



2014 Carbon Neutral Action Report

Plans and actions taken to reduce greenhouse gas emissions at the University of the Fraser Valley

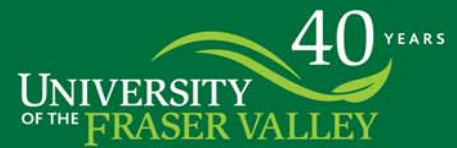


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This is the 2014 Carbon Neutral Action Report for the University of the Fraser Valley. This report contains our 2014 emissions profile, offsets purchased, the actions we have taken in 2014 to reduce our Greenhouse Gas emissions and our plans to continue reducing emissions in 2015 and beyond.

By June 30th, 2015, UFV's final CNAR will be posted to our website at: <http://www.ufv.ca/operations/cnar>.

Our Mandate - Changing Lives, Building Community

It continues to be UFV's vision to provide the best undergraduate education in Canada and to be a leader of the social, cultural, economic and environmentally-responsible development in the Fraser Valley. We place a high value on environmental, social and economic sustainability in all our institutional endeavours.

At the time of the writing of this report, the University of the Fraser Valley has been celebrating its 40th anniversary. We are looking forward into the future as we grow and develop into becoming a central educational institution in the Fraser Valley, as well as expanding globally with online opportunities for distance learning and partnership.

We remain committed to, and are actively pursuing, our *Strategic Direction* by assuming a position of environmental stewardship, leadership, and vision, not just in meeting our legislative mandates for GHG reduction targets, but also in the inspiration and enabling of environmental awareness and change in both student learning and campus growth. We continuously strive to be sustainable wherever economic and feasible, by design and retrofit through campus planning, through awareness and behavioural change within our learning community, and promoting initiatives and leadership inclusive of operations, curriculum, and the engagement of our students and employees.

Sustainability by design and retrofit:

In 2014, UFV's energy management agreement with B.C.

Hydro was nearing the end of its term, and the university optioned not to renew its Energy Manager position for the fiscal year as part of a budgetary strategy. It is UFV's intent to revisit the requirements for a new Energy Manager position in 2015 after careful review of our new energy program. In reviewing past achievements, 2014 was yet another year to reflect, re-assess, and re-prioritize our greenhouse gas reduction strategies. This is the second time in over our six year participation with the carbon neutral initiative in which a full year has been dedicated primarily to learning from past strategies to see which projects yielded successful reductions in energy consumption when compared to the previous years.

A number of sustainability actions were completed in 2013, with each contributing significantly to our long-term goal of reducing UFV's energy consumption and carbon footprint which is evident within our 2014 report figures. In 2014, UFV experienced a large growth spurt with the completion of two new facilities, and the continued construction of its second *LEED Gold* building. The Canada Education Park *LEED Gold* building has been operating for over two years and has yielded the energy savings, after modifying a few systems given the few growing pains that usually come with a new facility. In light of this success, UFV moved forward with the construction of a second *LEED Gold* building at the Abbotsford campus with the new Student Union Building, using the CEP building as a template model for success. The new Student Union Building broke ground in 2013, and was completed on April 7th, 2015, utilizing a new state-of-the-art HVAC thermal energy exchange system known as Thermenex - a more efficient way of providing heating and cooling to large buildings.

The Agriculture Centre of Excellence (ACE) which consists of a demonstration barn and greenhouse has been operating for the latter half of 2014. It is a state-of-the-art facility that

has a high-efficiency central heating plant. In addition, our satellite centre in Chilliwack has been up and running with continuing studies programs operating as of late 2014 in the renovated and re-purposed Bank of Montreal building to establish our presence in the downtown business district commonly referred to as our UFV Five Corners building. The donation of this building is part of a downtown revitalization strategy in partnership with the City of Chilliwack.

UFV has been fortunate enough to have met its 5-year energy reduction target two years earlier than anticipated. While UFV wishes to continue with its 5-year Strategic Energy Management Plan (SEMP), the recent addition of campus buildings and newly started retrofits anticipated for completion in 2015 will require the university to develop a new set of baseline measurements used to develop and start new energy reduction goals and reduction target dates. While SEMF has provided the framework required to link together all aspects of energy management at UFV, the changes we have experienced in 2014 require new strategic direction for UFV to keep electricity savings on track and to see that natural gas savings are maintained in the next few years of continued campus growth and expansion. In 2011, approximately 13,000 students attended the Abbotsford campus of UFV. The campus is expected to experience an average growth rate of ~1,000 students per annum with over 27,000 students expected by 2041 as UFV and the City of Abbotsford establish their U-District of the area surrounding the existing campus footprint.

UFV will be securing new funding to launch another series of Continuous Optimization Programs for the new buildings we have built on campus in order to provide a deeper level of baseline measurement, and the ability to monitor these buildings at a more granular level, to improve energy efficiency, as we move into 2015 and beyond to become carbon neutral.

Student Engagement in Sustainability:

UFV continues to benefit from a growing culture of sustainability among students and employees, and sustainability issues are increasingly the subject of student and faculty research. UFV values the trust of our communities, not just to educate, but to inspire and foster leadership in environmental awareness. 2014 marked our sixth year with the student sustainability internship position in Facilities Management. This one-year position offers the opportunity for a student near to graduation, demonstrating active engagement in sustainability issues, to develop and implement projects that contribute to a culture of sustainability on campus and within the broader community. Ashleigh Yakemchuck, who held the position in previous years, was nominated by the UFV Centre for Sustainability for Green Leader of Tomorrow at the Abbotsford-Matsqui Rotary Club awards ceremony and won the award for her work with Facilities and for the Centre.

The sustainability legacy of the students' work continues to grow: there is now a general awareness by students to conserve energy on campus (and home), and growing reliance on both public transit and the intercampus shuttle service to get to UFV campuses. Newly upgraded water fill stations and increased waste recycling depots are heavily used, widely practiced, and indeed, expected by the students and employees at all UFV sites. This year the focus of the sustainability coordinator has been to promote recycling, energy saving, and awareness through various social media outlets. The development and implementation of the new Campus Connector shuttle bus service was introduced back in 2013. The shuttle service originally started with two (2) 20-passenger, wheelchair-accessible buses to allow students to travel between the Abbotsford and Canada Education Park and to address the lack of alternate and public transportation between the Chilliwack and Abbotsford municipalities. The overwhelming and continued positive feedback and support from the student

body has seen an increase in ridership over the past year, with the increase in fleet to four (4) buses and more scheduled runs to accommodate ridership demand with new routes inclusive to the District of Langley, BC. The high frequency in student use of the shuttle service is a testament to the goal of reducing single vehicle use, to promoting carpooling and alternate transportation, and to helping to reduce the impact on the environment.

