

# Annual Carbon Footprint Report



University  
of Victoria

**PETER B. GUSTAVSON**  
School of Business

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The world looks different from here.

## Gustavson School of Business

2017

Completed By	Jay Cummins, GHG-IQ, & Eryn Beddoes
Email	<a href="mailto:jay@synergyenterprises.ca">jay@synergyenterprises.ca</a>
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synergy

# Executive Summary

The Gustavson School of Business 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 (occupying an average of 56% of the total floor area). 2017 marks the ninth year that Gustavson has measured and reported its greenhouse gas emissions, with previous reports (2009 - 2014) completed by EcoCentric and ColdStream Consulting.

As in previous years, all Scope 1 and 2 emissions (natural gas and electricity) and paper emissions are offset by the University of Victoria. In 2017, Gustavson made the decision to go carbon neutral, and purchased offsets for employee commuting and employee and student travel emissions for 2016, making them among the first carbon neutral educational institutions in the world. In addition, the school introduced a Carbon Neutrality Plus committee to provide information and long-term leadership in shortlisting carbon offset projects and integrating carbon neutrality education moving forward.

In 2017, Gustavson's reporting scope increased to include waste, and the total carbon footprint came to 984.4 tCO<sub>2</sub>e, a 13% increase over 2016. This increase was due to higher natural gas use and a rise in student and employee travel. Overall, staff members and the number of students participating in travel programs increased from 405 in 2016 to 443 in 2017. Gustavson's per capita emissions remained the same as in 2016, at 2.2 tCO<sub>2</sub>e per person. The school's largest source of emissions continues to be student and employee travel which makes up 73% of the total carbon footprint, and increased 12% over 2016. Natural gas is the second highest contributor at 17.6% of total emissions, and increased 17% over 2016 due to a colder winter.

## Company Information

Company Name	CSSI on behalf of Gustavson School of Business		
Contact Information	Rachel Goldsworthy	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 1st, 2017 - December 31st, 2017		
Baseline Year	2010 (Due to incomplete data/ scope changes in 2009)		
Inventory Boundary	<b>Scope 1 (Direct Emissions)</b> - Natural Gas		
	<b>Scope 2 (Indirect Emissions from Purchased Electricity)</b> - Purchased Electricity (BC Hydro)		
	<b>Scope 3 (Indirect Emissions from Other Sources)</b> - Stationery, Waste, Student & Employee Travel, Employee Commuting		
Consolidation Approach	Operational Control: Accounting for 100% of emissions from regular operations over which the company has operational control.		
Primary Measurement	Carbon Dioxide Equivalent (CO <sub>2</sub> e)		
Reporting Guidelines	Aligned with those defined in <i>The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (The GHG Protocol, www.ghgprotocol.org)</i> . Emissions factors reviewed & approved by Offsetters.		

## Inventory Results

	tCO <sub>2</sub> e		
Scope 1 (Direct)	<b>173.7</b>	17.6% of annual total.	
Scope 2 (Indirect)	<b>10.1</b>	1.0% of annual total.	
Scope 3 (Indirect)	<b>800.6</b>	81.3% of annual total.	
<b>TOTAL EMISSIONS</b>	<b>984.4</b>		

# Carbon Footprint (Summary)



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2017 Carbon Footprint Report

