



2023 - STRATEGIC ENERGY MANAGEMENT PLAN REPORT

Abbotsford, Canada Education Park (Chilliwack) and
Aerospace Campuses

University of the Fraser Valley
33844 King Road,
Abbotsford, BC, V2S 7M8

February 2024

Prepared by:
Doran Hoge – Director Energy and Sustainability
Parisa Mohammadi – Energy Manager
Alicia Nightingale – Cleantech Intern

Senior Management Support:
Name: Betty Poettcker
Position: Acting VP Campus Planning and Facilities
Management; VP Resource Planning and Enterprise Risk

Signature:

Contents

- Executive Summary..... 2
- Land Acknowledgement..... 3
- Introduction 4
- Commitments 5
 - Organization Goals..... 5
 - Sustainability Commitments 5
 - Carbon Emissions 5
 - Energy 6
 - Future Commitments 6
 - Stakeholder Engagement..... 7
- UFV Profile 8
 - Buildings..... 8
 - Utility Consumption and Costs..... 9
 - Energy Star Portfolio Manager (ESPM) 12
 - Energy Management Structure at UFV 12
 - Opportunities and Challenges with Energy Management..... 13
- 2019-2022 Projects 13
- 2023 Projects 14
 - Energy Efficiency 14
 - Behavior Change 14
 - Electric Vehicle Charging..... 14
 - Approved Projects 2024..... 15
- Conclusion..... 0
- Appendix A – Energy Management Letter of Commitment 1
- Appendix B - 2023 EMA Action Plan Details 2

Executive Summary

UFV's energy management program tracks energy consumption and promotes energy conservation measures at 22 core buildings across UFV's Abbotsford and Chilliwack (Canadian Education Park) campuses, and Aerospace building located at the Abbotsford Airport. This Strategic Energy Management Plan (SEMP) report highlights the results of UFV's effective energy management efforts, demonstrates UFV's commitment to energy conservation and environmental sustainability, outlines planned future actions aimed at increasing energy efficiency, and draws attention to trends in energy consumption.

Currently UFV's greenhouse gas emissions reduction targets align with BC Provincial targets; to reduce GHG emissions by 16 percent by 2025, 40 percent and 60 percent by 2040 using 2007 as a baseline. UFV's Office of Sustainability is working to create an Energy and Climate Resilience Plan (ECRP), which will include updated energy conservation and GHG emissions reduction targets and identify measures to reduce energy consumption and improve climate resilience.

In 2023, UFV spent \$1.35 million on electricity and natural gas. 10,134 megawatt hours (mWh) of electricity was used to power lights, equipment, ventilation, and cooling. 38,752 gigajoules (GJ) of natural gas was used for heating both water and the campuses at large. All energy was used to ensure the comfort of students, staff and visitors to UFV's campuses. These figures, change annually because of the evolving building portfolio of UFV, weather conditions, the cost of energy and the rate carbon tax. Throughout 2023, for example, UFV managed a gross floor space of 95,071m², an increase of 2.4% from the previous year, due to a sequence of sales, acquisitions, and lease agreements.

Despite challenges faced by the energy management team, UFV's Office of Sustainability and Campus Planning and Facilities Management more broadly, has been successful in implementing a series of projects, programs, initiatives that have resulted in reduced energy consumption and increased climate resilience. Improvements include lighting upgrades that have increased efficiency and provided high quality lighting; mechanical upgrades that have increased reliability, efficiency, and effectiveness in maintain occupant comfort; and behavioural change campaigns have cultivated a culture of energy awareness, sense of community and understanding of sustainability.

Since the last SEMP published for the 2018/2019 year, UFV has experienced firsthand the importance of implementing reliable energy sources and highlighted the connection between UFV's operations and the big picture of climate change. A global pandemic expanded the universities need for reliable technology that ensures air quality and ventilation in its buildings. In 2021, the Fraser Valley experienced a heat dome where hundreds of people in British Columbia lost their lives due to extreme heat. In 2021 the Fraser Valley experienced extreme flooding caused by two atmospheric rivers, which resulted in the displacement of hundreds of Fraser Valley Residents. In 2023 forest fires across BC displaced hundreds more people across BC. As these kinds of events become more frequent due to accelerating climate change, it will become increasingly important for UFV to increase its energy and extreme weather resilience to protect the health and wellbeing of students, staff and faculty on campus and avoid service outages.

Land 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. The language they spoke was Halq'eméylem, also known as the upriver dialect.

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 recognizes and honours the contribution that Aboriginal people have made – and continue to make – to our community. The university supports Indigenous learners and seeks to incorporate indigenous ways of knowing into all its activities.



Figure 1 - Wild Salmon in the Fraser River

Introduction

This Strategic Energy Management Plan (SEMP) report supports the commitment of the University of the Fraser Valley (UFV) to energy efficiency and conservation by providing a framework for reducing energy consumption and its associated environmental impact. This SEMP report reviews how UFV's energy management goals fit within UFV's larger commitments and how initiative undertaken within the 2023 calendar year are helping to achieve UFV's energy goals.

Energy management enables UFV identify, plan and take actions to achieve its operational, financial and sustainability goals. By implementing the actions detailed in this SEMP, UFV is demonstrating leadership, innovation, responsibility, and accountability for the resources it uses. Furthermore, by hiring of a dedicated Energy Manager UFV has demonstrated commitment to:

- Reduce operating costs through energy conservation and efficiency.
- Minimize its environmental impact.
- Reduce greenhouse gas emissions, which of global importance to avoid catastrophic climate change.
- Reduce exposure to volatile energy costs and costs escalations.
- Reduce reliance on the province's energy infrastructure.
- Demonstrate effective and responsible management of resources.
- Promote our successes and share best lessons learned with the public and other universities for mutual benefit.
- Educate those who will shape the future of our community, province, and country on the importance of managing the resources responsibly.

