2016 CARBON NEUTRAL ACTION REPORT

Prepared by Facilities Services

May 2017

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2016 Carbon Neutral Action Report

Kwantlen Polytechnic University

This Carbon Neutral Action Report for the period January 1st, 2016 to December 31st, 2016 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2016 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2017 and beyond.

OVERVIEW

Kwantlen Polytechnic University (KPU) evolved from what began in 1981 as Kwantlen College. Since inception KPU has endeavored to be a dynamic and inspirational leader in creating a more sustainable world. 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 creating a more sustainable world, particularly by reducing 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 has over 19,500 students and is one of the region's largest employers, with close to 1,500 employees.

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.

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, despite the colder than average winter months in 2016 causing increased consumption of natural gas and electricity for heating. Because of these colder temperatures, KPU's GHG emissions increased by 3.48% compared to 2015 GHG emissions. KPU aims to meet provincially legislated targets by targeting a yearly emissions reduction of 5.5%. Thanks to the cumulative effect of energy conservation upgrades implemented in previous years, KPU was able

to achieve the provincial 18% reduction target set for 2016, even though we experienced colder than average winter months than in recent years.

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 reducing. From 1994 to 2016 KPU has increased in space by 36.43% while decreasing our natural gas consumption by 11.8% and electricity consumption by 13.27% 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, BC Hydro, and the Province of British Columbia. In 2016, a contribution of $72,005 from the Ministry of Advanced Education enabled KPU to top up the funds and perform the decentralization of Domestic Hot Water systems at our Langley Main campus west building, to localized electric instantaneous on demand water heaters.

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 2016 (TCO2E)	
GHG Emissions created in Calendar Year 2015 *(from SMARTTool Homepage)*:	
Total Emissions (tCO_2e)	*2276*
Total Offsets (tCO_2e)	*2275*
Adjustments to GHG Emissions Reported in Prior Years *(from SMARTTool Homepage):*	
Total Emissions (tCO_2e)	*-5*
Total Offsets (tCO_2e)	*0*
Grand Total Offsets for the 2016 Reporting Year *(from SMARTTool Homepage):* *(This is the total of emissions that must be offset for Reporting Year 2015)*	
Grand Total Offsets (tCO_2e)	2270

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 2016 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.

Signature	Date
Jon Harding	Vice President, Finance & Administration
Name (please print)	Title

I. EMISSIONS AND OFFSETS, 2016

Green **H**ouse **G**ases 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_2equivalent (tCO2e) (calculated using scientifically determined energy consumption quantity conversion equations), to generate funding for support of carbon reduction projects that reduce atmospheric GHG levels. 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.

2016 Greenhouse Gas Emissions

KPU's 2016 total emissions from all sources for Offsets were **2,275** tCO^2e, producing a 183 tCO^2e (3.72%) increase from 2015 emission levels. Due to strategic system improvement projects carried out over the past several years KPU achieved a reduction of 511 tCO^2e from base year 2007 building emissions of 2,710 tCO^2e, or an 18.19% reduction from the partial reporting year.

Emission Source	2011 (tCO2e)	2012 (tCO2e)	2013 (tCO2e)	2014 (tCO2e)	2015 (tCO2e)	2016 (tCO2e)	2016 vs 2015
Buildings							
Diesel	4.39	1.91	4.08	0.96	7.49	27.03	261%
Electricity	284.85	280.99	163.19	116.35	112.51	125.54	11.58%
Natural Gas	2424.83	2229.85	2246.6	2132.22	1958.89	2018.73	3.05%
Fleet	25.74	20.65	17.26	15.6	17.04	12.2	-28.40%
Office Paper	151.34	132.31	114.33	117.72	98.57	92.54	-6.12%
Total Emissions	2891.15	2665.71	2545.46	2382.85	2194.5	2276.04	3.72%
Offset Exempt	1	1	1	1	1	1	
Total for Offsets	2890	2665	2545	2382	2194	2275	**3.72%**

Annual Fugitive Emissions generated by equipment using Hydrochlorofluorocarbon (HCFC) refrigerants remain well below 1% of our total emissions and were not reported in 2016, as permitted under regulatory guidelines.

