



VCC 2018 Carbon Neutral Action Report

SUBMITTED UNDER THE CARBON NEUTRAL GOVERNMENT REGULATION
OF THE BC GREENHOUSE GAS REDUCTION TARGETS ACT



This Carbon Neutral Action Report for the period January 1, 2018 to December 31, 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, VCC's final *Carbon Neutral Action Report* will be posted to our website at www.vcc.ca.

Emissions and Offset Summary Table:

Vancouver Community College GHG Emissions and Offset for 2018 (tCO ₂ e)	
GHG Emissions created in Calendar Year 2018:	
Total Emissions (tCO ₂ e)	1,530
Total Offsets (tCO ₂ e)	1,530
Adjustments to GHG Emissions Reported in Prior Years:	
Total Emissions (tCO ₂ e)	0
Total Offsets (tCO ₂ e)	0
Grand Total Offsets for the 2018 Reporting Year:	
Grand Total Offsets (tCO ₂ e)	1,530
Total Offset Investment (Grand Total Offsets Required X \$25/tCO ₂ e)	1,530 X \$25

Retirement of Offsets:

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, *Vancouver Community College* 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 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.

Executive sign-off

Signature

Date

Dr. Peter Nunoda

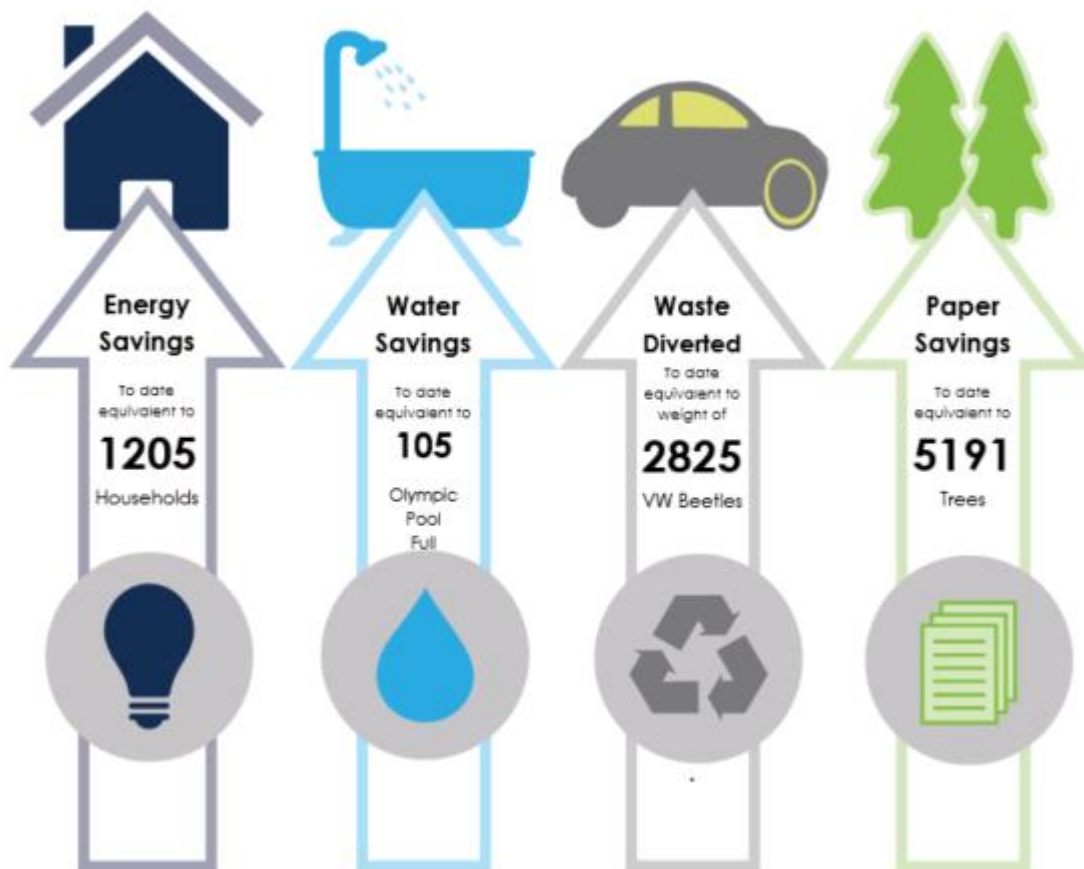
President and CEO

Overview

Vancouver Community College (VCC) believes that a healthy environment is essential for the health and well-being of present and future generations. At VCC, we are concerned about the quality of the natural environment and building a sustainable society and are committed to making a difference.

