Annual Sustainability Report

Gustavson
School of Business
University of Victoria

Gustavson School of Business

2020 & 2021

Completed By	Christian Muñoz, Arctica Cunningham, Kayli Anderson
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Completed	11/4/2022

synergy

Executive Summary

The Gustavson School of Business (Gustavson) is an internationally accredited business school at the University of Victoria. The school occupies classrooms, meeting rooms and office space in the Business and Economics and David Strong buildings. Gustavson has been carbon neutral for the past four years, having started by offsetting all emissions (including travel) that are not offset by the University of Victoria (UVic) with the 2016 inventory. This report measures Gustavson's carbon footprint for 2020 and 2021.

Gustavson's emissions in 2020 were 334.4 tCO_2e, which is 65.1% and 66.7% lower than 2019 and the 2010 baselines respectively. This is largely attributed to the effects of the Covid-19 pandemic, resulting in school closures and travel restrictions. Gustavson's emissions increased to 405.8 tCO_2e in 2021 as restrictions lessened, resulting in more staff commuting, and MGB and BCom student travel. The combined emissions for both years are 740.3 tCO_2e, a 26.2% decrease over the 2010 baseline.

Gustavson uses emissions factors for travel from the BC Best Practices Methodology to align with UVic and other BC post secondary institutions. For consistency, 2010 - 2013 flight emissions have been restated with BC Best Practices for GHG Accounting. Emissions from service calls are now deminimis and have been removed from the inventory.

Emissions to be offset by Gustavson come to 409.7 tCO_2e (excludes emissions already offset by UVic). The projects to be supported include the Vietstar Municipal Solid Waste Treatment Plant in Vietnam, the Darkwoods Forest Carbon Project in BC, and the InfraVest Windfarm in Taiwan.

Inventory Information

Company Name	CSSI on behalf of Gustavson School of Business		
Contact Information	Alex Berthin	cssi@uvic.ca	250-853-3721
	Basma Majerbi	majerbi@uvic.ca	250-472-4281
Company Description	Office space, meeting rooms, and classrooms in two UVic buildings.		
Reporting Period	January 1, 2020 - December 31, 2021		
Inventory Boundary	**Scope 1 (Direct Emissions)** - Natural Gas		
	Scope 2 (Indirect Emissions from Purchased Electricity) - Purchased Electricity (BC Hydro)		
	Scope 3 (Indirect Emissions from Other Sources) - Waste, Stationery, Student & Employee Travel, Employee Commuting & Work from Home		
Consolidation Approach	Operational Control: Accounting for 100% of emissions from operations over which the company has operational control.		
Primary Measurement	Carbon Dioxide Equivalent (CO_2e)		
Reporting Guidelines	Aligned with those defined in *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (The GHG Protocol, www.ghgprotocol.org)* . Emissions factors reviewed & approved by Ostrom.		

Inventory Results

	2020	2021
Scope 1 (Direct)	160.0	157.7
Scope 2 (Indirect)	4.3	6.5
Scope 3 (Indirect)	170.2	241.6
TOTAL EMISSIONS	**334.4**	**405.8**

This report measures Gustavson's carbon footprint for 2020 and 2021. Gustavson's emissions in 2020 were 334.4 tCO_2e and increased to 405.8 tCO_2e in 2021. The combined emissions for both years are 740.3 tCO_2e, a 26.2% decrease over the 2010 baseline.