Offsets Applied to be Carbon Neutral in 2016

KPU has been a Carbon Neutral organization since 2010 with an annual purchase of carbon offsets. For 2016 offsets purchased totaled 2275 tons of carbon emissions as identified in SMARTTool, at a cost of $57,723.75 including GST.

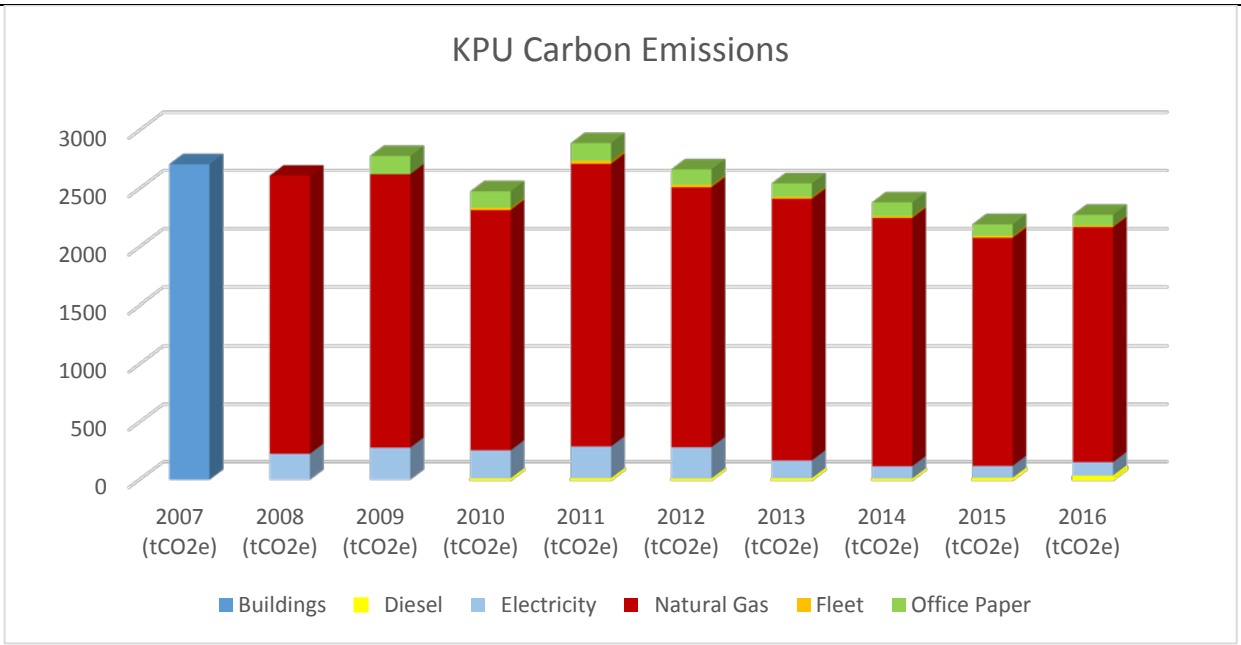
KPU spent $397,897 to purchase carbon offsets for 15,158 tons of carbon emissions during the period 2010 to 2015 including GST.

II. ACTIONS TAKEN TO ACCOMPLISH OUR 2016 GHG REDUCTIONS

KPU 2016 carbon emissions for buildings as calculated by the Provincial Government SMARTTool were 2,171.29 tCO2e. Producing a 19.88% 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_2e. KPU total carbon emissions for offsets for 2016 were **2275** tCO_2e. This produced an **18.19% reduction** in emissions from 2009.