Prepared by: **synergy**

Total emissions: **984.4** tCO<sub>2</sub>e

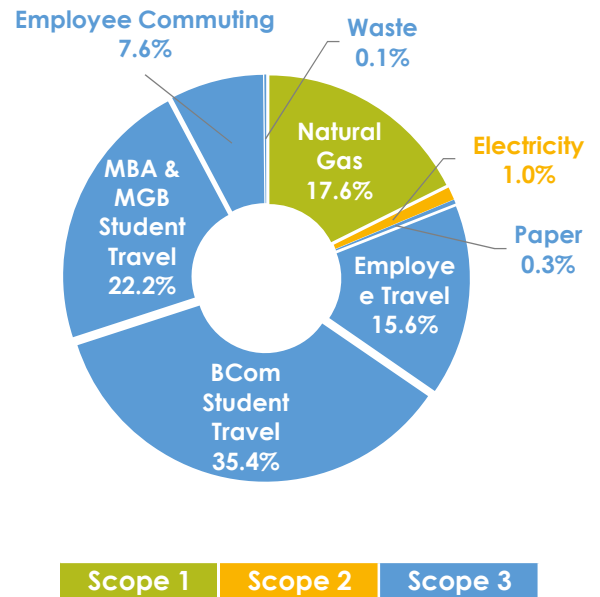
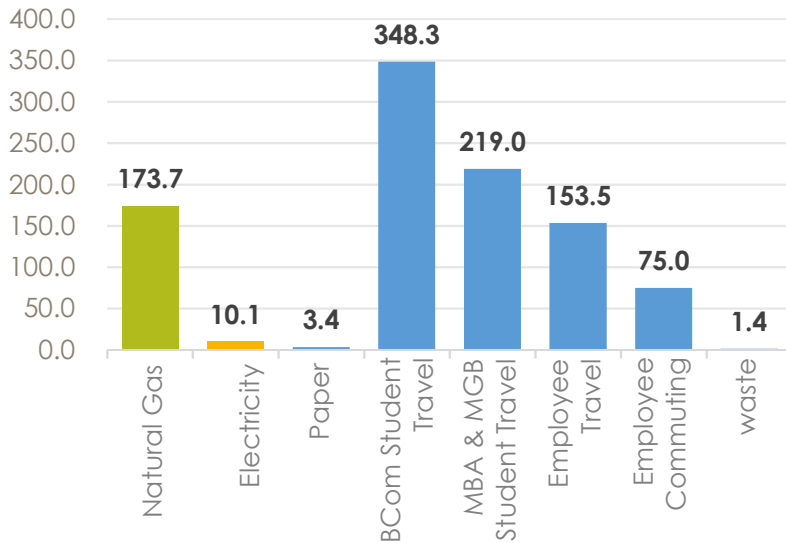
Offset cost\*: **\$15,944 - \$19,930**

Total emissions for 2017 come to 984.4 tCO<sub>2</sub>e, an increase of 13% over 2016. Since the baseline year of 2010, emissions have been reduced by 26%.

*\*Note: Cost is for Scope 3 emissions (excl. paper) and offset price of \$20-\$25/ tonne*

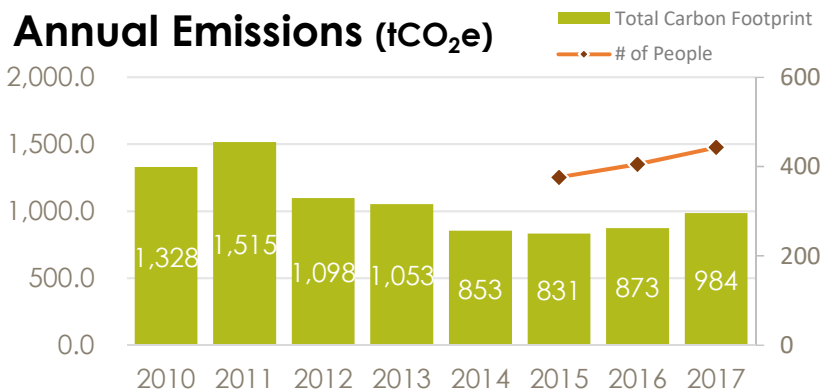
## Carbon Footprint (By Activity)

### Emissions by Activity (tCO<sub>2</sub>e)



## Carbon Footprint (Historical)

### Annual Emissions (tCO<sub>2</sub>e)



	tCO <sub>2</sub> e Per Year	Change since Baseline	
		tCO <sub>2</sub> e	Percent
2010	<b>1,327.9</b>		
2011	<b>1,515.4</b>	+187.5	+14.1%
2012	<b>1,098.0</b>	-229.9	-17.3%
2013	<b>1,052.6</b>	-275.2	-20.7%
2014	<b>853.4</b>	-474.5	-35.7%
2015	<b>831.2</b>	-496.7	-37.4%
2016	<b>873.1</b>	-454.8	-34.2%
2017	<b>984.4</b>	-343.5	-25.9%



