VCC.CA

2014 Carbon Neutral Action Report

Submitted under the Carbon Neutral Government Regulation
of the BC Greenhouse Gas Reduction Targets Act

VANCOUVER COMMUNITY COLLEGE

This is the 2014 Carbon Neutral Action Report (CNAR) for Vancouver Community College (VCC) for the period January 1st to December 31st, 2014 summarizes our emissions profile, the amount of offsets purchased to reach net zero emissions, the actions we have taken in 2014 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2015 and beyond.

By June 30, VCC's final *Carbon Neutral Action Report* will be posted to our website at *www.vcc.ca*.

Emissions and Offsets Summary:

Vancouver Community College **GHG Emissions and Offsets for 2014 (TCO2E)**	
GHG Emissions created in calendar year 2014 (from SMARTTool Homepage)	
Total Emissions	*2,326*
Total Emissions for Offsets	*2,326*
Adjustments to GHG Emissions Reported in Previous Years (from SMARTTool Homepage)	
Total Emissions	*-79*
Total Emissions for Offsets	*-79*
Credit owing from PCT at end of 2014 reporting year (if applicable – from May 15 Invoice):	
Credit Owing	*n/a*
Total Emissions for Offsets for the 2013 Reporting Year (from Offset Invoice):	2,247

Signature — May 29, 2015 Date

Irene Young — VP, Admin and CFO

Name (please print) — Title

Executive summary

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 commited 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 our graduates to contribute to sustainability in their homes, communities and workplaces.

In April, 2014, VCC released our 2014-2017 Environmental Sustainability Strategy which sets a 10-year vision and a series of three-year objectives to help us reach that vision. In addition, VCC's 2011-2016 Education Plan includes a commitment to promote and model environmental sustainability practices in all areas of teaching and learning.

Vision

> *By 2023 our approach to environmental sustainability is a key reason we are an educational institution of choice. Over ten years we have advanced towards zero - and in some cases restorative-environmental impact. We are a green community hub, catalyst and partner. Our students will graduate with the competencies, connections, and inspiration to play a leadership role in the region's transformation to sustainability.*

We have organized our three year strategy into three pillars or themes of lead, live and learn, which go beyond our direct operations to address all our impact areas. We have set ten objectives for ourselves to achieve by 2016/17.