Carbon Footprint Summary

CSSI on behalf of
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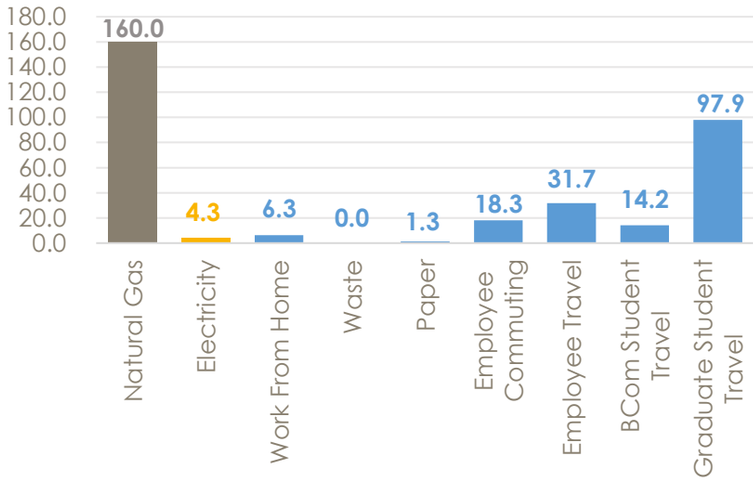
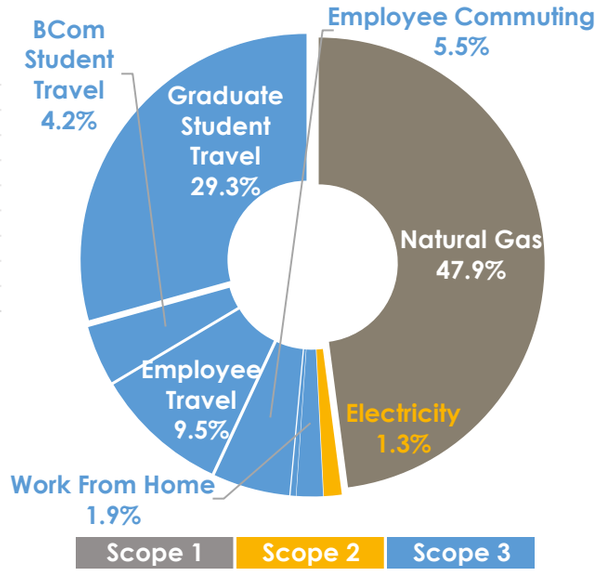
	tCO_2e	tCO2e offset by UVic	tCO_2e remaining	Offset Cost
2020	334.4	165.5	168.9	$4,068
2021	405.8	165.1	240.8	$5,798

2020 Carbon Footprint (By Activity)

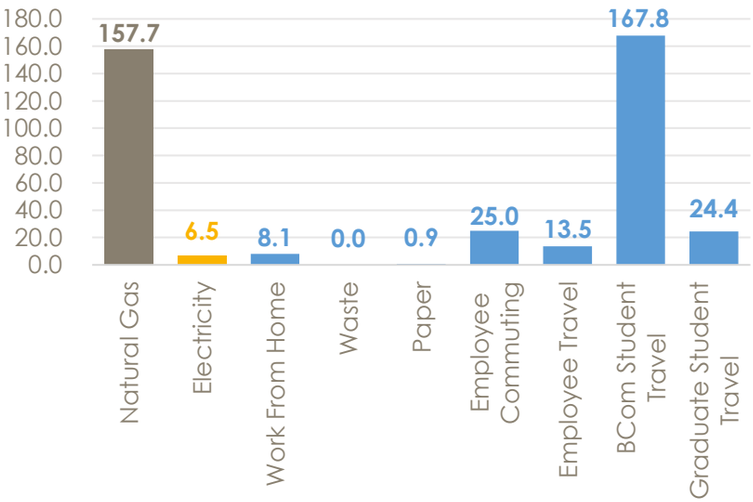
Emissions by Activity (tCO_2e)

