



# 2013 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 2013 Carbon Neutral Action Report for the University of the Fraser Valley. This report contains our 2013 emissions profile, offsets purchased, the actions we have taken in 2013 to reduce our Greenhouse Gas emissions and our plans to continue reducing emissions in 2014 and beyond.

By June 30<sup>th</sup>, 2014, UFV's final CNAR will be posted to our website at: <http://www.ufv.ca/operations/cnar>.

## ***Our Mandate - Changing Lives, Building Community***

It is 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 of the Fraser Valley. UFV will measure its success by the achievements of its graduates and the successful development of the communities in which they serve. In achieving its goals, UFV has committed to being innovative, entrepreneurial, and accountable. Paramount priority is placed on students and their learning needs and goals. We view education as an ongoing process essential for both career progress and actualizing human potential. We value and treat students as mature individuals, and encourage intellectual, cultural, creative, ethical and social development in order to prepare our graduates for their roles as productive citizens of an increasingly complex and pluralistic society. We place a high value on environmental, social and economic sustainability in all our endeavours.

As the University of the Fraser Valley celebrates its 40<sup>th</sup> anniversary, we remain committed to our *Strategic Direction* "to be a leader of social, cultural, economic and environmentally responsible development in the Fraser Valley." 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 retrospect, 2012 was a year in which UFV learned that past strategies yielded successful reductions in energy consumption when compared to 2011. As a result of these successes, we can view 2013 as the year to which we moved forward by replicating these achievements. 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. The Canada Education Park **LEED Gold** building has been operating for over a full year and appears to be yielding the energy savings anticipated with the new build. As such, the new building has risen above the international competition to be named "Best in class: University Building" by the *World Architecture News* (WAN) Education Awards. In fact, the Stantec-designed project was the only award winner from the Americas in 2013. In light of this success, UFV has moved forward with the construction of a second **LEED Gold** building at the Abbotsford campus with the new Student Centre facility, using the CEP building as a template model. The new Student Centre broke ground in 2013, and is hoped to be completed in 2015, utilizing a new state-of-the-art HVAC thermal energy exchange system known as Thermenex - a more efficient way to provide heating and cooling to large buildings.

Mirroring a major 2012 retrofit of the heating and hot water systems on the Abbotsford campus Buildings A West and B, we replicated the process by replacing our hot water plant with high efficiency boilers for Building A East - a 1993 renovation/add-on to the original 1983 Building A West structure to continue our process of replacing outdated technologies and end-of-life equipment in an effort to be more sustainable. These newly installed Camus gas-fired boilers are expected to save 794 GJ of natural gas and

reduce greenhouse gases by 35.9 tonnes/year. Additionally, the Trades and Technology Centre at CEP underwent a continuous optimization study to identify cost energy-saving initiatives and technological improvements for UFV. The projects focused on low-cost improvements to building control system configurations, with multiple improvements made to existing schedules and operating procedures. UFV replaced all the exterior metal halide light fixture with new LED lamps, operating on photo cell for optimization of natural daylight settings. The heavy duty, automotive, welding, and carpentry shops received HVAC upgrading that included the installation of variable frequency drives, gas sensors, updates to the DDC programming, and local override switches to allow units to run at lower fan speeds to reduce heating load and maintain negative pressure within the shop areas. Additionally, the welding and carpentry shops included the installation of overhead door sensors so that programming could be made to the DDC controls to utilize shop heaters for primary heating, and to shut off heating to the areas when the overhead doors are left open for an extended period of time. The modifications to the HVAC system in the automotive & heavy duty shops are estimated to save a combined total of 86,500 kWh of electricity, 130 GJ of natural gas, and reduce greenhouse gases by 8.2 tonnes/year.

UFV has continued with its 5-year Strategic Energy Management Plan (SEMP). This SEMP has provided 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. Ironically, in June 2013, UFV had reduced energy consumption by 10.6% compared to 2009/2010 levels (adjusted for weather). The original target was to save 10% by 2014/2015, yet UFV achieved this target 2.5 years early. Electricity performance has dropped 6.5% and natural gas by 13.7%. This overall reduction now exceeds the original 10% energy reduction target set in Section 5.1 of our SEMP, more than two years

early. However, it is important that we keep electricity savings on track to meet our 10% target by March 2015, and that natural gas savings are maintained.