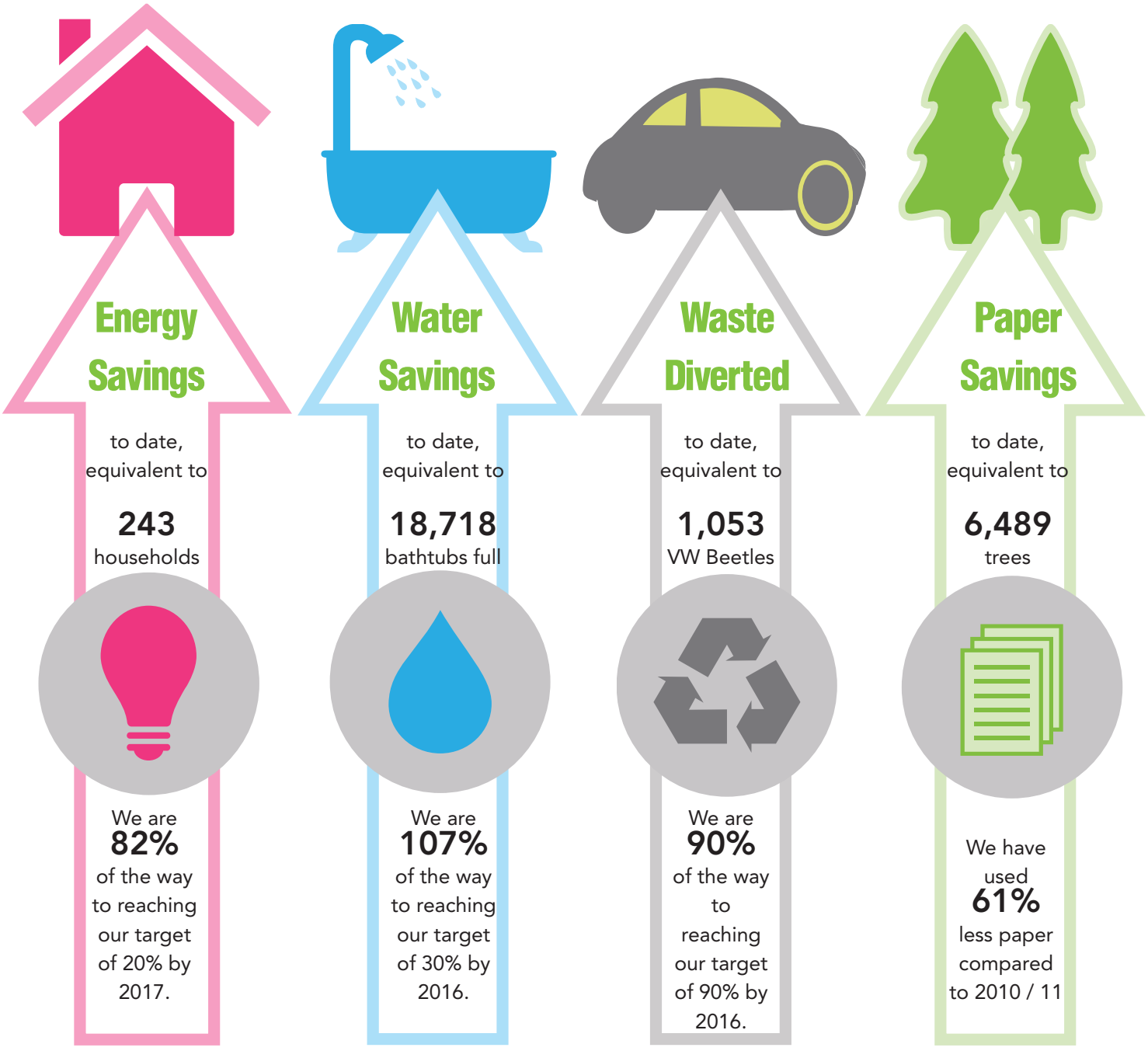
LEAD	Three-year objective	Three-year goal
	Environmental governance best practices are achieved	• Updated college vision, mission and mandate includes environmental sustainability commitment • A strategic environmental key performance indicator is included in VCC's business plan • Metrics and targets are established and cross-campus accountability, tracking and progress monitoring and reporting are in place • We use tools and procedures that embed sustainability factors in college decision-making
	Internal and external awareness of College's eco-plans and progress is increased	• Environmental sustainability messaging is included in branding, advertising, marketing and recruitment materials and internal communications
	On-campus environmental behaviours are increased	• On-campus student, staff, faculty and community engagement in green activities is measured and increasing

LIVE	Three-year objective	Three-year goal
	Our environmental footprint is reduced in ways that move us to become restorative	• Carbon-neutral status is maintained; greenhouse gas emissions from energy use are reduced by 20 per cent between 2010 and 2017 • One hundred per cent of curriculum content is available on-line/hybrid/mobile technology, reducing paper use • Ninety per cent waste diversion at both campuses • Thirty per cent water use reduction achieved over three years and free, potable water is available throughout VCC • Green building practices and features are adopted in any proposed Downtown campus redevelopment • Plans for becoming restorative in key areas researched and developed
	Environmental impacts of purchasing are reduced and number of local suppliers reducing their ecological footprint is increased	• Environmental purchasing capacity of internal stakeholders (buyers and end users) is strengthened • Sustainability is included as a regular consideration in the procurement process • Suppliers provide information on the environmental impact of their products and services and their approach to environmental innovation and management
	On-campus local and organic food production and availability is increased	• Offerings of local and sustainable food at both campus cafeterias are increased • Opportunities exist for for students, staff and faculty to participate in growing food
	Number of staff, faculty and students using alternative transportation is increased	• Key alternative transportation infrastructure improvements which take potential campus redevelopment into account are identified and implemented

