

Building Capacity and
Culture Through
Sustainable
Development



**2019/2020 UFV
Report on
Environmental
Sustainability**

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Acknowledgement

The University of the Fraser Valley (UFV) acknowledges that its campuses are located on unceded, traditional Stó:lō territory. The Stó:lō people have been present in their traditional territory - which includes modern New Westminster near the mouth of the Fraser River in the west, and extends up the Fraser River past Hope into the Fraser Canyon in the east - since time immemorial.

This territory has been rich in resources and the Stó:lō people have moved throughout the territory to fish, hunt, trap, and gather. In return for this abundance, the Stó:lō people were – and still are – the keepers of the lands and waters that sustain them. Today, the Stó:lō people still use many of these resources for economic and traditional purposes.

UFV is dedicated to learning from local Indigenous peoples, and within the context of environmental sustainability, there is much more to be learned.

Originating from Sxwóxwiyám (history of a distant past) and Sqwelqel (news, recent history): *“S’ólh Téméxw te íkw’élò. Xólhmet te mekw’ stám ít kwelát.* This is our land. We have to look after everything that belongs to us” (Stó:lō Research and Resource Management Centre, 2016).



Letter of Commitment to Sustainability



Letter of Commitment to Sustainability
April 20, 2017

Globally, there is an overwhelming consensus that climate change poses a serious threat to our environment today and into our future. The University of the Fraser Valley (UFV) intends to mitigate its negative environmental impact that contributes to climate change, and the degradation of our natural environment.

Each member of the UFV community has a role to play in this effort.

We must continue to encourage dialogue, develop ideas, and increase innovation aimed at the discovery of solutions to the environmental problems we face, and in some instances, the problems we continue to create.

UFV is committed to modelling a more sustainable campus and broadcasting leadership in environmental sustainability for our students, staff and faculty. UFV further engages-in and fosters sustainable development within its local communities. We are committed to harnessing creativity in the development of a healthier campus life which supports the well-being of all our students, staff and faculty. UFV does this by:

1. Prioritizing learning everywhere
2. Committing to flexibility and responsiveness in the face of rapidly changing challenges
3. Collaborating with various people and places
4. Developing local and global citizenship
5. Integrating experiential learning

UFV has made significant strides in recent years to reduce its operational impact on the environment, a few impactful initiatives include, but are not limited to: a dedication to green building design and construction, energy efficiency upgrades, monitoring of environmental metrics, reduction of CO₂ emissions, reduction of paper consumption, and the development of a more streamlined approach to waste management. UFV will continue to expand its scope and detail of work dedicated to improving sustainability on its campuses.

Sustainability at UFV is a critical and necessary focus for a more sustainable future; a future in which UFV's examples and teachings provide solutions to problems on its campuses and within its communities. Students, faculty and staff will over time develop a greater understanding of the complex challenges related to sustainability, and they will have the ability to take these learnings with them into the different communities their lives may take them to.

Together, we are creating that future. I am proud of UFV's commitment to sustainability, the strides UFV has taken, and the path ahead that we are developing. I look forward to supporting an increased dedication to sustainability and environmental stewardship and to work diligently with a variety of diverse stakeholders to solidify UFV's position as a green community leader.

A handwritten signature in blue ink, appearing to read "Mark Goudsblom".

Mark Goudsblom
Director of Facilities and Project Management

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Letter of Commitment to Energy Management

*Letter of Commitment to Energy Management
October 12, 2019*



The University of the Fraser Valley's Strategic Plan outlines key strategic directions, including: to be a "leader of social, cultural, economic, and environmentally-responsible development in the Fraser Valley" and to be "innovative, entrepreneurial, and accountable in achieving our goals". A major component of our environmental responsibility as an organization is to effectively manage the energy we consume. Natural gas provides us with heat and hot water in our buildings. Electricity provides us with lighting and cooling and runs our computers and other equipment. While the use of energy is intrinsic to our operation as a university, as leaders in our communities we must also be innovative and accountable for minimizing the environmental impact and greenhouse gas emissions that result.

