



# VCC 2017 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, 2017 to December 31, 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, VCC's final *Carbon Neutral Action Report* will be posted to our website at [www.vcc.ca](http://www.vcc.ca).

**Emissions and Offset Summary Table:**

| <b>Vancouver Community College GHG Emissions and Offset for 2017 (tCO<sub>2</sub>e)</b> |       |
|---|-------|
| <b>GHG Emissions created in Calendar Year 2017:</b>                                     |       |
| Total Emissions (tCO <sub>2</sub> e)  | 1,783 |
| Total Offsets (tCO <sub>2</sub> e)  | 1,783 |
| <b>Adjustments to GHG Emissions Reported in Prior Years:</b>                            |       |
| Total Emissions (tCO <sub>2</sub> e)  | 0     |
| Total Offsets (tCO <sub>2</sub> e)  | 0     |
| <b>Grand Total Offsets for the 2017 Reporting Year:</b>                                 |       |
| Grand Total Offsets (tCO <sub>2</sub> e)  | 1,783 |

**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 2017 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

Name

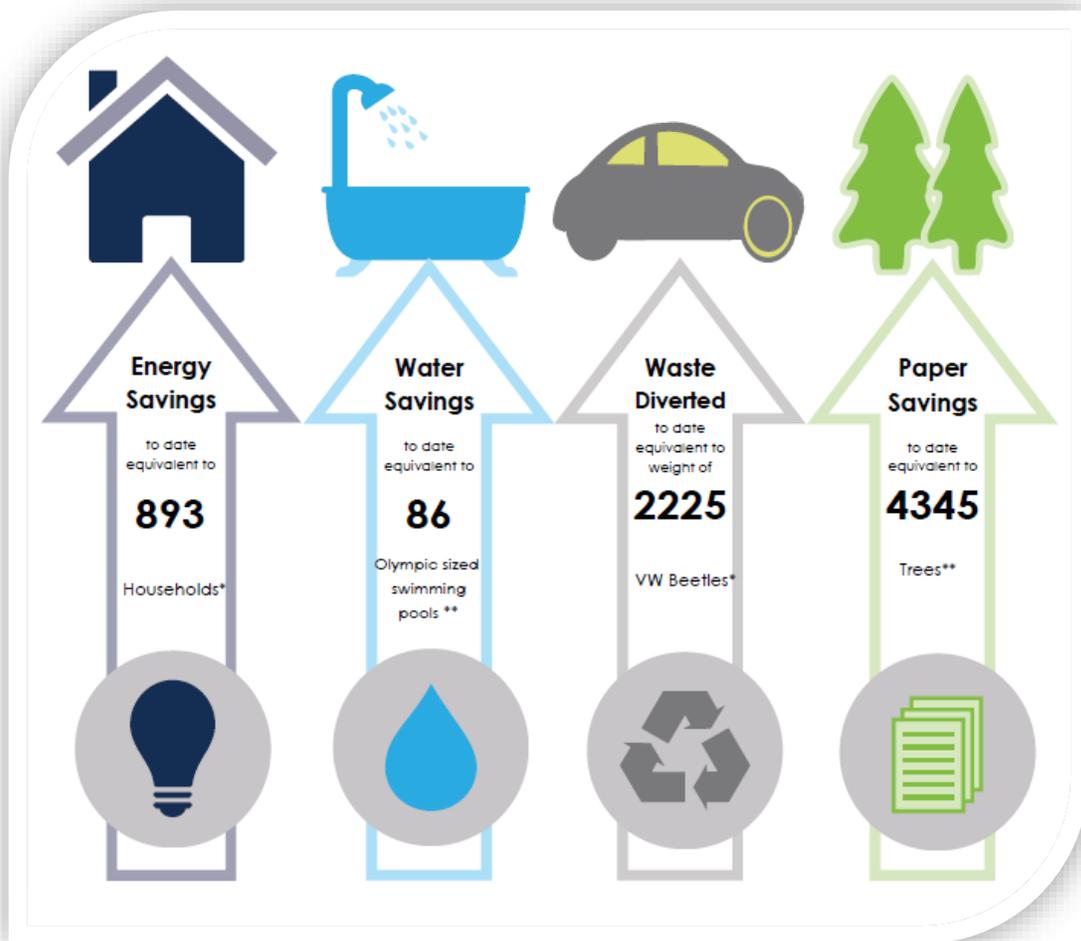
Title

## 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.



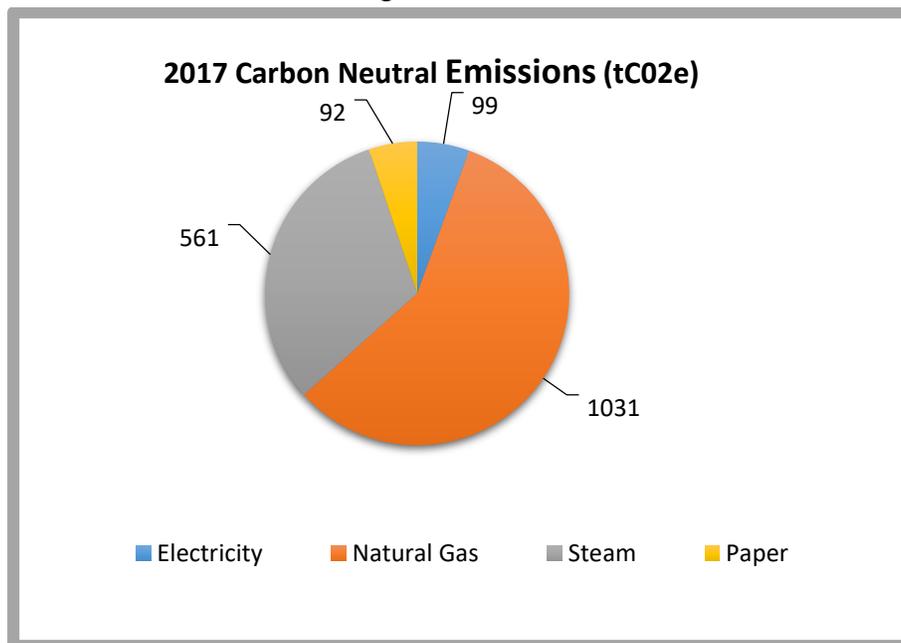
## 2017 Greenhouse Gas Emissions

In 2017, VCC emitted 1,783 tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) from sources covered under the Carbon Neutral Government Regulation (see Figure One). This is a 14 percent decrease over 2016 levels and a 40 percent reduction over 2010 levels. Of the total emissions for 2017, 95 percent come from heating, cooling, and lighting our buildings and the remaining 5 percent come from the use of paper.

It was estimated that stationary fugitive emissions from cooling do not comprise more than 0.01 percent of VCC's total emissions and to collect data for emissions from this source was not feasible.

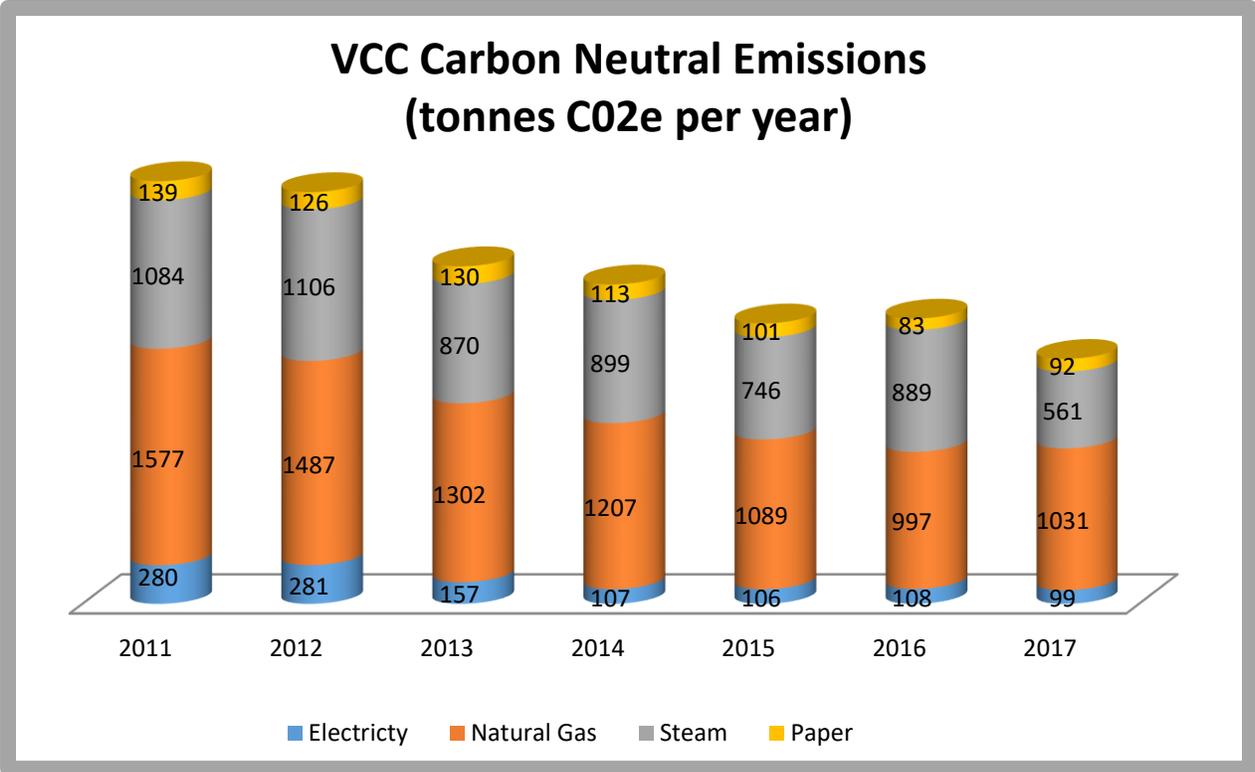
For this reason, emissions from this source have not been included in VCC's total greenhouse gas emissions profile.