LEARN	Three-year objective	Three-year goal
	Sustainability is integrated into select courses and programs and all teaching and learning practices	• Sustainability competencies are defined and a plan for integration in courses and programs is developed • A plan to integrate sustainability into select courses and programs and all teaching and learning practices is implemented and a plan for full implementation in the next phase is developed
	Opportunities for training in green trades are identified and advanced	• Research into opportunities for training on green trades and begin program development is completed
	An approach to becoming a green community catalyst, hub and partner has been developed	• Design and begin implementation of a plan to become a green community catalyst, hub and partner • Faculty and students are engaged in leadership opportunities

Our progress

VCC has made strides in achieving our environmental sustainability goals over the past three years since the hiring of their Manager of Environment & Sustinability. The Environmental Sustainability Advisory Group (ESAG), a leadership team made up of staff, faculty and student representatives, leads and champions VCC's environmental efforts. 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.



Energy
VCC's goal is to reduce our energy consumption by 20% below 2010/11 levels by 2016/17. In order to meet this target, VCC has developed and is implementing a Strategic Energy Management Plan in partnership with BC Hydro. This plan identifies opportunities to reduce energy use and greenhouse gas emissions and their associated costs. Since 2010 VCC has been offsetting greenhouse gas emissions to be carbon neutral.

Success Indicator – As of March 2015, VCC has reduced its energy use (weather adjusted) by 16% below 2010/11 levels, achieving savings of approximately $190,000. Carbon Neutral emissions in calendar year 2014 decreased by 5% over 2013 and are 22% less than in 2010.

Waste
VCC's goal is to minimize the production of waste and maximize landfill diversion. In order to meet this goal, a Waste Management Plan has been completed and implemented. This plan includes conducting waste assessments and audits, expanding recycling systems, establishing organics recycling (composting) and developing a green procurement policy to minimize waste and reduce packaging. By 2016/17, VCC hopes to increase diversion to 90%.

Success indicator: VCC's waste diversion rate in April 2015 was 83%. VCC's Salon & Spa is the largest Green Circle Salon in Canada and recycling metals, plastics, hair and chemicals from VCC's onsite salon and spa. Our Culinary and Pastry Arts programs divert an average of 40 tonnes of organics from the landfill each month.

Water
VCC's goal is to practice water conservation and ensure free access to potable water on campus. In order to meet this goal, the sale of bottled water has been eliminated on both campuses, a water audit was conducted to identify opportunities to use water more efficiently and automatic flush toilets have been installed in washrooms. VCC has set a goal to reduce water consumption by 30% by 2016/17 over our baseline of 2010/11.

Success indicator: As of the end of March 2014, VCC's water use has been reduced by 32% over our baseline, achieving our target ahead of schedule. In 2012, VCC eliminated the sale of bottled water and added nine new fountains with automatic bottle fillers. As of the end of April, 2015, the automatic bottle fillers have been used to fill 475,000 reusable water bottles.

Food systems
VCC's goal is to increase the availability of local and organic food on campus. In order to meet this goal, VCC is working toward establish a garden on campus, where students and staff can grow their own food and offer local and organic food in the cafeteria and food kiosks.

> *Success indicator: A visioning process to creae a VCC Learning Garden at the Broadway Campus was completed with the help of Fresh Roots. VCC is exploring community partnerships to make this Learning Garden a reality.*

Education and engagement
VCC's goal is to engage and educate the VCC family and local community to help realize a sustainable future. We are implementing initiatives to raise awareness and reduce environmental impact supported by the Environment and Sustainability Advisory Group (ESAG), the VCC Green Team and the Student's Union.

