



Greenhouse Gas Protocol (Dual Reporting) Report for Dawson College

Assessment Period: July 2014 - June 2015

Produced on Sept. 24, 2018 by *Our Impacts* on behalf of Ecometrica

Assessment Details

Consolidation Approach

Operational Control

Organisational Boundaries

Operations of Dawson College

Included

- Dawson College
- Dawson College

Operational Boundary

- Electricity
- Landfilled waste
- Natural gas
- Off-road vehicles and equipment
- Other fuel(s)
- Recycled waste

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Introduction

A greenhouse gas (GHG) emissions assessment quantifies the total greenhouse gases produced directly and indirectly from a business or organisation's activities. Also known as a carbon footprint, it is an essential tool, providing your business with a basis for understanding and managing its climate change impacts.

A GHG assessment quantifies all seven Kyoto greenhouse gases where applicable and is measured in units of carbon dioxide equivalence, or CO₂e¹. The seven Kyoto gases are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF₃), sulphur hexafluoride (SF₆) and perfluorocarbons (PFCs). The global warming potential (GWP) of each gas is illustrated in the Table 1.

Table 1. GWP of Kyoto Gases (IPCC 2013, without climate-carbon feedback)

Greenhouse Gas	GWP
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	28
Nitrous oxide (N ₂ O)	265
Hydrofluorocarbons (HFCs)	1 - 12,400
Perfluorocarbons (PFCs)	1 - 11,100
Nitrogen trifluoride (NF ₃)	16,100
Sulphur hexafluoride (SF ₆)	23,500

This assessment has been carried out in accordance with the World Business Council for Sustainable Development and World Resources Institute's (WBCSD/WRI) Greenhouse Gas Protocol; a Corporate Accounting and Reporting Standard, including the GHG Protocol Scope 2 Guidance. This protocol is considered current best practice for corporate or organisational greenhouse gas emissions reporting. GHG emissions have been reported by the three WBCSD/WRI Scopes.

Scope 1 includes direct GHG emissions from sources that are owned or controlled by the company such as natural gas combustion and company owned vehicles.

Scope 2 accounts for GHG emissions from the generation of purchased electricity, heat and steam generated off-site. As the subject of this assessment operates in markets which offer contractual instruments with product or supplier-specific data, scope 2 emissions are reported using both the location-based method and the market-based method. The location-based method applies average emission factors that correspond to the grid where consumption occurs, whereas the market-based method applies emission factors that correspond to energy purchased (or not purchased) through contractual instruments. Contractual instruments include energy attribute certificates, direct energy contracts, and supplier specific emission rates. The subject of this assessment has ensured that any contractual instruments used in the market-based method have met the Scope 2 Quality Criteria, as defined in the Guidance. Where contractual instruments do not meet the Quality Criteria, or where contractual instruments were not purchased, market-based scope 2 emissions have been calculated using residual mix emission factors. Where residual mix emission factors are not available, market-based scope 2 emissions have been calculated using default location grid-average emission factors, per the Protocol hierarchy. This may result in double counting between electricity consumers, as an adjusted emission factor taking into account voluntary purchases of electricity with specific attributes was not available.

Scope 3 includes all other indirect emissions such as waste disposal, business travel and staff commuting. Reporting of these activities is optional under the WBCSD/WRI GHG Protocol, but as they can contribute a significant portion of overall emissions Ecometrica recommends they are reported where applicable.

A GHG assessment is an essential tool in the process of monitoring and reducing an organisation's climate change impact as it allows reduction targets to be set and action plans formulated. GHG assessment results can also allow organisations to be transparent about their climate change impacts through reporting of GHG emissions to customers, shareholders, employees and other stakeholders. Regular assessments allow clients to track their progress in achieving reductions over time and provide evidence to support green claims in external marketing initiatives such as product labelling or CSR reporting. Ecometrica GHG assessments are designed to be transparent, consistent and repeatable over time.

¹ Carbon dioxide equivalent or CO₂e is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact.

Data Quality and Availability

In order to provide the most accurate estimate of an organisation's GHG emissions, primary (actual) data should be used where it is available, up to date and geographically relevant. Secondary data in the form of estimates, extrapolations and industry averages may be used when primary data is not available. Table 2 details the quality of data submitted for this assessment with the key assumptions used stated below.

Data Quality Overview



Location-based Accuracy Overview		
	tCO ₂ e/year	%
Actual	797	99.7
Estimated	2.31	0.289
Total	799	100



Market-based Accuracy Overview		
	tCO ₂ e/year	%
Actual	797	99.7
Estimated	2.31	0.289
Total	799	100

Table 2. Data Quality and Availability

Source of emissions	Data quality
Premises	
Composted waste	Unknown
Electricity	Actual
Landfilled waste	Actual
Natural gas	Actual
Off-road vehicles and equipment	Actual
Other fuel(s)	Estimated
Recycled waste	Actual
Refrigerant gas loss and other fugitive emissions	N/A

Key Assumptions

Quality review has not been performed by Ecometrica.