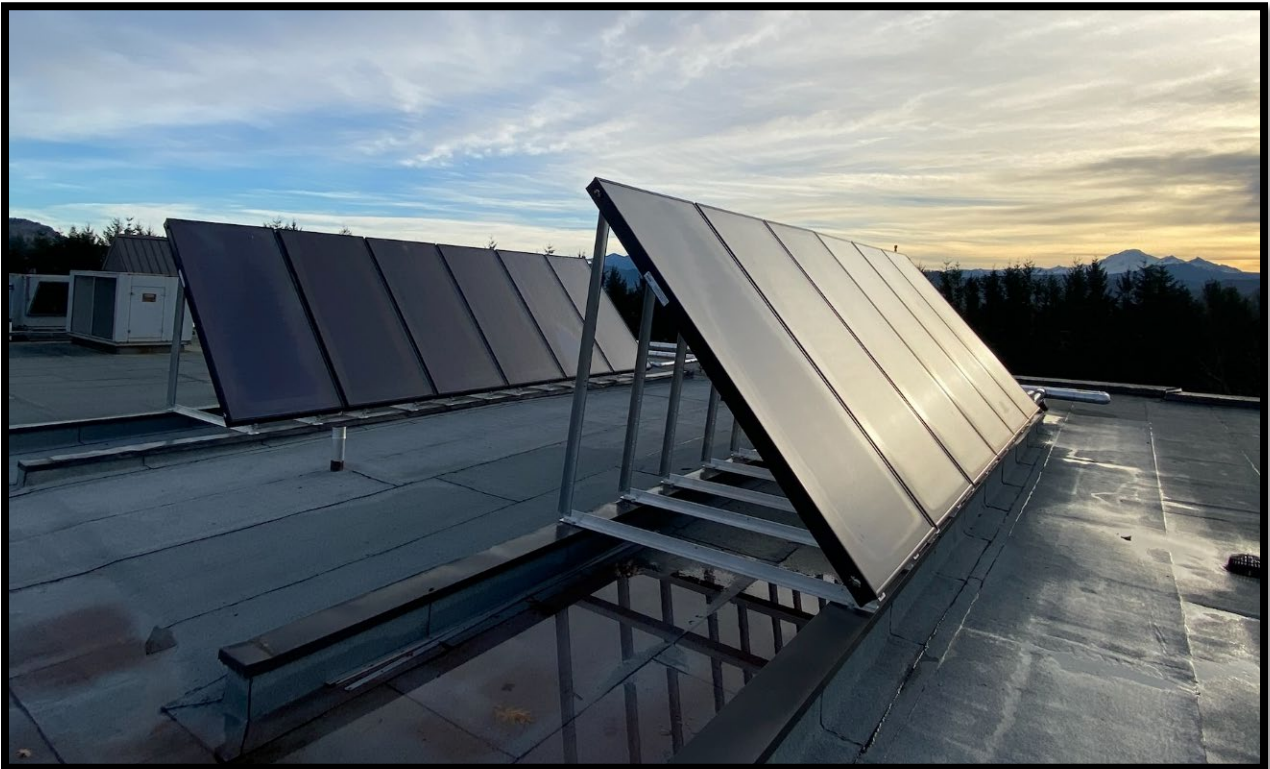


Figure 2 - Passive Solar Domestic Hot Water

Commitments

Organization Goals

UFV's mission is to engage learners, transform lives and build community. The university community's vision UFV to "be known as a gathering place for learners, leaders, and seekers." Energy management contributes to providing spaces in which these university-wide goals can take place.

Energy management at UFV involves intentional planning and project implementation that reduces operating costs through lower energy consumption. Energy management fosters a more sustainable campus environment by decreasing carbon emissions and promoting renewable energy sources. Energy-efficient practices and technologies can serve as learning opportunities for students, preparing future leaders with skills to integrate environmentally sustainable approaches into their careers.

Sustainability Commitments

In recent years UFV has made commitments to include sustainability as an institutional priority:

- UFV has included Sustainability into its Strategic Plan, to "Develop meaningful community partnerships and action-oriented projects that support social innovation, economic development, and environmental sustainability."
- An official sustainability policy was enacted in October of 2023 to bring focus to sustainability in operations, academics, evaluation, and community outreach.
- UFV is a signatory on the UN Sustainable Development Goals Accord and is a member university of the UN Academic Impact Initiative. Both indicate that UFV works to align itself with United Nations goals, which include adopting affordable and clean energy practices, promoting good health and well-being, and minimizing impact to life on land and water.
- UFV participates in Sustainability Tracking, Assessment, & Rating System (STARS), a program of the Association for the Advancement of Sustainability in Higher Education (AASHE), which assigns UFV a sustainability rating based on various aspects of the institution. In 2023 UFV received a Silver Rating and hopes to raise this rating to a Gold or Platinum Rating.

Carbon Emissions

As a public sector institution, UFV is required to report on greenhouse gas emissions under the Climate Change Accountability Act. The scope of emissions reported annually include: building energy (owned and leased by UFV), fleet, and paper related emissions. Carbon offsets are purchased by UFV to achieve carbon neutrality. A Carbon Neutral Action Report (CNAR) is prepared by UFV each year outlining the efforts planned and being undertaken to reduce carbon emissions.

The government of British Columbia has set targets to reduce greenhouse gas emissions 40% below 2007 levels by 2030, 60% by 2040, and 80% by 2050. The province also has an interim target to reduce emissions 16% by 2025. UFV's current targets are in alignment with provincial targets.

Shown in Figure 3, the largest source of emissions at UFV is associated with building energy. Therefore, many of the energy projects outlined in this SEMP are crucial to meeting the greenhouse gas reduction goals set by the province.