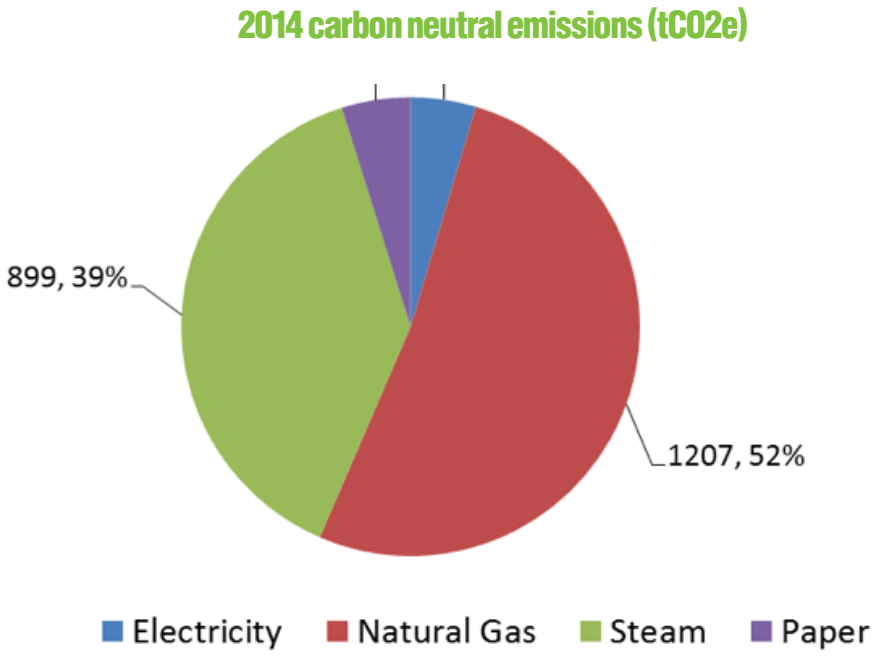
> *Success indicator: In 2014, VCC held a successful Random Acts of Green Campaign which reached out to students, faculty and staff through social media. We also implemented an air compressor leak tag system in Automtive Services to encourage students to identify energy wasting leaks. VCC also holds many successful events including Green Living Fairs, Bike to Work Week, Great Canadian Shoreline Cleanup and Electronic Recycling Days.*

Through these actions, VCC is engaging and empowering students, faculty, staff and the local community to help realize a sustainable future.

2014 greenhouse gas emissions

In 2014, VCC emitted 2,326 tonnes of carbon dioxide equivalent (tCO2e) [1] from sources covered under the Carbon Neutral Government Regulation. This is a 5% reduction over 2013 levels and a 22% reduction over 2010 levels. Of the total emissions for 2014, 95% come from heating, cooling and lighting our buildings and the remaining 5% come from the use of paper.

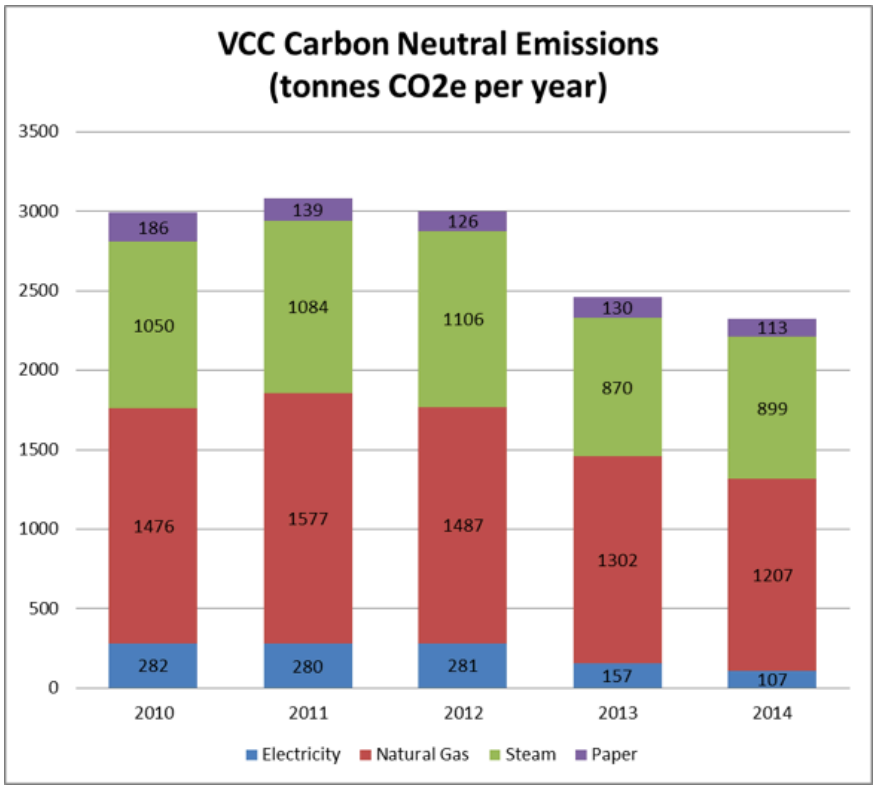
In fiscal year 2013/14, VCC spent approximately $1,155,000 on energy costs ($726,000 for electricity, $224,000 for natural gas and $205,000 for steam). While electricity use accounts for only 4% of carbon neutral emissions, it accounts for 63% of utility costs.