Emission Source	2007 (tCO2e)	2008 (tCO2e)	2009 (tCO2e)	2010 (tCO2e)	2011 (tCO2e)	2012 (tCO2e)	2013 (tCO2e)	2014 (tCO2e)	2015 (tCO2e)	2016 (tCO2e)	**2016 vs 2015**	**2016 vs 2009**	**2016 vs 2007**
Buildings	2710												-21%
Diesel				2.78	4.39	1.91	4.08	0.96	7.49	27.03	261%		
Electricity		225.3	279.22	252.65	284.85	280.99	163.19	116.35	112.51	125.54	12%	-55%	
Natural Gas		2386.84	2345.69	2062.07	2424.83	2229.85	2246.6	2132.22	1958.89	2018.73	3%	-14%	
Fleet				20.31	25.74	20.65	17.26	15.6	17.04	12.2	-28%		
Office Paper			156.09	140.21	151.34	132.31	114.33	117.72	98.57	92.54	-6%	-41%	
Total Emissions	**2710**	2612.14	2781.00	2478.02	2891.15	2665.71	2545.46	2382.85	2194.5	2276.04	3.72%	-18.16%	-16%
Offset Exempt				1	1	1	1	1	1	1			
Total for Offsets		2612	2781	2477	2890	2665	2545	2382	2194	2275	**3.72%**	**-18.19%**	



- 2007: Internal energy records; buildings only (Base Year)
- 2008: Implementation of Smartool for Bill 44 legislation passed in 2007
- 2009: Buildings and paper now included
- 2010-current: Fleet and building diesel now included in calculations

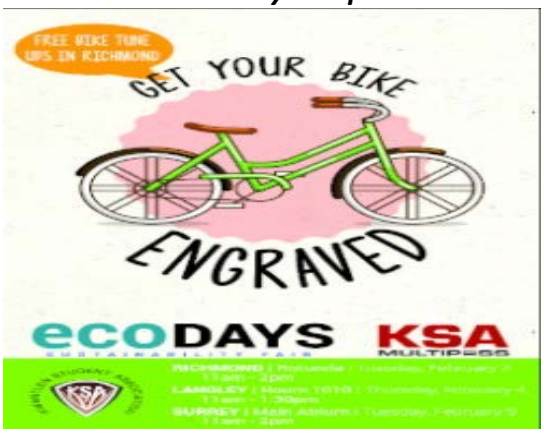
During 2016 KPU continued to build on energy conservation successes and explore additional options for savings opportunities. Engineering assessments were undertaken to examine technological advancements and identify sustainable solutions for improving energy efficiencies while preserving or improving 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. The projects undertaken and events supporting 2016 environmental sustainability improvement and carbon emissions reduction efforts are listed in the following tables.

Infrastructure Projects and Partnerships

Paper Cut Program implementation completed ***Desk Top Printer Replacement Program & Print Management Software Program*** 	As part of the IT department's centralized copier replacement program, 2015's project implementation was completed in 2016 and dramatically reduces the number of individual printer/copiers in individual offices by replacing them with centralized print/copy stations. Along with the Printer/Copier replacement program, IT implemented a secure print service (employee card required). The software uses a dashboard to allow users to track their impact on the environment by totaling all ongoing print and energy usage. Success in other similar environments have achieved up to 30% reduction in paper usage. Though the program was not fully implemented until early in 2016, there was a drop in paper use carbon emissions from the 2014 level of 118 tonnes to 99 tonnes for a 16% reduction. Once the program was fully implemented in 2016, paper consumption dropped to 92.54 tonnes CO_2e. Producing a 21.58% reduction from 2014 and a 39.95% reduction from the 2009 CO_2e emissions level of 156.09 tonnes from office paper consumption.