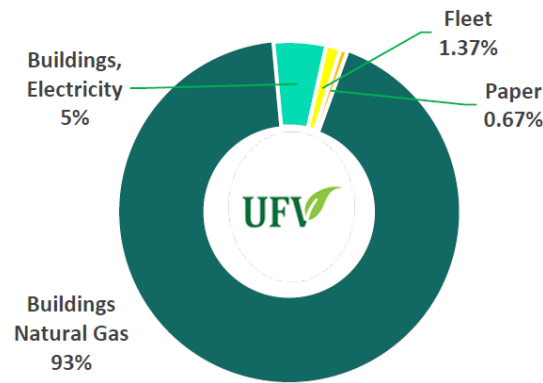


Figure 3: Greenhouse Gas Emissions Distribution at UFV in 2022

Energy

In 2019 UFV committed to increasing energy efficiency and reducing GHG emission (Appendix A). The attached Letter of Commitment to Energy Management highlights the overall importance of improving energy efficiency to UFV to reduce, environmental impacts and energy costs, respond to climate change, and responsibly manage resources.

Previous SEMP reports established energy reduction target of 10% by 2021/2022 from the 2015/2016 levels (measured in (ekWh) per degree day (DD)* per area (m²)). Table 1 below is taken from the 2019 SEMP report shows that energy targets were met ahead of schedule. Due to staff changes, a SEMP report has not been completed since 2019.

Table 1: 2018/19 Energy Efficiency Timeline

ekWh/DD/m ²	Reduction Target	Target	Actual	Year-to-Year Change	Cumulative Change from Base
2015/2016	-	-	0.0889	-	-
2016/2017	-2%	0.0871	0.0867	-2.5%	-2.5%
2017/2018	-2%	0.0854	0.0841	-2.6%	-5.1%
2018/2019	-2%	0.0837	0.0788	-7.3%	-12.4%

* A degree day (DD) is a measure of heating and cooling. There are two varieties of DD; when separated they are identified as: Heating Degree Days (HDD) or Cooling Degree Days (CDD). Degree days for a given day represent the number of Celsius degrees that the mean temperature is above or below, when compared to a given base temperature. For example, Heating Degree Days represent any number of degrees that fall below 18 °C. If the temperature is equal to or greater than 18 °C, then the number will be zero. A cooling degree day is the inverse. Source: Environment Canada www.climate.weather.gc.ca. Climate ID 1100031.

Future Commitments

UFV is currently working to develop new mid and short-term targets through the development of and Energy and Climate Resilience Plan. Once complete, UFV will work to advance specific projects to reduce energy consumption and GHG emissions. Work for the Energy and Climate Resilience Pathway Plan commenced in 2023 and will be completed in in Summer 2024. The Energy and Climate Resilience Pathway Plan includes and audit of the core buildings in UFV’s portfolio to create a long-term strategy for project prioritization and planning. Plan will also identify targets for energy and greenhouse gas emissions reduction that align with UFV’s strategic and sustainability commitments. Subsequent SEMPs will reflect on the progress along the preferred pathway identified in the Energy and Climate Resiliency Pathway Study.

Table 2: 2024 Energy Efficiency Targets

ekWh/DD/m ²	Reduction Target	Year-to-Year Change	Cumulative Change from Base
2024/2025	-2%	-2.5%	-2.5%
2025/2026	-2%	-2.6%	-5.1%
2026/2027	-2%	-7.3%	-12.4%

Stakeholder Engagement

UFV is an advanced education institution. Students, university staff and faculty make up the majority, of stakeholders for projects completed at UFV. In the 2022-2023 year there were approximately 14,300 students and approximately 1700 staff and faculty working at UFV. While students and employees are the main stakeholders at the university, there are often members of the public, visitors from other universities, and external contractors working at the University that need to be considered as well.

Generally, each project carried out requires a unique approach to stakeholder engagement. One way this is being addressed is through an Energy and Climate Change Committee, formed during the summer of 2023. The purpose of this committee is to work together to identify and prioritize the implementation of energy and GHG emissions reduction projects, policies, plans, and best practices. The committee includes members from UFV's Office of Sustainability, campus operations, capital projects, Research Office, academic community, information and technology, ancillary services, student housing and broader university community. Members work together to identify stakeholders that may be impacted by the project and how best to engage with stakeholders and address stakeholder concerns.

Additional planning for stakeholder engagement and an action prioritization and implementation guild are being developed as part of the Energy and Climate Resiliency Plan, which will be complete in summer 2024.



UFV Profile

UFV is a leading institution BC, which has contributed education and economic development of the Fraser Valley over the last 50 years. The University was founded as Fraser Valley College (FVC) in 1974, became the University College of the Fraser Valley (UCFV) in 1991, and gained university status in 2008. Currently, UFV has campuses in Abbotsford, Chilliwack, and Mission, with regional centres in Hope and Chandigarh, India.

Buildings

Most staff and students working in UFV's buildings are located at UFV's Aerospace Centre, Abbotsford Campus and Chilliwack Campus (Canadian Education Park), thus the scope of this report is focussed on the 21 core buildings making up 88,642m² of space as summarized in Table 3. UFV's Office of Sustainability, within Campus Planning and Facilities Management is responsible for Energy Management, under the guidance of UFV's Director of Energy and Sustainability and Manager of Sustainability.