At the University of the Fraser Valley we are committed to energy efficiency and conservation. This commitment is deeply engrained. In 1999 we joined Natural Resources Canada's Energy Innovator Program. In 2002 an energy study was conducted to find ways in which energy consumption could be reduced at that time. In 2005, after the measures identified in the study were implemented, we succeeded in reducing our annual greenhouse gas emission intensity by 11%. In the summer of 2010, with the support of BC hydro, we hired a dedicated Energy Manager for the Abbotsford Campus and Aerospace Centre resulting in a further 10% energy reduction during the first 3 years. In 2016 we re-affirmed our dedication to environmental stewardship in the Fraser Valley by hiring a new Energy Manager tasked with addressing energy efficiency, rapidly escalating utility costs, and reducing the environmental impact of university operations. To reinforce our commitment to energy efficiency and conservation and to link our commitment to outcomes, we are developing a new version of the Strategic Energy Management Plan (SEMP). The SEMP will provide us with the framework and direction required to further reduce our energy consumption and meet reduction targets.

I am proud of our commitment to energy efficiency and conservation, knowing we are not only providing a benefit to the environment, but also to our community. Further, by providing a means of generating a more sustainable university we are also improving our economic bottom-line – a win-win situation. I encourage all members of the campus community to provide support for our commitment, as the benefits extend to each and every one of us.

A handwritten signature in black ink, appearing to read "Jackie Hogan".

*Jackie Hogan,
Chief Financial Officer and Vice President Administration
University of the Fraser Valley*

Who We Are

The Office of Sustainability (the Office) is a central location for students, administrators, and academics to collaborate in the pursuit of sustainability at the University of the Fraser Valley (UFV). The Office supplanted the Centre for Sustainability in April, 2020. The Office has transitioned into the primary source of planning and actions that deliver sustainability projects, programs, events, and initiatives at the University of the Fraser Valley, with a particular emphasis on the environment. SustainableUFV continues to be the moniker for collaborative initiatives and actions in the sustainability realm.

Functioning within the Campus Planning and Facilities Management department and located on the Abbotsford Campus in Building B, the Office is connected in proximity and structure with other factions of the department including: grounds maintenance, building systems optimization, project management, operations, and campus planning. Each of these departmental branches have significant impacts on the university's sustainable development plans and actions.

UFV's Sustainability Mission

The primary objective of the Office of Sustainability is to enable the long-term wellbeing of the university and its place within the communities it operates within. Providing value to and aligning the university's values with those of current and prospective students, employees through sustainable development ensures that the Office is proactive and attuned to generational, sectoral, and societal best practices.

The creation of sustainability culture is foundational to the positive development of UFV that enables equity amongst learners and employees. This is done by encouraging conservation, innovation, and the efficient use of resources in facilities and operations, as well as promoting education and research, engagement and outreach as they relate to sustainability best practices.



Overview

This Report on Environmental Sustainability is intended to be a transparent description of the environmental footprint created by the daily operations of UFV. The report outlines the work being done within the core campuses of Abbotsford, Chilliwack, and Aerospace (to the west of Abbotsford), details the progress made on goals and targets, and outlines key performance indicators.

This report is intended to help educate the executive leadership group, staff, and students – both current and prospective – so that they can better understand the University's operational impacts. It also allows UFV to reach out to

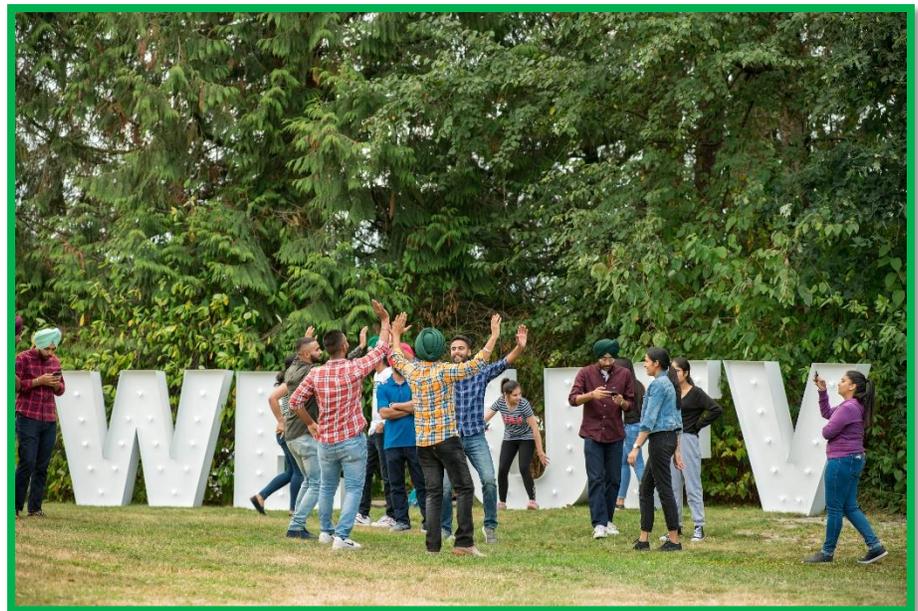
the general public to increase awareness in regards to the work the University is undertaking to become a regional leader in sustainability.