Centre for Sustainability:

The Centre for Sustainability at UFV integrates a number of environmental initiatives geared towards engaging students, faculty, staff and the broader community, by promoting research, information exchange, awareness and action in all matters of sustainability. The Centre for the last four years has successfully coordinated an engaging series of public seminars coined "**greenSPEAK**", which has included a plethora of sustainability topics presented from a diverse group of disciplines. The profile and work of the Centre continues to grow within the broader community served by the University with an average of a dozen seminars hosted annually.

2014 Greenhouse Gas Emissions

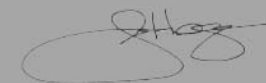
The carbon footprint for the University of the Fraser Valley registered at 2,294 tCO₂e in accordance with the SMARTTool recording and reporting protocols for 2014; that value was slightly lower than the 2013 recorded value of 2,561 tCO₂e. In relation to the University's activity as measured by full time equivalent (FTE) student enrolment, the 2014 carbon footprint also reduced marginally over the previous year from a value of 0.31 tCO₂e/FTE to a value of 0.29 tCO₂e/FTE, a reduction of 6.5 % in GHG emissions, inclusive of a 3.12% marginal decrease in student enrolment. The "in scope" carbon footprint for the University includes Scope 1 (combustion), Scope 2 (purchased, principally electricity), and Scope 3 (office paper) components. For the reporting year 2014, Scope 1 fleet combustions decreased by 1.63

tonnes of greenhouse gas, congruent with stationary combustion decreased by 226 tonnes as compared to 2013. Scope 2 reported purchased energy reductions at 49 tonnes of GHG in contrast to last year, while Scope 3 saw a continued increase in office paper consumption of 1727 packages, approximately 13% more packages purchased as compared to 2013, resulting in a larger increase of 10 tonnes of GHG.

The 11% decrease in energy consumption for our buildings can be attributed to a number of mechanical system upgrades and building energy retrofits. We used 5,174 Gigajoules less energy in 2014 than compared to 2013. Our assessment of changes made in 2013 seem to show that 2014 yielded the intended results. After identifying missing fleet vehicles from our inventory in 2013, it would appear that the erroneous increase in emissions identified in 2013 have leveled out in 2014 with a slight decrease in GHG emissions by 2.0 tCO₂e's. Fuel consumption decreased by 537 litres in comparison to 2013. In 2014, we seem to have increased our consumption in the use and purchase of recycled paper stock at UFV. Paper consumption was 13% more as compared to 2013, which resulted in the purchase of 1727 packages of paper. As a result, we generated an increase of 9.96 tonnes of GHG emissions as compared to last year. Behaviourally speaking, we have been able to maintain an awareness on paper consumption and have seen a steady reduction from our baseline measurements which were first record in 2009.

Offsets Purchased to become Carbon Neutral in 2014

In 2014, the University purchased offsets for 2,294 tCO₂e from the Pacific Carbon Trust valued at \$60,217.50 net of GST, slightly lower from \$67,200 paid in the previous year.



Jackie Hogan, Chief Financial Officer

ELKAY®

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Helped eliminate waste from

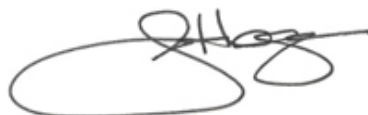
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disposable plastic bottles



Water Bottle Fill Stations

UNIVERSITY OF THE FRASER VALLEY GHG EMISSIONS AND OFFSETS FOR 2014 (tCO ₂ e)	
GHG Emissions created in calendar year 2014 (from SMARTTool Homepage):	
Total Emissions	2,294
Total Emissions for Offsets	2,294
Adjustments to GHG Emissions Reported in Previous Years (from SMARTTool Homepage):	
Total Emissions	0
Total Emissions for Offsets	0
Credit owing from PCT at end of 2013 reporting year (if applicable - from May 15 Invoice):	
Credit Owing	0
Total Emissions for Offsets for the 2014 Reporting Year (from Offset Invoice):	0,000



May 31, 2015

Signature

Date

Jackie Hogan

Chief Financial Officer

Name (please print)

