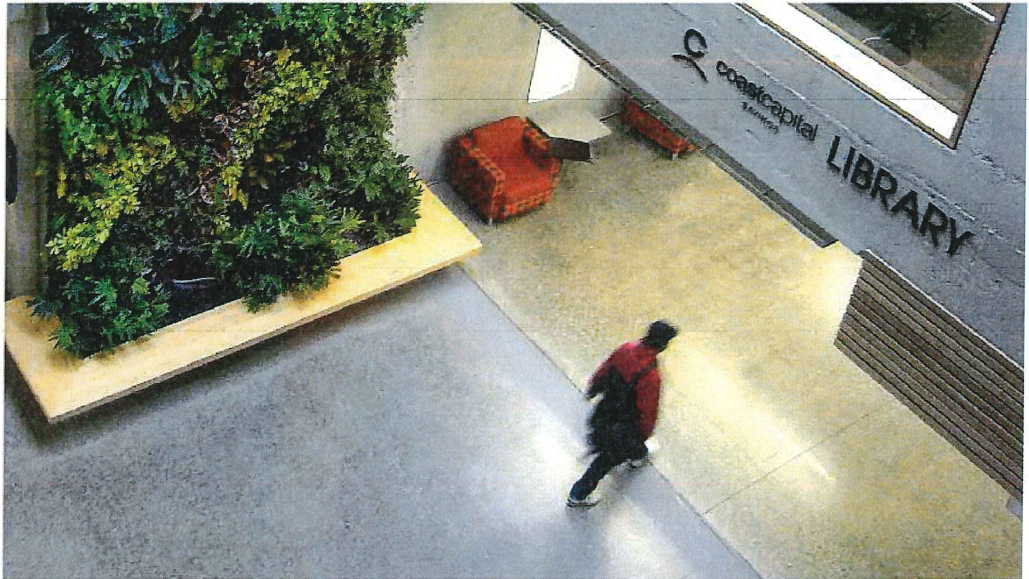


# 2017 CARBON NEUTRAL ACTION REPORT

Prepared by Facilities Services



May 2018



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# 2017 Carbon Neutral Action Report

## Kwantlen Polytechnic University

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

### OVERVIEW

Several extenuating circumstance events beyond KPU's control that occurred in 2017 contributed to an overall 14.24% increase in GHG emissions from the 2016 calendar year. This resulted in only a 4.1% decrease in GHG emissions from the initial Bill 44 benchmarking 2007 calendar year. Comparing to 2016, the Surrey campus experienced a 10.18% increase in GHG emissions because of a few contributing factors. A leak in the Surrey campus heating system underground piping loop, is estimated to have resulted in an approximate 5% increase in natural gas consumption, because of the heating hot water that was lost to ground from the underground pipe leak and needed to be replenished from cold water to keep the system running. Construction at the Surrey campus Spruce building is also estimated to have resulted in an approximate 5% increase in natural gas consumption, because of the need to operate over extended hours and the fact that many of the adjoining sections of the building that were still in use, were not environmentally sealed from the outside construction area, and were constantly spilling heated air to the outside over the winter months. The Richmond campus saw a 27.15% jump in GHG emissions largely because of a 35.79% increase in natural gas consumption, and marginally from a 6.18% increase in electricity consumption, which resulted mostly from increased heating needs and extended operating hours, related to construction of the new 5 floor CSWSOD building. The Langley Main campus experienced a 21.68% increase in GHG emissions largely because of a 22.15% increase in natural gas consumption resulting from a combination of increased operating hours, and a significant increase in natural gas consumption for commercial beer production operations of the Brewing Instructional Lab. The Langley Horticulture campus experienced a 7.85% increase in GHG emissions primarily attributable to leaks in the ageing and inefficient Greenhouse heating system. Which had multiple repeated leaks, causing heating hot water to flow onto the floor of the Greenhouses, and requiring the continuous replenishment of the heating system with cold water, that needed to be heated by the natural gas fired boilers to keep the system running. The Cloverdale Tech campus experienced a 10.74% increase in GHG emissions, resulting from an 11.75% increase in natural gas consumption for heating. Which is mostly because of an increased

number of instructional sessions being offered in the class rooms and Trades shops during the evening and weekend hours.

All these contributing events resulted in an overall 14.24% increase in GHG emissions from 2016, and highlight the importance of actively following a Strategic Energy Management Plan, and pursuing energy efficiency and GHG reducing upgrades to mechanical, electrical and building controls systems. The practice of continuously improving efficiency of these systems, must be part of all renovations and new construction in order to catch up and get on track to make the significant improvements needed to meet legislated GHG reduction targets. The next legislated target KPU faces is the 33% reduction of GHG emissions from the 2007 benchmarking level, by the end of 2020. That means KPU needs to cut GHG emissions to 1815.7 tCO<sub>2</sub>e by the end of 2020.

