BentallGreenOak

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Annex 1: 2019 GHG Reporting Methodology

April 2020 rev. May 26, 2020

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Energy Profiles Limited

1. Background

BentallGreenOak tracks utility use for their asset managed portfolio, including office, retail, medical, residential and industrial assets.

Energy Profiles Limited (EPL), in concert with BentallGreenOak, prepares an energy and emissions report each year, summarizing progress made in reducing energy / emissions across the overall property portfolio, as well as individual reports for select clients' portfolios. There are two goals for this exercise:

1. To determine the energy / emissions for asset managed properties following the guidance of the GHG Protocol[i], the industry standard practice for corporate disclosure purposes.

2. To determine the portfolio's performance vs. historical years, normalized to remove the impact of outside influences such as changes to weather and occupancy, and exceptional tenant loads.

This document details the methodology used to derive the greenhouse gas (GHG) emissions reported by BentallGreenOak on behalf of their clients for the 2019 emission reporting year.

2. Operational Boundaries

Operational boundaries define the parts of the operation, or 'activities', for which emissions will be reported. Emissions are reported for energy and water consumed and waste generated across the portfolio. Scope 1, 2 and 3 emissions resulting from the operation of properties are reported, as follows:

Scope 1 Emissions

Scope 1 emissions are direct emissions that originate at managed properties. These include natural gas and fuel oil consumption for space heating, water heating and, in some cases, cooking. Emissions resulting from refrigerants used on-site are outside of the reporting scope.

Scope 2 Emissions

Scope 2 emissions are indirect emissions from purchased electricity, steam and chilled water that is consumed at properties, but generated elsewhere. Emissions from submetered tenant consumption are outside of BentallGreenOak's organizational boundary, as discussed in Section 3, and are therefore not included as Scope 2 emissions.

Scope 3 Emissions

Scope 3 emissions are reported for water consumption, waste generation, and tenant submetered energy consumption at properties. While submetered tenant consumption is outside of the organizational boundary, it is reported as Scope 3 (other indirect emissions) for completeness and comparability of overall emissions to historical years where submeter-based billing was not present.

3. Organizational Boundaries

Organizational boundaries define the approach to determining ownership or control over the energy and emissions reported for the property portfolio.

BentallGreenOak Reporting

The operational control approach has been selected for the purposes of reporting BentallGreenOak's corporate emissions, defined as follows in the GHG Protocol.

> *A company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation…. Under the operational control approach, a company accounts for 100% of emissions from operations over which it or one of its subsidiaries has operational control. It should be emphasized that having operational control does not mean that a company necessarily has authority to make all decisions concerning an operation.…*

In other words, emissions are reported for properties and operations where BentallGreenOak or their agents are responsible for managing utility consumption. In cases where a third-party is hired by BentallGreenOak to manage a property on their behalf, the third-party property manager is considered to be an agent of BentallGreenOak.

BentallGreenOak Client Reporting

When reporting emissions for a specific BentallGreenOak client, the equity share consolidation approach is used, defined as follows in the GHG Protocol.

> *Under the equity share approach, a company accounts for GHG emissions from operations according to its share of equity in the operation. The equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation. Typically, the share of economic risks and rewards in an operation is aligned with the company's percentage ownership of that operation, and equity share will normally be the same as the ownership percentage.*

In other words, emissions are reported for the portion of a property/operation owned by the BentallGreenOak client in question.

Determining Responsibility for Emissions

The responsibility for emissions from utility consumption is that of the party responsible for paying the utility costs.

In general, utility accounts billed to BentallGreenOak or the property owner are defined to be within the operational control of BentallGreenOak since BentallGreenOak has the authority to introduce operating polices as they relate to these accounts. Utility accounts paid directly by the tenant are outside of BentallGreenOak's operational control.

One exception is 'pass-through' utility accounts. Typically, these accounts exist at industrial properties or buildings with triple-net leases where the owner / property manager pays the utility bills but has no influence over utility use or building systems. In these cases, BentallGreenOak does not have the authority to introduce operating policies as they relate to the account, so they are treated as if the tenant were billed directly by the utility company.