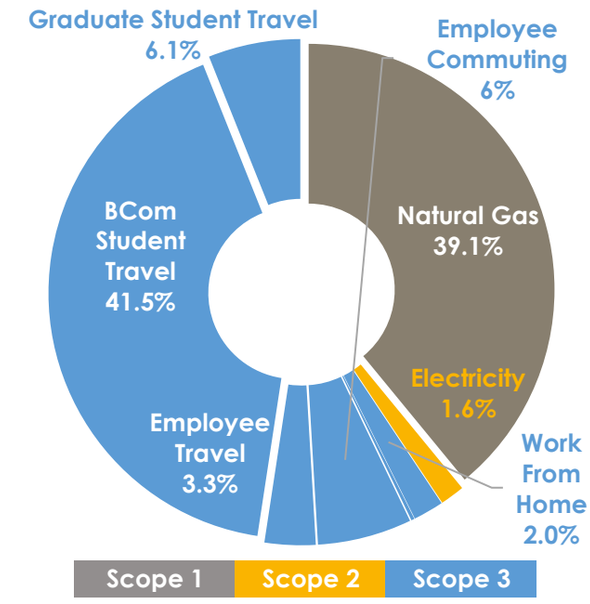




2021 Carbon Footprint (By Activity)

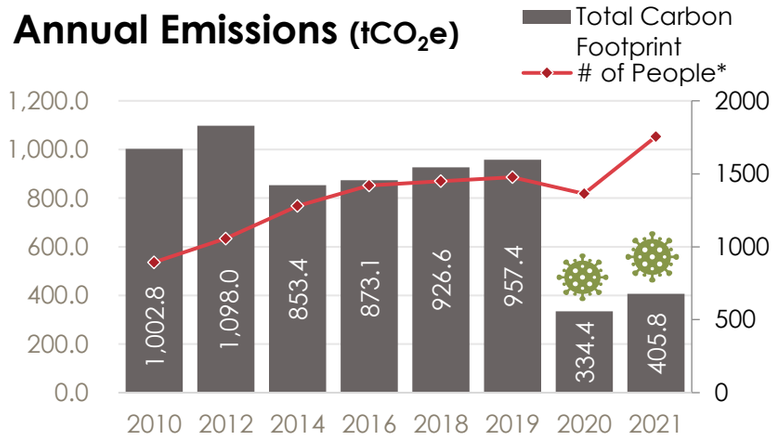
Emissions by Activity (tCO_2e)





Carbon Footprint Year Over Year

Annual Emissions (tCO_2e)



	tCO_2e Per Year	Change since Baseline	
		tCO_2e/person	Percent
2010	**1,002.8**	1.12	
2012	**1,098.0**	1.04	9.49%
2014	**853.4**	0.67	-14.9%
2016	**873.1**	0.61	-12.9%
2018	**926.6**	0.64	-7.60%
2019	**957.4**	0.65	-4.52%
2020	**334.4**	0.25	-66.7%
2021	**405.8**	0.23	-59.5%
Target	**766.0**	0.51	-20.0%

** Note: Number of people includes employees (faculty and staff), undergraduate (BCom), and graduate students (MBA, MGB and PhD) at the Gustavson School of Business.*

2,335.3	**Barrels of Oil**
198.2	**Cars per Year**
0.47	**tCO_2e per person**
Total tCO_2e	740.3 **2020 + 2021**

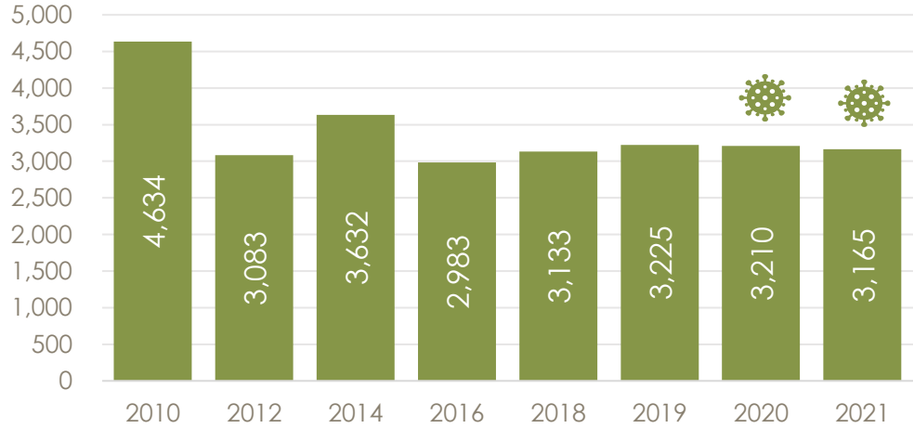
Reduction Target

Reduction Target

The Gustavson School of Business (Gustavson) commits to reduce emissions by 20% by 2030 based on 2019 levels

Natural Gas (2020 + 2021)

Natural Gas (GJ)



Analysis

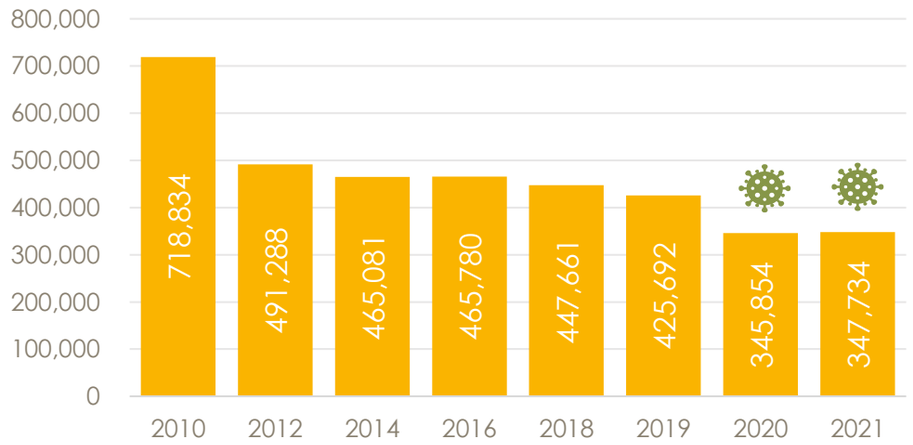
Gustavson's buildings are connected to a natural gas heating loop. Natural gas use and associated emissions have remained fairly consistent over the past ten years, even during the Covid-19 school closures. Natural gas use has decreased by 31.7% since the 2010 baseline due to overall improvements to the HVAC systems at UVic.