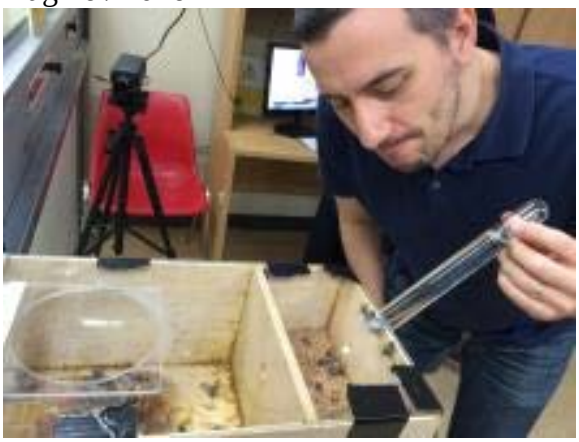
Domestic Hot Water System Decentralization Project, Langley Campus West building 	Installed localized electric on demand domestic hot water heaters, in the Langley campus west building and removed them from the main campus domestic hot water supply line, fed from the natural gas fired condensing on demand boilers in the east building and temperature maintained 24/7 using electric heat tape, along the full length of pipe from the boiler room. Heat tape from boiler room was de-energized. Removing these locations from the distant gas fired system, reduced carbon emission reductions, improved electrical and natural gas energy savings, provides greater demand control and reduces future maintenance costs.
Utility Sub-Meters Installed to Provide Energy Consumption Monitoring	The new electric on demand hot water heaters installed at the KPU Langley campus, included a water flow meter to track system water consumption for calculation of system use.
Exterior Lighting Improvement and Energy Conservation Upgrade	MMM Engineering contracted to use the results of the existing lighting assessment and exterior lighting improvement recommendations report, to develop tender package specifications for improvement of campus exterior lighting effectiveness, with new technologies that also increase energy efficiency, reducing electrical consumption and GHG emissions while improving campus safety.

Training and Awareness

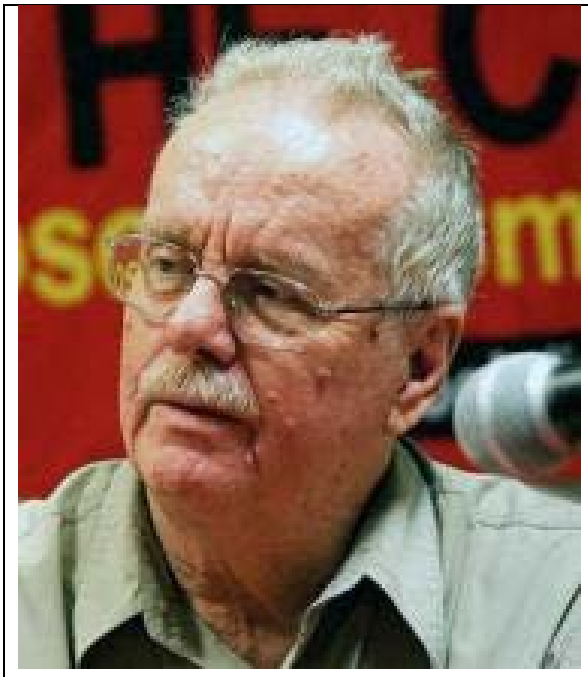
Ninth season of Green Wednesdays Produced 	Hosted by the KPU School of Horticulture in collaboration with the non-profit Green Ideas Network, the eighth season of the eco-minded film series will featured dynamic documentaries and discussions on the ways energy, agriculture and consumption impact our daily lives. Everyone is welcome to join KPU students and faculty as they screen movies that tackle climate change, urban and rural sustainability, energy production, agriculture and food. The screenings often include informed guest speakers who spark spirited conversations on universal environmental and social issues. http://www.kpu.ca/greenwednesdays
ecoDay events held at KPU Langley, Richmond and Surrey campuses 	Sponsored by the KSA and supported by KPU, on-campus sustainability events were held in February at each campus to showcase programs where students can learn about their community, find ways to get involved in and learn about how to make their lives more sustainable! Mark your bike to prevent theft! Bring your bike, and join the MultiPass team at ecoDAYS Sustainability Fair 2016 for FREE bike engraving! Free bike tunes ups were also available on the Richmond Campus Tuesday February 2, 11am - 2pm
From the book – now see the film – free at KPU! 	To coincide with the KSA ecoDAYS activities KPIRG, the PipeUp Network and a number of KPU Faculty hosted screenings of the film... *This Changes Everything* (http://thischangeseverything.org/a-weekend-of-movement-premieres/) The events were held at each campus. For each screening the film was shown and then followed with a conversation and panel discussion about the film.