Add to this the announced annual increase of \$5 per tonne of carbon offsets required to become carbon neutral, and the cost for carbon offsets for 2017 rises from  $2599 \times \$25 = \$64,975$  plus tax, to  $2599 \times \$30 = \$77,970$  plus tax. This annual increase of \$5 per tonne of carbon offsets will double the cost up to \$50 per tonne by the end of 2022, and cost KPU \$129,950 plus tax. And so on...

All this spotlights the mounting urgency to revive the Strategic Energy Management Program that has languished since 2015. Actively pursuing opportunities to improve energy efficiency and significantly reduce emissions, is needed to meet the looming 2020 legislated 33% GHG emissions reduction target of 894.3 tCO<sub>2</sub>e lower than the 2007 level, or a maximum of 1815.7 tCO<sub>2</sub>e.

Recognizing this urgency, KPU has initiated several projects to reduce electrical consumption and channel that saved electricity to fuel switch from natural gas heating sources, which create more than 80% of GHG emissions, to other heating sources that would use the otherwise saved electricity. Constantly aiming to obtain required GHG emissions reductions, while remaining operating cost neutral.

Taking into account that these initiatives require significant increases in resources, and to support these efforts, capital renewal funding for major maintenance and upgrades to KPU buildings and systems, is being added to the funding available for GHG reductions projects. KPU is making the conscientious commitment to support these projects, which will require a significant amount of dedicated personnel to plan and execute them, to achieve successful completion.

Through implementation of sustainable energy conservation practices, business practices, educational offerings, community events, and research, KPU has engaged stakeholders in addressing environmental sustainability. By sponsoring and supporting sustainability events and activities, KPU upholds its commitment to environmental stewardship and creating a more sustainable world, particularly by reinforcing efforts to reduce Greenhouse Gas Emissions (GHG) for the University. KPU is a new model of undergraduate university that combines superior instruction, learning support, faculty and student research, and community relations to meet our communities' needs for leaders, thinkers, and doers.

KPU offers all learners opportunities to achieve success in a diverse range of programs that blend theory and practice, critical understanding, and social and ethical awareness necessary for good citizenship and rewarding careers.

“Our vision and goals have been tested against the expectations of the communities we serve and against scenarios for the future of our region and our province. We believe that our three themes of Quality, Relevance, and Reputation capture both the challenge and the opportunity that present themselves to KPU.” Alan Davis, PhD, KPU President and Vice-Chancellor.

From a global perspective, KPU recognizes that organizations need to greatly reduce their impact on the natural environment. KPU’s Mission and Vision, (Vision 2018) outlines “opportunities to achieve success in a diverse range of programs that blend theory, practice, critical understanding, and social and ethical awareness necessary for good citizenship and rewarding careers.” Vision 2018 further outlines the values of “responsible stewardship of resources” with specific goals of “integrating sustainability into core curriculum” and “continuing to enhance sustainability efforts on campus”. To that end, along with the numerous curricular offerings, KPU strives for efficient and sustainable outcomes in all its service delivery. Examples include; green procurement practices and product selections such as enhanced recycled paper content; a comprehensive waste management program; technological solutions for meeting rooms and office PC’s (the addition of cameras) to reduce the need for travel between campuses; promoting alternative transportation such as an intercampus shuttle, bike lockers, bike repair stations, and showers. KPU strives to reduce consumption of water, electricity and natural gas so that KPU is a leader to others in our sector and the community. Energy Conservation is a core consideration when completing new expansions, renovating buildings, and daily operations. This has led KPU to consistently focus on sustainability. From 2000 to 2017 KPU has increased in space by 21.03% while decreasing our natural gas consumption by 4.32% and electricity consumption by 3.3% in the same time period.

KPU’s energy conservation success has been created through our many partners including design professionals, service technicians, building operators, BC Hydro, NRCan, the Province of British Columbia and more. Much of the energy efficiency work we have performed has been funded by either future avoided energy costs, or from financial assistance from NRCan, BCHydro, and the Province of British Columbia. In 2017, a contribution of \$72,000 from the Ministry of Advanced Education enabled KPU to top up the funds and perform additional HVAC controls modernization upgrades at the Surrey campus. These upgrades consisted of replacing 1990s era electronic controls, with more advanced technology that greatly improves the ability for the computerized building automation system to monitor and control equipment, and maximize both energy efficiency and performance effectiveness in satisfying occupant environmental comfort needs. Visit KPU’s webpage on [Sustainability and Energy](#) for further details including archived records of KPU’s previous Carbon Neutral Action reports (CNAR) and other valuable resources.