Culture Change

Over the course of the last 10+ years, the University has grown significantly when compared to its beginnings as a regional college. Through this time, UFV has increased instructional hours by 33%, created 22% more floor space, and welcomed 18% more full-time students. While the University itself has expanded, so too has its environmental footprint. In an effort to become a regional leader in environmental sustainability, the University created the Energy Manager position in 2016 to drive positive change and growth in the areas of energy efficiency, sustainability, and outreach. With a full-time position dedicated to sustainability, the University has a consistent figurehead to push forward the campaigns, initiatives, projects, and visions of the SustainableUFV team and the Campus Planning and Facilities Management department. The Energy Manager has now transitioned into the role of Sr. Manager, Energy & Environmental Sustainability.

Efforts to change cultural and habitual behaviours within the institution are constant and ongoing. Throughout this document, the reader will find a number of ways in which UFV has gained traction in employing sustainable and environmentally responsible operations, which have been supported by students, employees, and individuals within executive leadership groups.

Cultural change is difficult to quantify, so in the absence of numbers, the Office of Sustainability welcomes you to explore UFV's campuses and provide us with your feedback. Where are we now? Where are we going? Where will you, the reader, take us?



Communications

Social Media and Sustainability Communications

Social media is a powerful communication platform for the Office, as it is used to promote contests and participant engagement, provide insight into projects, events, and initiatives, and is useful for connecting with those that are interested in sustainability. It takes a lot of dedication, however, to use social media as a medium for maintaining and providing positive, interactive, and informational spaces.

The Office of Sustainability currently uses three social media platforms under the banner of *SustainableUFV*:

- Facebook: www.facebook.com/SustainableUFV (225 likes)
- Instagram: www.instagram.com/sustainableufv (490 followers)

- Twitter: www.twitter.com/sustainableufv (290 followers)

Other information on topics related to campus sustainability can be found at:

- www.ufv.ca/sustainability
- www.ufv.ca/energy
- SustainableUFV blog: www.blogs.ufv.ca/sustainability
- Science Department blog: www.blogs.ufv.ca/science
- The Cascade: www.ufvcascade.ca

Energy, Carbon Emissions, and Sustainability Metrics

Energy Management

In addition to the energy saving behavioural campaigns listed in the Events & Campaigns section of this report, there were also numerous mechanical and systematic upgrades aimed at increasing energy efficiency and comfort for building occupants, as follows:

- Abbotsford Campus closing windows behaviour change program
- Abbotsford Bldg A & D Building envelope energy studies
- Abbotsford Bldg C Boiler upgrade
- Abbotsford Bldg E Solar Thermal Collector installation
- Abbotsford Bldg G Electrification of DHW
- Abbotsford Bldg G Boiler upgrade
- Abbotsford Bldg H Low-carbon electrification study
- Abbotsford Bldg K Exterior LED upgrade
- Abbotsford Bldg K Mechanical insulation upgrade
- CEP Campus Mechanical insulation upgrade
- CEP A Boiler upgrade
- CEP Lot 7 LED upgrade
- CEP H East greenhouse thermostat optimization
- FortisBC Energy Specialist Funding
- Fleece Blanket Program
- DDC programming adjustments

Energy management continues to play a pivotal role within UFV, in part due to an increased reliance on technology (computers, scanners/printers, laptops, tablets, projectors, etc.) in classrooms and offices, which in turn increases the demand for electricity. With an increased utilization of energy-requiring technology coupled with cool winters, there is an amplified onus on the Facilities department to optimize major energy consuming systems such as boilers, chillers, and the HVAC system that brings conditioned air to learning and working spaces. Campuses and buildings are dynamic places and spaces. To effectively measure and compare energy performance campus-wide, its important to factor in and measure the changes to the building portfolio (or, gross floorspace, m²) and the impacts of weather (DD) on heating and cooling systems. The goal is to compare how efficiently systems are operating year-to-year. The Energy Intensity Normalized for Weather (Figure 1) succinctly displays UFV's energy efficiency and its progress from the 2011/2012 baseline.