With the recently announced changes to the Carbon Tax, UFV is developing an internal revolving fund that will leverage energy savings, carbon tax funds, and energy rebates to launch projects that will reduce greenhouse gases and grow our Workplace Conservation Awareness (WCA) program on campus. While BC Hydro funding will be concluding shortly, UFV has secured funding to launch another Continuous Optimization Program for the last remaining buildings on campus in order to provide a deeper level of measurement, and the ability to monitor buildings at a more granular level, to improve energy efficiency.

### *Student Engagement in Sustainability:*

In September of 2013, a partnership between the university and the Student Union Society sought to address a long-standing transportation challenge between the UFV campuses in the communities of Abbotsford and Chilliwack. The development and implementation of the new Campus Connector shuttle bus service was introduced that year. 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 campuses in an effort to keep our campuses well connected, and to address the lack of alternate and public transportation between the Chilliwack and Abbotsford municipalities. The overwhelming response from a student referendum on the shuttle service resulted in over 75% approval in the endeavor and was the result of a strong push from students for a solution to the transportation issue. Constant feedback and support from the student body has seen an increase in ridership over a short period of time, with the increase in fleet to three (3) buses and more scheduled runs to accommodate the demand. The high

frequency in use of the shuttle service is a testament to the behavioral goal of reducing single vehicle use, promoting carpooling and alternate transportation, and helping to reduce the environmental impact.

### *Centre for Sustainability:*

The Centre for Sustainability at UFV integrates a number of environmental initiatives at UFV engaging students, faculty, staff and the broader community, by promoting research, information exchange, awareness and action in all matters of sustainability. The Centre has continued its successful series of "greenSPEAK" public seminar series, which, in 2013, included a variety of topics such as: "Sea Level Rising"; "Escaping Easter Island"; "Bee Colony Collapse"; "Taking Action through Saving Energy"; and "Confronting the New Academic Anti-Environmentalism". The profile and work of the Centre continues to grow within the broader community served by the University.

### *2013 Greenhouse Gas Emissions*

The carbon footprint for the University of the Fraser Valley registered at 2,561 tCO<sub>2</sub>e in accordance with the SMARTTool recording and reporting protocols for 2013; that value was significantly lower than the 2012 recorded value of 3,269 tCO<sub>2</sub>e. In relation to the University's activity as measured by full time equivalent (FTE) student enrolment, the 2013 carbon footprint also reduced quite noticeably over the previous year from a value of 0.40 tCO<sub>2</sub>e/FTE to a value of 0.31 tCO<sub>2</sub>e/FTE, a reduction of 22.5 % in GHG emissions, inclusive of a 0.43% marginal increase 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 2013, Scope 1 fleet combustions increased by 11.91 tonnes of greenhouse gas, but stationary combustion decreased by 568.77 tonnes as compared to 2012.

Scope 2 reported purchased energy reductions at 128.88 tonnes of GHG in contrast to last year, and Scope 3 saw a continued reduction in office paper consumption of 3851 packages, approximately 10 x times less packages purchased as compared to 2012, resulting in a larger reduction of 22.57 tonnes of GHG.

The higher GHG value for fleet in 2013 can be attributed to the increased reporting of fleet vehicles in the SmartTool protocol for our Trades & Technology program for vehicles that were not previously identified as part of the fleet scope. In contrast, the more significant decrease in procurement from 2013, as compared to 2012, is a large indicator of the behavioural changes starting to show some rewards at UFV through our commitments to the Strategic Energy Management Program and Workplace Conservation and Awareness programs on campus by reducing paper use on campus. Similarly, the striking decrease in electricity and gas consumption for 2013 can be attributed to the new energy-efficient building at the Canada Education Park campuses operating continuously for over a year based on the Geo-exchange system, the termination of utility services to all the non-occupied and inefficient buildings located at the former Chilliwack North campus, and the 2013 continuous optimization projects completed at the Abbotsford and CEP campuses which helped reduce greenhouse gas emissions by updating outdated technologies and improving building system operations through scheduling and programming techniques to conserve energy.

### *Offsets Purchased to become Carbon Neutral in 2013*

In 2013, the University purchased offsets for 2560 tCO<sub>2</sub>e from the Pacific Carbon Trust valued at \$64,000 net of GST, significantly lower from \$81,725 paid in the previous year.



Jackie Hogan, Chief Financial Officer



Abbotsford, Aerospace and CEP campus locations combined have eight (8) level 2 electric vehicle charging stations installed with funding assistance from Fraser Basin Council.

