



2019 Carbon Neutral Action Report

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



NOTE: This 2019 Carbon Neutral Action Report (CNAR) contains the University of the Fraser Valley's 2018 emissions profile and offsets purchased, and outlines the actions we have taken in 2019 to reduce greenhouse gas (GHG) emissions, and our plans to continue reducing emissions in 2020 and beyond. As per the Ministry directive on March 31, 2020, all public sector organizations are to publish a CNAR by June 30th, 2020 outlining quantitative data from 2018 and qualitative data from 2019. The use of 2018 data is a temporary measure with 2019 data updated later in the year. This change in directive is a result of the COVID-19 pandemic and ensures the reporting requirements within the Climate Change Accountability Act are fulfilled.

Declaration statement: This Carbon Neutral Action Report for the period January 1, 2019 to December 31, 2019 summarizes our emissions profile, the total offsets to reach net-zero emissions, the actions we have taken in 2019 to reduce our greenhouse gas emissions and our plans to continue reducing emissions in 2020 and beyond.

By June 30th, 2019, UFV's CNAR will be posted to our website at: <http://www.ufv.ca/energy/>.

Executive Summary:

Our Mandate - Engaging learners, transforming 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. High value is placed on environmental, social, and economic sustainability in all institutional endeavours.

UFV remains committed to, and is actively pursuing the Strategic Plan 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. The University continuously strives to be sustainable wherever economic and feasible, by design and retrofit through campus planning, through awareness and behavioural change within the learning community, and promoting initiatives and leadership inclusive of operations, curriculum, and the engagement of students and employees.

In 2019, approximately 15,000 students attended UFV. The University is expected to experience an average growth rate of ~1,000 students per annum as UFV and the City of Abbotsford establish their U-District of the area surrounding the existing campus footprint.

Campus Expansion Increases Impacts of Actions:

Our 2019 report figures are evidence of the number of sustainability actions completed in the years leading up to, and including the reporting year. Each action contributed significantly to our long-term goal of reducing UFV's energy consumption and carbon footprint. 2019 was characterised by an unusually long lasting six-week cold spell in February and the first half of March. The remainder of the year had temperatures that were consistently average. In 2019, UFV's building footprint changed with the sale of the Chilliwack North Campus in January. The space attributed to that transaction was 6,430m². As such, the University within the calendar year managed and maintained 88,641m² of total core building space with an increasing

scrutiny on environmental sustainability throughout all spaces. UFV leases spaces totalling 2,975m², of which carbon emissions are included within this report.

The recent addition of campus buildings, retrofits and sales/leases of buildings will require the university to focus increasingly on metrics that normalize energy use based on space to provide a more functional perspective on GHG emissions consumption, reduction and targets. The Sustainable Energy Management Plan (SEMP) has provided the framework required to link together all aspects of energy management at UFV, the changes we have experienced in 2019 require an increased urgency for UFV to invest in de-carbonization by upgrading capital equipment, supporting electrification, and investing in innovative technologies. As the plans, actions, and metrics pertaining to environmental sustainability develop at UFV, so will the reporting. In 2020, the SEMP will be absorbed by the Report on Sustainability to provide a more holistic, transparent, and integrated report that includes sections on carbon, energy efficiency, and environmental sustainability.

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. 2019 marked the tenth year with the student sustainability coordinator (SSC) internship position in the Campus Planning and Facilities Management department. 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. Sharisse Birk, BBA student, moved on from the SSC role and the department welcomed Taylor Breckles and Kaitlin James to lead student engagement projects and initiatives.

The sustainability legacy of the students' work continues to grow: There is now a general awareness by students to conserve energy on campus (and at home), and growing reliance on both public transit and the intercampus shuttle service to get to UFV campuses. Newly upgraded water fill stations and comprehensive waste stations are heavily used. Sustainability is 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. Students have continued to volunteer for events related to sustainability on campus, from simple tabling events to waste audits. It is clear that students are passionate about and willing to commit their time to improving sustainability on campus.