Title

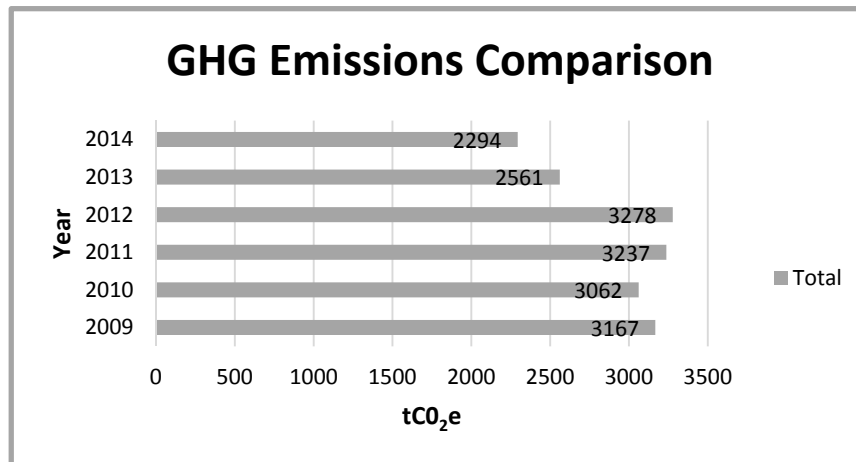


Agriculture Centre for Excellence

Emissions Reduction Activities

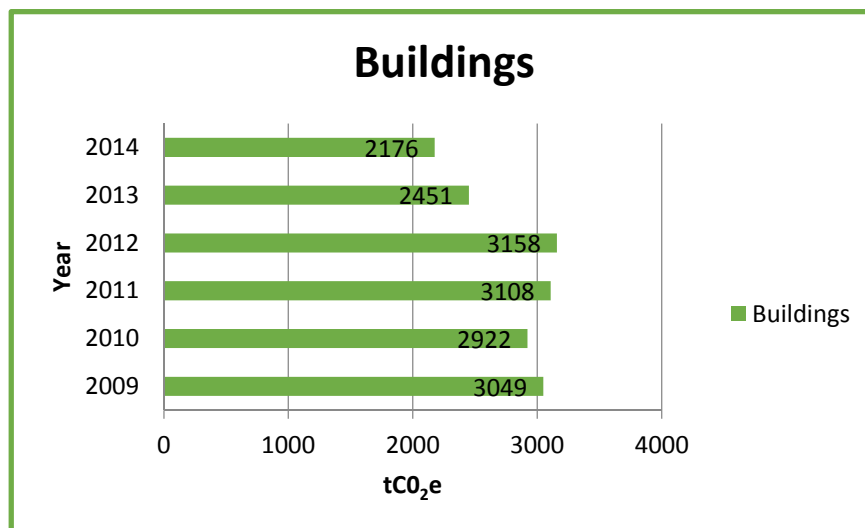
UFV's GHG Emissions by Source

In 2014, our total GHG emissions were 2,294 tonnes of CO₂ equivalent. The most significant emission source being energy used in our buildings for heating space and water, and the use of electricity comprising of 94.9% of emissions source with paper consumption rounding out at 3.8% and mobile (fleet) combustion a minor 1.39%.



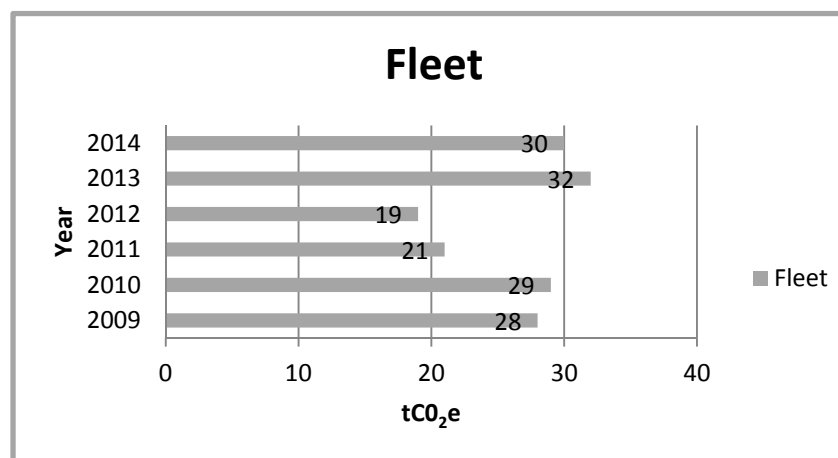
Buildings

The 11% decrease in energy consumption for our buildings can be attributed to a number of mechanical system upgrades and building energy retrofits. We used 5,174 Gigajoules less energy in 2014 than compared to 2013. It stands to reason that our efforts to reduce gas and electricity consumption as per SEMP has been achieved through the efforts of building design and construction with new energy conserving technologies. Our assessment of changes made in 2013 seem to show that 2014 yielded the intended results.



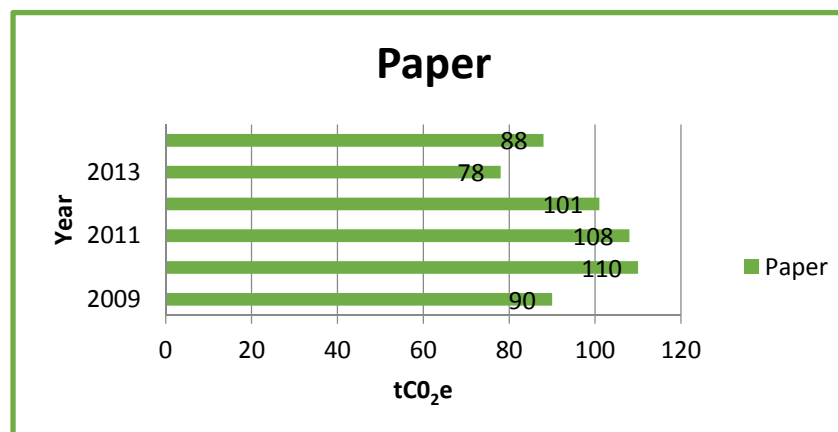
Fleet

After identifying missing fleet vehicles from our inventory in 2013, it would appear that the erroneous increase in emissions identified in 2013 have leveled out in 2014 with a slight decrease in GHG emissions by 2.0 tCO₂e's. Fuel consumption decreased by 537 litres in comparison to 2013.



Paper

In 2014, we seem to have increased our consumption in the use and purchase of recycled paper stock at UFV. Paper consumption was 13% more as compared to 2013, which resulted in the purchase of 1727 packages of paper. As a result, we generated an increase of 9.96 tonnes of GHG emissions as compared to last year, but remained lower to past years with 2013 being the only exception. Behaviourally speaking, we have been able to maintain an awareness on paper consumption and see a continued reduction from our baseline measurement created in 2009.