Table 3: Building Descriptions

Campus	Building	Originally Built	Area (m ²)	Description/Use
Aerospace	H4	1974	2,620	Aerospace Training Centre
Abbotsford	FH	1975	251	Friesen House (Presidents Residence)
	ABB - A	1983	9,000	Classrooms, laboratories, administration
	ABB - B	1983	8,543	Classrooms, administration, cafeteria, logistics
	ABB - C	1983	4,892	Classrooms, administration
	ABB - D	1997	5,740	Classrooms, print services, logistics department
	ABB - E	2002	3,797	Gymnasium
	ABB - F	1994	516	Administration
	ABB - G	1995	5,687	Library, administration
	ABB - H	2006	8,104	Baker house (student residences), campus bookstore
	ABB - K	2008	2,209	Classrooms
	ABB - T	2006	353	Student Union Building, administration, banquet hall
ABB - S	2014	4,358	Athletics Administration	
Canada Education Park- Chilliwack (CEP)	CEP - A	1971	14,000	Classrooms, administration, logistics
	CEP - H (ACE)	2012	1,944	Agriculture Centre of Excellence, greenhouses, livestock pens
	CEP - TTC	2007	9,904	Trades and Technology Centre, shops, classrooms, administration, cafeteria
	CEP - V	1971	892	Classrooms, administration
	CEP - W	1971	1,438	Print Services, Warehousing
	CEP - Q		338	Athletics
	CEP - R		1,658	Athletics, health sciences
CEP - S		2,397	Heavy Duty Mechanical	

UFV's building portfolio has changed over the years as the university has grown. Changes during the last decade include the sale of the Chilliwack North Campus in 2019, leasing out CEP Building N, and the purchase and renovation of the former Finnegan's Pub and Phoenix Ballroom (now building K in Abbotsford). At the beginning of 2023 planning began for the construction of a new 398 bed student residence and expansion of the current dining hall at the Abbotsford Campus. The new student residence and dining hall are expected to be complete by the end of 2025.

As UFV's building portfolio increases, energy consumption is expected to increase proportionally. Also, the degree to which energy use fluctuates is influenced by factors including weather, operating schedules, system efficiencies, and

how occupants interact with the building/space. For example, inefficient buildings such as Chilliwack North had higher energy intensities than those of classrooms and offices found within the newer Building K. Throughout this report, different approaches to analyzing energy efficiency will be presented, highlighting key variables, and providing context for the challenges in monitoring overall energy consumption patterns in a changing portfolio.

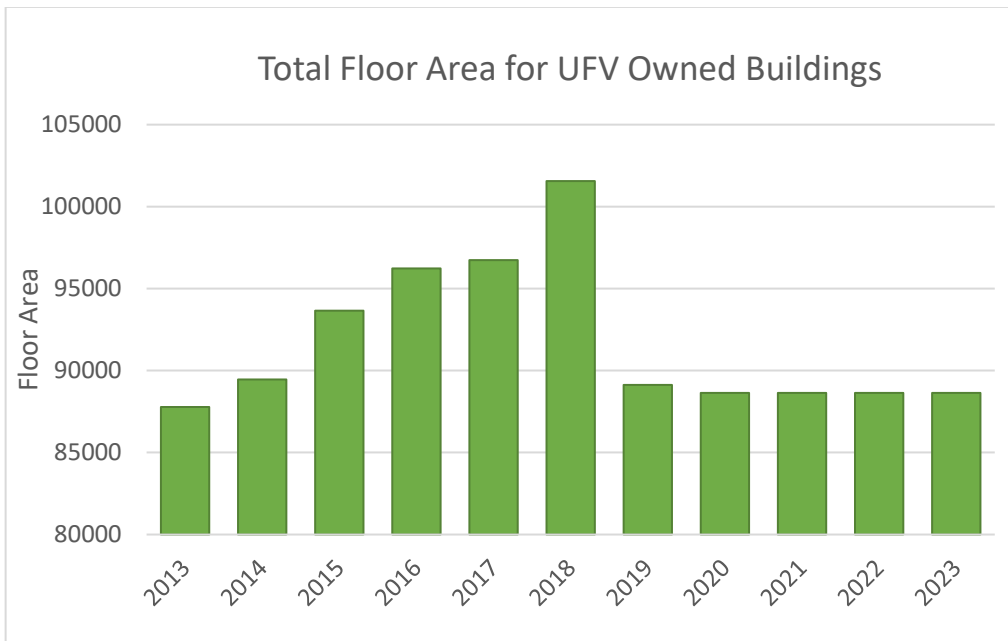


Figure 4: Gross Floor Area Changes Over a 10 Year Period

Utility Consumption and Costs

UFV uses natural gas and electricity for its energy needs on campus. Table 5 depicts the total consumption of electricity and natural gas usage, overall floor space, and the estimated costs associated with each energy source for 2023. One important aspect of energy management that cannot be influenced by operations is the cost rate. As customers of BC Hydro for electricity, and FortisBC and Shell Energy North America for natural gas, our influence does not extend into their rate structure process. Therefore, the success or failure of any energy management program must not be solely based upon costs.

Table 4: Energy Consumption and Cost Total for UFV Campuses 2023

Location		Electricity		Natural Gas			Energy Total	
Campus	m ²	kwh	\$	GJ	ekwh	\$	ekwh	\$
Abbotsford	53,450	5,871,060	562,647	20,054	4,568,236	202,036	10,439,296	764,683
Aerospace	2,620	129,383	15,028	1,285	292,693	17,557	422,076	32,586
CEP	32,572	3,227,281	302,944	15,610	3,555,862	178,135	6,783,143	481,079
UFV Total	88,642	9,227,725	\$880,619	36,948	8,416,790	\$397,729	17,644,515	\$1,278,348

Energy use significantly correlates to outdoor air temperature and weather conditions. Regionally, there are significantly more days that require heating (Heating Degree Days) than cooling (Cooling Degree Days) to keep occupants comfortable while teaching, learning, and working. Factoring in weather considerations allows for a more comparable basis for year-to-year energy consumption. This is called weather normalization. Figure 5, Figure 6, and Figure 7, show the normalized energy consumption for UFV’s campuses.