## Emissions and Offset Summary Table:

KPU GHG Emissions and Offset for 2017 (tCO <sub>2</sub> e)	
<b>GHG Emissions created in Calendar Year 2017</b> (from SMARTTool Homepage):	
Total Emissions (tCO <sub>2</sub> e)	2600
Total Offsets (tCO <sub>2</sub> e)	2599
<b>Adjustments to GHG Emissions Reported in Prior Years</b> (from SMARTTool Homepage):	
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> (from SMARTTool Homepage): (This is the total of emissions that must be offset for Reporting Year 2017)	
Grand Total Offsets (tCO <sub>2</sub> e)	2599

In accordance with the requirements of the Greenhouse Gas Reduction Targets Act and Carbon Neutral Government Regulation, *Kwantlen Polytechnic University* (**the Organization**) 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 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.

Signature

May 31, 2018

Date

Jon Harding, CPA, CA

Vice President, Finance & Administration

Name (please print)

Title

## I. EMISSIONS AND OFFSETS, 2017

**Green House Gases** consist of a variety of gaseous compounds that trap heat within the earth's atmosphere and create global warming. Historically quantities of these gases have existed in consistently stable quantities that were environmentally balanced to meet planetary life sustainability needs. It's been estimated that since the beginning of the industrial age carbon dioxide levels alone have increased by about 42%. This has led to increased heat retention and continually rising global temperatures.

The B.C. Provincial Government's Bill 44 targets carbon dioxide producing activities to compel pursuit of reductions and requires the purchase of Carbon Offset credits at \$25 per ton of CO<sub>2</sub>equivalent (tCO<sub>2</sub>e ) (calculated using scientifically determined energy consumption quantity conversion equations), to generate funding for support of carbon reduction projects that reduce atmospheric GHG levels. Beginning in 2018 the cost of Carbon Offset credits will start to increase annually by \$5 per ton to increase the economic incentive for reductions. Thus 2018 Carbon Offset credits will be \$30 each and in 2019 \$35 each and so on. Provincially legislated targets have been set to reduce GHG emissions from 2007 levels, 6% by 2012, 18% by 2016, 33% by 2020, and 80% by 2050.

### **2017 Greenhouse Gas Emissions**

KPU's 2017 total emissions from all sources for Offsets were 2,599 tCO<sub>2</sub>e, producing a 324 tCO<sub>2</sub>e or 14.24% increase from 2016 emission levels. Due to the uncontrollable effects of heating system pipe failures, and major construction being carried out at two campuses over the past year, KPU experienced a significantly reduced level of GHG emission reduction success and only achieved a 4.1% reduction from base year 2007 building emissions of 2,710 tCO<sub>2</sub>e.

Annual Fugitive Emissions generated by equipment using Hydrochlorofluorocarbon (HCFC) refrigerants remain well below 1% of our total emissions and were not reported in 2017, as permitted under regulatory guidelines.