Electric Vehicle Charging Stations

UNIVERSITY OF THE FRASER VALLEY GHG EMISSIONS AND OFFSETS FOR 2013 (tCO <sub>2</sub> e)	
GHG Emissions created in calendar year 2013 (from SMARTTool Homepage):	
Total Emissions	2,561
Total Emissions for Offsets	2,560
Adjustments to GHG Emissions Reported in Previous Years (from SMARTTool Homepage):	
Total Emissions	9
Total Emissions for Offsets	9
Credit owing from PCT at end of 2012 reporting year (if applicable - from May 15 Invoice):	
Credit Owing	3
Total Emissions for Offsets for the 2013 Reporting Year (from Offset Invoice):	2,569



May 31, 2014

Signature

Date

Jackie Hogan

Chief Financial Officer

Name (please print)

Title

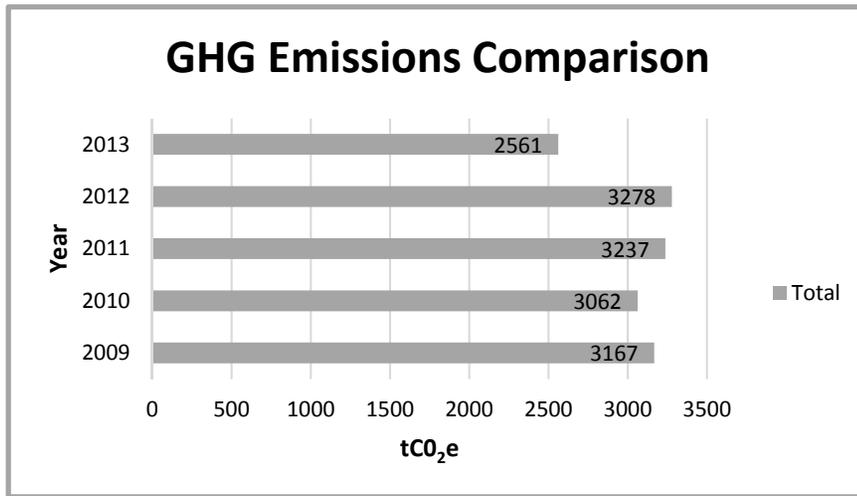
The Agriculture Centre of Excellence (ACE), consisting of a demonstration barn and two greenhouses will support existing agriculture programs and provide the infrastructure to develop an agriculture hub for BC. A high-efficiency central plant was installed to provide heating in the barn and greenhouse.



Centre for Excellence in Agriculture

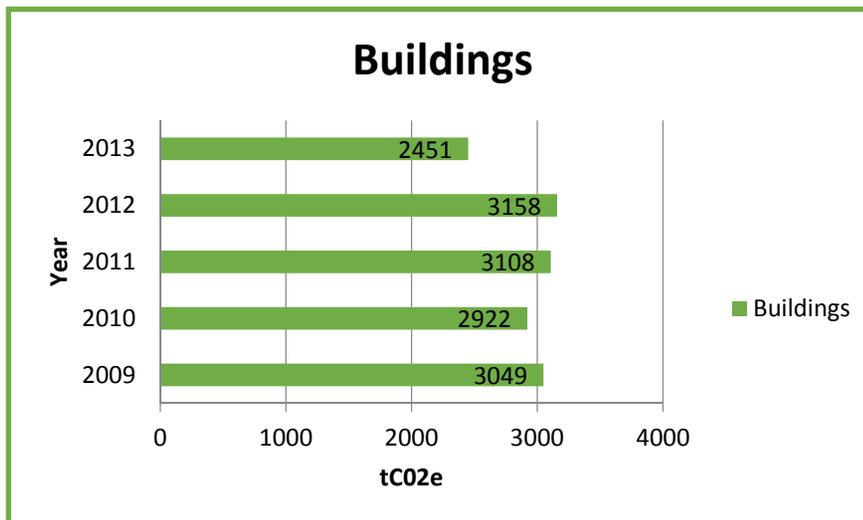
## UFV's GHG Emissions by Source

In 2013, our total GHG emissions were 2,561 tonnes of CO<sub>2</sub> equivalent. The most significant emission source is energy used in our buildings for heating space and water, and use of electricity.