VCC takes the responsibility of ensuring our students are prepared to play their role in a sustainable future very seriously. It is our hope to inspire these graduates to contribute to sustainability in their homes, communities, and workplaces.

VCC has made strides in achieving our environmental sustainability goals over the past seven years. As part of BC Hydro's Energy Management Program, VCC has created a three-year Strategic Energy Management Plan to reduce energy consumption. Working together across the college, staff, faculty and students have achieved a number of milestones.



2018 Greenhouse Gas Emissions

In 2018, VCC emitted 1530 tonnes of carbon dioxide equivalent (tCO₂e) from sources covered under the Carbon Neutral Government Regulation (see Figure 1). This is a 36% decrease over 2016 levels and a 96% reduction over 2010 levels. Of the total emissions for 2018, 94% come from heating, cooling, and lighting our buildings and the remaining 6% come for the use of paper.

It was estimated that stationary fugitive emissions from cooling do not comprise more than 0.01% of VCC's total emissions and to collect data for emissions from this source was not feasible. For this reason, emissions from this source have not been included in VCC's total greenhouse gas emissions profile.

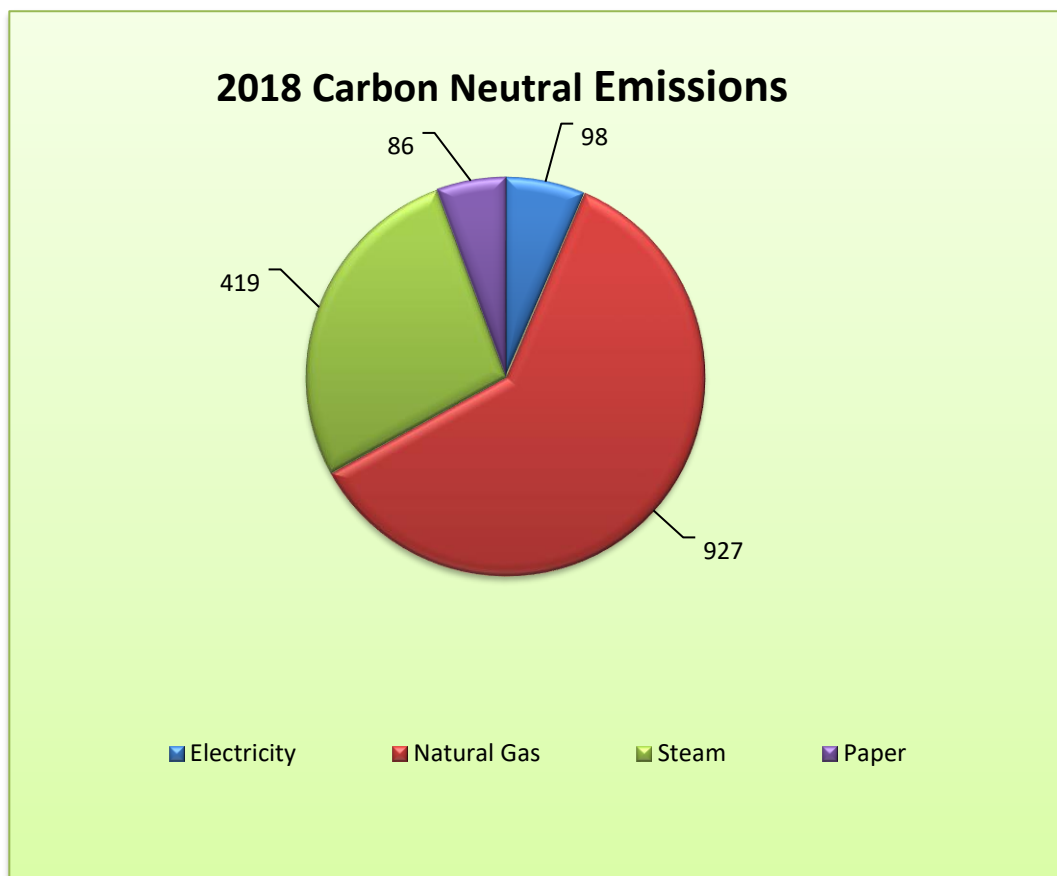


Figure 1

¹VCC owns six diesel trucks, five diesel excavators, three diesel bull dozers, five diesel front end loaders and several diesel engines on stands used for training purposes in the School of Transportation Trades. Emissions from the use of these engines do not compromise more than 0.01% of VCC's total emissions and to collect data for emissions from this source was not feasible. For this reason, emissions from this source have not been included in VCC's total greenhouse gas emissions profile.

¹ The tonne 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.