### **Offsets Applied to be Carbon Neutral in 2017**

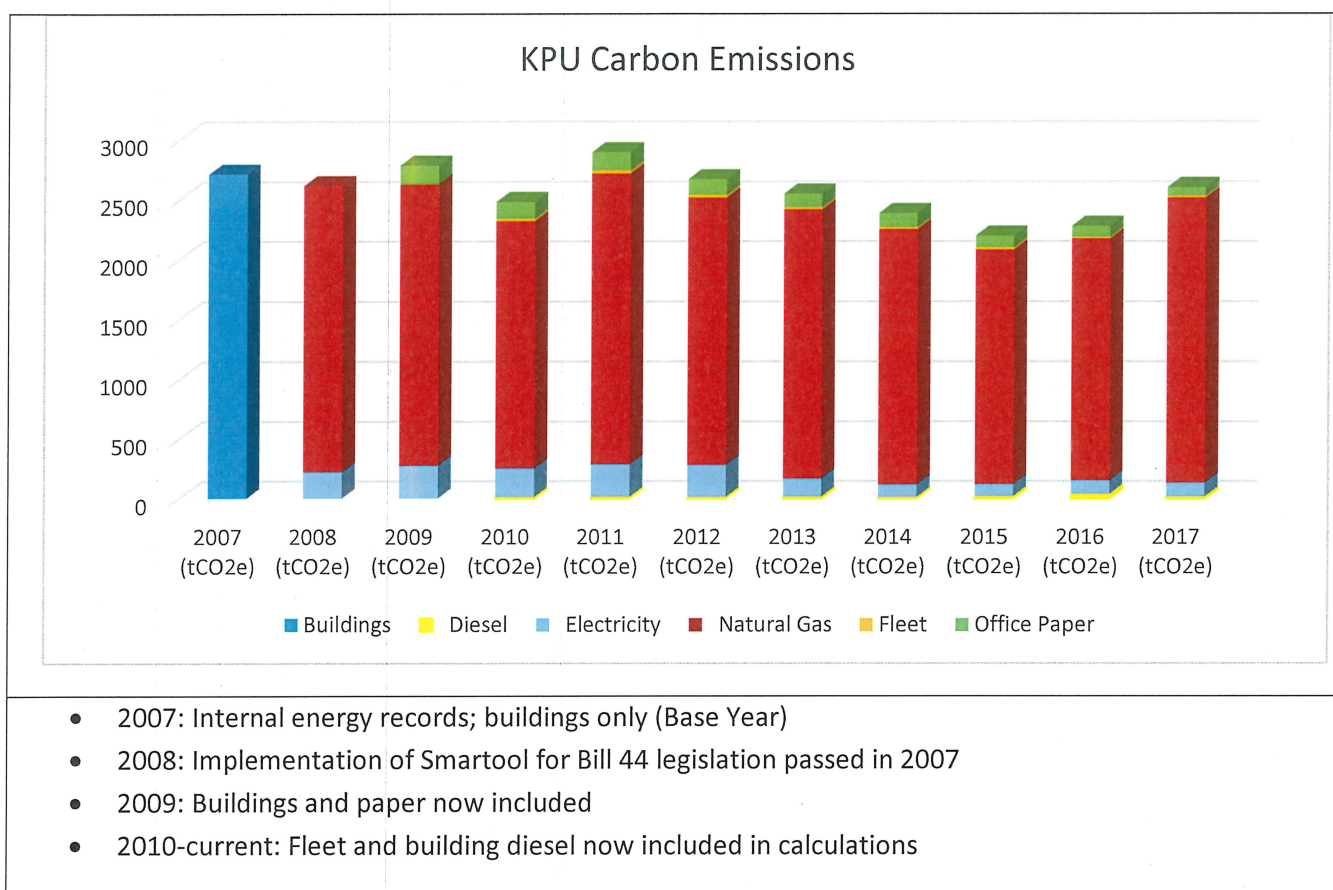
KPU has been a Carbon Neutral organization since 2010 with an annual purchase of carbon offsets. For 2017 offsets purchased totaled 2599 tons of carbon emissions as identified in SMARTTool, at a cost of \$68,223.75 including GST.

KPU spent \$455,620.80 to purchase carbon offsets for 17,428 tons of carbon emissions during the period 2010 to 2016 including GST.

## II. ACTIONS TAKEN TO ACCOMPLISH OUR 2017 GHG REDUCTIONS

KPU 2017 carbon emissions for buildings as calculated by the Provincial Government SMARTTool were 2,512 tCO<sub>2</sub>e. Producing a 7.32% reduction in emissions from the comparative 2007 buildings emission level.

The first complete reporting year for buildings and paper in the SMARTTool reporting system was 2009. In that year, KPU's total carbon emissions for offsets were **2,781** tCO<sub>2</sub>e. KPU total carbon emissions for offsets for 2017 were **2599** tCO<sub>2</sub>e. This produced a **6.54% reduction** in emissions from 2009.