KPU experts talk sustainability at PechaKucha Night Surrey Mar 24 / 2016 	What does sustainability mean? Faculty from various departments at Kwantlen Polytechnic University (KPU) took up the challenge to explore this question. Looked at from a variety of perspectives — including anthropology, technical trades, creative writing, horticulture and psychology — the results will be unveiled at City Hall's Centre Stage, in partnership with KPU, at PechaKucha Night Surrey Vol. 6: Sustainability**.** The event March 24 was a show-and-tell evening of images, ideas and inspiration. Ten fast-paced presentations cover topics from *Undiscovered Virtues of Weeds* by Lily Liu*,* to *Incorporating Aboriginal Wisdom to Promote Eco-literacy* by June Kaminski, to *Four Simple Things You Can Do to Save Honeybees* by Farhad Dastur.
Tsawwassen First Nation Farm School students share 'fruits' of their labours Aug 30 / 2016 	**Delta, B.C.** – Everyone has heard of the 100-mile diet. But can you imagine surviving on a 10-mile diet? Now you can. Thanks to a collaboration between the Tsawwassen First Nation and Kwantlen Polytechnic University (KPU), consumers can enjoy a diet that is much, much closer to home and features a plethora of veggies, free-range eggs and countless cuts of palate-pleasing pork. Students in the 10-month farm school program began working an eight-hectare (20-acre) piece of land on the Tsawwassen First Nation in the spring, learning the science and business of farming plus perspectives on indigenous food systems. They have been raising market crops and small livestock (chickens and pigs), with the fruits of their labour sold at farmer's markets around the Lower Mainland. Members of the public interested in direct farm sales can also sign up for a weekly produce box

	with items that are in season and eggs, as well as order various pork products, from chorizo and salami to ham, bacon and chops. Visit kpu.ca/tfnfarm/box-a-week for more information and to place your order.
Learning to bee in a buzzing local industry 	In response to a wide and pressing demand for bees – and those with the skills to care for them – KPU launched the province's first commercial beekeeping program earlier this year. With 11 months of theory and practical training, students exit the program with the skills to manage up to 300 colonies – a venture that could provide sufficient income to support a family. KPU's program runs in three sessions that mirror the annual apiculture cycle in British Columbia. Students study topics such as honeybee biology and integrated pest management and are exposed to trades skills involved in beekeeping. The students participate work experience with an established commercial beekeeper in Western Canada, or participate in a part-time work term with KPU and the Honeybee Centre. Students also learn the business skills needed to operate their own business. KPU's commercial beekeeping program, in partnership with the Honeybee Centre, is funded in part by Agriculture and Agri-Food Canada and the B.C. Ministry of Agriculture through programs delivered by the Investment Agriculture Foundation of B.C. It's also funded in part by Western Economic Diversification Canada and Project Apis. m, in partnership with Costco USA. To learn more, visit kpu.ca/cps/commercial-beekeeping.