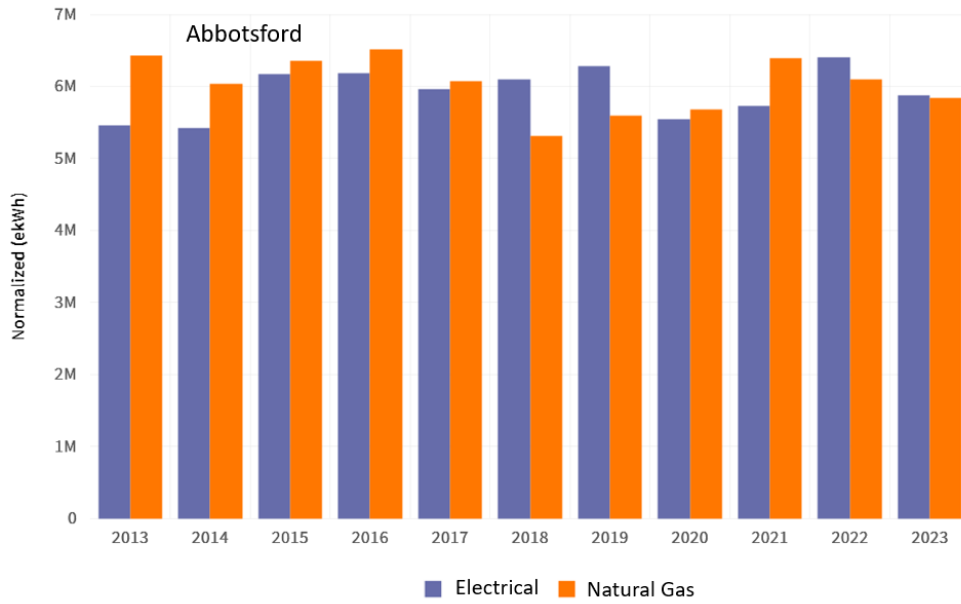


Figure 5: 10-Year Energy Consumption at UFV's Abbotsford Campus Normalized for Weather

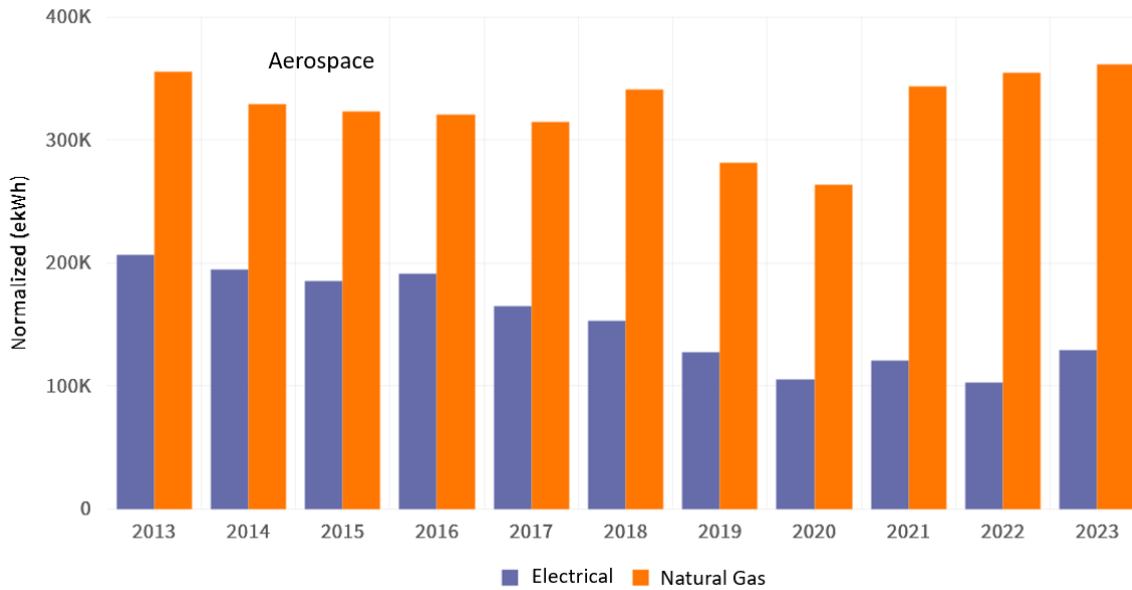


Figure 6: 10-Year Energy Consumption at UFV's Aerospace Campus Normalized for Weather

