VANCOUVER BOARD OF EDUCATION

2018 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 - from waste reduction to food gardens to energy conservation.

In 2018 a number of projects were implemented including retrofitting old lighting systems at several school sites and designing heat plant retrofits for two schools. These projects improve the comfort and learning environment and will save on utility costs for years to come.

Our energy management program completed a five year cycle in 2018. Measures implemented over that period achieved a cumulative 11% reduction in electricity use and a 5% reduction in natural gas consumption.

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 2018 calendar year, our offset-requiring emissions were 14,894 tonnes of CO_2e. As required by Provincial legislation, the District purchases certified carbon credits to offset these emissions.

Our efforts will continue in 2019. We are initiating more classroom lighting retrofits, heating plant replacements, optimization reviews of two secondary schools, and re-commissioning of several elementary school sites.

We will be updating our energy management plan during 2019 to a 10 year strategy to 2030. Our goal is to set a pathway to meet the Provincially mandated carbon emission reduction target of 50% by 2030.

Our District has set a vision for our school district to be the "greenest, most sustainable school district in North America". In May 2018 our Board approved our first ever "Environmental Sustainability Plan". Implementation measures began in the 2018/19 school year and will continue for years to come.

As the Superintendent of Schools for the VBE, I am excited about the District's movement on sustainability, energy conservation, and climate change action. These are made possible by the diligent work on the part of VBE 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 what is now known as the Climate Change Accountability Act CCAA (formerly the *Greenhouse Gas Reduction Targets Act* GGRTA 2007). The CCAA 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.

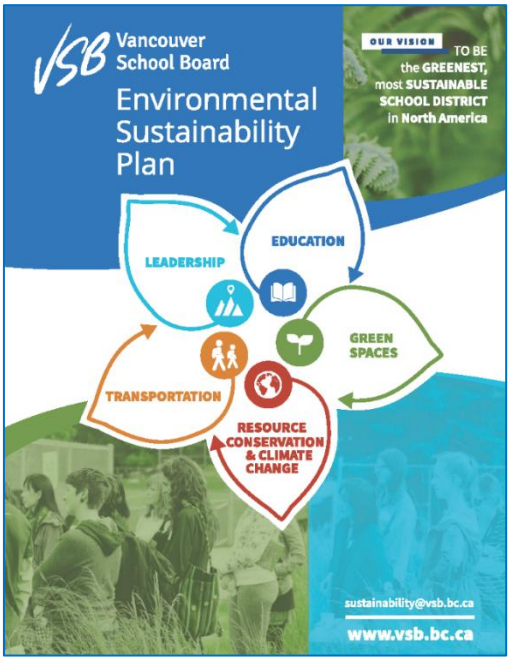
The Province has defined criteria for reporting and has developed an internet-based system for tracking and reporting emissions.

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. Evolving from the framework was the 2018 Board approved VSB Environmental Sustainability Plan – our first-ever district sustainability plan.

The VBE has been active in energy management for more than 15 years. Conservation activities over the past decade have resulted in energy spending savings of over $950,000 annually to the District operating budget. Many projects have received incentive grants from our energy utility providers.

Moreover, these upgrades have improved the learning environment for our students through better lighting conditions, and improved thermal comfort.



View the VSB Sustainability Plan at:
www.vsb.bc.ca/district/sustainability

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 CCAA) 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

2018 Emissions and Offsets

For the 2018 calendar year, our offset-requiring emissions were 14,894 tonnes of CO_2 (including adjustments as indicated in the table below). 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_2 resulting in a cost of $372,350 (+ GST).

VBE Greenhouse Gas Emissions and Offset Requirements for 2018 (tonnes of CO_2 equivalent)

GHG Emissions created in Calendar Year 2018 [Notes 1, 2]	GHG emissions (tonnes of CO_2e)
Total Emissions of carbon (all types) (tCO_2e) [Notes 3, 4]	14,924
Total $BioCO_2$	21
Total Offsets (tCO_2e)	14,903
Adjustments to GHG Emission Reported in Prior Years	
Total Emissions (tCO_2e)	-9
Total Offsets (tCO_2e)	-9
Grand Total Offsets for the 2018 Reporting Year	
Grand Total Offsets Required (tCO_2e)	14,894
Total Offset Investment [Note 4]	$372,350

Notes:

[1] Greenhouse Gas (GHG) emissions are measured in tonnes of CO2 'equivalent' (t CO_2e).
[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.

3 Emissions Reduction Activities 2018

Actions to Reduce Reportable Emissions in 2018

A number of actions were taken in 2018 to reduce energy use, and GHG emissions including:

- Upgrading lighting systems at 9 school sites.
- Auditing 10 facilities to identify future lighting retrofit opportunities.
- Designing heat plant replacements for two elementary schools – to be implemented in 2019 and 2020.
- Installing a high efficiency boiler in the Nelson Elementary seismic project.
- Initiating an optimization (building tune-up) initiative at two secondary schools.