**3,105**

Barrels of Oil



**261.5**

Cars per Year



**2.2**

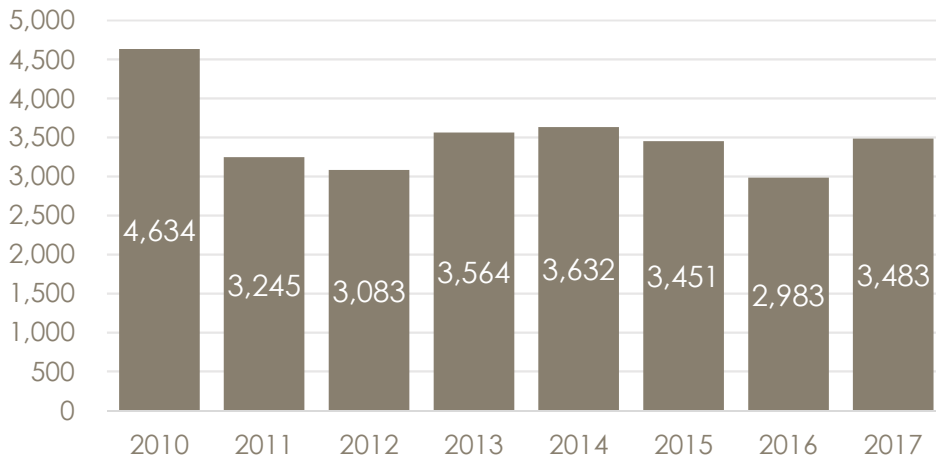
tCO<sub>2</sub>e per person

tCO<sub>2</sub>e  
(Total)

**984.4**

# Natural Gas

## Natural Gas (GJ)



### Analysis

Gustavson's buildings are connected to a natural gas heating loop. Consumption is calculated based on floor area of all buildings connected to this loop.

Due to a colder winter, Gustavson's natural gas use increased 17% over 2016 and is the second highest contributor to overall emissions. This is a 25% decrease over the 2010 baseline.

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

GJ/ft<sup>2</sup> **0.05**

tCO<sub>2</sub>e **173.7\***

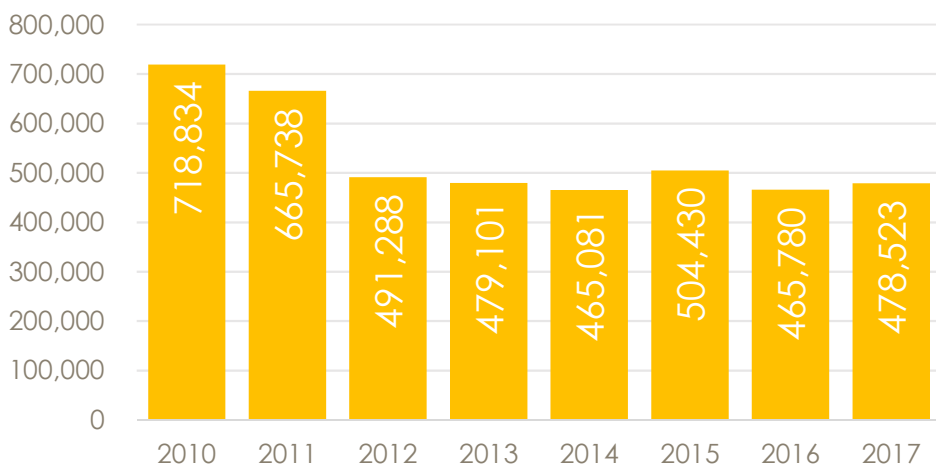
% of Total **17.6%**



**37.9**  
Houses

# Electricity

## Electricity (kWh)



### Analysis

Electricity use has decreased 33% since the baseline year as a result of lighting upgrades and educational initiatives at the University of Victoria.