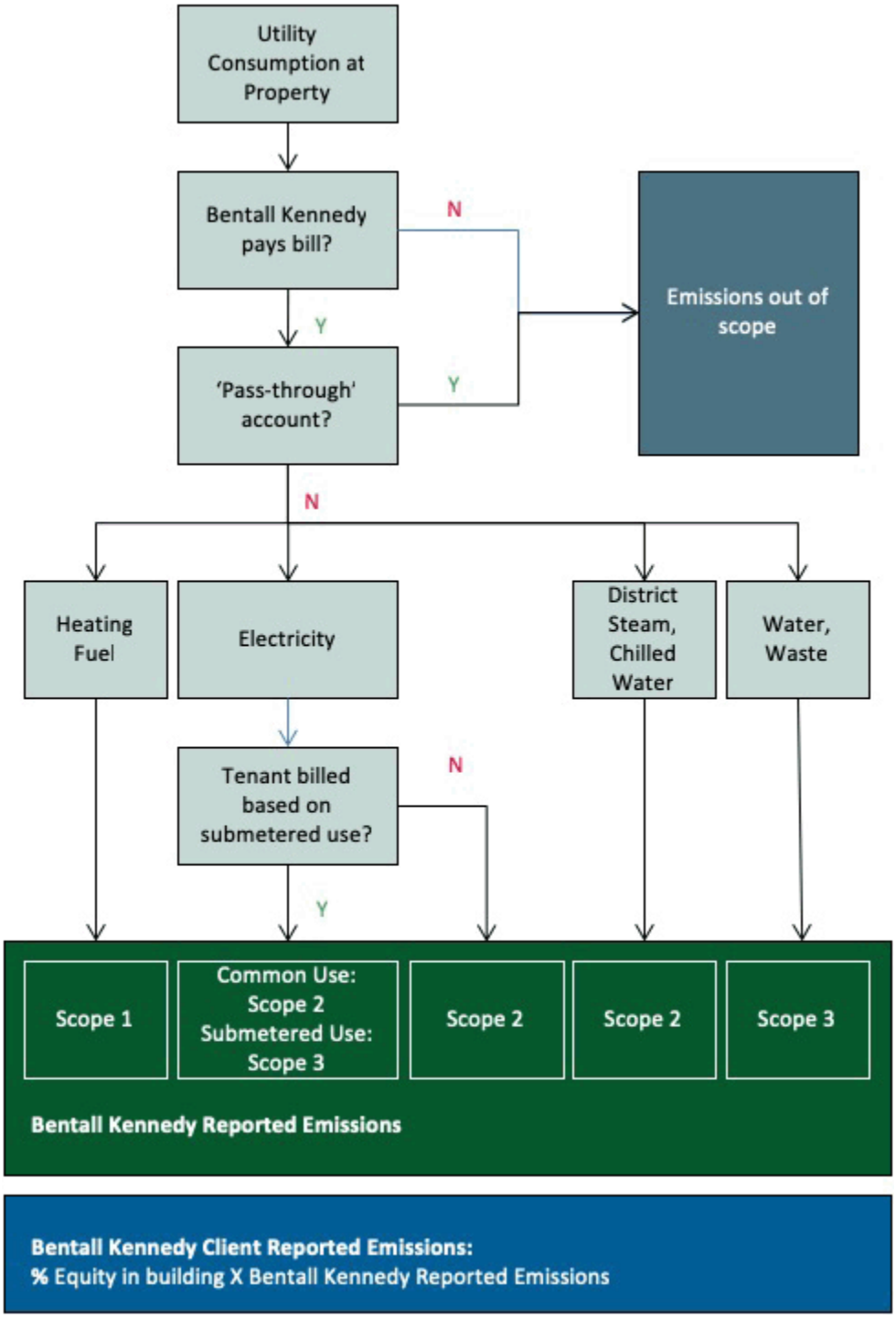
Submetered Consumption

Submetered energy use billed to tenants by BentallGreenOak is outside of the organizational boundary of BentallGreenOak and the building owner, as recommended by REALpac[ii]:

> *Where sub-metering of tenants occurs, the party that is directly responsible for the utility costs is a reasonable method for determining control. For instance, if an owner installed electrical sub-metering for each tenant, and the tenants were responsible for payment of the electricity consumed, then it is far less likely that the owner is responsible for any associated emissions…*

4. Application of Boundaries

The boundaries defined above are applied to utility consumption based on the following decision tree.



5. Comparison to Historical Years

For comparative purposes, BentallGreenOak reports GHG emissions on a five-year-rolling basis. 2015 is the Base Year for the 2019 reporting year, and energy and emissions are trended from 2015-2019. This method has been selected to allow for a meaningful presentation of historical performance, while focusing on recent portfolio performance.

Base Year Recalculation Policy

Energy and emissions are recalculated for the Base Year and each historical year, in keeping with the GHG Protocol, to account for the following factors:

1. Property acquisitions and divestments by BentallGreenOak clients.
2. Properties or accounts owned in the base year, but previously excluded from scope.
3. Corrections to historical data based on availability of more accurate information.
4. Changes to reporting methodology.

In cases where historical data is not available, historical consumption is estimated based on the best data available. The base year is not recalculated to account for new property developments or demolitions.