** Emissions from natural gas are offset by the University of Victoria.*

GJ/ft^2	tCO_2e	% of Total	Houses
0.10	317.7*	43%	69.3
2020 + 2021	2020 + 2021	2020 + 2021	2020 + 2021

Electricity (2020 + 2021)

Electricity (kWh)



Analysis

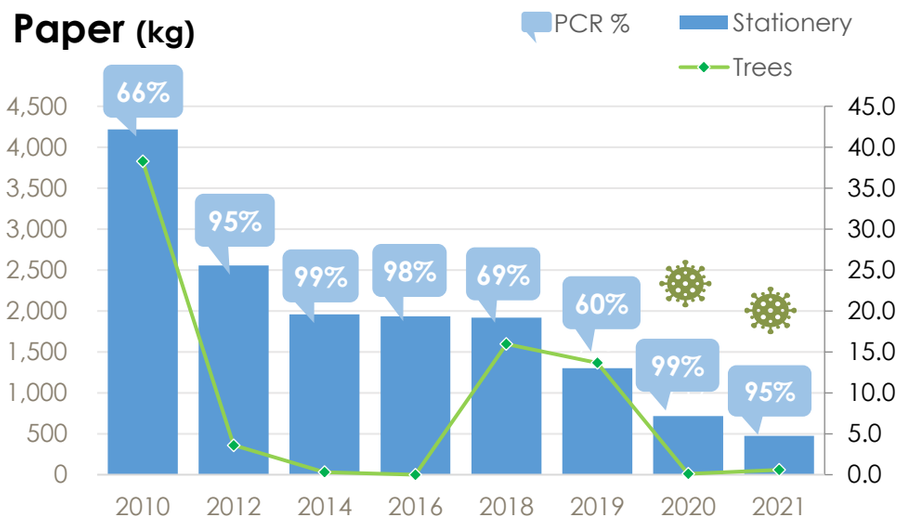
Electricity use in 2020 and 2021 was down 18.5%, while emissions from electricity use remained fairly consistent. Electricity use reductions are likely due to the global Covid-19 pandemic and the resulting school closures. Electricity makes up less than 1% of Gustavson's total carbon footprint. Energy use from staff working from home have been measured and accounted for in scope 3.

Note: The emissions factor for BC's electricity has increased by 55% since 2020, increasing the tCO_2e per kWh as a result of increasing natural gas in BC's grid

** Emissions from electricity are offset by the University of Victoria.*

kWh / ft^2	tCO_2e	% of Total	Houses
11	10.7*	1.4%	63.1
2020 + 2021	2020 + 2021	2020 + 2021	2020 + 2021

Paper (2020 + 2021)



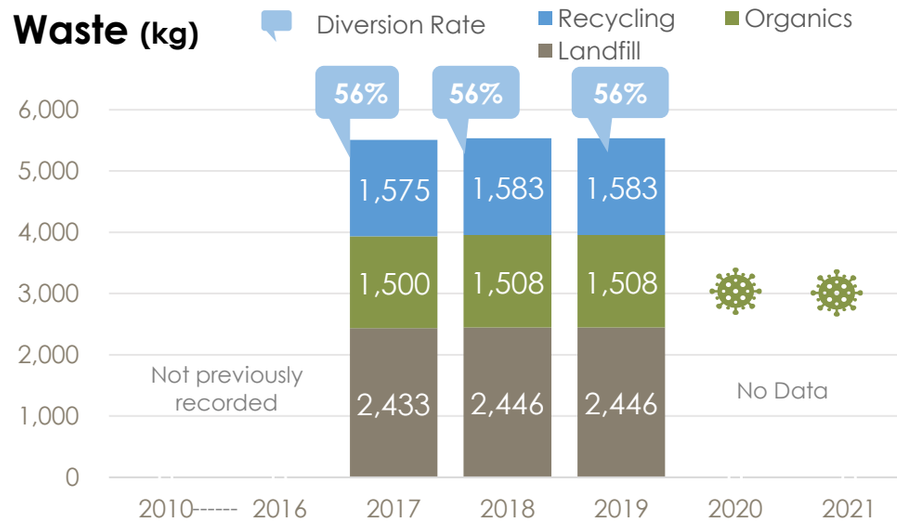
Analysis

Gustavson saved 13 trees in 2020 by using 45.0% less paper and ensuring that 99% of the paper purchased contained 100% PCR. In 2021, paper consumption was down 88.7% over the 2010 baseline year. The average percentage of post consumer recycled content dropped from 99% to 95%. By ensuring all paper purchased is tree-free or 100% PCR, Gustavson could save an additional 0.7 trees.