Gustavson experienced a modest increase in usage of 3% over 2016. Emissions from electricity have increased 48% over last year due to an updated emission factor for BC electricity<sup>†</sup>.

\* The emissions from electricity are offset by the University of Victoria

† The emission factor for electricity increased from 0.0147 kgCO<sub>2</sub>e/kWh in 2016 to 0.0212 kgCO<sub>2</sub>e/kWh in 2017.

kWh/ft<sup>2</sup> **7.4**

tCO<sub>2</sub>e **10.1\***

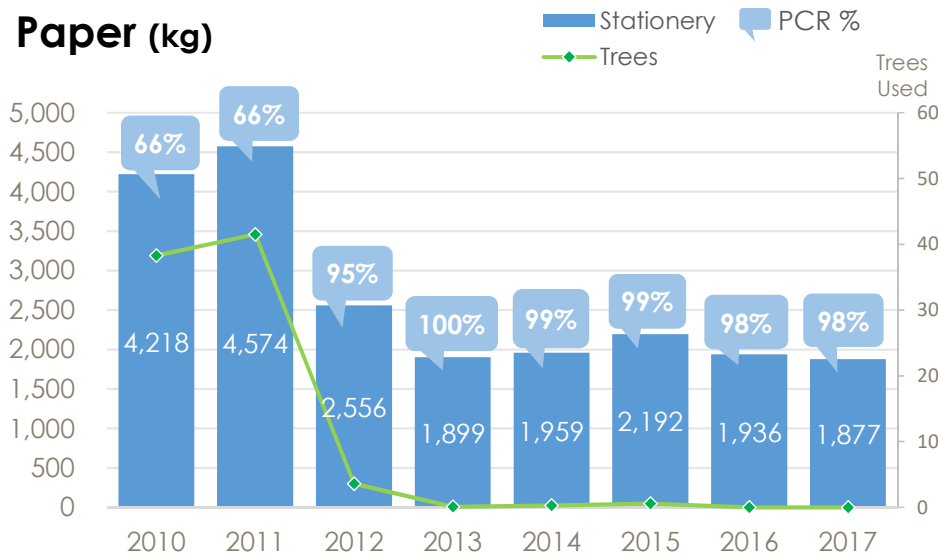
% of Total **1.0%**



**43.5**  
Houses

# Paper

## Paper (kg)



### Analysis

Paper use at Gustavson accounts for 0.3% of the total carbon footprint at 3.4 tCO<sub>2</sub>e. Purchasing 100% PCR copy paper keeps overall PCR content high at 98%, and equates to a demand of just over 1 tree per year, well done!

In 2017, 30 fewer reams of copy paper were purchased, helping reduce emissions by 3% over 2016.

\* The emissions from paper are offset by the University of Victoria.