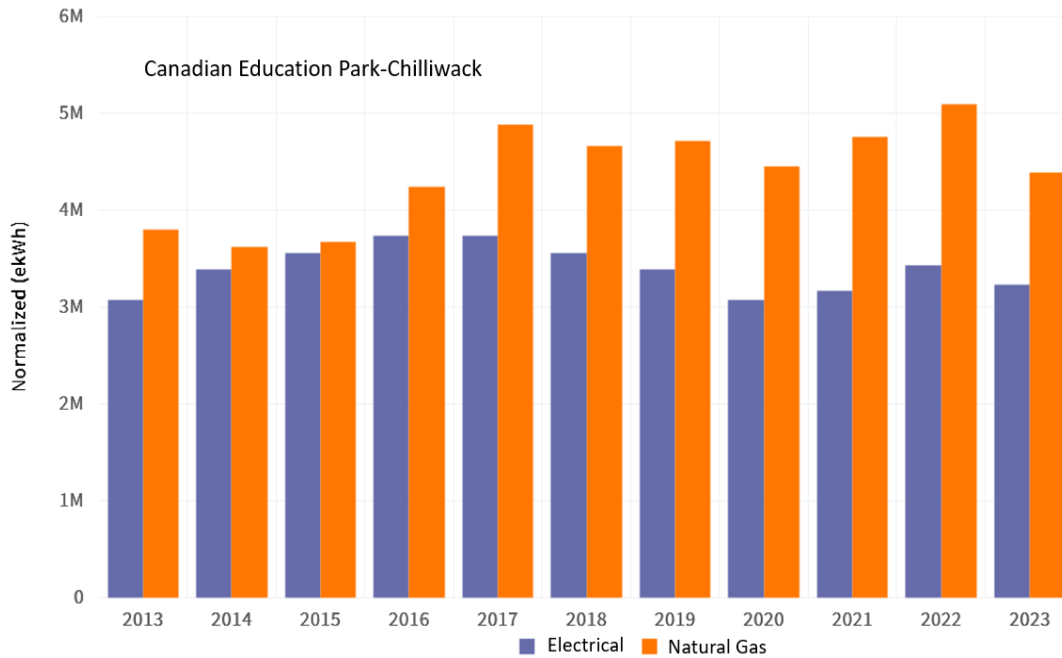


Figure 7: 10-Year Energy Consumption at UFV's Canadian Education Park (Chilliwack) Campus Normalized for Weather

Generally, as energy management works to reduce energy consumption there should be a downward trend as the years increase showing that energy conservation measures are working. There may be events that affect these trends from occurring however that are outside of the energy manager's control. For instance, in the year 2020 during the COVID-19 Pandemic there will be a notably less energy consumption compared to the years previous and following this year. Using the charts above help to determine if energy reduction goals are being met.

Another way to look at energy consumption is by using a metric referred to BEPI (building energy performance index) also known in industry as EUI (energy use intensity). This is a measure of the energy use per square meter and can be helpful in identifying priority areas of a campus to focus new energy projects on based on which have a higher energy intensity. Figure 6 below shows the EUI across UFV's portfolio of buildings. Note that there is an electricity meter associated with Lot 7 at the CEP (Chilliwack) campus that is not displayed in this figure.

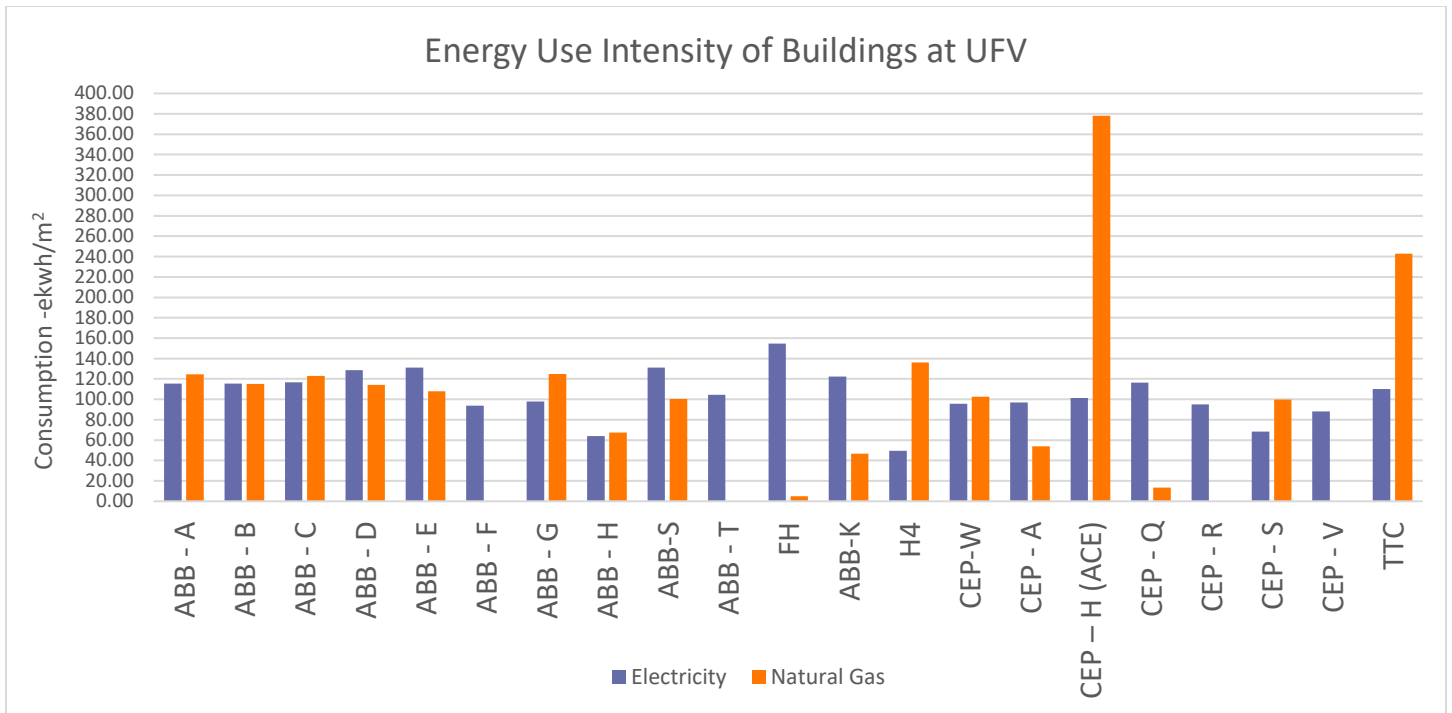


Figure 8: Energy Use Intensity of Buildings at UFV for electricity and natural gas consumption\

It is also important to consider the use type of buildings when comparing them. For instance, the Trades and Technology Centre (TTC) hosts courses such as Culinary Arts, and Welding that are by nature more energy intensive than the other courses offered at other UFV buildings.

Energy Star Portfolio Manager (ESPM)

ESPM is a benchmarking tool originally created by the US Environmental Protection Agency and is now a part of Natural Resources Canada's benchmarking programs and tools. It is used to help collect utility use data that can be used to compare against historic data for the property, as well as data for similar building types that other organizations have added. It can factor in weather impacts and easily combine different energy sources from a multitude of meters.