Assessment Summary for Dawson College

Gross Overall Emissions (location-based): 799 tCO₂e

Gross Overall Emissions (market-based): 799 tCO₂e

Key Performance Indicators

Absolute GHG emissions will vary over time and often correspond to the expansion or contraction of an organisation. It is useful therefore to use reporting metrics that take these effects into account and monitor relative GHG emissions intensity. A common emissions intensity metric is tonnes of CO₂e per full time equivalent. This has been calculated, along with other relevant metrics, in the table below:

Data	KPI
10,985 Number of students	0.0728 tCO ₂ e per student (Location-Based)
78,949 Floor area (square metres)	0.0101 tCO ₂ e per square metre (Location-Based)
816 Full Time Equivalent Employees	0.98 tCO ₂ e per Full Time Equivalent Employee (Location-Based)
10,985 Number of students	0.0728 tCO ₂ e per student (Market-Based)
78,949 Floor area (square metres)	0.0101 tCO ₂ e per square metre (Market-Based)
816 Full Time Equivalent Employees	0.98 tCO ₂ e per Full Time Equivalent Employee (Market-Based)

Summary by Activity (Location-Based, tCO₂e)



By Activity	tCO ₂ e/year	%
Premises	799	100
Total	799	100

Summary by Activity (Market-Based, tCO₂e)



By Activity	tCO ₂ e/year	%
Premises	799	100
Total	799	100

Summary by WBCSD/WRI Scope (Location-Based, tCO₂e)



Scope	tCO ₂ e/year	%
Scope 1	490	61.3
Scope 2	19.4	2.43
Scope 3	290	36.2
Total	799	100

Summary by WBCSD/WRI Scope (Market-Based, tCO₂e)



Scope	tCO ₂ e/year	%
Scope 1	490	61.3
Scope 2	19.4	2.43
Scope 3	290	36.2
Total	799	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year (Location-Based)	tCO ₂ e/year (Location-Based)	tGHG/year (Market-Based)	tCO ₂ e/year (Market-Based)
CO ₂	1	507	507	507	507
CH ₄	28	10.4	290	10.4	290
N ₂ O	265	0.0107	2.83	0.0107	2.83
CO ₂ e	1	0	0	0	0
Total			799		799

Summary of Scope 2 Market-Based Method for Dawson College

Energy Consumed and Emissions By Factor Type In Scope 2 Market-Based Method

Scope 2 Market-Based Energy



Scope 2 Market-Based Emissions



Emission Factor Type	Energy		Market-Based Emissions	
	MWh	%	tCO ₂ e	%
Client-supplied market-based instrument	0	0	0	0
Residual mix factors	0	0	0	0
Default location-based factors	13,603	100	19.4	100
Total	13,603	100	19.4	100

Detailed Results

Detailed Summary by WBCSD/WRI Scope

Location-Based methodology

Source of Emissions	tCO ₂ /yr	tCH ₄ /yr	tN ₂ O/yr	Total Emissions (tCO ₂ e/yr)	%
Scope 1 Total	488	0.00984	0.00933	490	61.3%
Premises Total	488	0.00984	0.00933	490	61.3%
Natural gas	485	0.00951	0.009	488	61%
Off-road vehicles and equipment	0.185	2.16e-4	4e-6	0.192	0.0241%
Other fuel(s)	2.22	1.1e-4	3.3e-4	2.31	0.289%
Scope 2 Total	19	0.00136	0.00136	19.4	2.43%
Premises Total	19	0.00136	0.00136	19.4	2.43%
Electricity	19	0.00136	0.00136	19.4	2.43%
Scope 3 Total	0	10.3	0	290	36.2%
Premises Total	0	10.3	0	290	36.2%
Landfilled waste	0	10.3	0	290	36.2%
Recycled waste	0	0	0	0	0%
Total	507	10.4	0.0107	799	100%

Market-Based methodology

Source of Emissions	tCO ₂ /yr	tCH ₄ /yr	tN ₂ O/yr	Total Emissions (tCO ₂ e/yr)	%
Scope 1 Total	488	0.00984	0.00933	490	61.3%
Premises Total	488	0.00984	0.00933	490	61.3%
Natural gas	485	0.00951	0.009	488	61%
Off-road vehicles and equipment	0.185	2.16e-4	4e-6	0.192	0.0241%
Other fuel(s)	2.22	1.1e-4	3.3e-4	2.31	0.289%
Scope 2 Total	19	0.00136	0.00136	19.4	2.43%
Premises Total	19	0.00136	0.00136	19.4	2.43%
Electricity	19	0.00136	0.00136	19.4	2.43%
Scope 3 Total	0	10.3	0	290	36.2%
Premises Total	0	10.3	0	290	36.2%
Landfilled waste	0	10.3	0	290	36.2%
Recycled waste	0	0	0	0	0%
Total	507	10.4	0.0107	799	100%

Summary by Company Unit

Location-Based methodology

Assessment	July 2013 - June 2014		July 2014 - June 2015	
Company Unit	Total Emissions (tCO ₂ e)	Emissions per FTE (tCO ₂ e/FTE)	Total Emissions (tCO ₂ e)	Emissions per FTE (tCO ₂ e/FTE)
Dawson College	783	1	799	0.98
Dawson College	783	-	799	-

Market-Based methodology

Assessment	July 2013 - June 2014		July 2014 - June 2015	
Company Unit	Total Emissions (tCO ₂ e)	Emissions per FTE (tCO ₂ e/FTE)	Total Emissions (tCO ₂ e)	Emissions per FTE (tCO ₂ e/FTE)
Dawson College	783	1	799	0.98
Dawson College	783	-	799	-

Annual Activity Data

Source of Emissions	Value	Unit
Premises		
Electricity		
Electricity consumption	13,602,732	kWh
Landfilled waste		
Waste, landfilled, MSW	192	tonne
Natural gas		
Natural gas consumption (gross CV)	257,119	m3
Off-road vehicles and equipment		
Small utility mobile equipment and off-road vehicles, gasoline	80	l
Other fuel(s)		
Diesel	825	l
Recycled waste		
Waste, recycled	47	tonne

References

EC (2016). National Inventory Report, 1990-2014: Greenhouse Gas Sources and Sinks in Canada. Environment Canada.

EC (2017). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2015. Environment Canada.

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IPCC (2006). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.