Secret life of bees revealed Aug 16 / 2016 	**Surrey, B.C.** – Dr. Levente Orbán is a scientific expert on the cognitive processes and biological relevance of symmetry and spatial frequency to the *Bombus impatiens*. But you can just call him the bumblebee guy. "Bumblebees can see, smell, learn, remember and act on information, making them excellent models of fundamental psychological concepts," said Orbán, who is a psychology instructor at Kwantlen Polytechnic University (KPU). Orbán's research mainly focuses on how bumblebees process visual information. With funding from KPU's Office of Research and Scholarship and the Natural Sciences and Engineering Research Council of Canada (NSERC), Orbán collaborated with Dr. Deborah Henderson at the KPU Institute for Sustainable Horticulture, and the university's Facilities and Information-Technology teams to open KPU's unique Bee Cognition Lab at its Surrey campus last year. Orbán estimates that only about a handful of other labs in the world are working with bees in the field of comparative psychology. Orbán's research is freely available on the Kwantlen Open Resource Access (KORA) website at kora.kpu.ca. KORA is a digital collection of hundreds of scholarly and creative works produced by KPU faculty and students.
Water, water nowhere: KPU expert talks water rights and scarcity Sep 7 / 2016	**Richmond, B.C.** – Water, water, nowhere, and not a drop to drink – unless we make big changes. "Already, 800 million global citizens have no clean water source," said Pink. "By 2050, that number will reach two billion."

	Pink was the guest speaker at the September 15th instalment of the popular KPU-Science World Speaker Series at KPU Richmond. Water Rights and Scarcity: A 21st Century Challenge, explored the issues of climate change, drought, flooding and water-borne disease. Pink l highlighted these issues as they face Asia and India with fascinating examples and innovative scenarios for change. "These issues are urgent in those regions and will become so in North America," affirms Pink. Pink notes that Arctic ice is expected to disappear by 2070; major flooding is anticipated in coastal cities 2050; and chronic and increasing drought will send food prices skyrocketing and render food insecurity for over 1.5 billion people. Of the 9.4 billion people who are expected by 2050, approximately two billion will be without access to clean, safe water sources, leading to political upheaval, severe social and economic crises, and a projected global climate refugee population of 400 million. But there is hope, says Pink. His presentation also covered potential solutions to the impending water shortage; namely, rainwater harvesting, desalinization and cloud seeding.
Surviving the Anthropocene: Expert talks planetary crisis at KPU Surrey Sep 14 / 2016	**Surrey, B.C.** – If you think Anthropocene is the name of a new horror movie, you'd be partly correct. It's actually a term under discussion by scientists, about whether we have entered a new geological epoch. The argument for this new epoch is the impact of human activities. "It is becoming increasingly clear that a new and dangerous stage in planetary evolution has begun: the Anthropocene, a time of rising



temperatures, extreme weather, rising oceans, and mass species extinctions," says Dr. Bill Burgess, a geography instructor at Kwantlen Polytechnic University (KPU). "Humanity faces not just more pollution or warmer weather, but a crisis of the earth system."

KPU's geography department hosted Ian Angus, author of *Facing the Anthropocene: Fossil Capitalism and the Crisis of the Earth System* to spoke about his new book at KPU Surrey. The event was free and open to the public.

KPU, Delta School District partner to bring the classroom to the farm

Delta, B.C. – Students are digging right in to their post-secondary education in sustainable agriculture while still in high school, thanks to a new partnership between Kwantlen Polytechnic University (KPU) and the Delta School District.

Students who graduate with Farm Roots experience will have a unique skillset to apply to a variety of growing career paths, as well as the competencies in demand from today's employers. These include leadership, collaboration, creativity, problem-solving and communication.