GHG Emissions Source Detail Report 2014

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Source		Quantity		Greenhouse Gases In Tonnes			
				CO ₂	CH ₄	N ₂ O	tCO ₂ e *
Stationary Fuel Combustion (Building Heating and Generators) and Electricity							
Offset Required	Fuel Combustion **	41,528.30	GJ	2,056.09	0.04	0.04	2,068.78
	Purchased Energy	38,458.23	GJ	107.68	0.00	0.00	107.68
Offset Required Sub Total				2,163.78	0.04	0.04	2,176.46
TOTAL STATIONARY EMISSIONS				2,163.78	0.04	0.04	2,176
Supplies (Paper)							
Offset Required	Non-recycled Content Paper	138	Pkg	1.03	0.00	0.00	1.03
	Recycled Content Copy Paper	15,124	Pkg	87.33	0.00	0.00	87.33
Offset Required Sub Total				88.36	0.00	0.00	88.36
TOTAL SUPPLIES EMISSIONS				88.36	0.00	0.00	88
Mobile Fuel Combustion (Fleet and other mobile equipment)							
Offset Required	Fuel Combustion **	12,535.44	L	26.99	0.01	0.01	29.03
	Offset Required Sub Total			26.99	0.01	0.01	29.03
Offset Exempt	CO ₂ from Biogenic Fuel Combustion			0.89	N/A	N/A	0.89
	Offset Exempt Sub Total			0.89	0.00	0.00	0.89
TOTAL MOBILE EMISSIONS				27.89	0.01	0.01	30
Total Offset Exempt				0.89	0.00	0.00	1
Total Offset Required				2,279.13	0.05	0.04	2,294
TOTAL EMISSIONS				2,280.03	0.05	0.04	2,295

* Each greenhouse gas has been converted to a standard measurement (tCO₂e) by multiplying its emissions by its global warming potential (GWP).

The GWP of carbon dioxide (CO₂) from both anthropogenic and biogenic sources is 1; methane (CH₄) is 21, and nitrous oxide (N₂O) is 310.

The Totals for tCO₂e are shown here rounded to the nearest whole metric tonne as only whole tonnes of tCO₂e can be purchased for offsets.

** Includes Fossil Fuels and CH₄ and N₂O from Biogenic Fuels



2014 09 25

From Vancouver to Finland and back; an artist's interpretation of farming - **Sylvia Grace Borda**

2014 11 13

Watersheds, Ecosystems, and Ecological Anthropology - **Dr. Douglas Hudson**

2014 11 13

Roderick Haig-Brown: Canada's Green Prophet - **Ron Dart**

2014 11 27

Dikes aren't all they are cracked up to be: Increased risk & decreased ecological values on the Fraser River - **Tasmin Lyle**

2014 12 18

Sustainable living in the Western Canadian Arctic - **Sheen Adams**

2014 03 18

The Canadian Ecological Tradition: Confederation Poets to the Green Party - **Ron Dart**

2014 03 25

Taking the pulse of the mighty Fraser River - **Audrey Epp & Rosalie Luymes**

2014 04 01

Indigenous Perspectives on the Natural World - **Chantelle Marlor & Shirley Hardman**

2014 04 17

Ozone Air Pollution in the Lower Fraser Valley - **Dr. Douw G. Steyn**

2014 Carbon Neutral Action Report (CNAR) Survey Form - Part 1 DATA

PSO Administrative Information

PSO Name

University of the Fraser Valley

Indicate your Sector

- Post-Secondary Institution

Primary Contact Person (GHG Coordinator)

Variable	Response
Primary Contact Person (GHG Coordinator) Name	Natasha Collins
Primary Contact Person (GHG Coordinator) Email	Natasha.Collins@ufv.ca
Primary Contact Person (GHG Coordinator) Phone #	604-557-4059

Secondary Contact Person

Variable	Response
Secondary Contact Person Name	Adam Bodnar
Secondary Contact Person Email	Adam.Bodnar@ufv.ca
Secondary Contact Person Phone #	604-851-6319

Designated Representative (CNAR Signatory)

Variable	Response
Designated Representative (CNAR Signatory) Name	Jackie Hogan
Designated Representative (CNAR Signatory) Email	Jackie.Hogan@ufv.ca
Designated Representative (CNAR Signatory) Phone #	604-864-4676

Self-Certification Checklist signatory

Variable	Response
Self-Certification Checklist signatory Name	Jackie Hogan
Self-Certification Checklist signatory Email	Jackie.Hogan@ufv.ca
Self-Certification Checklist signatory Phone #	604-864-4676

PSO Data

Please fill in all variables. If there are no variables, please enter 0 (zero).

Variable	Response
PSO Data How many Full Time Equivalent employees (FTEs) do you have within your organization?	842
PSO Data How many small vehicles are in your fleet (gators, forklifts, snowmobiles)?	11
PSO Data How many medium-sized vehicles are in your fleet (cars, trucks, SUVs, ambulances)?	8
PSO Data How many large vehicles are in your fleet (school buses, buses, transport trucks)?	0
PSO Data How many buildings does your organization own?	26
PSO Data How many buildings does your organization lease space in?	3
PSO Data What is the total amount of floor space in your organization (including occupied and unoccupied space)? please report in square meters	98,755
PSO Data Schools, Universities and Colleges only - number of student FTEs as of Dec 31, 2014?	7955

Green Buildings

Green Buildings refers to any buildings built to a higher level of energy efficiency than the standard building code including LEED, Boma Best, Living Building, Passive House or other designations

How many Green Buildings do you own?

Variable	Response
How many Green Buildings do you own? LEED Non-certified	1
How many Green Buildings do you own? LEED Silver	1 - silver equivalent
How many Green Buildings do you own? LEED Gold	0
How many Green Buildings do you own? LEED Platinum	0
How many Green Buildings do you own? Other - Boma Best, Living Building, etc.	0

How many Green Buildings do you lease space in?

Variable	Response
How many Green Buildings do you lease space in? LEED Non-certified	0
How many Green Buildings do you lease space in? LEED Silver	0
How many Green Buildings do you lease space in? LEED Gold	0
How many Green Buildings do you lease space in? LEED Platinum	0
How many Green Buildings do you lease space in? Other - Boma Best, Living Building, etc.	0

How many Green Buildings do you have under construction (as of Dec 31, 2014)?

Variable	Response
How many Green Buildings do you have under construction (as of Dec 31, 2014)? LEED Non-certified	1
How many Green Buildings do you have under construction (as of Dec 31, 2014)? LEED Silver	0
How many Green Buildings do you have under construction (as of Dec 31, 2014)? LEED Gold	0
How many Green Buildings do you have under construction (as of Dec 31, 2014)? LEED Platinum	0
How many Green Buildings do you have under construction (as of Dec 31, 2014)? Other - Boma Best, Living Building, etc.	0

Describe the one action taken in 2014 that resulted in, or is expected to result in, the greatest emissions reductions for your organization (this may be considered your 2014 "success story"):

2014 was yet another year to reflect, re-assess, and re-prioritize our greenhouse gas reduction strategies. As a result, there were really no operational actions taken this year that really stand out as having any significant reduction in our carbon footprint at UFV. We would, however, like to recognize the behavioural changes that have been championed by UFV's past and present sustainability coordinators. UFV has had the benefit of student involvement in the last four years with support from the Centre for Sustainability and the hiring of student sustainability coordinators to help promote "green ideas" on campus. Former sustainability coordinator Ashleigh Yakemchuk is a Geography student who has taken many science courses and is keen about environmental and sustainability issues. She is a leader as one UFV's past sustainability coordinators, "working to improve university awareness of our composting program and on the reduction of plastic water bottle sales on campus", and worked tirelessly to "reduce the carbon foot-print of UFV".