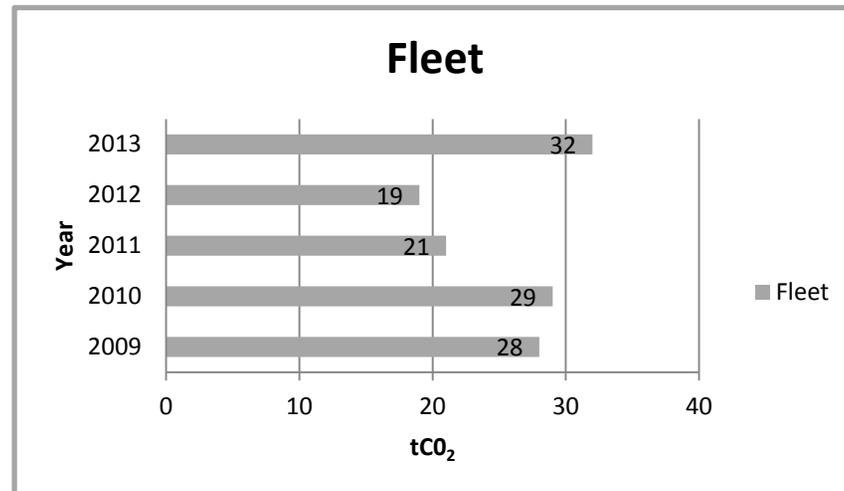
## Buildings

The 20% decrease in energy consumption for our buildings can be attributed to a number of upgrades and energy retrofits, as well as HVAC equipment re-programming which maximized the energy efficiency in some of our recent builds. We used 11,310 Gigajoules less energy in 2013 when compared to 2012. In addition, the shut-down of services to vacated buildings at the Chilliwack North campus had greatly reduced our consumption of gas and electricity.



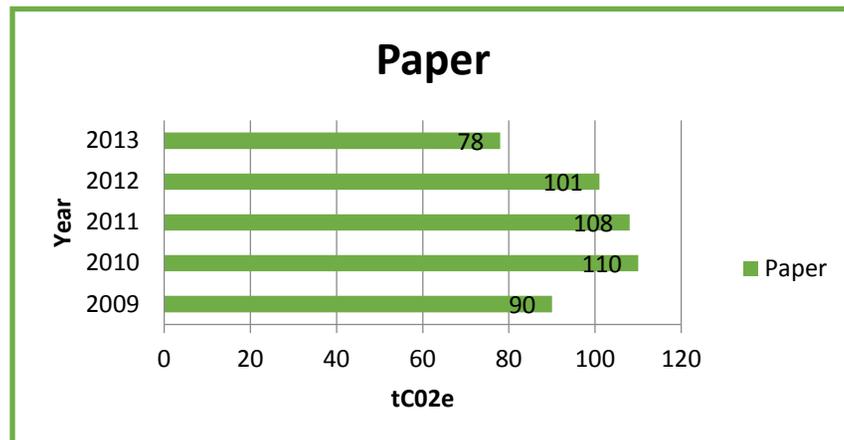
## Fleet

The increase in emissions related to our fleet is a bit erroneous. In 2013, we did not increase the number of fleet vehicles to our existing motorcade, however, we did add a number of unidentified fleet vehicles to our reporting system that were a result of administrative changes within the University. Fuel consumption increased by 5261 litres in comparison to 2012.



## Paper

In 2013, we achieved significant reductions in the use and purchase of 30% recycled paper stock at UFV. Paper consumption was 22% less as compared to 2012, which resulted in the purchase of 3851 packages of paper, 10 x less than the amount purchased in 2012. It has become standard practice at all our multi-function devices (MFD's) to default to double-sided printing wherever possible to reduce paper waste.



## GreenSPEAK Lecture Series

*Mar 12 2013* - Rex Weyler - "State of the Earth & Progress Preserving It" and Victor Chan - "Role of peace in education"

*Mar 19 2013* - PipeUp - "Pipeline Debate & Impact throughout the Valley"

*Apr 2 2013* - Dr. Lucy Lee - "Evaluating Toxicity & Redemption Strategies in Oil Sands Process-affected Waters Using Fish Cell Lines, Without Sacrificing Fish or Animal Lives"

*Sep 10 2013* - Sam Thomas - "How green is UFV? Taking Action through Saving Energy"

*Sep 24 2013* - Trevor Carolan - "Talking Dirty, Talking Green: Confronting the New Academic Anti-Environmentalism"

*Oct 8 2013* - Tom Baumann & Eric Gerbrandt - "Reliable Fruit Set in Berries: Give the Bees Some Help" and Carrie Baron - "How to Plan for & Cope with the Sea Level Rising: The City of Surrey Story"

*Oct 15 2013* - Sven Van de Wetering - "Escape from Easter Island"

*Oct 22 2013* - Pat Harrison - "Walking on the National Spirit"

*Oct 29 2013* - Patricia Ross - "Greening the Economy"