In the fall of 2023 UFV has started using ESPM to collect utility data for all the buildings for the Aerospace, Abbotsford, and Canadian Education Park Campuses.

Energy Management Structure at UFV

Energy management at UFV is headed by the UFV Energy Manager who is hired to work in partnership with BC Hydro, the facility management, and operations staff and the UFV Office of Sustainability, to improve energy practices at UFV's Campuses. While coordination of energy management activities are ongoing, Energy Management Assessments (EMA) take place to periodically discuss and clarify key energy management priorities. In the 2023 EMA session, the strategic priorities identified can be summarized as follows.

1. Engage and collaborate with executives, employees, and students to share goals and recognize achievement.
2. Investigate new policy targets, monitoring strategies, and projects.

The detailed action plan outlined in the EMA can be found in the Appendix. Much of the work outlined will be addressed in the Energy and Climate Resiliency Plan that is taking place, including how energy reduction measures will be prioritized.

Opportunities and Challenges with Energy Management

Many factors influence energy management and projects creating both opportunities and challenges that should be explored. Some of the challenges that have risen include:

- Staffing changes
- A constantly changing student body
- A student body that is made up of people of diverse backgrounds, such as international students, who may not be familiar with energy efficiency practices in Canada
- Lack of a priority plan and long-term goals that would help identify next projects
- High capital costs requiring large investments
- The COVID-19 pandemic that delayed projects
- A lack of submetering to obtain granular building energy use information

Fortunately, these challenges have allowed UFV to explore new opportunities. These include:

- The current development of an Energy and Climate Resiliency Pathway Plan
- A recently completed metering gap analysis
- Collaboration with different departments in the University to conduct education and outreach regarding energy management
- Discussions with other Canadian universities about potential energy funds through streams like a revolving energy fund, or a travel emission offset fund
- Upcoming Studies including University-wide Solar Feasibility Assessments, Fleet Management Planning, Abbotsford District Energy Feasibility

2019-2022 Projects

Between the SEMP report that was completed 2019 and 2022 there were significant showcase energy projects that were completed at UFV which are worth mentioning before discussing the 2023 projects. These included:

- In 2019 Canada Education Park swapped out inefficient parking lot lighting and with low-wattage LEDs and in Building G the domestic hot water system switched fuels from natural gas to electricity
- In 2020, a solar wall was installed on the South side of the Envision Athletic Centre. The black metal wall absorbs the sun's energy and preheats air entering the building. This preheated air is circulated to supplement existing heating systems, reducing energy costs and GHG emissions.
- In 2021, 321 solar panels were installed on the roof of Building G which houses the library on the Abbotsford Campus. These panels have been producing around 130MWh of electricity per year. The building envelope renewal project was completed for Building A and Building D in 2021 as well. The project included upgrades the exterior finish, energy efficient windows, and new pipe and wall insulation.
- In 2022 much of the work completed was part of the planning stages for the projects that were completed in 2023

Other mechanical upgrades were completed between 2019-2022 as well including boiler upgrades, insulation upgrades, and air unit replacements in several buildings.

2023 Projects

These projects were completed during 2023 and began reducing energy consumption in 2023. Some work began for projects that will be completed in 2024 and are presented in the next section.

Energy Efficiency

- Solar Thermal Water Preheat System in building H - These rooftop solar collectors work by running water through large panels, that can capture heat generated by the sun as the water moves. This water is now considered preheated and decreases the amount of heat needed by boilers to bring the temperature of the water up.
- High performance wall upgrades in Buildings A and D
- Installation of a condensing boiler to Serve buildings A, B and D
- Hydronic Heating Pipe installation in building D.

Behavior Change

UFV is part of the Energy Wise Network, a collaborative group made up of Education, Government, Hospitality, Municipalities, and more. This network has helped UFV host various behavior change initiatives in the past and supported the Sweater Week campaign and the development of a Sustainable Office Certification program in 2023. The network provides campaign tool kits, professional coaching hours, webinars, and networking opportunities.

Sweater Week encouraged students and staff to dress for cooler weather by wearing different themed sweaters during one week in February while UFV reduced temperatures by 2 °C campus wide. This campaign allows the university community to participate in energy conservation and by reducing the temperature, heating equipment malfunctions were identified and corrected to reduce energy consumption and prolong the life of the equipment.

Through the Sustainable Office Certification program various departments received a sustainability audit and a list of actions they could take to boost a sustainability score. Various sustainability practices, including ways to reduce energy consumption, determines their score and a final designation of bronze, silver, gold or platinum. The plan is to continue this program in 2024 where offices can try to improve upon their original designation.

Like the Office Certification, the Sustainable Event Certification encourages good practices of sustainability on campus, including energy conservation. When events are held at UFV they can apply to get a bronze, silver, or gold designation. 2023 was the second year this program ran.

In addition to these initiatives, UFV's Office of Sustainability share tips and resources for sustainability practices including energy conservation in Monthly Newsletters and on social media.

Electric Vehicle Charging

As more people switch to electric vehicles, the expansion of EV charging stations on campus is an important step in providing essential transportation infrastructure to students, employees, and the public. The stations are also a part of a broader effort, to reduce greenhouse gas emissions and promote leadership in sustainable practices across all areas of the university.

UFV has eight Level 2 stations and one DC fast charge station between the Abbotsford and Canadian Education Park campuses capable of charging up to 17 vehicles simultaneously. In 2023 these chargers dispensed 99710kwh of electricity. In 2023 work was complete to fix vandalized chargers and planning took place to install more chargers in 2024.