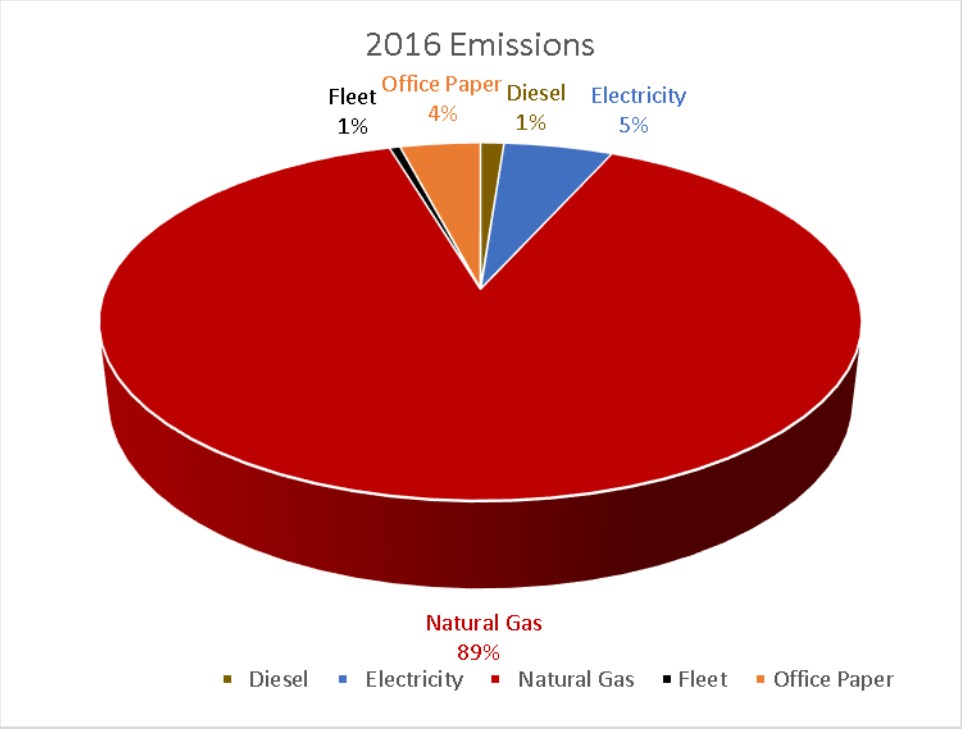
While earning dual credits toward high school graduation and graduation from KPU, students will design, plan and build a learning farm on eight acres. Students will learn about food systems and resource management with a focus on innovative sustainability and agricultural sciences.

	Images of today's MOU signing are available on Flickr. To learn more about Delta District Farm Roots Mini School: deltalearns.ca/farmroots To learn more about KPU's Sustainable Agriculture Faculty: www.kpu.ca/agriculture

III. FUTURE ACTIONS PLANNED FOR 2017

KPU entered 2016 with dedicated Facilities personnel focused on Energy Conservation and reduction of GHG emissions. This team and the university enter 2017 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 growing awareness of the connections and institutional participation already in place for Sustainability and Energy Conservation.

Of the 2,275 tCO_2e KPU produced in 2016, **2,018.75 tCO_2e** 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.



Awareness and Training; Green Teams	KPU's early successes in conservation focused on major building systems. As the program becomes more refined, partnership with the faculty, students, and front line teams becomes ever more important. Continued participation at events, discussions, and the expansion of energy Green Teams increase awareness and improve both the understandings and opportunities for new operational efficiencies.

KPU Street Market at Richmond Campus Featuring local vendors	The KSA with the support of KPU is organizing a Street Market at the KPU Richmond campus to provide local Farmers and other vendors with a venue to offer their goods and services.
Heating System Efficiency Improvements, Richmond campus.	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.
Lighting Retrofits	Significant success in the past with lighting retrofits and emerging new technologies in the sector have KPU exploring additional lighting retrofit projects.
Monitoring and Metering Projects	To find new opportunities an understanding of current load demands is needed. KPU is targeting 2 areas in the university this year that could lead to future savings.
Consultant Review; Fuel Switching	With natural gas consumption representing a majority of the university's GHG emissions portfolio, KPU recognizes that the challenges in meeting future legislated Carbon Neutral targets will require a focus on switching heating and hot water systems from natural gas to electricity.

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

Energy conservation is a strength with KPU's energy consumption 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.

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 than 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.
- 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.

Strategic Energy Management Plan (SEMP)

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

- Its detailed Strategic Energy Management Plan SEMP has been 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 inks 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%).