*Nov 5 2013* - Nichole Marples - "From Awareness to Action, Langley Environmental Partners Society (LEPS)"



# 2013 Carbon Neutral Action Report (CNAR) Survey Form - Part 1 DATA

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## 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?	913
PSO Data   How many small vehicles are in your fleet (gators, forklifts, snowmoblies)?	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?	21
PSO Data   How many buildings does your organization lease space in?	3
PSO Data   What is the total amount of floorspace in your organization (including occupied and unoccupied space)? please report in square meters	83,293
PSO Data   Schools, Universities and Colleges only - number of student FTEs as of Dec 31, 2013?	8211

### 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, 2013)?

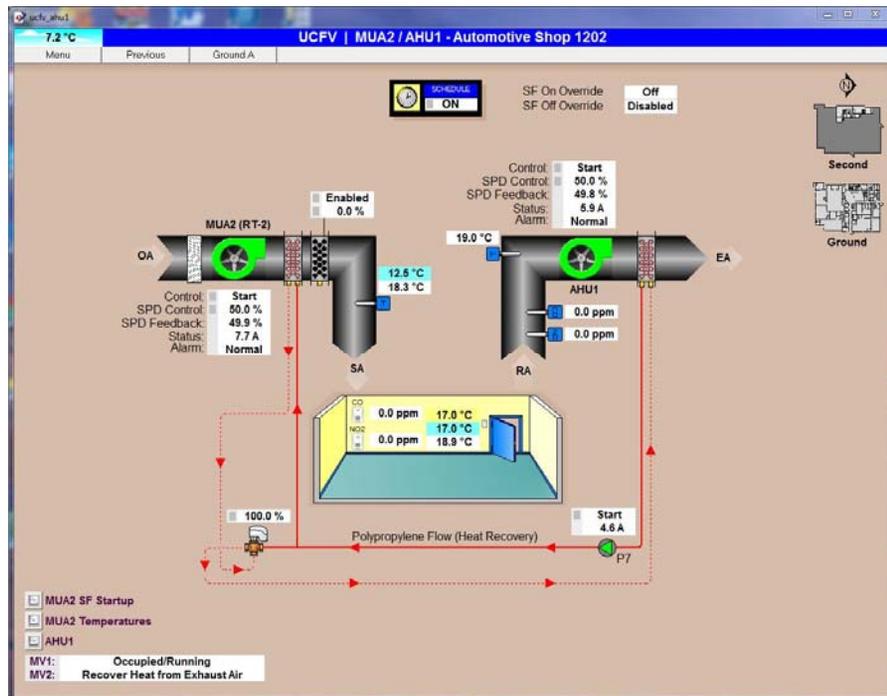
Variable	Response
How many Green Buildings do you have under construction (as of Dec 31, 2013)?   LEED Non-certified	1
How many Green Buildings do you have under construction (as of Dec 31, 2013)?   LEED Silver	0
How many Green Buildings do you have under construction (as of Dec 31, 2013)?   LEED Gold	0
How many Green Buildings do you have under construction (as of Dec 31, 2013)?   LEED Platinum	0
How many Green Buildings do you have under construction (as of Dec 31, 2013)?   Other - Boma Best, Living Building, etc.	0

Describe the one action taken in 2013 that resulted in, or is expected to result in, the greatest emissions reductions for your organization (this may be considered your 2013 "success story"):

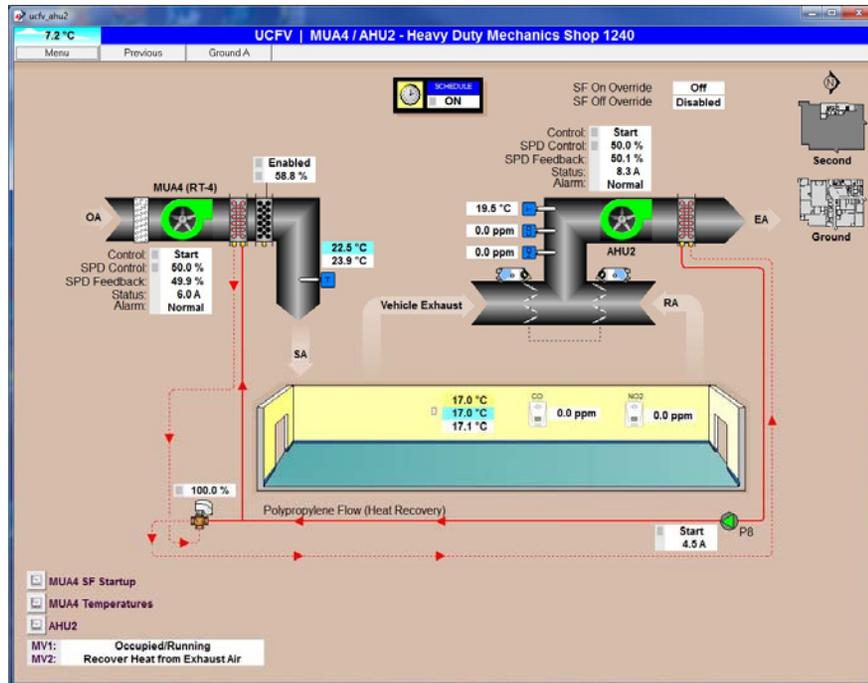
The top 3 actions taken in 2013 that are expected to result in the greatest reduction in energy and GHG's are:

#1 - replacement of the boilers in building A East with new high-efficiency boilers. This project is estimated to save 794 GJ of natural gas and reduce greenhouse gases by 35.9 tonnes/year.

#2 - the modification of the HVAC system in the automotive shop in building T at CEP. This project is estimated to save 49160 kWh of electricity, 75 GJ of natural gas 794 GJ of natural gas and reduce greenhouse gases by 4.7 tonnes/year.



#3 - the modification of the HVAC system in the heavy duty shop in building T at CEP. This project is estimated to save 37340 kWh of electricity, 55 GJ of natural gas of natural gas and reduce greenhouse gases by 3.5 tonnes/year.



Actions #2 and #3 included the installation of VFD's on the HVAC fans for the shop spaces and exhaust duct monitoring of various combustion gases to monitor the space for safe gas levels; modifications to the controls programming the HVAC to monitor the various combustion gases and speed up the fans if the gas levels increased above minimal levels (these levels are below the threshold levels permitted by Work Safe); and the provision of local control so the individual shops could shut units off or ramp them up to 100% when these conditions were required.

The VFD's and controls installed have allowed for the operation of these units to function at a minimum speed, while maintaining environmental temperatures and air quality and reducing the air changes in the space, thus reducing the electricity used operating the fans and the natural gas used to heat the fresh air being brought in to the building.

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. CEP building T - installation of controls in the rest of the shops to use the shop heaters for primary heating, and the air handling units for secondary heating, as well as interlocking the heating to the overhead doors shutting down the heating when the doors are left open for prolonged periods.
2. All buildings and parking lots - upgrade from metal halide lights to lower energy lights (LED's or better).
3. Continue upgrading old boilers to new energy efficient boilers (end of life cycle).
4. Continue upgrading controls and lights to reduce energy use for lighting.
5. Continue to install alternative sources and management systems for heating and cooling (ground water source - GeoThermal, Thermonex, etc.).

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 endeavors.

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.

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!

Electricity performance has dropped by 6.5% and natural gas by 13.7%.

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'.

The following graph shows progress of electricity, gas, and overall performance in relation to our target.



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.

To assist UFV with energy management, BC Hydro sponsored an Energy Management Assessment (EMA) for the organization in 2008. The purpose of this assessment was to conduct a holistic assessment of energy-related practices at UFV and identify opportunities for organizational improvement. The 2008 EMA identified the five most critical areas for energy management at UFV, which included Resourcing.

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/behavioral 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 the recently announced changes to the Carbon Tax, UFV is developing an internal revolving fund that will leverage energy savings, carbon tax funds, and energy rebates to launch projects that will reduce greenhouse gases and grow our Workplace Conservation Awareness (WCA) program on campus. While the BC Hydro funding will be concluding shortly, UFV has secured funding to launch the Continuous Optimization Program for the last remaining buildings on campus. This will provide a deeper level of measurement, providing the ability to monitor buildings at a more granular level and improve energy efficiency.

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

The Student Union Society (SUS) and UFV are building a 50,000 sq. ft. Student Centre in Abbotsford that will house services and amenities for students that will foster *life on campus*. Targeting LEED Gold, this building has been designed with a state-of-the-art energy system that capitalizes on heat loss. It will have the highest energy coefficient on campus and will provide the foundation for a campus utility.



Student Centre Abbotsford

## 2013 Carbon Neutral Action Report (CNAR) Survey Form - Part 2 ACTIONS

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### Organization Name

University of the Fraser Valley

### Actions Taken to Reduce Emissions

#### 1) Stationary Fuel Combustion, Electricity (Buildings) - Indicate which actions were taken in 2013:

Performed energy retrofits on existing buildings

Yes

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

Yes

Undertook an evaluation of overall building energy use.