Approved Projects 2024

Project	Campus	Funding Support		Incentive Amount	Total Cost
Energy and Climate Resilience Pathway	Abbotsford/ Chilliwack	BC Hydro- Integrated Energy Audit	BC Hydro	\$107,840	\$168,780
Heating System Condition Assessment & Energy Study	Chilliwack/ TTC	CleanBC Study Agreement	BC Hydro	\$13,252	\$26,500
Gas Absorption Heat Pump	Chilliwack/ TTC	GAHP- Early Adopter Offer GAHP- Contribution Agreement	Fortis BC	\$575,000	\$575,000
Replacing Rooftop Units	Abbotsford/ A- West	CNCP - Carbon Neutral Capital Program	The Ministry and BC Hydro	\$138,690	\$501,730
Replacing Rooftop Units	Abbotsford A	BC Hydro Incentive Fund Agreement	BC Hydro	\$82,955	\$435,705
HRC/ Interconnecting A, B, D	Abbotsford/ A, B, D	BC Hydro Incentive Fund Agreement and Custom Efficiency Program- Commercial	BC Hydro and Fortis BC	\$118,851 (BCH) 178,276 (Fortis) +12,000 Bonus	\$1,750,00
Meter Gap Analysis and Recommendations	Abbotsford/ Chilliwack	Energy Efficiency Feasibility Study	BC Hydro	\$6,900	\$13,800
G Building Envelope	Abbotsford – G	TBD	TBD	TBD	\$500,000
D Building LED Lighting Retrofit	Abbotsford – D	TBD	TBD	TBD	\$220,000
G Building LED Lighting Retrofit	Abbotsford – G	TBD	TBD	TBD	\$220,000
Campus Fleet Plan	All Campuses	TBD	TBD	TBD	\$75,000
Campus-wide solar assessment	All Campuses	TBD	TBD	TBD	\$100,000
District Energy Feasibility Study	Abbotsford Campus	TBD	TBD	TBD	\$150,000

Conclusion

University of the Fraser Valley's commitment to reducing energy consumption and GHG emissions through intentional strategic energy management is operational necessity. By implementing this Strategic Energy Management Plan we aim, reduce our carbon footprint, operational costs, and contribute to a sustainable future.

This SEMP aligns with UFV's values of environmental stewardship, social responsibility, and academic excellence. By optimizing our energy use, we enhance operational efficiency, reduce costs, and set a benchmark for sustainability in higher education. Moreover, our proactive approach demonstrates leadership and accountability, inspiring our students, staff, and the wider community to engage in sustainable practices.

Ultimately, reducing energy consumption and GHG emissions reinforces our dedication to creating a healthier, more sustainable environment for current and future generations. This strategic endeavor ensures that the University of the Fraser Valley remains at the forefront of sustainable development, paving the way for a greener, more resilient future.

*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 "J. Hogan", written over a large, light-colored oval shape.

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

Appendix B - 2023 EMA Action Plan Details

Action Plan			
Topic	Action	Due Date	Owner
Plan			
Executive Involvement	Consider implementing a recognition process through the Executive Sponsor for energy team members and employees who contribute to energy efficiency improvements. Recognition could come in the form of awarding gift cards, priority parking, spotlight in the newsletter, branded items, etc.		
Policy/Charter & Goals	Collaborate with senior leadership to put forward an energy policy that states the measurable energy and carbon-related goals and how the university plans on attaining them. This could be incorporated into an existing policy or be something entirely new.		
	Once developed, share the energy policy with employees and faculty as part of the onboarding process.		
Planning & Budgeting	Develop a comprehensive register of projects. This would include small and large projects across campuses to ensure all energy-saving measures and electrification projects can be prioritized, tracked, and quantified.		
Do			
Employee Engagement	Consider ways of gathering energy reduction and sustainability suggestions from employees and students. One common way of this is done is by establishing a dedicated email address to collect ideas (ex. EnergyManager@UFV.ca). Once developed, it could be communicated through morning announcements, a newsletter, or another communication method.		
	Collaborate with the communications team to develop a sustainability social media campaign and/or newsletter. These can be effective methods for sharing success stories, sharing goals, and communicating important messages.		
Procurement & Partnering	Investigate formalizing the procurement process to evaluate the carbon impact of purchases. The evaluation could include GHG cost forecasting, utility escalation, and inflation to determine overall avoided costs.		
Check			
Data Collection & Management	Look into identifying areas that could be prioritized for future submetering. If practical, submeters could be integrated into new builds from the design phase. It is suggested to introduce a calibration program to sustain the accuracy of meter readings.		

Performance, Measurement & Reporting	Look into the dashboarding and connectivity capabilities of potential data collection systems. Connecting the system with real-time data sources, such as the BAS, can provide valuable insights and be leveraged for campus engagement.		
	Establish a method for identifying deviations in energy use so the root cause may be identified promptly. Regression-based energy models can be a useful tool for this.		
	Consider registering for Building Benchmark BC as a way to voluntarily increase the transparency of energy use at university buildings and publicly disclose performance. This can aid the public image of sustainability at the university, should that be a priority of theirs.		
Act			
Audit, Review & Control	Consider implementing a simple document control system for energy-related procedures, policies, and/or practices within the Department of Sustainability. A simple numbering system can help keep documents organized and will help track the most up-to-date versions.		
Overall effectiveness	Continue to prioritize low-cost/no-cost measures. Given the size of the university, small changes to setpoints, schedules, etc., can lead to a significant level of energy savings while avoiding capital investment.		

<i>Suggestions for future improvements and sustainability</i>			
Topic	Action	Due Date	Owner
Do			
Energy Team	If UFV has student-led clubs or associations whose activities relate to energy and sustainability, consider engaging with them to support energy management engagement campaigns.		
	Collaborate with relevant departments to find ways of integrating UFV's energy management into the curriculum of university degrees/programs. This can help increase buy-in from the broader community.		
Training & Development	Develop internal training on energy conservation for staff and faculty. Staff whose job duties have a greater effect on energy use can receive more in-depth specific training, whereas the broader employee base could receive general energy management awareness training.		