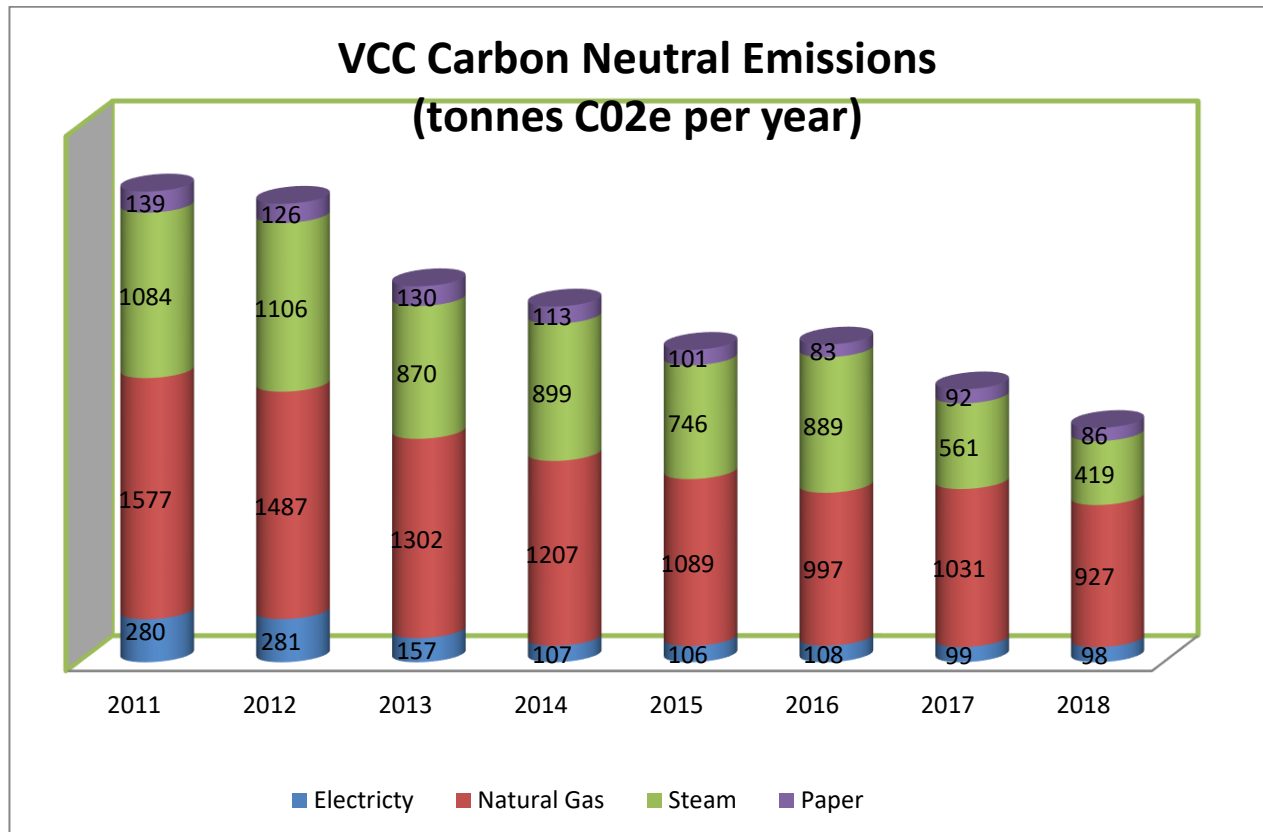


Figure 2

Offsets applied to become carbon neutral in 2018

VCC has purchased 1530 tonnes of carbon offsets from the Ministry of the Environment at a cost of \$38,425 (\$25 per tonnes) plus GST to achieve carbon neutrality, as required by the Greenhouse Gas Reduction Targets Act.

Actions taken to reduce greenhouse gas emissions in 2018

Since 2013, VCC has partnered with BC Hydro in an Energy Manager Program and engaged the services of Prism Engineering to work with the college in developing and implementing a Strategic Energy Management Plan (SEMP). The SEMP supports VCC's commitment to energy efficiency and conservation by providing a framework for reducing energy consumption and its associated environmental impacts. It includes a specific energy reduction target and an action plan of how the target will be achieved.