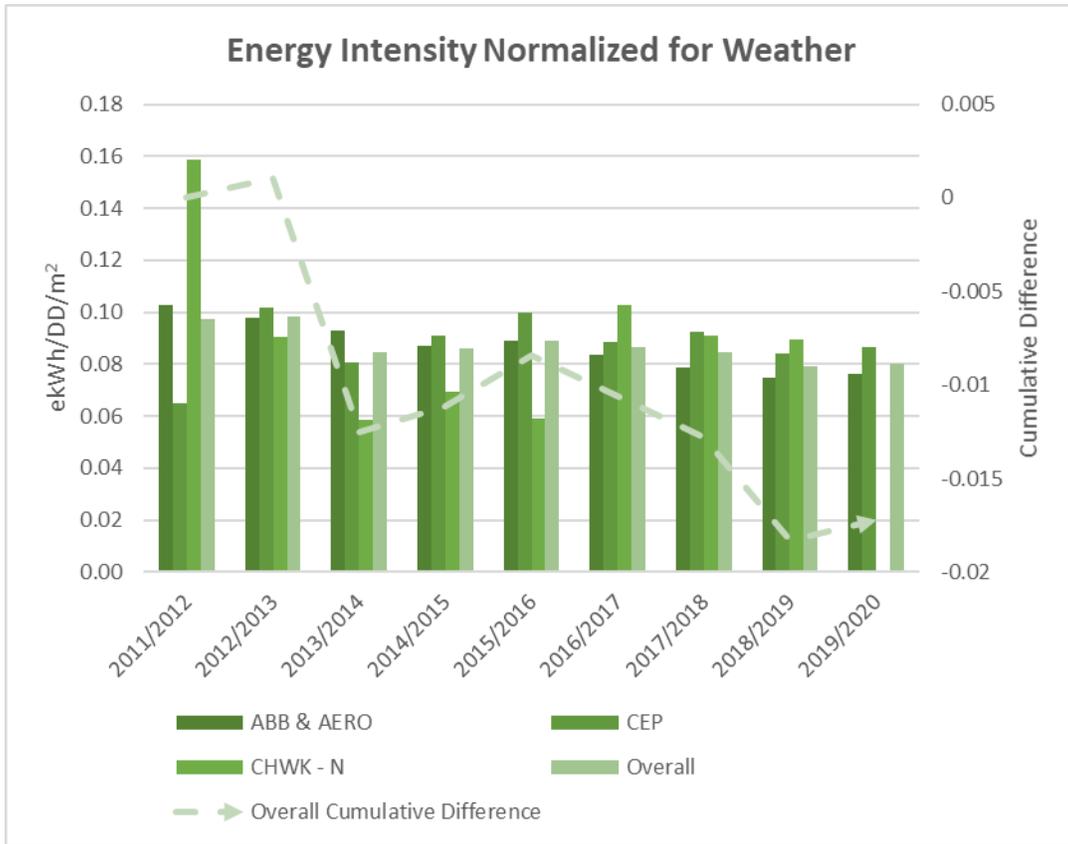


Figure 1. Campus energy efficiency

Energy Wise Network

SustainableUFV joined the Energy Wise Network in 2016. The 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. It provides campaign tool kits, professional coaching hours, networking opportunities, and training webinars, as well as hosts two summits per year, which collectively provides the framework for many of the energy-efficiency-focused initiatives throughout 2019/20.

The Energy Wise Network sponsored project in 2019/20 was focussed on office occupants use of operable windows and their impacts on nearby colleagues, the HVAC system, and energy consumption. In doing so Facilities was able to express the “Why”: why should occupants close their windows? Securiguard ensured that windows were closed afterhours and dropped off informative placards detailing the program and rationale.

Get Your Fleece On 4.0

FortisBC and BC Hydro have supported UFV’s Get Your Fleece On! by sponsoring the purchase of hundreds of fleece blankets with the SustainableUFV emblem embroidered onto each blanket.

Fleece blankets have been provided to employees who have felt consistently chilly in their workspaces. After providing evidence that they have made efforts to have the HVAC system in their area assessed by a Facilities Technician, and ensuring that nearby windows and doors are shut, employees may request a blanket.