Adjustments for acquisitions / divestments are treated using the 'Same-year, Pro-rata'[iii] approach, meaning that buildings only owned for a portion of the reporting year (2019) are included in all historical years for the same period. Utility use, waste, emissions, and 'effective' gross leasable area are all adjusted proportionately for the period of ownership in 2019.

Treatment of Scope 2 Emission Factors in Historical Years

Canada

Electricity emission factors vary over time as the generation mix throughout Canada changes. Environment Canada publishes a 'National Inventory Report' (NIR) each year. The 2019 NIR, used in the preparation of this emission report, contains annual electricity emission factors reflecting the electricity generation mix in each year from 2000-2017. Emissions could be calculated in two ways:

Method 1: Using the 2019 NIR annual emission factors for the corresponding year for each year prior to 2017, and the 2017 emission factors to report 2017-2019 emissions

Method 2: Using the 2017 emission factors for all years

This is an important issue, as the majority of portfolio emissions are Scope 2 indirect electricity emissions, and the difference in provincial emission factors can vary by up to 60% year-over-year. There is no specific guidance in the GHG Protocol as to which approach should be used.

An international survey of other available standards and industry practices in addition to an informal survey of local industry experts suggests that a best practice has not emerged in this regard. Specific guidance is limited to that from climate registries, whose objectives are markedly different from that of an independent corporate entity such as BentallGreenOak and their clients.

For BentallGreenOak reporting, Method 2 has been applied in order to allow for a clear assessment of changes in emissions influenced by BentallGreenOak. Note that the water emission factors are dependent on electricity emission factors and are therefore also affected by this choice of calculation method.

USA

The US Environmental Protection Agency (EPA) periodically publishes the Emissions & Generation Resource Integrated Database (eGRID), specifying electricity emission factors. The 2016 values from eGRID2016, published in 2019, are used for this report. The 2016 emission factors are applied across all years.

6. Treatment of Waste

BentallGreenOak began reporting emissions generated from waste in 2008. Emissions are reported for trash that is sent to landfill only. No emissions are reported for recycled or composted waste.

Emission reductions occur at some properties that send trash to Waste-to-Energy (WTE) facilities where it is used to generate electricity.

In order to conservatively estimate emissions from trash sent to WTE facilities, it is assumed that 10% of the material sent to WTE facilities still ends up in landfill.

Emissions are calculated using the following formulas for properties that send trash to WTE facilities:

Landfilled trash trash weight produced by site – 0.9 * trash weight sent to WTE facility

Emissions landfilled trash * waste emission factor

Emissions produced from power production at WTE facilities are not included in this report on the basis that the trash is used as a fuel source, as opposed to being wasted. Analogously, a natural gas producer would not report emissions from the combustion of fuel at generating stations to which it sells fuel. Emissions from the combustion of waste at WTE facilities would be accounted for in the electricity emission factor for the region in which the power is generated.

7. Renewable Energy Credits and Carbon Offsets

Renewable Energy Credits and Carbon Offsets are two distinct mechanisms used to reduce GHG emissions. This section details how each is handled with respect to emission reporting.

Renewable Energy Credits

Renewable Energy Credits (RECs) represent the rights to the environmental benefits from generating electricity from renewable sources. RECs are purchased for some properties in the BentallGreenOak portfolio and are reported using the Market-based Approach, as discussed below.

Market-based Approach vs. Location-based Approach

In January 2015, the World Resource Institute published the GHG Protocol Scope 2 Guidance[iv], defining two approaches to emission reporting and specifying that emissions should be reported using both approaches (dual reporting), effective as of the 2015 reporting year.

- The *location-based approach* reflects the average emissions intensity of grids on which energy consumption occurs and does not account for REC purchases or any other contractual instruments.
- The *market-based approach* reflects the emissions from electricity that BentallGreenOak has chosen to purchase via contractual instruments. This approach does account for REC purchases.

In light of this guidance, both location-based and market-based emissions are reported for BentallGreenOak's portfolio. Base Year and historical year market-based emissions have been calculated based on the GHG Scope 2 Guidance, as per the Base Year Recalculation Policy detailed in Section 5.

Quality Criteria

The GHG Protocol Scope 2 Guidance, discussed in Section 7.1, sets out 8 'Quality Criteria' for the inclusion of contractual instruments, such as RECs, in market-based accounting.

RECs purchased in 2016-2019 and accounted for in the 2019 reporting year are Green-e certified and specify 100% wind power, or otherwise meet the Quality Criteria. Green-e has stated publicly that their certified RECs meet the Quality Criteria requirements[v]. RECs purchased for BentallGreenOak properties before 2016 do not meet the Quality Criteria as they do not convey the direct GHG emission rate attribute associated with the unit of electricity produced. They are therefore excluded from reporting.