**VCC will reduce campus energy intensity in existing buildings by
25 percent from 2010/11 fiscal year levels
by 2019/20 fiscal year.**

The following specific projects were undertaken during fiscal year 2018/19 to reduce energy use and GHG emissions:

- **Broadway Campus - Lighting Upgrades:**

The lighting upgrades at the Broadway campus were completed in March 2019. The project involved retrofitting all of the fluorescent luminaires in Building A with dimmable LED T8 lamps and drivers. This upgrade will result in annual savings of over 129,000 kWh per year.

- **Downtown Campus - Direct Digital Controls (DDC):**

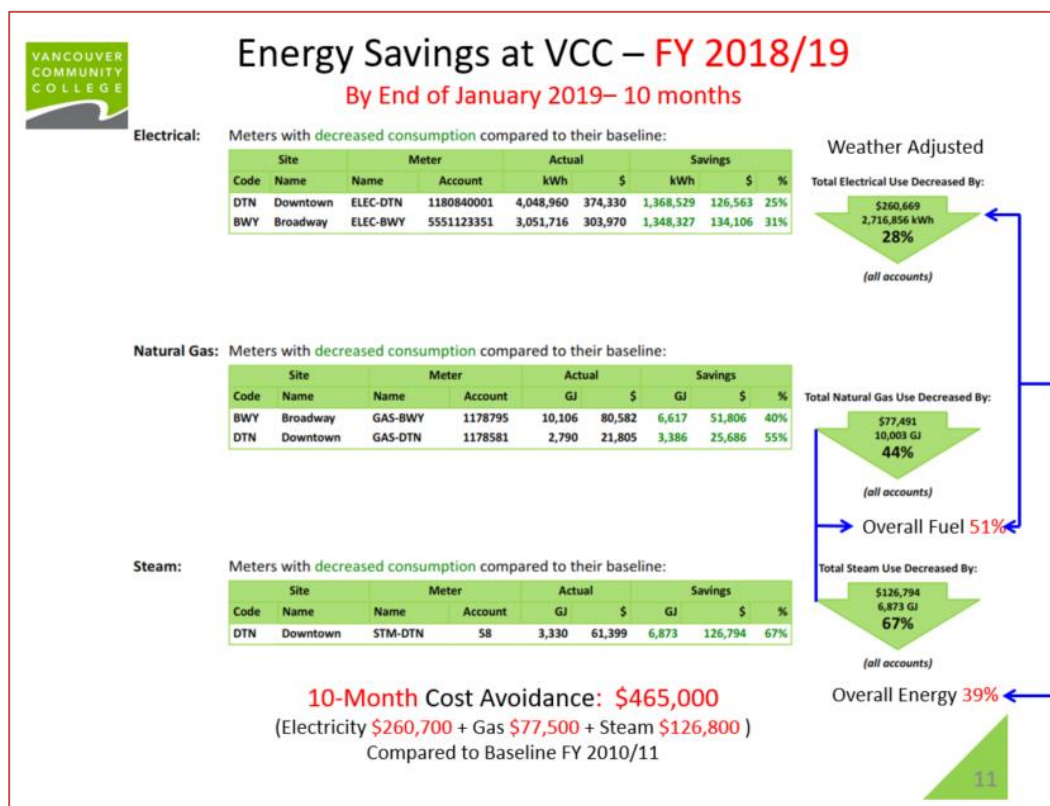
In 2018, 29 heat pumps serving first floor offices, classrooms, boardroom and lobby were added to the existing DDC system. At this time, occupancy sensors were also installed in the classrooms. Estimated energy savings for this upgrade are over 135,000 kWh.