Figure One



<sup>1</sup>VCC 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 percent of VCC's total emissions from this source have not been included in VCC's total greenhouse gas emissions profile.

<sup>1</sup> The tonne of carbon dioxide equivalent (tCO<sub>2</sub>e) 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.



**Offsets applied to become carbon neutral in 2017**

VCC has purchased 1,783 tonnes of carbon offsets from the Ministry of the Environment at a cost of \$44,575 (\$25 per tonne) plus GST to achieve carbon neutrality, as required by the Greenhouse Gas Reduction Targets Act.

**Actions taken to reduce greenhouse gas emission in 2017**

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 2010/2011 fiscal year levels by 2019/2020 fiscal year.**

**The following specific projects were undertaken during fiscal year 2017/18 to reduce energy use and GHG emissions:**

- **Downtown Campus - Lighting Upgrades:**

The lighting upgrades to the Downtown campus were completed in March 2018. The project involved upgrading the T8 fluorescent lighting systems to LED in select areas such as the parkade, lecture theatre, carpentry shop, and hallways. Occupancy sensors were installed in the parkade to automatically dim the lights down to 50% when there are no occupants. Incandescent exit signs were also retrofitted with LED conversion kits. These upgrades will result in annual savings of over 65,000 kWh per year.

- **Broadway Campus - Lighting Upgrades:**

The lighting upgrades at the Broadway campus were completed in March 2018. The project involved retrofitting all of the fluorescent luminaires (approximately 1,600 in total) in Building B with dimmable LED T8 lamps and drivers. . This upgrade will result in annual savings of over 122,000 kWh per year.

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

In 2017, 31 heat pumps serving first floor classrooms 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 160,000 kWh.

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

In 2017, the standard efficiency electrical motors of three existing fluid coolers were replaced with premium efficiency motors. Estimated annual energy savings for this upgrade was approximately 12,000 kWh.

- **Broadway Campus - Implementation of Measures recommended in Continuous Optimization Program Study:**

Recommended measures in the continuous optimization study report were implemented by March 2018 resulting in electrical energy savings of 100,000 kWh and fuel energy savings of 700 GJ per year.

- **Energy Conservation and Awareness:**

Working with the VCC Energy Management Team, VCC produced a green e-newsletter in 2017 and a success story regarding one million Dollar savings on avoided energy cost since fiscal year 2010/11. In addition, a “Holiday Shutdown” campaign was planned and implemented in December 2017.

## **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](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 383,000 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 206,000 kWh. The capital cost of this upgrade is estimated at \$365,000 and would include upgrading all T8 fluorescent luminaires in Building A to LED technology.

- **Energy Conservation and Awareness**

Building on our successful previous campaigns such as "Lights Out", "Random Acts of Green" and "Take the Stairs", 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% per year.

# Holiday Shutdown



Photo Credit: VCC Library and Learning Centre

## Introduction

VCC Facilities used the holidays 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 21, 2017 to January 1, 2018.

## Campaign

From November 15 to December 15, 2018, 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

“While shutting down these large spaces took us some time, we all worked together. I think it surprised us all to really take note of how many devices and appliances we really do have plugged in every day.”

Emma Sommers – VCC Library



Photo Credit: VCC Dental Technology

## Learn more

Ria Salonga  
Energy Management Coordinator  
[rsalonga@vcc.ca](mailto:rsalonga@vcc.ca)

## 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 Marketing Department



### Success Metrics 15,800 kWh electricity was saved

| Campus/Building | kW Reduction | kWh Reduction |
|-----------------|--------------|---------------|
| Downtown        | 36           | 10,152        |
| Broadway - B    | 5            | 1,410         |
| Broadway - A    | 15           | 4,230         |
| <b>Total</b>    |              | <b>15,792</b> |

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.