Ashleigh Yakemchuk won an award at this year's Abbotsford-Matsqui Rotary Club awards ceremony. Ashleigh was nominated by the UFV Centre for Sustainability for the Green Leader of Tomorrow award for her work at UFV for the Centre for Sustainability and for Facilities. We greatly appreciated the work that Ashleigh was doing at UFV, and we thank the Rotary Club of Abbotsford-Matsqui for recognizing the talent here at UFV.

This year's student environmental coordinator, Alyssa Bougie, has set up Twitter and Facebook sites for the Centre for Sustainability. The latest happenings in sustainability at UFV can be viewed here. It's a convenient way to keep up to date with CFS events.

Twitter: https://twitter.com/green_UFV

Facebook: <https://www.facebook.com/UFVCFS>

Events that Alyssa has been heavily promoting on campus in 2014 were as follows:

- Recycle My Cell Campaign (September - October), in collaboration with Geography students.
- Computers Need Sleep Too/energy saving campaign (October - November), also brought in BC Hydro.
- Collaborating with Janitorial to bring Pathways to CEP campus (bottle recycling collection program).
- Entering data from Ashleigh's Sustainability survey into Excel and creating a large visual display of the data.
- Overhauling the Centre for Sustainability's display boards
- Creating and maintaining social media accounts and blog for the Centre for Sustainability (see above).
- General promotion for the Centre for Sustainability (posters, UFV Today announcements).
- Creating graphics showing what is recyclable and compostable on campus, used for decreasing variance and increasing awareness.
- Collaborating with the Garden Club to begin work on a community garden, assisting in promotion.
- Assisting in recruiting a core group of students that volunteer for Centre for Sustainability activities.

Provide a "wish list" of reduction actions your organization would like to take, i.e. what are the priority projects your organization sees as being most effective in leading to substantive reductions of emissions and increased energy efficiency (regardless of cost or other limiting factors)?

1. All buildings and parking lots - upgrade from metal halide lights to lower energy lights (LED's).
2. Continue upgrading old boilers to new energy efficient boilers.
3. Continue upgrading controls and lights to reduce energy use for lighting.
4. Continue to install alternative sources and management systems for heating and cooling (ground water source, Thermonex, etc.).
5. Installation of gas and power meters to monitor and mitigate energy saving strategies on a building-by-building basis (historically, this was measured on a campus basis).

What are the barriers your organization faces when trying to implement emissions reduction initiatives? It is expected that funding is a major issue. If there are other barriers as well please describe those.

UFV has been very lean as an institution in the reduction of emissions since we started the program in 2009. Our biggest barrier faced by UFV has been funding. In order to realize the savings over time from the reduced energy use and reduced natural gas use, we would only benefit from the larger reductions initiatives which would require significant capital. Developing a strong business case for Ministry-funded projects, supported by BC Hydro incentives, has been a struggle for our broader endeavours.

Second to funding, our most prevalent barrier would be time constraints for the completion of these projects. In our mandate to provide a better learning environment at UFV, we do not have the luxury of closing down our business for renovations or construction. We have a full calendar year of continuous teaching and instruction, which is not always conducive to large and disruptive breaks for maintenance and repair of such a large scale.

In 2014, UFV was unable to renew the contract with the hire of an energy manager due to budgetary constraints. It is hopeful that we will be re-hiring another energy manager in 2015 to help champion energy reduction initiatives and provide better business cases in which funding can be secured to move forward with more projects to help reduce GHG emissions.

Does your organization have an emission reduction target? If yes, please describe below.

Yes

In June 2013, UFV had reduced energy consumption by 10.6% compared to 2009/10 levels (adjusted for weather). The original target was to save 10% by 2014/15, and UFV achieved the target 2.5 years early!

This overall reduction now exceeds the original 10% energy reduction target set in Section 5.1, more than two years early! However it is important that we keep electricity savings on track to meet their 10% target by March 2015, and that natural gas savings are maintained.

One of the biggest challenges in meeting this reduction target has been that we are 'fighting' against growth. Increased classroom utilization and use of equipment inherently causes an increase in energy consumption. As such the savings that are achieved through implementing projects under the Energy Manager program may not be seen in the overall results presented in this section due to this 'creep'.

With the latest construction of three new buildings at UFV, the absence of an energy manager, and the earlier target reduction met 2.5 years ahead of our 5-year plan, we recognize 2014 as the year in which to reflect on our achievements, and to start planning a new baseline in which to measure our future target reductions for the next five years. Every three years we seem to be at a point of self-awareness where we need to reflect on what successes we achieved in past years, analyse the benefit of these successes in the present, and then help plan and map forward the changes we want to make in the future as we move forward in becoming carbon neutral.

Does your organization have a strategic plan to implement emission reduction activities (e.g. a five year plan)? If yes, please describe below:

Yes

The Strategic Energy Management Plan (SEMP) supports the University of the Fraser Valley's (UFV) commitment to energy efficiency and conservation by providing a framework for reducing energy consumption and its associated environmental impact. This SEMP includes a specific energy reduction target and an action plan of how the target will be achieved. By implementing the actions detailed in this Strategic Energy Management Plan, UFV is demonstrating leadership through innovation and accountability for the resources it uses as an organization. Further, UFV is also reducing its exposure to energy cost escalations, demonstrating environmentally-responsible development in the Fraser Valley, and reducing its reliance on the province's energy infrastructure.

UFV's renewed commitment to energy management began in 2010 with the development of a Strategic Energy Management Plan (SEMP). Through BC Hydro funding for an energy manager, UFV has continued to grow the SEMP through improved metrics and continuous optimization projects.