Yes

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

Abbotsford building A - replaced existing boilers with higher efficiency boilers.

Abbotsford building E - replaced North gym metal halide lights with T8 fluorescent lights and installed motion controls and timers to turn off lights when gym not in use.

CEP building T - replaced exterior metal halide lamps with LED lamps.

CEP building T - heavy duty shop and automotive shop HVAC upgrade - installed VFD's, gas sensors, updated DDC programming, and installed local override switches to allow units to run at lower fan speeds to reduce heating load.

CEP building T - welding shop and carpentry shop HVAC upgrade - installed overhead door sensors, updated DDC programming to use shop heaters for primary heating and to shut off heating when overhead doors are open for an extended period of time.

CEP building T - welding shop HVAC upgrade - installed VFD's, updated DDC programming to ramp the HVAC unit fan speed up and down to match the running exhaust units in order to reduce the heating load in the shop and to maintain a negative pressure within the shop area.

#### 2) Mobile Fleet Combustion (Fleet and other vehicles) - Indicate which actions were taken in 2013:

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:

Student Union and UFV Administration introduced and funded an inter-campus shuttle service for commuting between Abbotsford and Chilliwack campuses. Three shuttle vans commute daily in an effort to reduce single vehicle traffic between campuses and promote alternative forms of transportation.

Abbotsford, Aerospace and CEP campus locations combined have eight (8) level 2 electric vehicle charging stations installed with funding assistance from Fraser Basin, for UFV students, employees and general public use. This is in addition to four (4) dedicated level 1 electric vehicle parking stalls, with twelve (12) visitor stalls also able to provide level 1 charging capabilities at the CEP campus.

### 3) Supplies (Paper) - Indicate which actions were taken in 2013:

Used less paper than previous year

Yes

Used only 100% recycled paper

No

Used some recycled paper

Yes

Used alternate source paper (Bamboo, hemp, etc.)

No

Please list any other actions taken to reduce emissions from paper use:

UFV utilized 3,851 less packages of paper in 2013 as compared to 2012.

The UFV Information Technology Services (ITS) department has pre-programmed all multi-functional devices (MFD's) at communal printing stations to perform 2-sided printing as a default standard as a way to reduce paper consumption.

In addition, all MFD's are capable of electronically scanning documents and sending PDFs via email as an alternative to copying paper.

Meeting minutes are now sent electronically via email, and a majority of senior administration view the agendas via iPads or tablets, with administrative assistants taking notes in a similar fashion with tablets and/or laptops.

### Actions Taken to Reduce Emissions - continued

Explain how you plan to continue minimizing emissions in 2014 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 funds are available for these types of energy-saving projects and initiatives.

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

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.)

Yes

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

Yes

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

No

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.**

Removal of individual office garbage cans/recycling bins. We now have installed communal waste & recycling stations in central locations around our campuses in an effort to reduce waste generated by the University. Janitorial services has implemented a behavior change program call "Bin-Be-Gone" in order to reduce contracted waste service removal, fuel, and dumping fees.

Abbotsford and Chilliwack campuses now have compost collection on site. Bio-degradable and compostable materials are collected at central refuse stations and separated from general waste bins in an effort to be environmentally conscience and promote green practices at our university. Contracted food services have also utilized this service in their kitchen areas which is a mass producer of compostable waste.



With the implementation of the shuttle service at UFV, ridership has contributed to a reduction of 387 tonnes of CO<sub>2</sub> / year in the Fraser Valley. The Campus Connector shuttle bus averages a ridership of 1,712 students & employees in an average week, resulting in an estimated reduction in auto use of 59,235 km/week (assuming 1 person per vehicle).

Intercampus Shuttle Bus

## Canada Education Park Centre for Excellence in Agriculture

While UFV did not complete a capital project in 2013, there were a number of projects underway that are worth noting in this report. The Agriculture Centre of Excellence (ACE), consisting of a demonstration barn and two greenhouses will support existing agriculture programs and provide the infrastructure to develop an agriculture hub for BC.

There is no LEED designation for the agriculture facility; however a high-efficiency central plant was installed 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.



Standing 12 metres high, this unique greenhouse is the first of its kind in the industry featuring a high performance growing environment that is achieved from a 95% light diffusion rate. The Agriculture Centre underwent construction on 2013 and officially opened in April 2014 in a grand ceremony officiated by Premier Christy Clark.