# VCC Achieves One Million Dollars in Energy Cost Avoidance

As of July 2017, VCC has exceeded one million dollars in energy cost avoidance in existing buildings since 2010. This figure is represented by actual energy savings of 20,346,000 ekWh, enough energy to power over 1,600 homes for an entire year. This marks an important milestone towards the goal of reducing campus energy intensity by 25% from 2010 levels by 2020. VCC hit the 20% reduction mark in September 2015, and with more than two years remaining in the timeframe, both the Broadway and Downtown campuses are on track to meet the 2020 target.

## Committed to Reducing Our Carbon Footprint

As part of VCC's most recent Strategic Plan, VCC committed to seeking innovative and improved practices that reduce its carbon footprint. VCC has since undertaken significant projects to change the way energy is used on campus. Major upgrades include LED lighting installation for exterior and parking lights at Broadway campus, adding occupancy sensors and digital controls at Downtown campus, and implementing continuous optimization programs for heating and cooling systems at both campuses. These projects have, in part, helped keep VCC's Broadway campus well below average in terms of energy intensity when compared with similar post-secondary institutions in BC.

The chart below indicates energy savings and cost avoidance at VCC's Downtown and Broadway campuses since 2011.



*Exterior lights at Broadway Campus received a major upgrade in 2015 resulting in approximately 68,000 kWh of annual energy savings.*

| YEAR      | ENERGY SAVINGS<br>(ekWh) | CULMULATIVE<br>COST AVOIDANCE |
|-----------|--------------------------|-------------------------------|
| July 2011 | 146,000                  | \$5,600                       |
| July 2013 | 2,044,000                | \$81,500                      |
| July 2015 | 8,908,000                | \$425,200                     |
| July 2017 | 20,346,000               | \$1,032,200                   |



## Continued Progress Towards Sustainability

The vision laid out in the Environmental Sustainability Strategy 2014-2017 imagines VCC as an institution that “will advance toward zero—and in some cases restorative—environmental impact.” Today, with the achievement in over one million dollars of energy cost avoidance and with the College handily meeting energy reduction targets ahead of schedule, VCC can proudly claim real progress towards that goal.



*Take the Stairs Challenge encouraging those on campus to avoid the elevator saving electricity and encouraging a more active lifestyle.*

## Creating a culture of Energy Conservation

VCC has worked to integrate energy conservation and sustainability into the culture on campus. VCC is part of BC Hydro and FortisBC’s Energy Wise Network program, which consists of both public and private sector organizations committed to saving energy through behaviour change and engagement. Last year, engagement with IT staff led to updated computer settings, where PCs transition more quickly into “sleep” or energy saving modes while the user is away. Also, a recent “Take the Stairs” campaign encouraged people on campus to skip the elevator, thereby saving energy and staying active.

Created with support from BC Hydro’s Energy Manager program



Savings calculations & case study prepared by



Prepared by: Ria Krisna Salonga  
VCC’s CNAR - Designated Representative  
rsalonga@vcc.ca

# Part 1: CNAR Survey

## 1. General Information

Name: Ria Krisna Salonga

Contact Email: rsalonga@vcc.ca

Organization Name: Vancouver Community College

Sector: Post Secondary

## 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)

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

How many buildings were retrofitted?: 2

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

How many new "Green" buildings?:

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

The following specific projects were undertaken during fiscal year 2017/18 to reduce energy use and GHG emissions were all listed in the our VCC's 2017 CNAR.

## 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

Capital funds will be requested to complete a lighting upgrade and achieve further annual energy savings of 383,000 kWh. The capital cost of this upgrade is estimated at \$275,000 and would include replacing all T8 fluorescent lamps with LED lamps.

Capital funds will be requested to complete a lighting upgrade and achieve further annual energy savings of 206,000 kWh. The capital cost of this upgrade is estimated at \$365,000 and would include upgrading all T8 fluorescent luminaires in Building.

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

Currently working on our long term plan.

## 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

n/a

b) Over the following 6-10 years

n/a

### 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 an awareness campaign focused on reducing office paper use; 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.

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.

The Registrar's Office used BDM (Document Management Software). At VCC, we encourage employees and students to go paper less by sending documents electronically.

## 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)

Encouraged alternative travel for business (e.g. bicycles, public transit, walking)

### 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)

### 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)

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; Green procurement standards for goods (e.g., office furniture, etc.)