Executive Summary (Continued)

2018 Greenhouse Gas Emissions

The carbon footprint for the University of the Fraser Valley registered at 2,380 tCO₂e in 2018; that value was significantly lower than the last year’s value of 2,701 tCO₂e. In relation to the University’s activity as measured by on campus full time equivalent (FTE) student enrolment (7,951), the 2018 carbon footprint was reduced to its lowest level since tracking the metric in 2012. Last year’s value of 0.359 tCO₂e/FTE was reduced to 0.299 tCO₂e/FTE, a decrease of 20% in GHG emissions when factoring a 5.4% increase in student enrolment.

It should be noted that the year started with slightly below average temperatures in the first third, and above average temperatures for the final third of the year which leveled out the heating load energy consumption in the heating seasons. The information provided throughout this report has not been normalized for weather, as we are reporting unaltered data. The 13.5% decrease in stationary combustion (primarily natural gas for heating) resulted from warmer overall temperatures in 2018 and supported by a number of internal and external factors. Mechanical system upgrades, HVAC schedules and increased DDC monitoring, and energy retrofits and behaviour change campaigns. UFV consumed 6,002 less gigajoules in 2018 compared to 2017. This figure represents a significant reduction from the 10 years average.

Fleet emissions identified in 2018 are lower than typical (and significantly lower than last year) due to two key factors: the replacement of a shipping van with an electric vehicle in August which coincided with the re-organizing the logistics department. While fleet emissions account for a small amount of emissions, alternative low-carbon transportation can have a significant impact on the culture of low-carbon economies. Fuel consumption decreased by 2,942 litres in comparison to 2017 and is now lower than the average since 2013 when more vehicles were added to the inventory. With the increasing importance of GHG emissions reduction there will continued efforts to electrify UFV vehicles in 2019 and beyond.

In 2018, UFV decreased its consumption in the use and purchase of paper stock. Paper consumption was down a significant 15.9% compared to 2017, with 1630 less packages purchased compared to last year’s totals, resulting in a reduction of additional 9.1 tCO₂e. These figures speak to the behavioural changes on campus as paper reduction continues to trend downwards resulting in an outstanding 82% decline in paper purchases from 2010 levels: that equates to 8,265 less packages of paper purchased in 2018 alone.


Offsets Purchased to Become Carbon Neutral

<i>University of the Fraser Valley GHG Emissions and Offsets for 2019</i>	
As per the Directive issued March 31, 2020, each PSO will use their 2018 GHG Emissions as a placeholder for the purposes of their 2019 CNAR.	
Total Emissions (tCO ₂ e)	2,382
Total BioCO ₂	1.07
Total Offsets (tCO ₂ e)	2,381
Offset Investment (\$25 per tCO ₂ e)	\$59,525

Retirement of Offsets:

In accordance with the requirements of the Climate Change Accountability Act and Carbon Neutral Government Regulation, The University of the Fraser Valley (**the Organization**) is responsible for arranging for the retirement of the offsets obligation reported above for the 2019 calendar year, together with any adjustments reported for past calendar years (if applicable). The Organization hereby agrees that, in exchange for the Ministry of Environment and Climate Change Strategy (**the Ministry**) ensuring that these offsets are retired on the Organization’s behalf, the Organization will pay within 30 days, the associated invoice to be issued by the Ministry in an amount equal to \$25 per tonne of offsets retired on its behalf plus GST.

Executive sign-off:



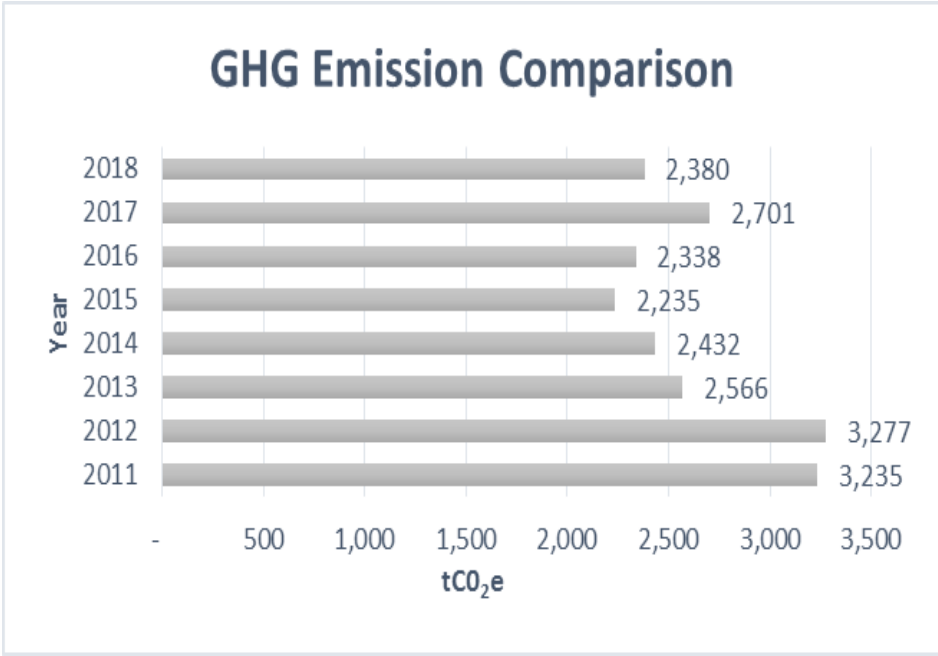
 Signature
 Jackie Hogan

 Name (please print)

June 4/2020

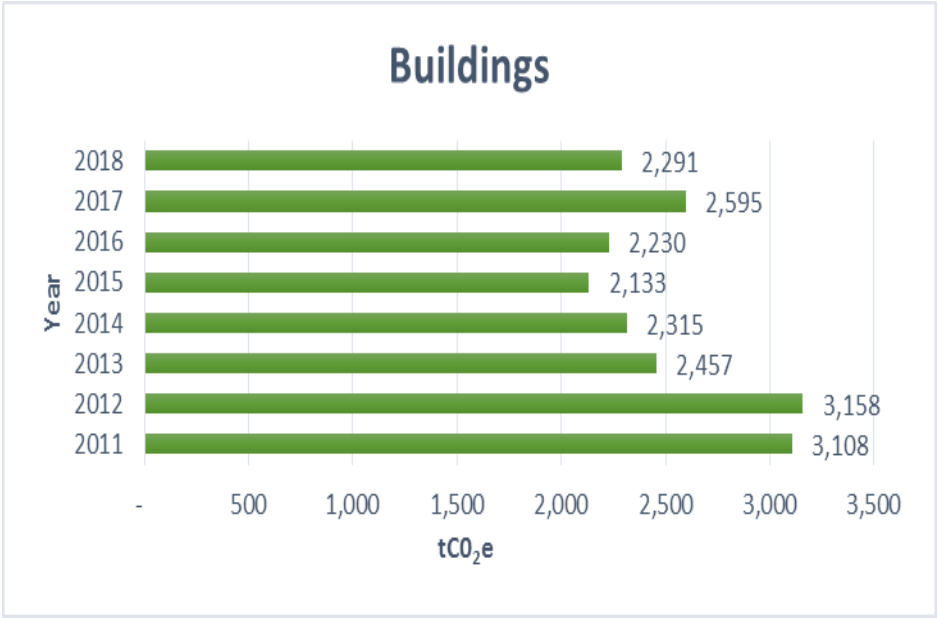
 Date
 CFO & VP Administration

 Title



UFV's GHG Emissions by Source

In 2018, UFV's total GHG emissions were 2,380 tonnes of CO₂ equivalent. The most significant emissions source was from buildings as natural gas is used for heating and space and water, cooking, and to a lesser degree the carbon in the electrical grid which is 98% carbon emission free. Natural gas and electricity used in buildings combined for 96.3% of UFV's total emissions. Paper consumption at 2.5% and mobile (fleet) combustion rounding out a minor 1.3% were the remaining sources of emissions in 2018.