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.

VCC owns 6 diesel trucks, 5 diesel excavators, 3 diesel bull dozers, 5 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 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.

1 Tonnes of carbon dioxide equivalent (tCO2e) is a standard unit of measure in which all types greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.



Offsets applied to become carbon neutral in 2013

VCC has purchased 2,247 tonnes of carbon offsets from the Ministry of the Environment at a cost of $56,200 ($25 per tonne) plus GST to achieve carbon neutrality, as required by the Greenhouse Gas Reduction Targets Act.

An adjustment of -79 tonnes has been made to VCC's carbon neutral emissions and corresponding offset bill from 2013. This is due to a corrected emissions factor calculated for emissions from the use of steam from Creative Energy (formerly Central Heat Distribution). The corrected emissions factor was calculated from data that was received after the 2013 submission deadline.

Actions taken to reduce greenhouse gas emissions in 2013

In 2013, VCC partnered with BC Hydro in their 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.

In order to better monitor energy usage and utility costs, VCC utilizes Prism's online energy management software program, PUMA to analyze and manage energy consumption and GHG emissions using utility billing data.

The following specific projects were undertaken during 2013 to reduce energy use and GHG emissions:

• **Downtown Campus Lighting Upgrades Phase 1**: Phase One of Lighting Upgrades to the Downtown Campus were completed in March, 2015. This project involved relamping all 4 foot luminaires with 28W T8 lamps at a cost of $280,000 and will save 267,000 kWh per year.

• **Broadway Campus Exterior and Parking Lot Lights**: Lighting Upgrades to the exterior and parking lot lights at the Broadway Campus were also completed in March, 2015, replacing all existing lights with LEDs. The project cost $180,000 and will save 68,000 kWh per year.

• **Direct Digital Controls (DDC)**: In 2014, DDCs were installed on existing heat pumps and lighting systems on three floors of the Downtown Campus (Dunsmuir Floor 3, Tower Floor 3 and Pender Floor 4). At this time, occupancy sensors were installed in the classrooms on these floors. Estimated savings of 30% will result from these actions.

• **Air Compressors and Scheduling:** In July and August of 2014, VCC completed two projects – the leaks in the air compressor lines in Automotive were fixed and a process to immediately report and fix future leaks was instituted with Faculty and students. In addition, the Air Handling Units at Broadway were aligned to the room booking schedule to ensure operational efficiency. These actions saved approximately 88,500 kWh in July and August alone.

