exterior lighting projects.
- Designing new heating plants, control and communications systems.
- Continuing with new facility design to ensure low carbon, low cost, and low energy facilities become the standard for the VBE.
- Participating in the BC Hydro Continuous Optimization program for two secondary school sites.

### Actions to Reduce Out-of-Scope GHG Emissions in 2018 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:

- Promoting 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 2018

Our efforts will continue in 2018. Specific actions include:

- Implementing the Environmental Sustainability Plan.
- Continuing to support student- and teacher-led sustainability initiatives.

## 5 Closing

The VBE is proud to maintain 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 Suzanne Hoffman visiting with elementary school students*

# Part 1: CNAR Survey

## 1. General Information

Name: Ron Macdonald

Contact Email: rmacdonald@vsb.bc.ca

Organization Name: Vancouver Board of Education

Sector: School District

## 2. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

During 2017, did your organization take any of the following actions to support emissions reductions from buildings? (please select all that apply)

Conducted an energy audit/study of building(s) in the organization's portfolio.; Performed energy retrofits of the organization's building(s); Built, or are building new LEED Gold or other "Green" buildings

If you selected "*Performed energy retrofits of the organization's building(s)*":

How many buildings were retrofitted?: 16

If you selected "*Built, or are building new LEED Gold or other "Green" buildings*":

How many new "Green" buildings?: 2

Did your Organization perform any retrofits during 2017? Please describe briefly:

Lighting retrofits

Boiler upgrades



## 2a. Stationary Sources (eg. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

Please briefly describe your organization's plans to continue reducing emissions from its stationary sources:

### a) Over the next 1-5 years

Future Energy Management activities will include greater focus on:

- heat plant retrofits
- DDC tune-ups
- new construction efficiency
- updating 5 year Energy Management Plan

### b) Over the following 6-10 years

- greater focus on natural gas reduction and less focus on electricity reduction

## 3. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

During 2017, did your organization take any of the following actions to support emission reductions from its mobile sources? (please select all that apply)

None of the above

3) Mobile Sources - Other? Please specify: n/a

If you selected "*Replaced existing vehicles with more fuel efficient vehicles (gas/diesel)*":

How many vehicles?:

If you selected "*Replaced existing vehicles with hybrid or electric vehicles*":

How many vehicles?:

## 3a. Mobile Sources (Vehicles, Off-road/portable Equipment): Fuel Combustion:

Please briefly describe your organization's plans to continue reducing emissions from its mobile sources:

a) Over the next 1-5 years

- continue to evaluate electric and hybrid applications (eg. vehicles, forklifts etc)

b) Over the following 6-10 years

## 4. Supplies (Paper): Indicate which actions your PSO took in 2017:

During 2017, did your organization take any of the following actions to support emissions reductions from paper supplies? (please select all the apply)

Had a policy requiring the purchase of recycled content paper

If you selected "*Had a policy requiring the purchase of recycled content paper*":

State the required recycled content here (30%, 50%, 100%): 30

If you selected "*Had a policy requiring the purchase of alternate source paper (bamboo, hemp, wheat, etc)*", which type of alternate source paper did you use?

Please briefly describe your organization's plans to continue reducing emissions associated with its office paper use in future years.

- continue implementation of print management software

## 5. Other Sustainability Actions

### a) Business Travel

During 2017, did your organization take any of the following actions to support emissions reductions from business travel? (please select all that apply)

None of the above

### b) Education/Awareness

During 2017, did your organization have any of the following programs or initiatives to support sustainability education and awareness? (please select all that apply)

A Green, Sustainability or Climate Action Team; Support for professional development on sustainability (e.g. workshops, conferences, training); Supported or provided education to staff about the science of climate change, conservation of water, energy and/or raw materials

### c) Other Sustainability Actions

During 2017, did your organization have any of the following programs or initiatives to support sustainability? (please select all that apply)

A water conservation strategy which may include a plan or policy for replacing water fixtures with efficient models; An operations policy or program to facilitate the reduction and diversion of building occupant waste (e.g., composting, collection of plastics, batteries) from landfills or incineration facilities; Lifecycle costing of new construction or renovations