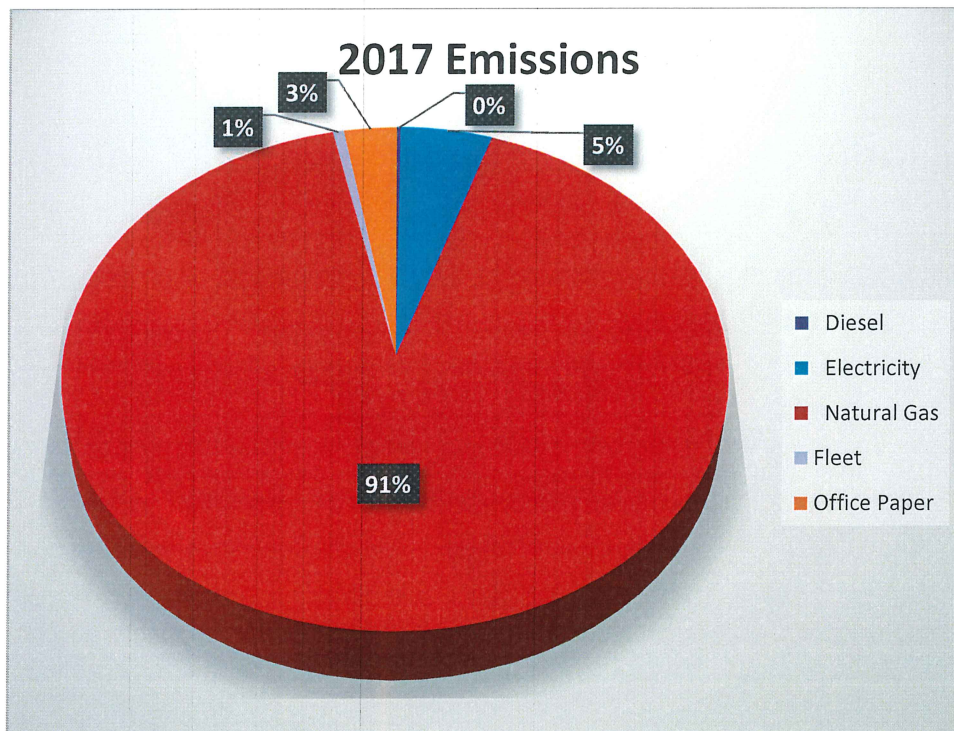


During 2017 KPU implemented building system controls upgrades in three buildings at the Surrey campus to continue to build on energy conservation successes, and explore additional options for savings opportunities. Engineering assessments were undertaken to examine technological advancements and identify sustainable solutions for improving energy efficiencies, while preserving or improving service delivery effectiveness. Sustainability is a key element of KPU as was evidenced by the diverse range of events sponsored by the University or attended by members of the Faculty, Staff and Student Body.

### III. FUTURE ACTIONS PLANNED FOR 2018

KPU entered 2017 with enthusiastic Facilities personnel focused on Energy Conservation and reduction of GHG emissions. This team and the university enter 2018 with continued established partnerships in external agencies such as the Province of British Columbia/ BC Hydro/ and Terasen Gas; new partnerships emerging in KPU's departments and faculty areas; while continuing to grow awareness of the connections and institutional participation already in place for Sustainability and Energy Conservation.

Of the 2,599 tCO<sub>2</sub>e KPU produced in 2017, **2,378.62 tCO<sub>2</sub>e** were produced by burning natural gas. Improving efficiencies in heating systems and exploring alternative energy heating sources is key to achieving substantial GHG emissions reductions, to meet statutory targets.



#### ***Heating System Efficiency Improvements***

The feasibility of replacing aging inefficient boilers with higher efficiency condensing boilers and heat distribution piping will be explored to increase system efficiencies. Geo-exchange systems will be fine-tuned to maximize system operational effectiveness and with opportunities for new geo-exchange fields being explored. Use of heat pumps sourced from geo-exchange fields and air sourced heat exchangers, create opportunities to fuel switch heating systems from natural gas heating systems.

<b><i>Lighting Retrofits</i></b>	Significant success in the past with lighting retrofits and emerging new technologies in the sector have KPU exploring additional lighting retrofit projects. Use of new technologies available such as LED lighting create substantial opportunities for electricity conservation.
<b><i>Monitoring and Metering Projects</i></b>	To find new opportunities an understanding of current load demands is needed. KPU has implemented Coppertree Kaizen building management controls system software on each campus to monitor and track building systems key performance indicators and identify performance improvement energy savings.

#### IV. KPU's COMMITMENT TO SUPPORT CARBON REDUCTION, SUSTAINABILITY, AND ENERGY CONSERVATION

Energy conservation is a strength with KPU's energy consumption being 40% less than the average for post-secondary institutions within the Pacific Coast Region, (from the 2014 Association of Physical Plant Administrators' Facilities Performance Index, APPA FPI). KPU extends our conservation focus to embed it within business practices, academic offerings, and buildings.

Since being formed as Kwantlen College in 1981 and over the course of its evolution to becoming Kwantlen Polytechnic University, KPU followed environmental stewardship practices and aimed to be a dynamic and inspirational leader in creating a more sustainable world. When the institution was first formed to serve the South-Fraser region of the Lower Mainland of BC, it consisted of several preexisting facilities that were previously owned or leased by Douglas College. During the 1990s new buildings were constructed in Surrey, Langley and Richmond, to increase space for delivery of educational services. Then in 2006 the Cloverdale Tech campus was opened to replace the ageing Trades campus in Newton which consisted of mostly leased buildings. Sustainability was a driving design factor for each of these new construction buildings. In addition, in 2000 KPU implemented internal energy conservation efforts, initiated using funds from the projected and subsequently recouped, lower energy consumption costs savings that were captured as a result of the projects. This placed KPU as a leader in sustainability efforts by making it one of the lowest energy per square meter of space institutions in the Province.