• **Energy conservation and awareness:** Working with the ESAG and the VCC Green Team, a Random Acts of Green campaign was run in October of 2014. The campaign consisted of encouraging students, staff and faculty to take a "selfie" of themselves doing an act of green – turning lights out, recycling, commuting by bus – and then posting it to the VCC Sustainability Facebook page or Twitter account. In addition, people were "caught" doing acts of green around the college and given prizes. Results indicated a 19% increase (61 people) in Twitter followers and a 62% increase (13 people) in Facebook Likes. In total, 62 people had their picture taken engaged in an act of green. Also in 2014, VCC launched a quarterly e-newsletter to update the College community on environmental initiatives and progress throughout the year.

Plans to continue reducing greenhouse gas emissions
2015 – 2017

In April, 2014, VCC released its Environmental Sustainability Strategy 2014-2017 (see vcc.ca/about/college-information/reports-and-publications/). In the Strategy, VCC set a target to reduce campus energy (and GHG emissions) intensity in existing buildings by 20% from 2010/2011 fiscal year levels by 2016/2017 fiscal year. As of the end of March, 2015, we have achieved savings of 16%.

Full details on our three-year strategy to reduce energy use can be found in VCC's Strategic Energy Management Plan (see vcc.ca/about/college-information/reports-and-publications/).

VCC will reduce campus energy intensity in existing buildings by 20 per cent from 2010/11 fiscal year levels by 2016/17 fiscal year.

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 Phase 2:** Capital funds have been requested to complete Phase 2 of this project and achieve further electricity savings of 263,000 kWh or an additional 5% at a payback period of 5.9 years. The capital cost of Phase 2 is $280,000 and would include converting CFL downlights with LED modules in select common areas and relamping incandescent sconces with LED lamps in Four Corners and JJ's Restaurant; converting halogen downlights in Four Corners restaurant and the 4th floor hospitality lobby to LED lamps or modules; installing daylight controls in high fenestration hallways and installing occupancy sensors in all washrooms; and, replacing all exterior compact fluorescent, metal halide and high pressure sodium luminaires with new LED luminaires.

• **Broadway Campus Interior Lighting:** Capital funds have been requested to upgrade the interior lighting at both buildings on the Broadway Campus at a cost of $150,000. This would save 195,000 kWh or 5% of current electricity costs and have a payback period of 5.9 years. The work would include: converting higher wattage Compact Fluorescent (CFL) downlights with LED modules in common areas and corridors in both Buildings A and B; converting metal halide lamps in decorative luminaires in Building B to induction lamps or LED modules; installing occupancy sensor lighting controls in several long corridors in both Buildings A and B; installing daylight controls for downlights located in high fenestration areas on North side of Building B; and, relamping all 4' linear fluorescent luminaires in Building B with 25W energy saving T8 lamps.

• **Continuous optimization program:** VCC has been approved to participate in Continuous Optimization, a BC Hydro and Fortis BC program. This will involve the installation of an energy management information system which will allow VCC to conduct a detailed investigation to identify potential control focused projects. Projects with a payback period of less than two years will be actioned by the College.

• **Direct digital controls:** Direct Digital Controls (DDCs) have not yet been installed on existing heat pumps and lighting systems in all parts of the Downtown Campus. Three floors were completed in 2014. We will continue to install DDCs in the remaining five sections as budget allows.

• **Energy conservation and awareness:** Building on our successful "Lights Out Campaign" and "Random Acts of Green" Campaign, 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 2% per year.

• In September 2014, VCC opened the **Motive Power Centre** on Annacis Island, a new space for the Heavy Duty Commercial Transport Program. Referred to as the Annacis Island Campus (AIC), it is a shared facility with BCIT. The energy consumption of AIC is not included in this document and an action plan will be developed in partnership with BCIT during 2015/16 to address energy use and emissions at AIC.

Actions to reduce provincial emissions and improve sustainability

VCC recognizes the role it plays in working to reduce provincial greenhouse gas emissions and improve sustainability. In April 2014, VCC released its Environmental Sustainability Strategy for 2014/15 to 2016/17.