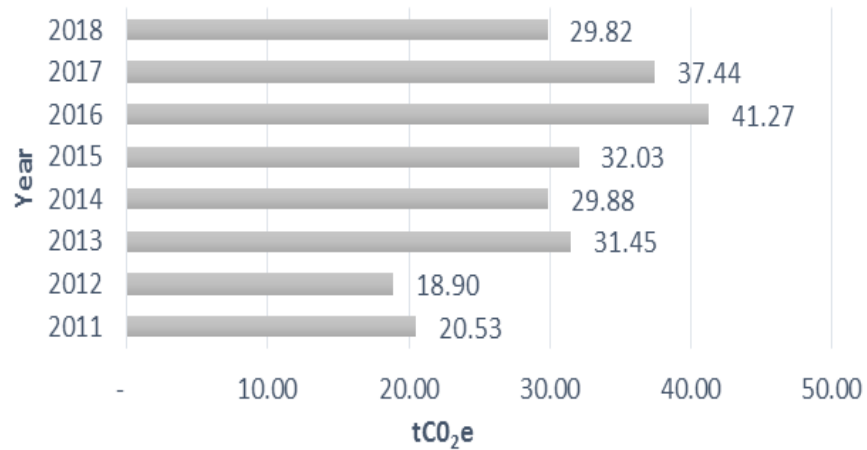


Buildings

A number of mechanical system upgrades, building energy retrofits, and behaviour change campaigns reduced carbon emissions in the built environment which resulted in a 14.1% decrease in natural gas use. When accounting for the changes in building portfolios and the amount of space needing heating, the efficiency (tCO₂e/HDD/m²) of carbon emitting systems at 6.2% lower than the previous year. It took 6,002 less gigajoules in 2018 compared to 2017 to heat spaces and domestic water at UFV.



Fleet

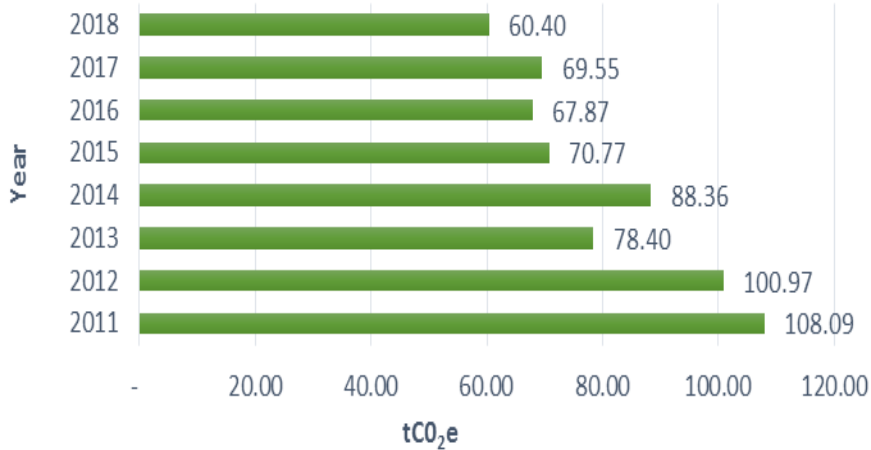


Fleet

After identifying missing fleet vehicles from our inventory in 2013 and again in 2017, a further reduction in fuel consumption in 2018 data. Overall, there was a 2,942L reduction in fuel consumption in 2018 from the previous year. The driving force behind these significant reductions is due to an old shipping van being replaced with a zero-emission electric vehicle. Additionally, the restructuring of logistics operations in August 2018 significantly reduced fuel purchases for UFV vehicles.

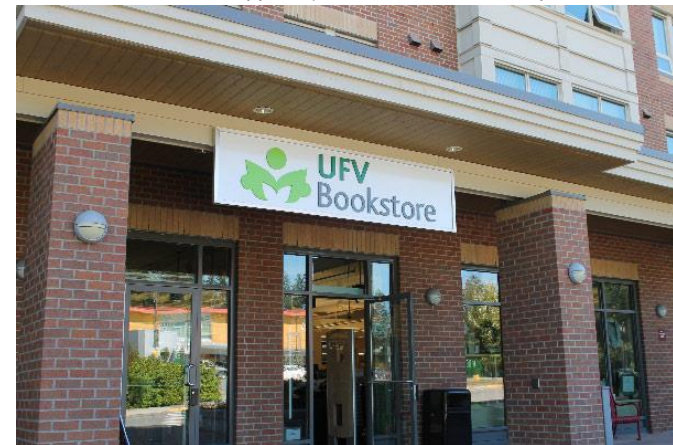


Paper



Paper

In 2018, UFV drastically reduced the purchase and use of recycled paper stock at UFV. Paper consumption was nearly 16% less than the previous year, which resulted in avoiding 1630 packages of paper (9.1tCO₂e). Overall, six of the previous eight years have had year-over-year reductions in paper purchases. UFV is on the right path and will continue to identify opportunities to digitize paperwork. Paper purchases have decreased by 80.4% from the peak in 2010, and related emissions have dropped by 82.7% over that same period.