Treeless Content

**98%**

tCO<sub>2</sub>e

**3.4\***

% of Total

**0.3%**

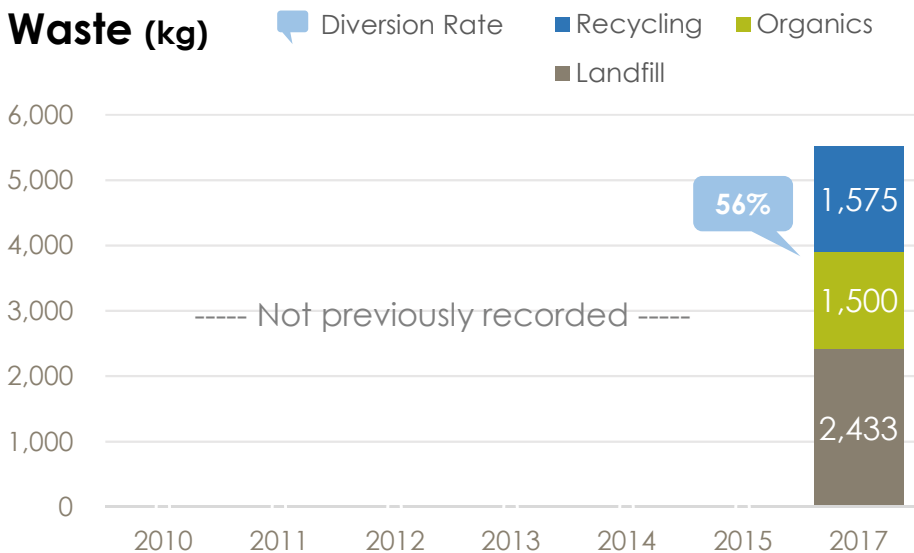


**1.2**

Trees / Year

# Waste

## Waste (kg)



### Analysis

This is the first year that waste has been included in Gustavson's carbon footprint report.

Emissions from waste have a small impact on overall emissions at 1.4 tCO<sub>2</sub>e. UVic has measured the waste diversion rate at 56%, and increasing this metric should be the focus of improvement.

kg/Day

**15**

tCO<sub>2</sub>e

**1.4**

% of Total

**0.1%**

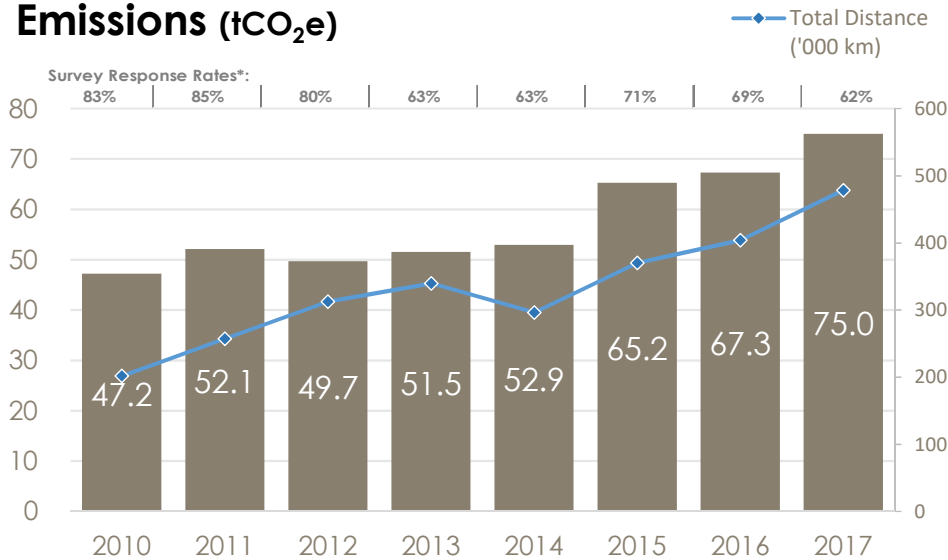


**55.8%**

Diversion Rate

# Employee Commuting

## Emissions (tCO<sub>2</sub>e)

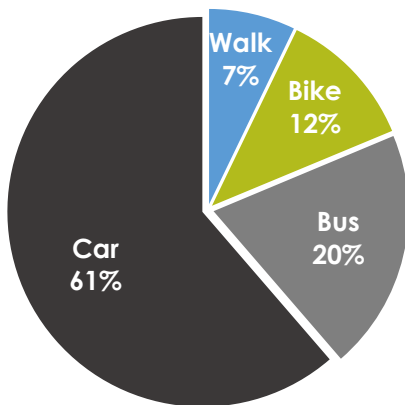


## Analysis

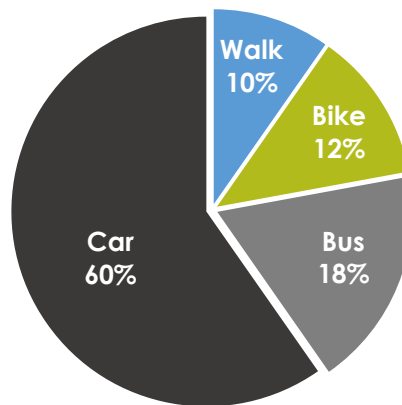
Staff commuting is the third highest contributor to Gustavson's overall emissions at 7.6%. In 2017, 75.0 tCO<sub>2</sub>e were emitted, representing an increase of 11% over 2016. This increase is due to a rise in the number of employees over 2016. As well as this, the average distance travelled has increased from 8.5 km to 10.3 km.