** Emissions from stationery paper are offset by the University of Victoria.*

Treeless Content	tCO_2e	% of Total	Trees / Year
97%	2.1*	0.3%	0.7
2020 + 2021	2020 + 2021	2020 + 2021	2020 + 2021

Waste (2020 + 2021)



Analysis

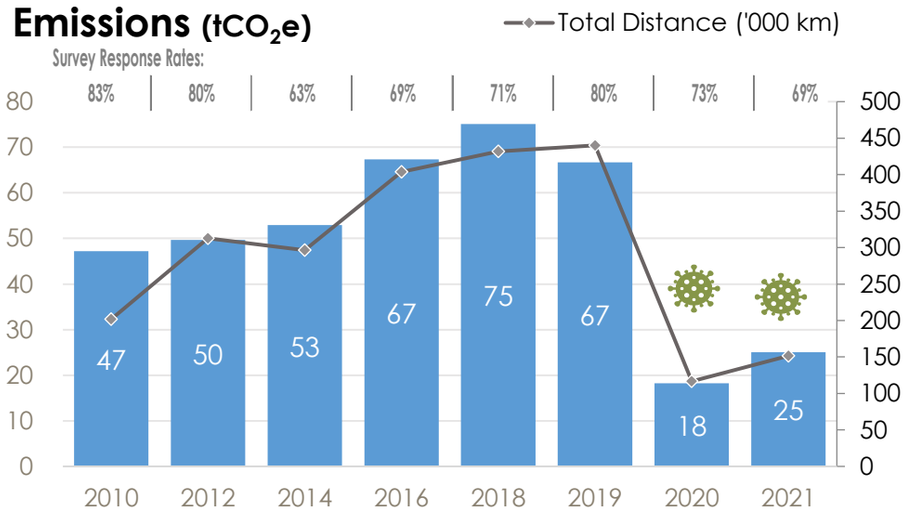
The last waste audit at UVic was conducted in 2017. A 24-hour waste audit was completed for the Business Economic Centre (BEC). The data was extrapolated for a full-year waste estimate. No data was available for the 2020 and 2021 years.

Waste has historically been less than 5% of Gustavson's total carbon footprint and therefore deminimis.

** Note: It is recommended that Gustavson measures its own waste assessments moving forward. Project Zero offers a free and simple to use waste auditing tool (https://www.project-zero.ca/waste-audits).*

kg / Day	tCO_2e	% of Total	Diversion Rate
N/A	N/A	N/A	N/A
2020 + 2021	2020 + 2021	2020 + 2021	2020 + 2021

Commuting (2020 + 2021)

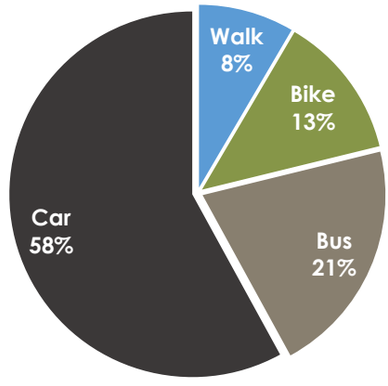


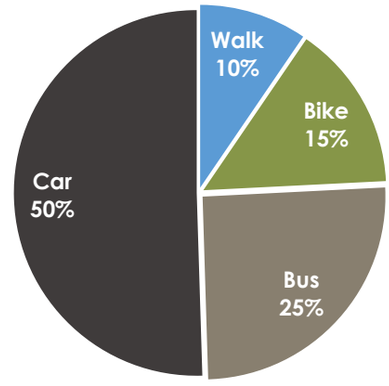
Analysis

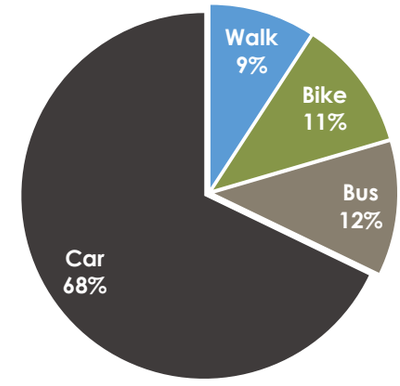
Staff commuting emissions in 2020 were down 72.6% over 2019 as a result of the Covid-19 pandemic, school closures, and shift to remote work. In 2021, staff commuting emissions increased by 37.0% due to an increase in personal vehicle commuting.