Participants of the program are provided with insight to the adverse effects of space heaters and are asked to sign a pledge that state they would either use such devices less frequently or would remove them entirely from campus. The program remains a valued component of office comfort, productivity, and insight into the complexities of building systems.

Carbon Emissions

Carbon emissions at UFV have been significantly reduced since detailed tracking began in 2009. In fact, there has been a 42% overall reduction in total carbon emissions from 2009 to 2019, and a further 81% reduction in tonnes of carbon per square meter (tCO₂e/m²) within the building portfolio during that same time frame.

Potential carbon emissions reductions play a pivotal role in the project and program selection process. Synergies between energy efficiency, cost savings, and carbon emissions reductions improves the attractiveness of system repairs, upgrades, retrofits, and innovative projects implemented in the building portfolio.

Carbon emissions at UFV are primarily sourced (96%) from buildings, with the remaining emissions contributions from fleet fuels, and paper purchases.

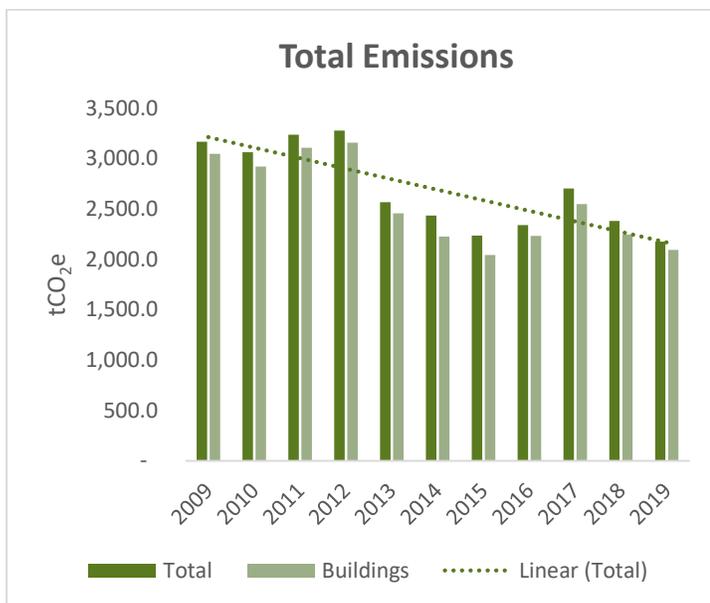


Figure 2. Total carbon emissions per calendar year

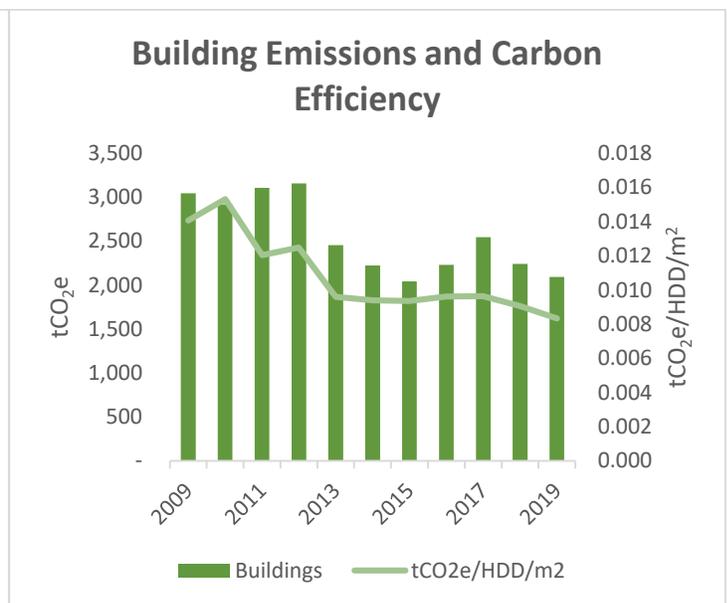


Figure 3. Annual building emissions per m²

Grounds Crew Hand-Tool Transition to Low-Carbon

Christine Jones, Grounds Supervisor, championed the transition from traditional gasoline-powered tools to electric battery pack tools. A leaf blower and two hedge trimmers are operational on campus and are no longer a significant source of noise or atmospheric pollution. A full transition off of gas powered tools is planned.

The Carbon Neutral Action Report (CNAR) provides full details and analysis of carbon emissions management at UFV and can be read at www.ufv.ca/energy/energy-reports/.