\* Employee commuting data has been extrapolated each year to account for missing surveys.

## Commuting Percentages by Method per Week



Previous (2016)



Current (2017)

## Analysis (Breakdown)

Since 2010, there has been a trend towards more sustainable commuting methods such as walking, biking and public transit. This year, 40% of commutes were made by low-emission methods, up from 27% in 2010.

The breakdown of commuting methods is similar to 2016, with slightly more staff walking, and slightly fewer busing in 2017.

To lower emissions from commuting, Gustavson should explore options aimed at reducing single-occupant vehicle use.

Average kgCO <sub>2</sub> e/km	<b>0.17</b>
Low-Emission Commuting %	<b>39%</b>

Average kgCO <sub>2</sub> e/km	<b>0.16</b>
Low-Emission Commuting %	<b>40%</b>

tCO<sub>2</sub>e/  
FTE **0.17**

tCO<sub>2</sub>e **75.0**

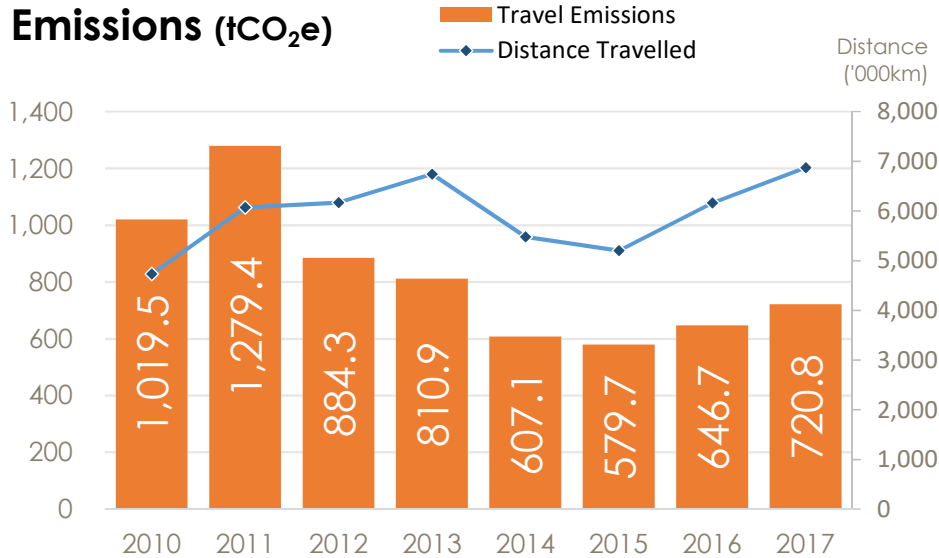
% of  
Total **7.6%**



**19.9**  
Cars / Year

# Travel

## Emissions (tCO<sub>2</sub>e)



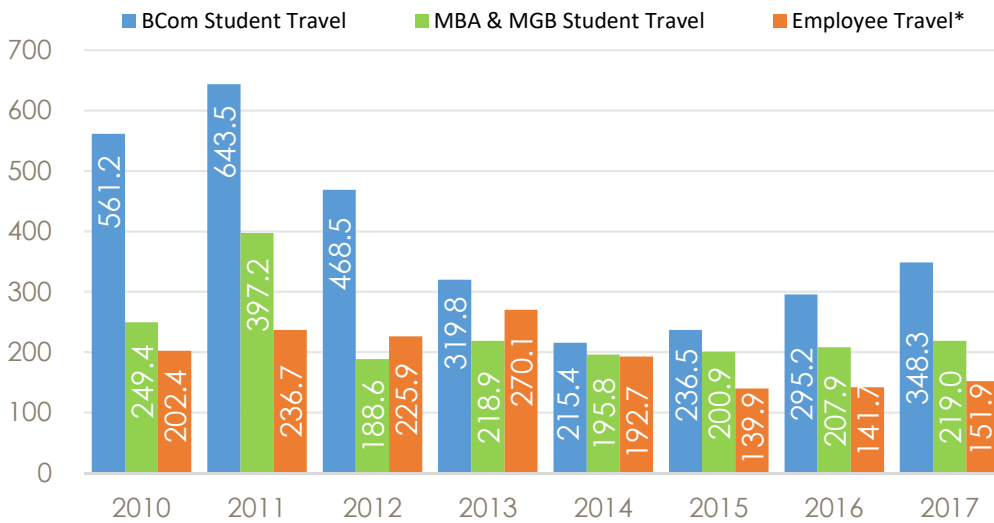
## Analysis

Travel has the greatest contribution to Gustavson's carbon footprint at 73% of total emissions. Emissions increased 11% over 2016, with a 12% increase in distance travelled.

The extra distance travelled is due to an increase in Gustavson employees and the number of students travelling as part of the BCom, MBA, and MGB programs.

Note: The emissions reduction in 2012 is due to switching from UK emissions factors to factors recommended for BC. All years after 2012 use annually updated BC emissions factors.

## Flight Emissions by Dept. (tCO<sub>2</sub>e)



## Analysis (Breakdown)

Flight emissions from employees, BCom students, and MBA/ MGB increased over 2016. The greatest increase was in BCom travel, which had 27 more participants this year and saw an 18% increase in travel distances over 2016. Overall, the number of flights increased from 877 in 2016 to 958 in 2017.

### Previous (2016)

# of Flights	<b>877</b>
Average Distance per Flight (km)	<b>7,019</b>

### Current (2017)

# of Flights	<b>958</b>
Average Distance per Flight (km)	<b>7,169</b>

2017 Year	Distance (km)	# of Flights
Employees	1,458,078	324
BCom	3,323,829	392
MBA & MGB	2,085,558	242
<b>Total</b>	<b>6,867,465</b>	<b>958</b>