In April 2011, the EMA process was repeated to measure progress and identifies five new critical areas of focus for the energy management program at UFV. These five critical items are:

1. Augment the current energy policy to include clear, measurable goals and delivery timelines and establish a formal incentive program that rewards actions from individuals or teams that contribute toward energy efficiency and/or meeting established targets.
2. Set energy intensity parameters and consumption reduction targets for all key departments that cascade up to the overall annual reduction target.
3. Develop energy conservation plans that correlate potential savings from both capital projects and organizational/behavioural initiatives to the established consumption reduction targets.
4. Increase broader participation in the energy conservation initiative by establishing energy coordinators in all key departments.
5. Ensure communication of the energy policy to the broader organizational stakeholders to produce better results in raising energy conservation across the whole organization in general.

This SEMP provides the framework required to link together all aspects of energy management at UFV and give strategic direction for UFV to succeed in meeting its reduction target.

With announced changes to the Carbon Tax in late 2013/early 2014, UFV developed an internal revolving fund that would leverage energy savings, carbon tax funds, and energy rebates to launch projects that would reduce greenhouse gases and grow our Workplace Conservation Awareness (WCA) program on campus. While the BC Hydro funding concluded in 2014, UFV had secured funding to launch the Continuous Optimization Program for the last remaining buildings on campus. This provided a deeper level of measurement, provided the ability to monitor buildings at a more granular level, and improved energy efficiency.

A copy of our SEMP can be found online at: <http://www.ufv.ca/energy/reports>



Abbotsford Student Union Building

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

Organization Name

University of the Fraser Valley

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings): Indicate which actions were taken in 2014:

Performed energy retrofits on existing buildings

No

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

Yes

Undertook an evaluation of overall building energy use.

No

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

No actions were taken in 2014 apart from completing the construction of three buildings which were designed to be energy efficient. The calendar year was spent analysing the changes made in 2013, continuing with planned construction, and determining what actions would be planned for the 2015 calendar year to reduce emissions from existing and new buildings.

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

Do you have a fleet?

Yes

Replaced existing vehicles with more fuel efficient 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

Yes

Please list any other actions taken to reduce emission from fleet:

The Student Union and UFV Administration continued to run its student-funded inter-campus shuttle service for commuting between Abbotsford and Chilliwack campuses. The success of the program, and the increased rider-ship helped with the addition of scheduled runs to include Langley district, as well as increase the number of shuttle buses from 3 to 4, and increase the number of runs between campuses. The four shuttle buses commute daily in an effort to reduce single vehicle traffic between campuses, and now municipalities, while promoting alternative forms of transportation.

3) Supplies (Paper): Indicate which actions were taken in 2014:

Used less paper than previous year

No

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:

Although UFV has been promoting behavioural change in paper use on campus, in 2014 we have seen a 13% increase in paper consumption with the purchase of 1727 packages more as compared to 2013. Our IT department programs all of our MFD's to perform 2-sided printing as a default printing standard as a way to reduce paper consumption, in addition, there has been a greater move towards using the MFD's to scan documents for electronic archiving versus traditional photocopying. The popularity of using electronic devices such as iPads, tablets, iPhones and laptops seems to be a move in the right direction towards sharing information electronically versus using paper format, but this increase in paper consumption might be borne out of complacency and could be a topic for behavioural awareness with our sustainability "green team" to address in 2015.

Actions Taken to Reduce Emissions - continued

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

UFV will continue to upgrade existing equipment with new, more efficient models, when the current equipment is due for replacement as a result of end of life-cycle. In addition, replacement and upgrading will continue when funding is available for these types of energy-saving projects, initiatives, and associated rebates.

UFV will switch to new technologies to help reduce GHG emissions and reduce electrical usage as these technologies become available and have proven to work effectively.

UFV is in the process of hiring a new energy manager for the 2015 calendar year. It is hopeful that the person filling this position can concentrate on identifying methods on improving our existing building systems and dedicate their time in keeping UFV moving forward in its target reductions. This will include creating a new baseline in which to measure ourselves as we successfully met our target goals 2.5 years earlier than was forecast.

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

Yes

Actions to Promote Sustainability and Conservation - Optional: The following are actions that fall outside the scope of the Carbon Neutral Government Regulation, but which many organizations still undertake and may wish to report on. This section is optional for reporting.

Business Travel Created a low-carbon travel policy or travel reduction goal (Low-carbon: Lowest emission of greenhouse gases per kilometre per passenger)

No

Virtual Meeting Technology Installed web-conferencing software (e.g., Live Meeting, Elluminate, etc.)

No

Made desktop web-cameras available to staff

No

Encourage alternative travel to meetings (e.g., bicycles, public transit, walking)

Yes

Encourage carpooling to meetings

Yes

Education and Awareness Have created Green, Sustainability, Energy Conservation, or Climate Action Teams.

Yes

Provided resources and/or dedicated staff to support these teams

Yes

Provided behaviour change education/training for these teams (e.g., community-based social marketing)

Yes

Established a sustainability/green awards or recognition program

Yes

Support green professional development (e.g., workshops, conferences, training)

Yes

Planning for Climate Change Have assessed whether extreme weather events and/or long term changes in climate will affect our organization's business areas

Yes

Long term changes in climate have been incorporated into our organization's decision making.

Yes

Actions to Promote Sustainability and Conservation - Optional (continued)

Staff Awareness and Education provided education to staff about the science of climate change

Yes

Provided education to staff about the conservation of water, energy, and raw materials

Yes

Provided green tips on staff website or in newsletters

Yes

Alternate Work/Commuting Options Allow for telework/working from home

No

Staff have the option of a compressed work week

No

Commuting by foot, bicycle, carpool or public transit is encouraged

Yes

Shower or locker facilities are provided for staff/students who commute by foot or by bicycle

Yes

Secure bicycle storage is provided

Yes

Other Sustainability Actions Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models

Yes

Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features

Yes

Have put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities

Yes

Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)

Yes

Have incorporated minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)

Yes

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)

Yes

Incorporated lifecycle costing into new construction or renovations

Yes

Please list and other sustainability actions you wish to report not included in the previous list.