New LED Lighting installed at an elementary school

- Improved control systems at 2 schools through the seismic risk mitigation program.
- Upgrading DDC systems to improve building controls at three sites.
- Initiated an expansion to a solar panel installation on one secondary school.

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 volumes and cost.
- 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 one time weekly to reduce transport costs and emissions.

For the conservation actions implemented in 2018, we achieved:

- Reduced electricity consumption of 300,000 kWh annually.
- Avoided consumption increases, through efficient building design, of 700,000 kWh annually.
- Total reduced or avoided utility bill spending of approximately $100,000 annually – which will continue for many years to come.
- Improved occupancy/building comfort.
- Improved lighting within upgraded classrooms.
- Improved seismic restraint of lighting fixtures within the District.

Actions to Reduce Out-of-Scope (non-VBE) GHG Emissions in 2018

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 promotion of active transportation events (e.g. bike to school/work week) and working with the City of Vancouver's Active Transportation Planning program to reduce congestion and improve active commuting to and from school sites.

A bike-to-school/work week promotional event at the VSB education Center – located on the 10th Ave bikeway

Actions to Enhance Overall Sustainability in 2018

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

- Completion of the Environmental Sustainability Action Plan (board approved May 2018).
- Delivered 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 network with each other and learn from leading sustainability thinkers.

4 Future Activities

In 2019 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 2019

Actions planned for 2019 include:

- Replacing old lighting systems at several schools.
- Conducting lighting audits to evaluate opportunities for future lighting projects.
- Upgrading the heating plants at two elementary schools.
- Recommissioning several elementary sites.
- Continuing with new facility design to ensure low carbon, low cost, and low energy facilities become the standard for the VBE.
- Implementing a 'building energy tune-up' at two secondary sites through the BC Hydro Continuous Optimization program.
- Completing the new installation of a Solar PV extension at a Secondary School.
- Continue upgrading and tuning building DDCs to improve building controls.

Actions to Reduce Out-of-Scope GHG Emissions in 2019 and onward

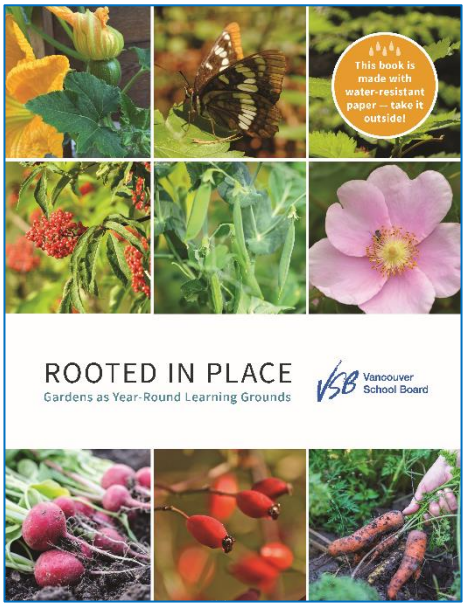
A number of activities help reduce carbon emissions in our community that are not considered 'in scope' for our carbon neutral reporting requirements. These include:

- Promoting active transportation initiatives like 'Bike to School/Work 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 2019

Our efforts will continue in 2019. 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.

Declaration Statement:

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulations, the VSB makes the following declaration,

> *This Carbon Neutral Action Report for the period January 1st, 2018 to December 31st, 2018 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2018 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2019 and beyond.*
>
> *By June 30, 2019 the VBE's final Carbon Neutral Action Report will be posted on our website at www.vsb.bc.ca.*

Retirement of Offsets:

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulations, VBE is responsible for arranging for the retirement of the offsets obligation reported above for the 2018 calendar year, together with any adjustments reported for past calendar years. The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy ensuring that these offsets are retired on the Organization's behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to $25 per tonne of offsets retired on its behalf plus GST.

Superintendent Suzanne Hoffman with elementary school students

Executive sign-off:

	May 8, 2019
Signature	Date
Suzanne Hoffman	Superintendent / CEO
Name (please print)	Title

Part 1: CNAR Survey

1. General Information

Name: Ron Macdonald

Contact Email: rmacdonald@vsb.bc.ca

Organization Name: SD39 - VSB

Sector: School District

Role - Please select your role(s) below.
If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: Yes

Sustainability Coordinator: No

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: No

CEO/President/Exec Director: No

Treasurer/Accounting: No

Superintendent: No

A. Stationary Sources (e.g. Buildings, Power Generators): Fuel Combustion, Electricity use, Fugitive Emissions.

1. Actions taken by your organization in 2018 to support emissions reductions from buildings.

a) Do you have a strategy to reduce emissions from stationary sources?