## Downtown Chilliwack Five Corners Plaza

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



Fortunately, Chilliwack Economic Partners Corporation (CEPCO) generously donated the funds to renew the facility, and also managed the design and construction of the facility. 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, we anticipate the Five Corners Plaza to be officially opened for May 2014.

## Abbotsford Campus Student Centre Building



On the Abbotsford campus, the Student Union Society (SUS) and UFV are working together to build a 50,000 sq. ft. Student Centre that will house services and amenities for students that will 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 will have the highest energy coefficient on campus and will provide the foundation for a campus utility. Construction began in September 2013 and completion of the new structure is expected for February 2015.

Information on the **Thermenex** system can be found online at <http://thermenex.com/>



Leave No Footprints



The Bank of Montreal donated one of their branch buildings to UFV in downtown Chilliwack.

The facility is part of a revitalization strategy by the City of Chilliwack. The HVAC systems, security and building controls have been completely replaced, bringing the energy rating up to current standards and renewing its life cycle.

Five Corners Plaza (former BMO building)

In addition to reducing our reportable emissions, our student and employees have continued to find ways to address our wider environmental impacts. Here are some examples of their commitment and innovation.

## ***Operational Waste Management***

UFV performed a waste management audit in 2013. In response to finding ways to be more sustainable, UFV and Students for Sustainability worked towards providing centralized recycling stations. We continue to monitor our progress and measure the amount of recyclables and compostable material that we can divert from landfills in the Fraser Valley.



## ***Business Continuity Planning***

As part of our Business Continuity Planning in 2013, the Director of Security & Emergency Management defined what an extreme weather event would be and assessed the risks to our business. The university experienced a few days of winter conditions in which the above planning was put into practice to identify what impact a campus closure would have on the institution. Each extreme weather event is looked at on a case-by-case basis, with the business continuity planning providing guidance to the senior administration group in their decision-making process.

## ***Alternate Transportation***

The Campus Connector shuttle bus service implemented on September 2013 addresses a long-standing transportation challenge between the UFV campuses in the communities of Abbotsford and Chilliwack. The Campus Connector, a partnership between the university and the **Student Union Society**, will run 15 x times a day, both ways from Monday to Thursday, and eight times a day on Fridays. The shuttle service will consist of three 20-passenger, wheelchair-accessible buses.



## ***Workplace Conservation Awareness (WAC)***

### **March 2013 - "Last out, Lights off"**

As a part of the campaign we accomplished: (a) 250 signed pledges from students, staff and faculty to turn off the lights when they're the last out; (b) 100 posters next to light switches reminding us to turn out the lights; and (c) 100 reminder cards for instructor desks prompting students to turn off the lights in classrooms.



## ***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, with the intention to host additional charging stations in 2014/2015.



## ***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/>

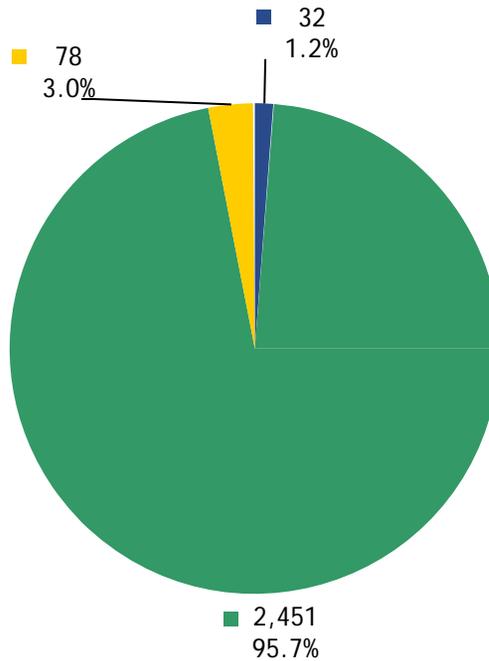
[http://www.fraserbasin.bc.ca/ccaq\\_plug\\_in\\_bc.html](http://www.fraserbasin.bc.ca/ccaq_plug_in_bc.html)

<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: 2,561**

- 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 2013 (Generated March 21, 2014 6:05 PM)**

Total offsets required: 2,560. Total offset investment: \$64,000. Emissions which do not require offsets: 1 \*\*

\*Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e) is a standard unit of measure in which all types of greenhouse gases are expressed based on their global warming potential relative to carbon dioxide.

\*\* Under the *Carbon Neutral Government Regulation of the Greenhouse Gas Reduction Targets Act*, all emissions from the sources listed above must be reported. As outlined in the regulation, some emissions do not require offsets.



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