OPERATIONAL CHANGES IN 2019

2019 presented a number of significant challenges and many successes as we progressed towards a more carbon-responsible organization.

UFV engaged with FortisBC to study, initiate, and complete a number of carbon-reducing projects. FortisBC provided rebates on two boiler upgrade projects on the Abbotsford campus in buildings C and G. The suite of rebates made available greatly enable Universities to pursue higher-efficiency equipment and systems that reduce carbon emissions. Within the Building G boiler replacement project, the domestic hot water system switched fuels from natural gas to electricity in an effort to reduce carbon emissions associated with hot water used in the building's washrooms and kitchens.

Canada Education Park hosted a number of upgrades including swapping out inefficient parking lot lighting and replacing with low-wattage LEDs. This project has not only reduced energy consumption by 80% compared to the previous technology, but has also improved visibility and the safety of students, employees, and the public through appropriate lighting levels. The Agriculture Centre of Excellence (CEP Building H) relocated thermostats within the east greenhouse to more accurately and efficiently heat the greenhouse. The Canada Education Park Building A boiler replacement project (via warranty) was completed in the summer months and will have a positive impact on efficiencies and natural gas use. Dana Hospitality increased their presence at the CEP campus by increasing their kitchen capacity, which will have impacts on natural gas use.

Building K on the Abbotsford Campus began full operations in the fall semester. The Chilliwack North campus was official removed from UFV's portfolio in early January, 2019.

The focus continues to be on increasing efficiency on existing systems, and experimenting with innovative technologies. It is expected that additional changes and improvements in processes and technology will be introduced into the operations of UFV.

Emission Reduction Actions Completed in 2019 & Key Sustainability Initiatives

In addition to reducing our reportable emissions, below are examples of our commitment to sustainability and innovation:

Mechanical Upgrades

- Abbotsford Campus Closing Windows Behaviour Change Program
- Abbotsford Bldg A Level 3 EV charger installation
- Abbotsford Bldg C Boiler Upgrade
- Abbotsford Bldg G Electrification of DHW
- Abbotsford Bldg G Boiler upgrade
- Abbotsford Bldg K Mechanical insulation upgrade
- CEP A Boiler upgrade
- CEP Lot 7 LED upgrade
- CEP H East greenhouse thermostat optimization
- Bicycle commuter hubs (Storage, Lockers, Repair, Showers)
- Tricycle Sharing Program pilot
- Banning the distribution of plastic bags on campus

Energy Wise Network & Sustainability

The BC Hydro & FortisBC Energy Wise Network is a collaborative network made up of Advanced Education, Government, Schools (K-12), Hospitality, Municipalities, Property Management, and Retail sectors. This network supplanted the Workplace Conservation Awareness program and was initiated by BC Hydro and Fortis BC. The network provides campaign tool kits, professional coaching hours, networking opportunities, training webinars, and two summits per year providing the framework for many of the energy efficiency focused initiatives throughout 18/19, and again in 19/20.

Events & Campaigns:

- Sweater Week: Lowering building temperatures and encouraging students, staff, faculty to wear layers - and sweaters, in an effort to lower GHG emissions and raise awareness of the effects of climate change.
- Gone with the Wind: Identifying when and where open windows are perpetually being opened and left open. Identifying why, and working with stakeholders to find sustainable and energy efficient solutions.
- Waste Audit: 5th annual waste audit data outlined an increase in compliance. Landfill diversion projects were implemented.
- Promoting and supporting cycle-commuters through infrastructure upgrades and communications

Plans to Reduce Greenhouse Gas Emissions in 2020 and beyond

In the upcoming year, we anticipate numerous energy audits, mechanical equipment upgrades, impactful LED upgrades, continued DDC optimization and a stronger sustainability culture throughout all levels of the UFV community.

Links to Other Information Relevant to Sustainability

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

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




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