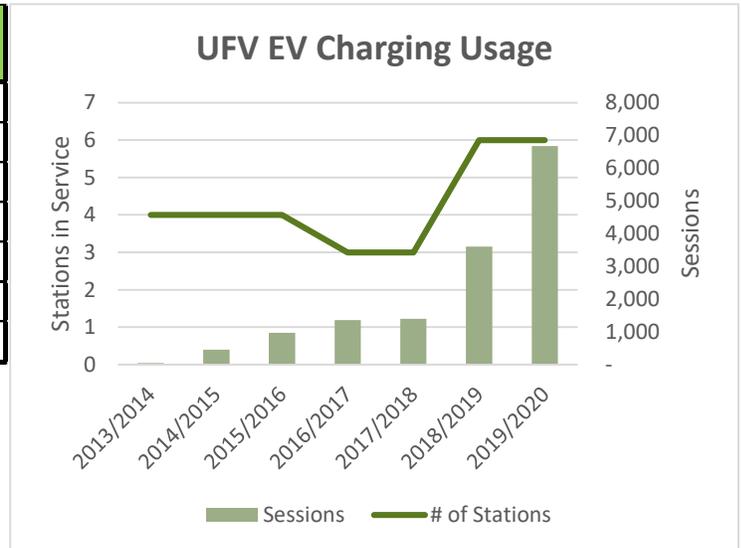
Low-Carbon Transportation

UFV has installed five Level 2 stations capable of charging up to 10 vehicles simultaneously. Additionally, a Level 3 DC Fast Charging Station is located in Lot 6 on the Abbotsford campus. The energy for the Level 2 stations is available to all students, staff, and faculty free of charge for the first four hours. Level 2 stations provide vehicles with a full charge in 4-8 hours. The first stations were installed in 2012/2013 at the Aerospace Campus (1), Abbotsford Campus (2), and CEP Campus (1). There has been significant year-over-year increases in charging sessions, - or, the number of times a vehicle has plugged in to charge - energy provided for cost-free charging, and emissions reductions compared to traditional combustion engine vehicles. The data supports the commentary from EV drivers that the stations are frequently utilized during the day and that the campuses could use more charging infrastructures.

Currently, UFV is capable of simultaneously charging 11 vehicles at Level 2 and 3 stations.

	# of Stations	Sessions	Energy (kWh)	Community GHG Savings (t)
2013/2014	4	51	227.5	0.10
2014/2015	4	459	3,150	1.33
2015/2016	4	971	9,830	4.13
2016/2017	3	1357	13,928	5.85
2017/2018	3	1396	13,076	5.49
2018/2019	6	3608	33,241	13.96
2019/2020	6	6676	60,710	25.50

Figure 4. Electric vehicle charging frequency and impact



Waste Management

On October 16, 2019 Campus Planning & Facilities Management conducted the fifth annual Waste Audit. The waste audit analyzed not only the gross amount of waste produced, but also the specific waste within each of the four waste streams (Organics, Landfill, Mixed Recycling, and Refundables). To begin the event, two days' worth of waste from Abbotsford's buildings A and B was collected and transported to an area on the green where the group of volunteers would record the weights of each waste stream.

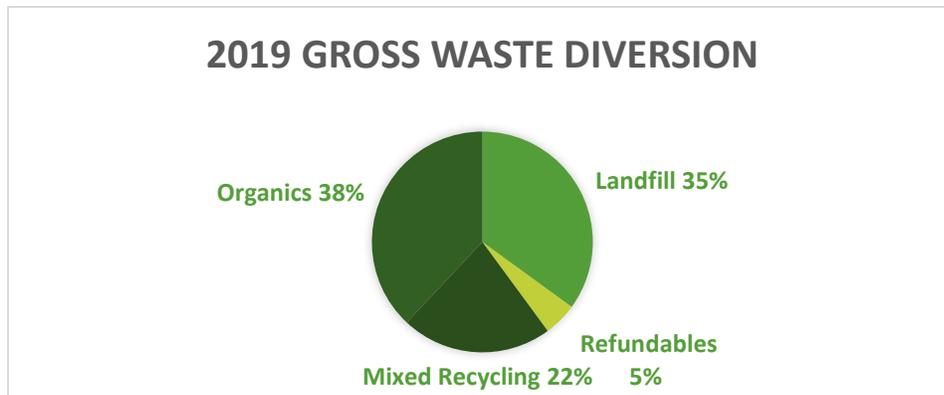


Figure 5. 2019 Abbotsford Campus waste profile

Figure 5 shows a diversion rate of 65% which depicts the total waste generated at UFV that is separated into more sustainable waste streams (Organics, Mixed Recycling, and Refundables) and is therefore not piling up in the landfill (only 35% of discarded materials). Through waste audits, we are able to track the rate at which streams are being utilized and, by extension, formulate initiatives to change behaviours in regards to how people are discarding their waste. The landfill diversion rate has improved nearly 15% from 2017.