UFV removed a number of old drinking water fountains on the Abbotsford and Chilliwack campuses. In Abbotsford, six of our buildings were outfitted with new Elkay water bottle fill stations, and our Trades & Technology Centre was outfitted similarly. The new Elkay water bottle fill stations is an initiative to reduce the number of bottled water being purchased at the university and subsequently preventing the number of plastic bottles being sent to landfills by promoting behaviour for employees and students to bring their own bottles for drinking water on campus. Each fill station offers filtered water, and indicates the number of bottles saved from the landfills by providing a bottle count via a digital counter found on the LCD display of the unit. The popularity of these water bottle fill stations has prompted the planned installation of another seven units in the 2015 calendar year. UFV has also seen the inclusion of two new Elkay water bottle fill stations installed in the new Student Union Building as a result of the initial replacement strategy started at the beginning of 2014.



Intercampus Shuttle Bus

Operational Changes in 2014

Canada Education Park

Agriculture Centre for Excellence in Agriculture

The Agriculture Centre of Excellence (ACE), consisting of a demonstration barn and two greenhouses was completed in 2014 and supports our existing agriculture programs and provides the infrastructure for the development of an agriculture hub for BC. The demonstration lab offers hands-on learning with real livestock as it is home to the likes of cows, chickens, goats and pigs.



While there is no LEED designation for the agriculture facility; we have designed the facility with a high-efficiency central plant to provide heating in the barn and greenhouse. Moreover, the new greenhouse is constructed from a hollow-wall polycarbonate which exceeds the energy rating of traditional glass greenhouses.



Abbotsford Campus

Student Centre Building

On the Abbotsford campus, the Student Union Society (SUS) and UFV spent most of 2014 working together to build a 50,000 sq. ft. Student Centre that houses services and amenities for students to foster "life on campus".



Utilizing a very creative financial structure, a partnership between UFV, SUS, and Envisions Financial has made it possible to create this facility for students. Targeting **LEED Gold** certification, this building has been designed with a state-of-the-art energy system called "Thermenex" that capitalizes on heat loss. It has the highest energy coefficient on campus and will provide the foundation for a campus utility. Construction was completed on April 7th, 2015.



Downtown Chilliwack

UFV Five Corners



The Bank of Montreal donated one of their branch buildings to UFV in the downtown area of Chilliwack commonly referred to as UFV Five Corners. As part of a downtown revitalization strategy, this facility required significant upgrading and retrofit to make it suitable for educational purposes.



The HVAC systems, security, and building controls have been completely replaced, bringing the energy rating up to current standards and renewing its life cycle. Construction started in 2013, however, the building was completed in early 2014 running some of our Continuing Studies programs.



UFV Five Corners (downtown Chilliwack)

In addition to reducing our reportable emissions, here are some examples of our commitment and innovation towards sustainability.

Agricultural Waste Management - Composting

In response to finding ways to be more sustainable, UFV's Agriculture department purchased an industrial composting system as part of its Phase II construction of A.C.E. The compostable material generated from this system is used to fertilize vegetation on campus, as well as within the greenhouse planting curriculum.



Water Filtration & Landfills

In 2014, UFV installed seven Elkay Water Bottle Fill stations on campus which provide filtered drinking water. To date, UFV has helped divert 102,327 disposable plastic water bottles from landfill sites. We plan to install more in 2015.



Alternate Transportation

The Campus Connector shuttle bus service expanded its operations in 2014 by increasing its scheduled runs, increasing ridership by another 120 seats per day, and extending service out to Langley, BC. We had a total of 51,581 seats filled during the year, with approximately 298 tonnes of CO₂/year reduction from single-vehicle usage.



Workplace Conservation Awareness (WAC)

October - November 2014 - "Computers Need Sleep Too"
The goal of the campaign was to ask staff and faculty to turn off their computers and monitors every night for the year in the hopes that the savings would equate to 1.7 average staff positions.



Since 2009, UFV has saved more than 13% in energy usage at the Abbotsford campus alone. This equates to more than 22 homes! Energy consumption has been reduced at UFV for the second year in a row!

Electric Vehicle Charging Stations

In 2013, UFV received funding assistance from the Fraser Basin Council to install eight electric vehicle level 2 charging stations at our UFV campuses. As part of the Plug in BC initiative, UFV is now an active participant in the EV charging station network across BC. It is our intention to host an additional eight charging stations at the Canada Education Park campus in 2015.



Links to Other Information Relevant to Sustainability

<http://www.ufv.ca/operations/cnar/>

<http://www.ufv.ca/energy/>

<http://www.ufv.ca/sustainability/>

<http://www.ufv.ca/sustainability/student-activitiesresearch/students-for-sustainability/>

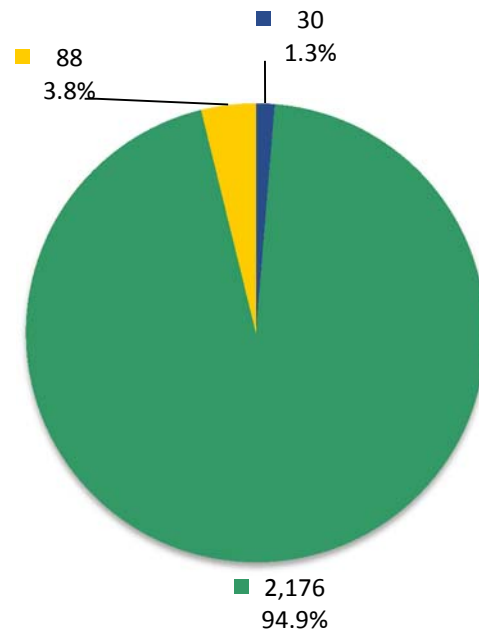
http://www.fraserbasin.bc.ca/ccaq_plug_in_bc.html

<http://www.plugshare.com/>

<http://thermenex.com/>

<http://www.ufv.ca/media/assets/janitorial/Bin-be-Gone.pdf>

University of The Fraser Valley Greenhouse Gas Emissions by Source



Total Emissions: 2,294

- Mobile Fuel Combustion (Fleet and other mobile equipment)
- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2014 (Generated April 04, 2015 10:24 AM)

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

** 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



University of the Fraser Valley

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Email: info@ufv.ca

www.ufv.ca/operations/CNAR



2014 Carbon Neutral Action Report (CNAR)

- Part 2 ACTIONS

Organization Name

University of the Fraser Valley

Actions Taken to Reduce Emissions

1) Stationary Fuel Combustion, Electricity (Buildings): Indicate which actions were taken in 2014:

Performed energy retrofits on existing buildings

No

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

Yes

Undertook an evaluation of overall building energy use.