\* Employee Travel in this chart is for flights only, and does not include emissions from reimbursed mileage (1.59 tCO<sub>2</sub>e) which are included in the total travel emissions.

† The average for Employee Travel is based on total number of employees, while the averages for students are based on numbers of students who participate in travel programs.

tCO<sub>2</sub>e / Employee

**1.21<sup>†</sup>**

tCO<sub>2</sub>e / BCom Student

**1.78**

tCO<sub>2</sub>e / MBA & MGB Student

**1.79**

**Total tCO<sub>2</sub>e**

**720.8**  
**73.2%**



# Carbon Reduction Strategy

The Gustavson School of Business has measured and reported its carbon emissions over the past nine years through the work of its Centre for Social and Sustainable Innovation (CSSI). The school reports on scopes 1, 2 and 3 of carbon emissions related to its operations, including employee commuting and travel by employees and students. In 2017, waste was added to Scope 3 emissions tracking. Since the baseline year of 2010, emissions have been reduced by 26%. This has been achieved through increased energy efficiency, a reduction in paper purchasing, a significant increase in high PCR content paper, and a shift towards more sustainable commuting methods by employees.

Total emissions for 2017 increased 13% over 2016. The largest increase in emissions occurred with a 17% increase in natural gas use due to a colder winter. The largest share of Gustavson's emissions is from travel, which accounts for 73% of the total footprint. Due to an increase in staff and student travel, more flights were taken which contributed to the 13% increase in overall emissions. As an international business school, air travel is an essential component of Gustavson's operations. By implementing a travel policy, the school can potentially reduce travel and encourage more sustainable methods.

For the first time in its history, Gustavson offset its 2016 emissions for student and employee travel making it a clear leader in Carbon Neutrality among educational institutions around the world. This was a clear example of responsible leadership and Gustavson should continue to be a leader in responsibly managing its overall footprint and reducing its per capita carbon footprint going forward.