Avoided staff commuting emissions between 2020 and 2021 total 90.1 tCO_2e.

Commuting Percentages by Method







2019 & 2020 (Pre Covid-19)

Average $kgCO_2e/km$	0.158
Low-Emission Commuting %	43%

2020 (Covid-19)*

Average $kgCO_2e/km$	0.136
Low-Emission Commuting %	50%

2021

Average $kgCO_2e/km$	0.165
Low-Emission Commuting %	32%

The portion of staff commuting by low-emissions means (biking, busing, or walking) decreased from 43% pre-pandemic to an average of 41% between 2020 and 2021. Excessive commuting time, lack of transit infrastructure, and personal safety concerns with COVID-19 are among the most common factors leading to increased personal vehicle use. Low-emission commuting methods increased to 50% due to the transition to remote work during the 2020 Covid-19 timeframe (March - December)*.

tCO_2e / FTE	0.341	2020 + 2021

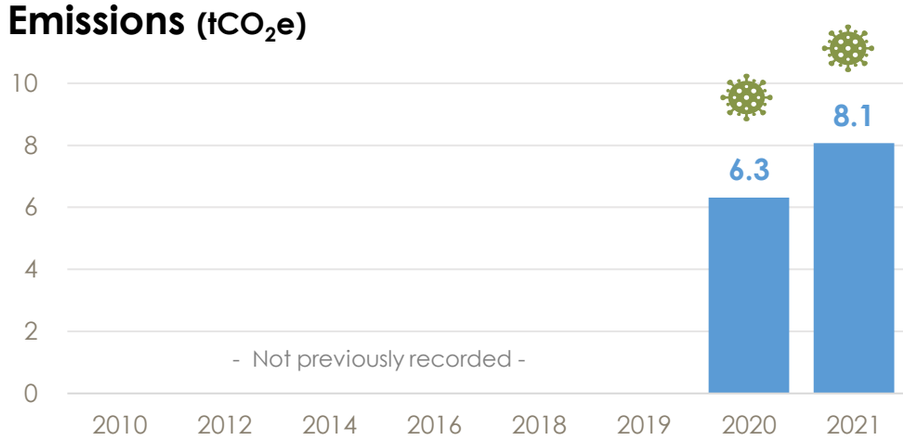
tCO_2e	43.3	2020 + 2021

% of Total	5.8%	2020 + 2021

11.6 Cars / Year	2020 + 2021

Work from Home (2020 + 2021)

Emissions (tCO_2e)



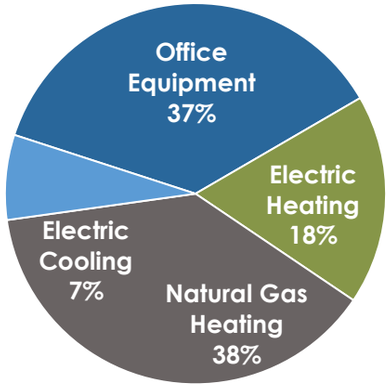
Analysis

Work from home emissions were measured for the first time during the Covid-19 pandemic.

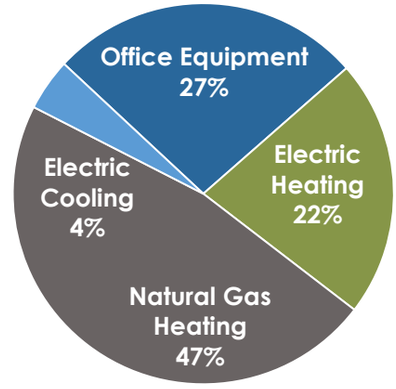
The difference between the emissions saved by reducing staff commuting and the increase in emissions from working from home resulted in a savings of 75.7 tCO_2e.

Note: Work from home emissions were calculated by surveying Gustavson faculty and staff to assess the incremental energy incurred over and above normal home energy use, as a result of homeworking.