No

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

No actions were taken in 2014 apart from completing the construction of three buildings which were designed to be energy efficient. The calendar year was spent analysing the changes made in 2013, continuing with planned construction, and determining what actions would be planned for the 2015 calendar year to reduce emissions from existing and new buildings.

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

Do you have a fleet?

Yes

Replaced existing vehicles with more fuel efficient 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

Yes

Please list any other actions taken to reduce emission from fleet:

The Student Union and UFV Administration continued to run its student-funded inter-campus shuttle service for commuting between Abbotsford and Chilliwack campuses. The success of the program, and the increased rider-ship helped with the addition of scheduled runs to include Langley district, as well as increase the number of shuttle buses from 3 to 4, and increase the number of runs between campuses. The four shuttle buses commute daily in an effort to reduce single vehicle traffic between campuses, and now municipalities, while promoting alternative forms of transportation.

3) Supplies (Paper):Indicate which actions were taken in 2014:

Used less paper than previous year

No

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:

Although UFV has been promoting behavioural change in paper use on campus, in 2014 we have seen a 13% increase in paper consumption with the purchase of 1727 packages more as compared to 2013. Our IT department programs all of our MFD's to perform 2-sided printing as a default printing standard as a way to reduce paper consumption, in addition, there has been a greater move towards using the MFD's to scan documents for electronic archiving versus traditional photocopying. The popularity of using electronic devices such as iPads, tablets, iPhones and laptops seems to be a move in the right direction towards sharing information electronically versus using paper format, but this increase in paper consumption might be borne out of complacency and could be a topic for behavioural awareness with our sustainability "green team" to address in 2015.

Page 3

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Yes

Page 4

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No

Virtual Meeting TechnologyInstalled web-conferencing software (e.g., Live Meeting, Elluminate, etc.)

No

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No

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Yes

Provided resources and/or dedicated staff to support these teams

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Yes

Long term changes in climate have been incorporated into our organization's decision making.

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Actions to Promote Sustainability and Conservation - Optional (continued)

Staff Awareness and Education Provided education to staff about the science of climate change

Yes

Provided education to staff about the conservation of water, energy, and raw materials

Yes

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Yes

Alternate Work/Commuting Options Allow for telework/working from home

No

Staff have the option of a compressed work week

No

Commuting by foot, bicycle, carpool or public transit is encouraged

Yes

Shower or locker facilities are provided for staff/students who commute by foot or by bicycle

Yes

Secure bicycle storage is provided

Yes

Other Sustainability Actions Establish a water conservation strategy which includes a plan or policy for replacing water fixtures with efficient models

Yes

Put in place a potable water management strategy to reduce potable water demand of building-level uses such as cooling tower equipment, toilet fixtures, etc. and landscape features

Yes

Have put in place an operations policy to facilitate the reduction and diversion of building occupant waste from landfills or incineration facilities

Yes

Have implemented a hazardous waste reduction and disposal strategy (Hazardous Waste: E.g., electronics including computer parts and monitors, batteries, paints, fluorescent bulbs)

Yes

Have incorporated minimum recycled content standards into procurement policy for consumable, non-paper supplies (e.g., writing instruments, binders, toner cartridges, etc.)

Yes

Established green standards for goods that are replaced infrequently and/or may require capital funds to purchase (e.g., office furniture, carpeting, etc.)

Yes

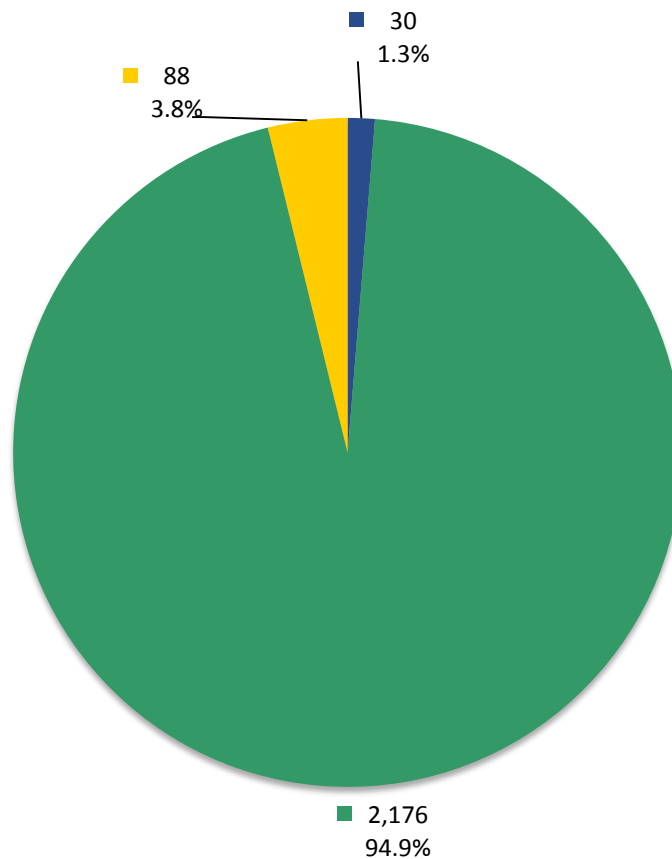
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University of The Fraser Valley Greenhouse Gas Emissions by Source for the 2014 Calendar Year (tCO₂e*)



Total Emissions: 2,294

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- Stationary Fuel Combustion (Building Heating and Generators) and Electricity
- Supplies (Paper)

Offsets Applied to Become Carbon Neutral in 2014 (Generated June 23, 2015 4:50 PM)

Total offsets required: **2,294**. Total offset investment: **\$57,350**. Emissions which do not require offsets: **1** **

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

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