- **Downtown Campus – Premium Efficiency Motors:**

In 2018, the standard efficiency electrical motors of 12 air handling unit fans were replaced with premium efficiency motors.

- **Energy Conservation and Awareness:**

A “Holiday Shutdown” campaign was planned and implemented in December 2018. In addition, high capacity electric space heaters in Broadway campus fifth floor offices were replaced with low consumption electric radiators reducing the demand and consumption in winter months.



Plans to continue reducing Greenhouse gas emissions 2018 and beyond

Full details on VCC's three-year strategy to reduce energy use can be found in the Strategic Energy Management Plan. See http://www.vcc.ca/media/vancouver-community-college/content-assets/documents/reports-publications/SEMP_VCC_Final_Y4_March2017.pdf

To enable VCC to achieve this reduction target, cost-effective energy management initiatives will be undertaken. In addition to energy savings potential, the initiatives taken will be selected based on non-energy benefits, including occupant comfort, equipment reliability, maintenance costs, and operational improvements. The following initiatives are planned for the next three years:

- **Downtown Campus - Lighting Upgrades**

Capital funds will be requested to complete a lighting upgrade and achieve further annual energy savings of 350,000 kWh. The capital cost of this upgrade is estimated at \$275,000 and would include replacing all T8 fluorescent lamps with LED lamps.

- **Broadway Campus - Lighting Upgrades**

Capital funds will be requested to complete a lighting upgrade and achieve further annual energy savings of 25,000 kWh. The capital cost of this upgrade is estimated at \$20,000 and would include upgrading the fluorescent luminaires in Building B Bookstore and the metal halide luminaires in the Building B Atrium to LED technology.

- **Energy Conservation and Awareness**

Building on our successful previous campaigns such as "Lights Out", "Random Acts of Green" "Take the Stairs" and "Holiday Shutdown"; VCC will continue to work to engage staff, students and faculty through campaigns to support behaviour change across both campuses. The annual savings from changing behaviour is estimated at 0.5% of total energy use per year.

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Space Heater Campaign



Photo Credit: VCC Senior Leadership Team

Introduction

This campaign is being developed to address the use of personal space heaters on the Broadway and Downtown campuses. A significant number of personal space heaters have been observed in use by staff at both campuses despite the fact that there is a system in place for staff to request an energy efficient space heater from Facilities. This campaign has the endorsement of VCC's Senior Leadership Team.

Campaign Goals

To reduce the overall use of space heater and eliminate the space heaters brought in from home at both campuses

Campaign

From June 2018 to November 2018, Facilities Management implemented the Space Heater Campaign. Everyone was encouraged to participate by dressing for the weather, hot cocoa days, and etc.

Campaign Activities

- Digest Article
- Emails to Staff
- Posters and Digital Signage
- Student Welcome Days
- One-on-one meeting



Space Heaters Collected from the Campaign

Learn more

Ria Salonga
Energy Management Coordinator
Facilities Management
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Bundle up VCC and help conserve energy

Every Action Counts!

Thanks for your help in moving towards VCC's energy conservation goals and greenhouse reduction targets.

Facilities Management



Photo Credit: VCC Administration Office - Downtown

Success Metrics

The above savings are for the months Oct-Nov-Dec 2018 and Jan 2019 (4 months).