Work from Home Energy Use (2020)



Work from Home Energy Use (2021)



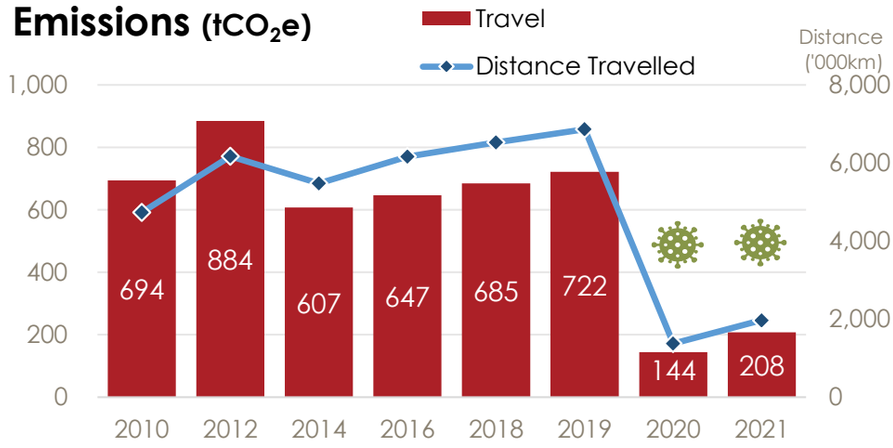
Analysis (Breakdown)

The main difference in the energy sources for work from home emissions is the result of the heating requirements based on the seasons staff and faculty were working from home. Staff and faculty started working from home mid-March 2020, skipping two and a half months of winter. The higher percentage of energy for heating in 2021 is due to the addition of more months in the colder season that require heating.

tCO_2e / FTE	tCO_2e	% of Total	Cars / Year
0.113	14.4	1.9%	3.9
2020 + 2021	2020 + 2021	2020 + 2021	2020 + 2021

Travel (2020 + 2021)

Emissions (tCO_2e)

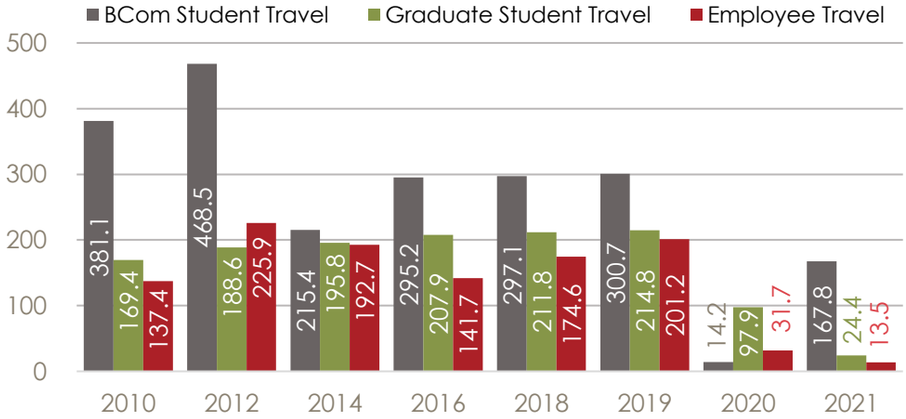


Analysis

Travel emissions in 2020 and 2021 were down 80.0% and 71.2% respectively over 2019. Travel in these years was extremely restricted due to the Covid-19 pandemic. Innovative virtual exchange solutions were implemented to provide students with international experience.

Note: Flight emission factors are pulled from the 2020 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions. These factors have not changed since 2016 and are an average of 42% lower than the current DEFRA factors used by Synergy.

Flight Emissions by Dept. (tCO_2e)



		Distance ('000 km)	# of Flights
2019	Employee	1,921	739
	BCom	2,869	330
	Graduate	2,050	232
2020	Employee	302	129
	BCom	135	50
	Graduate	934	165
2021	Employee	129	56
	BCom	1,601	198
	Graduate	233	57
Total 2020 & 2021		**3,333**	**655**

Previous Year (2019)	
Average $kgCO_2e/km$	**0.1052**
Average Distance per Flight (km)	**5,258**

2020	
Average $kgCO_2e/km$	**0.1051**
Average Distance per Flight (km)	**3,985**

2021	
Average $kgCO_2e/km$	**0.1054**
Average Distance per Flight (km)	**6,311**

Analysis (Breakdown)

In 2020 and 2021, emissions from travel made up 47.6% of total emissions versus 75.4% in 2019. Emissions from BCom Student travel were down 95.3% in 2020 and increased by 44.2% in 2021. Graduate student travel emissions dropped by 54.4% in 2020 and an additional 75.1% in 2021. Employee travel emissions dropped by 84.2% in 2020 and an additional 57.4% in 2021. Overall, ~1,100 tCO_2e were avoided due to reduced travel in 2020 and 2021, a 24.4% reduction over 2019 travel emissions.

tCO_2e / Employee	0.188	2020 + 2021

tCO_2e / BCom Student	0.07	2020 + 2021

tCO_2e / Graduate Student	0.47	2020 + 2021

Total tCO_2e	352.0 (47.6%)	2020 + 2021

Carbon Reduction Strategy

The Gustavson School of Business (Gustavson) has been carbon neutral for the past four years, and has measured its emissions for the past twelve. Emissions from scopes 1 and 2 as well as emissions from paper are offset by the University of Victoria (UVic). All remaining emissions, with travel being the most significant, are offset by Gustavson.