## Achievements

- > Gustavson offset its employee commuting and student and employee travel in 2016 making it a carbon neutral school
- > Formation of a Carbon Neutrality Plus committee, with faculty, staff and student representatives. This committee provides information and long-term leadership in shortlisting carbon offset projects and integrating carbon neutrality education with students moving forward.
- > Developing plans to address behavioural changes and educational actions
- > Due to lighting upgrades and educational initiatives at UVic, electricity use has been reduced by 33% since 2010.
- > Both natural gas and electricity intensity (usage/ft<sup>2</sup>) are lower than their respective industry averages.
- > Paper use decreased 3% over 2016. By opting for 100% PCR copy paper (rather than 30%), Gustavson has saved 34 trees this year.
- > Started tracking waste to include in carbon footprint reports.

## Moving Forward

- > Implement a school travel policy to reduce travel and encourage low-emissions methods.
  - More opportunities to work from home or attend e-conferences.
  - Choose sustainable modes of travel where possible (ex: carpooling, trains and busses).
- > Increase waste diversion by developing waste management policies, and ensuring sufficient infrastructure is in place to collect all type of recyclable materials.
- > Encourage employees to make use of the commuting incentives at UVic:
  - For full-time, continuing employees, UVic will pay the annual fee for Modo car-sharing.
  - UVic employees also receive a discounted \$35/year membership at Zipcar.
  - Vehicles may be rented from UVic for university business. Rides can also be organized through UVic's rideshare program.
  - Monthly bus passes are available to most employees at less than half price.

## 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.

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



# Emissions References

Emission Factor	Reference Document(s)/ Years Referenced
BC Natural Gas	National Inventory Report- Part 2 (2011, 2013, 2016, 2017)
BC Electricity	National Inventory Report- Part 3 (2013, 2016, 2017)
Paper	Environmental Paper Network (2010); BC Best Practices (2014, 2016/17)
Flights	DEFRA UK (2010, 2011); BC Best Practices (2012, 2013, 2014, 2016/17)
Reimbursed Mileage	Internal Factors (2010-2014); National Inventory Report- Part 2 (2013, 2016, 2017)
Employee Commuting	Internal Factors (2010-2014); National Inventory Report- Part 2 (2013, 2016, 2017); BC Best Practices (2014, 2016/17)

- 2016/17 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions  
<http://www2.gov.bc.ca/gov/content/environment/climate-change/policy-legislation-programs/carbon-neutral-government/measure>
- Environment Canada's National Inventory Report (1990-2015); Part 2 & 3.  
[http://unfccc.int/files/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/applications/zip/can-2017-nir-13apr17.zip](http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/applications/zip/can-2017-nir-13apr17.zip)
- Department for Environment, Food & Rural Affairs (UK) Carbon Factors  
<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2016>
- Intergovernmental Panel on Climate Change (Global Warming Potentials)  
[http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch2s2-10-2.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html)

All emissions factors are reviewed and approved by Offsetters ([www.offsetters.ca](http://www.offsetters.ca)) on an annual basis.

# Glossary of Terms

Term	Description
GHG	Greenhouse Gas (emissions): Atmospheric gasses contributing to the greenhouse effect, including Carbon Dioxide (CO <sub>2</sub> ), Methane (CH <sub>4</sub> ), Nitrous Oxide (N <sub>2</sub> O), etc.
GJ	<b>Gigajoule:</b> Unit of natural gas equal to 26.137 m <sup>3</sup> or 0.947 MMBtu
kWh	<b>Kilowatt-Hour:</b> Common unit for measuring electrical consumption
m <sup>3</sup>	<b>Cubic Meter:</b> Unit of measurement equal to 1,000 Litres
PCR%	<b>Post-Consumer Recycled Content</b> (as a percentage)
psg-km	<b>Passenger-Kilometer:</b> 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 <sub>2</sub> e	<b>Tonnes of Carbon Dioxide Equivalent:</b> GHGs have different warming potentials, measured collectively as CO <sub>2</sub> equivalent (hence "e")
t-km	<b>Tonne-kilometer:</b> A unit of measurement used in shipping

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