	GJ	kWh	kW	Rate/unit	Avoided Cost
GAS SAVINGS	467				\$4,631
ELEC SAVINGS		92,163		\$0.06	\$5,530
ELECTRICAL DEMAND REDUCTION			332	\$12	\$3,984
TOTAL					\$14,145

The space heaters were replaced with electrical radiators with low wattage. The supply hot water temperature was reduced.



Approved Space Heater from Facilities

The Energy Wise Network was launched in 2016 to help organizations in their energy engagement programs.

The network is made up of Advanced Education, Government, Schools (K-12), Hospitality, Municipalities, Property Management, and Retail sectors.

We're working together to help B.C. save energy.



Holiday Shutdown



Photo Credit: VCC Foundation Department

Introduction

VCC Facilities used the holiday closures as an opportunity to shut off the Heating, Ventilation, and Air Conditioning systems (HVAC) on both campuses in order to achieve some major savings.

Campaign Goals

To reduce the energy consumption while the college is closed from December 22, 2018 to January 1, 2019.

Campaign

From November 15 to December 15, 2019, VCC's Facilities Management encouraged everyone to participate in the Holiday Shutdown. Before leaving for the Holiday, staff are asked to switch off electronics, turn off lights, unplug small appliances, and close window & blinds.

Campaign Activities

- Email to VCC employees
- Write-up for Intranet Site
- Article in e-newsletter



Photo Credit: VCC Student Development



Photo Credit: VCC Partnership Office

Learn more

Ria Salonga
Energy Management Coordinator
Facilities Management
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Before you leave for the holidays...



Every Action Counts!

Thanks for your help in moving towards VCC's energy conservation goals and greenhouse reduction targets.

Facilities Management

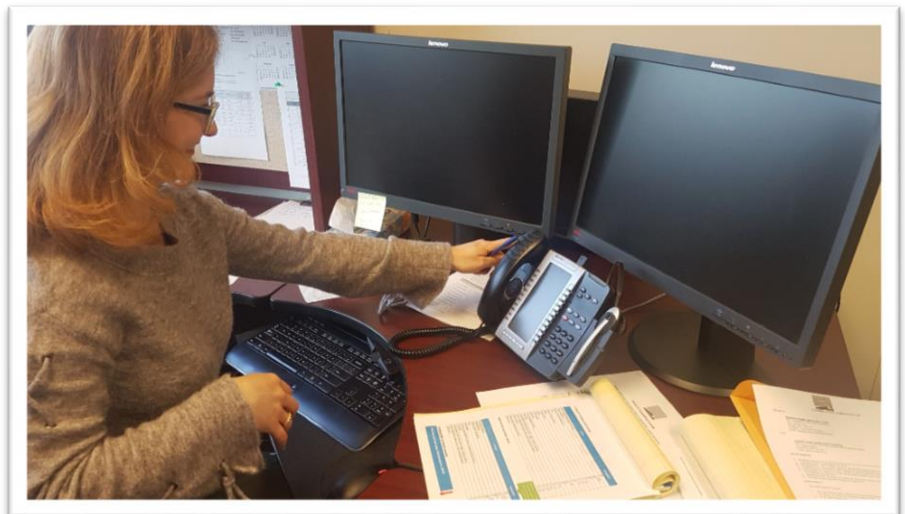


Photo Credit: VCC Procurement Department

Success Metrics

The above savings are for 6 days of weekdays between Dec 22nd 2018 and Jan 2nd 2019.

	GJ	kWh	Rate \$/unit	Avoided Cost
Gas Savings	60	-	8.06	\$484
Electricity savings	-	60,000	0.06	\$3,600
Total				\$4,084

The Energy Wise Network was launched in 2016 to help organizations in their energy engagement programs.

The network is made up of Advanced Education, Government, Schools (K-12), Hospitality, Municipalities, Property Management, and Retail sectors.

We're working together to help B.C. save energy.