VCC will strive to bring its long-term environmental sustainability vision to life over the next ten years. By 2023, our approach to environmental sustainability will be a key reason we are an educational institution of choice. Over ten years we will advance towards zero - and in some cases restorative - environmental impact. We will be a green community hub, catalyst and partner. Our students will graduate with the competencies, connections, and inspiration to play a leadership role in the region's transformation to sustainability. We have organized our three year strategy into three themes of lead, live and learn, and set ten objectives for ourselves to achieve by 2016/17.

For more information on VCC's Environmental Sustainability Plan, check out our website at vcc.ca.
Follow our activities and progress on our Facebook page at
facebook.com/pages/VCC-Sustainability and on Twitter at @GreenVCC.
For more information on VCC's Environmental Sustainability Plan, please visit:

vcc.ca

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2014 Carbon Neutral Action Report (CNAR) - Part 2 ACTIONS

Organization Name

Vancouver Community College

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.

No

Undertook an evaluation of overall building energy use.

Yes

Please list any other actions taken to reduce emissions from Buildings:

Phase One of Lighting Upgrades to the Downtown Campus were completed in March, 2015. This project involved relamping all 4' luminaires with 28W T8 lamps at a cost of $280K and will save 267,000 KWh per year.

Lighting Upgrades to the exterior and parking lot lights at the Broadway Campus were also completed in March, 2015, replacing all existing lights with LEDs. The project cost $180K and will save 68,000 kWh per year.

In 2014, DDCs were installed on existing heat pumps and lighting systems on three floors of the Downtown Campus (Dunsmuir Floor 3, Tower Floor 3 and Pender Floor 4). At this time, occupancy

sensors were installed in the classrooms on these floors. Estimated savings of 30% will result from these actions.

In July and August of 2014, VCC completed two projects – the leaks in the air compressor lines in Automotive were fixed and a process to immediately report and fix future leaks was instituted with Faculty and students. In addition, the Air Handling Units at Broadway were aligned to the room booking schedule to ensure operational efficiency. These actions saved approximately 88,500 kWh in July and August alone.

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

Do you have a fleet?

No

Replaced existing vehicles with more fuel efficent vehicles (gas/diesel)

No

Replaced existing vehicles with hybrid or electric vehicles

No

Reduced the overall number of fleet vehicles

No

Took steps to drive less than last year

No

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:

In 2014, VCC used 14% less paper than in 2013. 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.

Actions Taken to Reduce Emissions - continued

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

In April, 2014, VCC released its Environmental Sustainability Strategy 2014-2017 (see http://www.vcc.ca/about/college-information/reports-and-publications/). In the Strategy, VCC set a target to reduce campus energy (and GHG emissions) intensity in existing buildings by 20% from 2010/2011 fiscal year levels by 2016/2017 fiscal year. As of the end of March, 2015, we have achieved savings of 16%.

Full details on our three-year strategy to reduce energy use can be found in VCC's Strategic Energy Management Plan ((see http://www.vcc.ca/about/college-information/reports-and-

publications/).

Key projects include:

Phase One of Lighting Upgrades to the Downtown Campus were completed in March, 2015. This project involved relamping all 4' luminaires with 28W T8 lamps at a cost of $280K. This project will save 267,000 KWh per year. Budget has been requested to complete Phase 2 of project and achieve further electricity savings of 263,000 kWh or an additional 5% at a payback period of 5.9 years. The capital cost of Phase 2 is $280K and would include converting CFL downlights with LED modules in select common areas and relamping incandescent sconces with LED lamps in Four Corners and JJ's Restaurant; converting halogen downlights in Four Corners restaurant and the 4th floor hospitality lobby to LED lamps or modules; installing daylight controls in high fenestration hallways and installing occupancy sensors in all washrooms; and, replacing all exterior compact fluorescent, metal halide and high pressure sodium luminaires with new LED luminaires.