The full report can be read at: www.ufv.ca/sustainability/waste-management

Water

Water use has continued to be a core component of environmental sustainability efforts at UFV. In the previous 3 years, water consumption was reduced year over year from peak usage in 2015/2016. This year's consumption rose 10.5%. Data collected from the City of Abbotsford and City of Chilliwack show a 42.5% decline in overall water consumption at UFV since the peak, and a 17% overall reduction in water use per m² of floorspace since records were initiated in 2008/2009.

There are many end-uses for water consumption, including food prep, laboratories, sanitation, showers, irrigation, and building systems. UFV has shown a commitment to reducing the amount of plastic bottles that end up in the landfill by facilitating convenient water bottle filling stations throughout the campuses. There are now 24 bottle fill stations that can be found in twelve buildings.

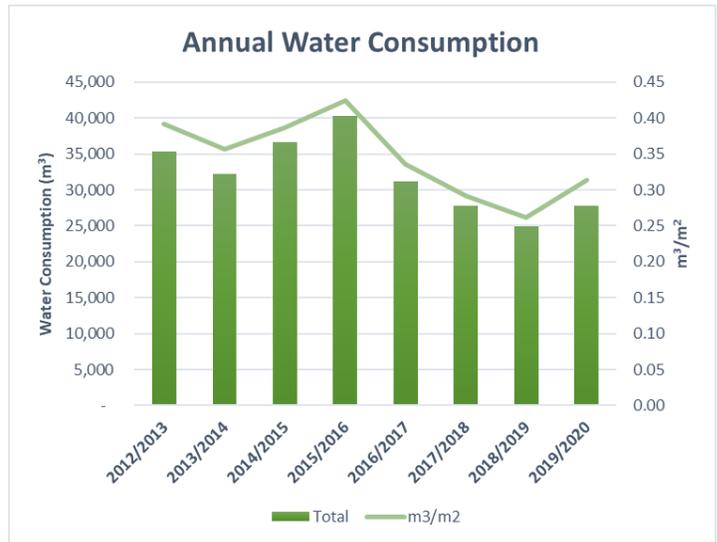


Figure 6. Annual total water use and efficiency

Final Words on Environmental Sustainability

Environmental sustainability at UFV involves reducing negative impacts on the environment in a fiscally responsible manner. UFV is committed to increasing the prevalence of action pertaining to environmental sustainability, both regionally and globally, and recognizes the impact it can functionally have as an educational facility. To encourage environmental consciousness, the Office of Sustainability seeks to consistently provide opportunities for different groups to connect, collaborate, and improve their learning and working spaces in sustainable ways. Sustainability at UFV, for many, facilitates an environmentally-responsible consciousness. The hope is that these values will be transported with many students and staff as they move on to their next endeavors outside of UFV.



UFV also recognizes that achieving sustainable operations within such a diverse institution can be challenging. In terms of recognizing progress, it can be difficult to determine when or at what point efforts have paid off. Furthermore, a challenge also lies in deciding what constitutes a successful campaign. Further success lays in UFV's ability to increase energy efficiency and provide numerous opportunities for students and employees to participate in sustainability projects, initiatives, and events. For instance, unique and innovative alternatives were used to mitigate the use of traditional, high-pollution tools and systems, which resulted in reduced carbon emissions.

Despite the challenges, there is a growing number of SustainableUFV members, higher quality interactions, and more poignant goals within projects. As the culture of environmental responsibility continues to grow, so too will the impacts of sustainability projects on campus and within the local communities. This consciousness will continue to develop until the culture of environmental accountability is a global one.

With your help, UFV in 2020/2021 will continue to strive to reduce waste and carbon emissions, lower negative environmental impacts, and increase energy efficiency. We thank you for your participation and support in this endeavor.