However, when Bill 44 legislation was passed in 2007, the targets were set as percentage reductions, based on reducing GHG emission levels from 2007 levels, which were already much lower than many others who had not yet initiated conservation efforts. Multiply this by the fact that the institution continues to grow and add new construction space to meet the growing community demands for educational services, while expecting to reduce energy consumption and

resulting GHG emissions, and KPU faces a steeper uphill climb every year. In support of the Provincial Bill 44 targets to reduce Green House Gas Emissions KPU has achieved an 18.19% reduction in GHG emissions from 2009 to 2016 achieving the provincial 18% reduction target set for 2016. However, because of the unpredictable and unique conditions resulting from heating system pipe failures and increased energy demands resulting from construction and renovations, as well as increased energy demands from increased space, hours of occupancy, and commercial production of beer for retail funding generation, there was an unpreventable 324 tCO<sub>2</sub>e or 14.24% increase in GHG emissions from 2016 to 2017.

Compounding the effects of these unusual events, in 2006, 2007, and 2008 the Surrey campus received expansions of the Fir, Main and Arbutus buildings, which increased the campus footprint and energy demands. From 2010 to 2012 the Langley campus was expanded to add spaces for the Institute of Sustainable Horticulture research laboratory and research greenhouses, and the Community and Health Studies building, which increased campus energy consumption levels. In 2015 the Langley campus was again expanded to add the Brewing Instructional Laboratory, which is not only used as a teaching facility, but produces commercial retail product for public sale, to create a revenue stream to support the instructional program. This revenue stream production creates significantly greater energy consumption and GHG emission levels for the Langley campus.

As mentioned previously, on top of all these additions, an unpredictable leak in the Surrey campus heating system hot water piping loop running underground between buildings, resulted in the loss of up to 2000 liters of heating hot water every day from mid October 2016 when it was first noticed because of daily water meter checks, to mid May 2017 when the weather became consistently warm enough to shut down and drain the heating pipe system between buildings and dig up the leak to repair it. After digging up the piping it was discovered that this high pressure, high temperature leak was due to exterior corrosion on the ageing heating pipe system, and it's strongly suspected that more leaks could occur as time passes.

This underground heating system pipe leak caused two issues of concern. It was estimated that the increased natural gas heating energy costs for the lost heating water were over \$800 per month driving up GHG emissions, and more importantly the high pressure high temperature water was flowing out of the pipe leak directly under the north east corner of the Birch building foundation. This created a serious concern that the underlying soil substructure had been dangerously compromised, and could present a danger to the building foundation that had a significant potential for structural damage that could risk occupant safety. Fortunately when the surrounding pavement was removed to reveal the underlying soil, it was discovered that the vast majority of the hot water that leaked from the system went into the storm water drainage system around the perimeter of the building, which fortunately minimized the amount of soil erosion under the corner of the Birch building foundation.

Because of these identified risks, KPU has engaged engineering services to inspect the remaining campus underground infrastructure and develop a renewal plan. Compound these increased energy costs with the renovations and expansion new construction at the Surrey campus Spruce building, and the new construction of the Wilson School of Design building at the Richmond campus, creating huge energy consumption jumps, and we have seen a drastic jump in GHG emissions levels from 2016 of 2275 tCO<sub>2</sub>e to 2017 of 2599 tCO<sub>2</sub>e. Resulting in a 324 tCO<sub>2</sub>e or 14.24% increase in GHG emissions in the past year.

In 2016 KPU was successful in meeting the provincial target of an 18% reduction in GHG emissions from the 2007 level of 2,710 tCO<sub>2</sub>e by achieving a reduction of 511 tCO<sub>2</sub>e from base year 2007 building emissions of 2,710 tCO<sub>2</sub>e. However, due to these increased demands of added spaces and the uncontrollable effects of unpredictable heating system pipe failures, added to the increased energy demand of construction, the resulting 2017 GHG level of 2599 tCO<sub>2</sub>e only represents a 111 tCO<sub>2</sub>e or 4.1% decrease from 2007 GHG emissions.