Lighting Upgrades to the exterior and parking lot lights at the Broadway Campus were also completed in March, 2015, replacing all existing lights with LEDs. The project cost $180K and will save 68,000 kWh per year. For fiscal 15/16, budget has been requested to upgrade the interior lighting at both buildings on the Broadway Campus at a cost of $150K which would save 195,000 kWh or 5% of current electricity costs and have a payback period of 5.9 years. The work would include: converting higher wattage Compact Fluorescent (CFL) downlights with LED modules in common areas and corridors in both Buildings A and B; converting metal halide lamps in decorative luminaires in Building B to induction lamps or LED modules; installing occupancy sensor lighting controls in several long corridors in both Buildings A and B; installing daylight controls for downlights located in high fenestration areas on North side of Building B; and, relamping all 4' linear fluorescent luminaires in Building B with 25W energy saving T8 lamps.

VCC has been approved to participate in a BC Hydro and Fortis BC program called Continuous Optimization. This will involve the installation of an energy management information system which will allow VCC to conduct a detailed investigation to identify potential control focused projects. Projects with a payback period of less than two years will be actioned by the College.

Direct Digital Controls (DDCs) have not yet been installed on existing heat pumps and lighting systems in all parts of the Downtown Campus. Three floors were completed in 2014. We will continue to install DDCs in the remaining five sections as budget allows.

VCC has an active energy conservation awareness program. Building on our successful "Lights Out Campaign" in 2013, and our "Random Act of Green" campaign from 2014, VCC will continue to work to engage students, staff and faculty through campaigns to support beahaviour change across both campuses. The annual savings from changing behaviour is estimated at 2% per year.

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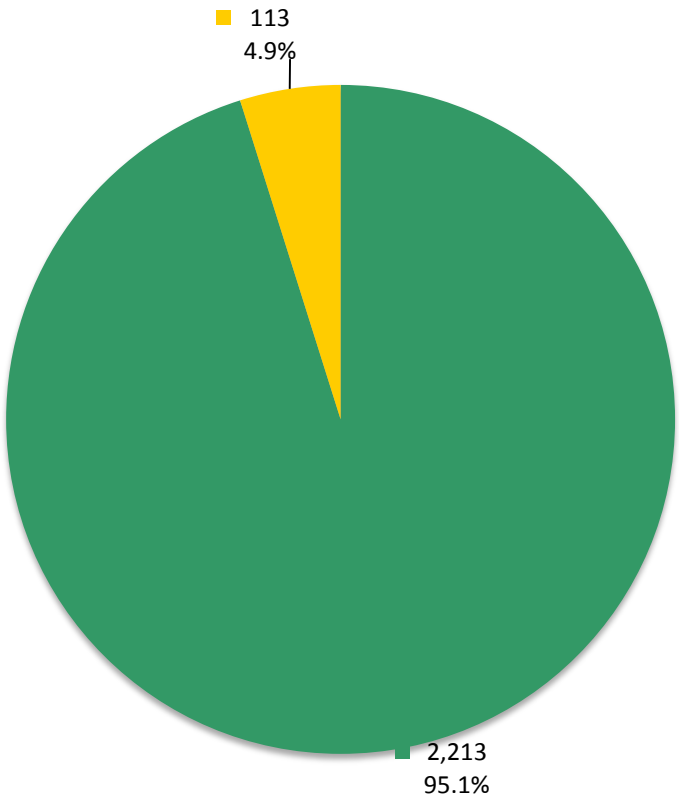
shared facility with BCIT. The energy consumption of AIC is not included in this document and an action plan will be developed in partnership with BCIT during 2015/16 to address energy use and emissions at AIC.

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

No

Vancouver Community College
Greenhouse Gas Emissions by Source
for the 2014 Calendar Year (tCO_2e*)



Total Emissions: 2,326

Stationary Fuel Combustion (Building Heating and Generators) and Electricity

Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2014 (Generated June 23, 2015 4:54 PM)

Total offsets required: **2,326**. Total offset investment: $**58,150**. Emissions which do not require offsets: **0** **

*Tonnes of carbon dioxide equivalent (tCO_2e) 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.