Gustavson has set an emission reduction target of 20% by 2030 over the 2019 base year. To achieve this reduction target, Gustavson will need to implement a travel policy/program to limit non-essential travel and work with UVic to decarbonize the heating loop. As a result of restricted travel during the Covid-19 pandemic, Gustavson avoided 90.1 tCO_2e from staff commuting, and ~1,100 tCO_2e from travel between 2020 and 2021. The combined emissions for both years are 740.3 tCO_2e, a 26.2% decrease over the 2010 baseline. By switching to renewable natural gas, Gustavson's combined 2020 and 2021 natural gas emissions would reduce by 99.5%, from 317.7 tCO_2e to 1.73 tCO_2e.

Achievements

> Measured and reported carbon emissions for 12 years

> Carbon neutral for four years.

> Formed the Carbon Neutrality Plus committee, comprising students, faculty and staff representatives, meant to provide information and long-term leadership in shortlisting carbon offset projects and integrating carbon neutrality education with students moving forward.

> Increased scope to include waste in 2017 and developed more sustainable waste management policies.

> Due to HVAC system improvements, natural gas use has been reduced by 31.7% since 2010.

Moving Forward

> Work with UVic to secure renewable natural gas

> Develop and implement a travel reduction strategy

> Continue to provide flexible work from home options to minimize staff commuting emissions

> Encourage UVic to continue addressing waste management and conducting waste audits

> Measure Gustavson's own waste assessments

> Implement more paper free practices

Information on Inventory Uncertainty

* The inventories for years 2010 to 2014 were completed by EcoCentric and ColdStream Consulting, and restated with the methodology and emissions factors of Synergy Enterprises.

* Flight emission factors are pulled from the 2020 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions. These factors have not changed since 2016 and are an average of 42% lower than the current DEFRA factors used by Synergy.

* Natural gas use in buildings was estimated using floor area share on the natural gas loop.

Emissions References

1. 2020 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions
https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf

2. Environment Canada's National Inventory Report (1990-2019); Part 2 & 3.
https://www.canada.ca/en/environment-climate-change/services/climate-change/greenhouse-gas-emissions/inventory.html

3. Department for Environment, Food & Rural Affairs (UK) Carbon Factors 2021
https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021

4. Intergovernmental Panel on Climate Change (Global Warming Potentials)
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

All emissions factors are reviewed and approved by Ostrom (www.ostromclimate.com) on an annual basis.

Policy for Base Year Recalculation:
Base year emissions, and other previous emissions, shall be retroactively recalculated if a change in organisational structure or data quality is expected to exceed a significance threshold of 10% of base year emissions. These changes may arise from structural changes such as mergers, acquisitions, divestments, outsourcing or insourcing, changes in calculation methodology and improvements in accuracy, or discovery of significant errors.

Glossary of Terms

Term	Description
CFL	**Compact Fluorescent Light**
GHG	**Greenhouse Gas (emissions):** Atmospheric gasses contributing to the greenhouse effect, including Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), etc.
GJ	**Gigajoule**: Unit of natural gas equal to 26.137 m^3 or 0.947 MMBtu
HVAC	**Heating, Ventilation & Air Conditioning**
kWh	**Kilowatt-Hour**: Common unit for measuring electrical consumption
LED	**Light Emitting Diode**: A form of highly efficient lighting technology
m^3	**Cubic Meter**: Unit of measurement equal to 1,000 Litres
PCR%	**Post-Consumer Recycled Content** (as a percentage)
psg-km	**Passenger-Kilometer**: Unit separating total emissions between passengers per km
Ream	Standard unit of paper measurement equal to 500 sheets (with 10 reams in one box)
tCO_2e	**Tonnes of Carbon Dioxide Equivalent**: a combined term capturing the emissions from various GHGs.
t-km	**Tonne-kilometer**: A unit of measurement used in shipping

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