If these GHG emission levels were to be considered in relation to total square meter space a different picture would emerge that would provide a more equally comparative key performance indicator to measure the success of GHG reduction efforts. For instance in 2007 KPU produced 0.03001 tCO<sub>2</sub>e per m<sup>2</sup> of campus space, but in 2016 the comparable key performance indicator was 0.02315 tCO<sub>2</sub>e per m<sup>2</sup>, representing a 22.87% decrease in GHG emissions per square meter of institutional space.

This would also mean that in 2017 even with the unexpected heating system pipe failure that caused heating hot water to flow into the ground water drainage system, and the additional energy demands of two construction sites, the key performance indicator would identify an 11.88% decrease in GHG emissions per square meter of space, from the level recorded in 2007.

Comparing the level of GHG emissions produced by the organization without factoring in the increases in building space needed to meet increasing demands for services, creates an increasingly insurmountably skewed perspective on GHG emission reduction efforts and becomes more of an impossibility to achieve reduction targets enshrined in legislated regulations. The simple answer to reducing GHG emissions would be to reduce occupied space, but that would not provide the ability to meet mandated service requirements. Otherwise substantial investment in infrastructure upgrades are needed to deal with this challenge.

Only by using the most energy efficient technologies to conserve electricity, to fuel switch from natural gas to electric heating sources for new and renovated spaces, while aiming to remain operating cost neutral, can one compensate for the skewed effect of comparing 2007 emission levels of a smaller total building footprint, to the emission levels of continually increasing size needed to satisfy growing service demands. The key performance indicators need to be re-evaluated to factor in growth as part of the equation. Otherwise, the only organizations that will

have a hope of meeting the 2020 target of a 33% drop in GHG emissions levels from their 2007 recorded level, will be the ones that are actually remaining the same in size, reducing their overall building space, or investing significantly in technology upgrades to conserve electricity and fuel switch heating system to reduce natural gas consumption. Which paints a distorted picture of actual GHG reduction efforts being undertaken by stakeholders throughout the community.

The following are highlights from KPU's comprehensive report, Sustainability at KPU. Where Are We Now?

### **Sustainability in Academic Programs**

KPU's Academic calendar offers over 16 degrees and 6 diploma/certificate programs that have an aspect of environmental sustainability. Program areas include but are not limited to Horticulture, Environmental Protection, Greenhouse and Nursery Production, Institute for sustainable Food Systems, Turf Management, Geography, Policy Studies, Interior Design, Graphic Design, School of Business, and the Faculty of Community & Health Studies.

### **Sustainable Principles in Facilities Operations**

Facilities Services initiatives include;

- day time Custodial Services within a full Green Cleaning program ;
- optimized Building Management System controls with ongoing monitoring and verifications; and night audits and comprehensive maintenance contracts to ensure equipment is running at its most efficient.

### **Sustainable Landscape Maintenance Practices**

Core principles in the delivery and design of landscape services include;

- plantings that require low maintenance and no irrigation after establishment;
- deciduous trees around building perimeters that provide summer shading/cooling and improved winter natural lighting during after leaf drop:
- rain water capture systems;
- green walls and a green roof under construction;
- and the ban of herbicides, pesticides, and phosphates in the core contract.

### **Comprehensive Waste Management and Diversion Program**

Diverting over 25 consumer materials from the general landfill stream, KPU's waste management program utilizes the 3 R's principle of action; Reduce, Reuse, Recycle. The university is poised to launch its initial composting program in 2015.

## **Alternative Transportation Efforts**

In its approach to support alternative transportation options, KPU has the following in place;

- student U-Passes promoting transit use that also offer discounted fitness club memberships and access to car sharing;
- an intercampus shuttle that made over 1,100 trips/ week in the Fall & Spring semester;
- carpooling options; Car-2 Go registry;
- bike storage at all and access to showers at most campuses (Richmond's in planning stage) ;
- dedicated E-car and Hybrid stalls at each campus.

## **Work Schedules**

KPU encourages reduced commuting and travel between campuses with efforts such as;

- promotion and technologies to allow teleconferencing for meetings;
- hotel offices at each campus to provide less travel for faculty;
- on line classes;
- adjusted work week schedules and opportunities to work from home where practical.

## **Food Services**

Food Services at KPU promote sustainable food options.

- The university has also partnered to bring Farmer's Markets to the Langley campus throughout the spring and summer and is exploring new opportunities for Winter markets and other campuses.
- The Langley Horticulture program provides locally grown produce for sale and a Student Food Bank initiative is in place.

## **Buildings and Energy**

KPU's buildings are designed to minimize our environmental impact and energy consumption with outcomes that have led to an overall average less than 50% of the typical energy used by other North American post-secondary institutions.