Yes

If yes above, what are the main goals?: currently developing a 10 year climate reduction target

b) Whether you have a strategy or not (1.a), briefly describe your organization's plans to continue reducing emissions from stationary sources:

I. Over the medium-term term (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
- expanding use of heat-pump technology

II. Over the long term (6-10 years)

- greater focus on natural gas reduction and less focus on electricity reduction
- deployment of heat-pumps for heating

c) Please describe your strategy's goals (if any) related to energy audits.

- lighting audits to identify inefficient lighting to be upgraded
- mechanical energy studies at large sites

I. What % on average of your building portfolio has an energy audit completed each year (if any)?: 5

d) Please describe your strategy's goals (if any) related to building retrofits.

- continued electricity conservation
- increasing focus on natural gas conservation

I. What % on average of your building portfolio is retrofitted each year in the following categories (if any) - click here for further information:

Minor retrofits (e.g., low cost, easy to implement measures including caulking, lighting, adding roof insulation, etc.) (%): 2

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 1

Deep retrofits (e.g., replacing roof, replacing the heating, ventilation and air-conditioning system with a renewable technology like a ground-source heat pump, etc.) (%): 0

e) Please describe your strategy's re/retro-commissioning goals (if any)?

- currently recommissioning three sites
- plan to recommission one - two sites annually

I. What % on average of your building portfolio do you recommission each year?: 2

f) Do you keep records of Refrigerant gases category and refilling volumes?

No

g) How many newly constructed buildings received at least LEED Gold certification in 2018: 0

I. How many newly constructed buildings did not receive LEED Gold certification?: 0

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

3. Actions taken by your organization in 2018 to support emissions reductions from mobile sources.

a) Do you have a strategy to reduce emissions from mobile sources?

No

b) Whether you have a strategy or not (3.a), briefly describe your organization's plans to continue reducing emissions from mobile sources:

I. Over the medium-term term (1-5 years)

- continue to right size vehicle fleet in replacement cycle
- exploring electrification of equipment

c) How many fleet vehicles did you purchase from the following categories:

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 0

"Plug In" Electric Vehicle – PHEV (e.g., plug-in Prius, Chevy Volt): 0

Hybrid vehicle – HEV – non "Plug In"- (e.g., Toyota Highlander Hybrid): 0

Hydrogen fuel cell vehicle : 0

Natural gas/propane: 0

Gas/diesel vehicle: 0

d) How many existing EV charging stations does your organization have in each category:

level 2: 13

How many level 2 stations (if any) are specifically for your fleet vehicles: 2

e) How many EV charging station(s) did you install in 2018 in each category:

level 2: 0

How many level 2 stations (if any) were installed specifically for your fleet vehicles: 0

4. Please indicate the number of the vehicles in the following vehicle classes that are in your current fleet (including any purchased in 2018):

Definitions:

• Light duty vehicles (LDVs) are designated primarily for transport of passengers <13 and GVWR<3900kg
• Light duty trucks (LDTs) are designated primarily for transport of light-weight cargo or that are equipped with special features such as four-wheel drive for off-road operation (include SUVs, vans, trucks with a GVWR<3,900kg)
• Heavy duty vehicles (HDV) includes vehicles with a GVWR>3,900 kg (e.g. ¾ tonne pick-up truck, transport trucks)

a) Light duty vehicles (LDVs)

Electric Vehicles – EV - (e.g., Nissan Leaf, Chevy Bolt): 3

"Plug In" Electric Vehicle – PHEV -- (e.g., plug-in Prius, Chevy Volt) : 0

Hybrid vehicles – HEV – (e.g., non "Plug In"- older Toyota Prius, Toyota Camry hybrid): 4

Hydrogen fuel cell vehicles: 0

Gas/diesel: 0

b) Light duty trucks (LDTs)

Natural Gas/propane: 1

Gas/diesel: 37

c) Heavy duty vehicles (HDV)

Gas/diesel: 17

5. Please indicate the number of the vehicles you plan to replace in your fleet:

How much do you budget per LDV?: 0

How many LDVs do you plan to procure annually over the next 5 years?: 0

How much do you budget per LDT?: 0

How many LDTs do you plan to replace annually over the next 5 years?: 0

How much do you plan to spend per HDV?: 0

How many HDVs do you plan to replace annually over the next 5 years?: 0

C. Office Paper: Indicate which actions your PSO took in 2018:

6. Actions taken by your organization in 2018 to support emissions reductions from paper supplies.

a) Do you have an Office Paper strategy?

Yes

I. If yes, what are its goals?

- print reduction strategy based on consolidating printing to multi function devices
- standard 30% recycled content paper

b) Whether you have a strategy or not (6.a), briefly describe your organization's plans to continue reducing emissions from paper use:

I. Over the medium-term (1-5 years)

- continue consolidating printing to multi function devices

c) Have an awareness campaign focused on reducing office paper use

No

d) Purchased alternate source paper (bamboo, hemp, wheat, etc.)

No