Part 1: CNAR Survey

1. General Information

Name: Ria Krisna Salonga

Contact Email: rsalonga@vcc.ca

Organization Name: Vancouver Community College

Sector: Post Secondary

Role - Please select your role(s) below.

If more than one individual completed the survey, multiple categories may be selected:

Energy Manager: No

Sustainability Coordinator: No

Administrative Assistant: No

Facilities/Operations Manager/Coordinator: Yes

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?: To reduce emissions by 25% below the 2010/2011 levels in end of the fiscal year 2019/2020 (March 2020).

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)

Downtown Lighting Upgrades - Capital funds will be requested to complete a lighting upgrade and achieve further annual energy savings of 350,000 kWh. The capital cost of this upgrade is estimated at \$275,000 and would include replacing all T8 fluorescent lamps with LED lamps.

Broadway Lighting Upgrades - Capital funds will be requested to complete a lighting upgrade and achieve further annual energy savings of 25,000 kWh. The capital cost of this upgrade is estimated at \$20,000 and would include upgrading the fluorescent luminaires in Building B Bookstore and the metal halide luminaires in the Building B Atrium to LED technology.

We will add 30 heat pumps to the DDC System at the Downtown Campus.

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

Vancouver Community College is currently working on our long term plan.

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

Energy studies will be conducted in the future to approach the net zero buildings concept for both campuses.

I. What % on average of your building portfolio has an energy audit completed each year (if any)? : 20

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

Since 2013, Vancouver Community College has been conducting energy saving retrofits on lighting and DDC Systems. In addition, upgrades to the HVAC control systems has been implemented.

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.) (%): 15

Major retrofits (e.g., replacing windows and doors, equipment replacement such as boilers, etc.) (%): 0

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)?

Vancouver Community College is interested to re-commission all buildings (Downtown and Broadway) every five years.

I. What % on average of your building portfolio do you recommission each year? : 0

II. If yes, have you included the associated emissions in your reporting?

No

II. What, if any, mitigation approaches have been considered? Please describe.

We are looking into mitigation approaches in the near future.

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

II. Please explain why LEED Gold certification was not obtained.

n/a

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?**

Yes

I. If yes, what are its goals?

To convert all the fossil fuels vehicles into electric.

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)

We recently purchase an electric vehicle for Transportation Trades Department. In addition, we would to purchase electric vehicles in the in the near future.

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

Currently working on our long term plan.

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

Electric Vehicle – EV - (e.g., Nissan Leaf, Chevy Bolt): 1

I. If you purchased new gas/diesel vehicles, can you briefly explain why vehicles from the other categories were not chosen?

n/a

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

level 2: 0

level 3: 0

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

How many level 3 stations (if any) are specifically for your fleet vehicles: 0

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

level 2: 0

level 3: 0

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

How many level 3 stations (if any) were installed specifically for your fleet vehicles: 0

f) Other actions, please describe briefly (e.g. charging station feasibility studies, electrical panel upgrades, etc.)

To install two level 2 charging stations at the Downtown and Broadway campuses.

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): 1

"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): 0

Hydrogen fuel cell vehicles: 0

Natural gas/propane: 0

Gas/diesel: 0

b) Light duty trucks (LDTs)

Electric Vehicles – EV : 0

“Plug In” Electric Vehicle – PHEV: 0

Hybrid vehicles – HEV – (e.g., non “Plug In”- older Ford Escape Hybrid, older Chevrolet Silverado pickup hybrid etc): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 1

c) Heavy duty vehicles (HDV)

Electric Vehicles – EV : 0

“Plug In” Electric Vehicle – PHEV : 0

Hybrid vehicles – HEV – (e.g., non “Plug In”): 0

Hydrogen fuel cell vehicles: 0

Natural Gas/propane: 0

Gas/diesel: 1

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?

Had an awareness campaign focused on reducing office paper use; Had a policy requiring the purchase of 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)

VCC uses 30% recycled paper and all printers are set to double-side as a default. All printers have stickers on them to remind users to save paper.

Encourage all employees to send documentation electronically.

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

Currently working on the long term goal.

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

Yes

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

No