- With optimized monitoring and controls in place, continuous focus is on front line teams for ongoing monitoring, building operator training; awareness training to service contractors such as Custodial and Security); and participation and partnerships with external agencies like BC Hydro.
- As leaders in energy conservation for over a decade, KPU's efforts towards energy conservation had resulted in 8 BC Hydro awards including Power Smart Leader and Power Smart Excellence.

## Sustainable Building Design

KPU's construction projects are designed to meet or exceed LEED Gold requirements and all major renovations to exceed LEED Silver. The current LEED certified buildings include;

- **LEED Gold:** Surrey Arbutus (Coast Capital Savings Library) building (74% more efficient than the traditional model building), Cloverdale Campus (33% more efficient than a traditional campus); and Langley Institute for Sustainable Horticulture (ISH) Labs
- **LEED Silver:** Surrey Main building; Langley West Wing, Langley South Building.
- **LEED Pending:** Richmond library

## Awareness and Partnerships

The promotion of sustainability is embedded in important awareness activities with the university including;

- KPU's Sustainability and Energy website provides a number of detailed reports and resources for the community; [Sustainability and Energy](#)
- Internal and external partnerships and attendance at events.
- KPU Street Market at Richmond Campus Featuring local vendors.
- Internal champions are part of KPU's Sustainability committee; [KPU Environmental Sustainability Committee](#).
- Green Teams in energy conservation unite building operators with department level expertise to understand local area energy use and saving opportunities.
- Attendance at conferences & student events, local area school districts and municipality partnerships.
- Promotion of global efforts such as Earth Day.

## 2015 Strategic Energy Management Plan (SEMP)

As a leader in energy conservation, KPU's efforts have resulted in approximately a million dollars of avoided energy consumption costs every 3 years.

- Its detailed [Strategic Energy Management Plan](#) SEMP was identified as one of the most comprehensive energy reporting systems in the public educational sector.
- Along with the detailed energy records and achievements to date, the website links to a number of resources such as Success Stories and a list of Efficiency Improvements Using Technology.

## Information and Educational Technology (IET) Initiatives

KPU's IET department has a growing list of Sustainable Technology Initiatives including;

- remote shut down of computers;
- increased use of Thin Clients and lap tops replacing the more energy consuming office PC's;
- and server virtualization.

## Government Reporting

KPU has taken many steps to reduce greenhouse gas emissions and energy consumption while being ever challenged by increasing building growth and increasing student enrollment.

- In 1995 the university joined the federal government's Energy Innovators Initiative and Canada's Climate Change Voluntary Challenge and Registry (VCR)
- Bill 44 and this Carbon Neutral Action Report outlines the specific greenhouse gas targets and accomplishments to date to achieve below 2007 levels by 2012 (6%), 2016 (18%), 2020 (33%) & 2050 (80%).
- Participation in the Public Sector Energy Conservation Agreement (PSECA) with specific targets to reduce energy consumption in 2011 (5%), 2016 (14%), and 2020 (20%).

# Part 1: CNAR Survey

## 1. General Information

Name: Maurice Bedard

Contact Email: Maurice.Bedard@kpu.ca

Organization Name: Kwantlen Polytechnic University

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)

Built, or are building new LEED Gold or other "Green" buildings

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

How many buildings were retrofitted?:

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

How many new "Green" buildings?: 2

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

1990s era electronic control units in the Surrey campus automated building management system were replaced with more modern controls technology that greatly improves the systems ability to monitor and control buildings systems and significantly improves energy efficiency and effectiveness in satisfying occupant needs.

## 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

KPU is upgrading the automated building management systems with newer technology to improve energy efficiency, and implementing use of newer technologies such as LED lighting to conserve electrical consumption, then utilize the electricity saved to fuel switch from natural gas heating sources to electricity based heating systems.

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

KPU will continue with building systems optimization and technology upgrades to improve energy efficiency.

## 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)

Took steps to drive less than previous years

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

KPU is exploring opportunities for the use of hybrid and electric vehicles to replace existing fleet vehicles as they come up for renewal.

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

KPU plans to switch to hybrid and fully electric vehicles as the fleet replacements come up for renewal, and infrastructure such as charging stations is developed at each campus.

## 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.

KPU is continuing to encourage the use of electronic documenting and records retention formats to reduce the quantity of printed material generated by the University annually. Board of Governors members and University Senate members receive documentation electronically. The Payroll Department is moving to a fully electronic time sheet reporting system and other departments are encouraged to expand the use electronic forms of communication and records retention.

## 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); Encouraged or allowed teleworking or working from home

### b) Education/Awareness

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

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

### c) Other Sustainability Actions

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

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