Volume Allocation

REC contracts typically specify the volume of RECs purchased in one of two ways:

1. As a percentage of a building's electricity consumption

2. As a fixed amount, approximating a percentage of the building's total electricity (or in some cases total energy) use over a specified number of years.

In cases where a fixed volume of RECs are purchased, there are often no start and end dates associated with the agreements; the contracts confirm only the amount of renewable energy that will be delivered to the grid and a number of years for which the contract applies. In these cases, it has been assumed that the contracted renewable energy volume was delivered to the grid linearly over the specified number of years, starting at the date the contract was executed.

In cases where RECs cover common area and tenant electricity use at a property, RECs are first applied to the common area consumption and the remainder are applied to tenant consumption (Scope 3).

Market-based emissions calculations

Market-based emissions are calculated as follows, in accordance to the GHG Protocol Scope 2 Guidance:

1. Electricity consumption at a property for which RECs are purchased is reported as having zero emissions, given that all RECs reported are from 100% wind generation sources.

2. For all other electricity consumed at a property, emissions are calculated using the appropriate "residual mix" emission factors, where available[vi]. Residual mix emission factors represent the emissions from the grid, after discounting reductions achieved by RECs sold on the market. 2019 is the first year for which residual mix emission factors are available for the US.

3. In cases where RECs are purchased for more than 100% of a property's electricity consumption, emissions from electricity are reported as zero (i.e. negative emissions are not reported).

Carbon Offsets

Carbon Offsets, or Verified Emissions Reductions, are direct reductions in GHG emissions that can be purchased to 'offset' property emissions. Unlike RECs, Carbon Offsets are purchased in units of 'tonnes of CO_2 equivalent' (tCO_2e) and are not related to electricity purchased or consumed at a property. Carbon Offsets are purchased for some properties in the BentallGreenOak portfolio to offset Scope 1 emissions. Offsets are subtracted from the total location-based and market-based emissions to report 'Net location-based' and 'Net market-based' emissions.

8. Utility Data Estimation

There are two situations in which utility data is estimated:

1. Properties where utility data is tracked but some bills are missing.

2. Properties that are within the reporting boundary, but utility data is not tracked.

Missing Utility Bills

Best efforts are made to collect actual utility consumption from utility bills or utility meters for all properties/accounts. Where verifiable utility data is not available, consumption is estimated based on a linear regression of available utility data and actual weather data. In the case of non-weather dependent accounts, historical consumption is assumed to be equal to recent year consumption.

'Not Tracked' Properties

For some properties within the reporting scope, utility data is not available for reporting. In these cases, where BentallGreenOak-paid utility accounts are known to exist, consumption is estimated based on the average 2015 energy use intensity of a representative sample of properties from the same asset class.

For properties within the reporting scope where there are known to be no BentallGreenOak paid utility accounts, consumption is set to zero.

9. Reporting Normalized Results

To understand the change in energy use and emissions intensity excluding the impact of outside influences, a detailed variance analysis is performed to calculate 'normalized' results for the Investment Portfolio.

Reporting Periods

This analysis is performed for two reporting periods and corresponding sub-sets of properties:

1. 2019 vs. 2018, for properties managed for the duration of 2018-2019

2. 2019 vs. 2015, for properties managed for the duration of 2015-2019

In other words, properties acquired since 2018 and 2015, respectively, are not included in the analyses. New developments, however, are included in normalized results.

The impact of the following factors on energy use and emissions is calculated and subtracted from the results determined per the GHG Protocol:

1. Weather and occupancy
2. Exceptional tenant loads
3. Changing emission factors

Normalization for Weather

2015 and 2018 energy and emissions are normalized to reflect 2019 weather conditions.

To do so, linear regression models are developed for 2015 and 2018 consumption for each individual utility account as a function of heating degree hours (for accounts providing heating energy) and cooling degree hours (for accounts providing cooling energy) using hourly weather data from Environment Canada (in Canada) and the National Oceanic and Atmospheric Administration's National Weather Service (in the US) for the closest weather station to each property.

The 2015 and 2018 models are applied to 2019 weather data to calculate, in effect, what consumption in historical years would have been had they experienced 2019 weather. The difference between the actual historical year consumption, and the consumption modeled using 2019 weather provides a reasonable estimate of the impact of changes in weather on energy and emissions.

Normalization for Occupancy

2015 and 2018 energy and emissions are normalized to reflect 2019 occupancy levels. It has been assumed that electricity consumption at office and residential properties is the only utility materially affected by occupancy.

Monthly vacancy data is extracted from BentallGreenOak's accounting system for each property for 2015 through 2019. A 'gross-up factor' for each year is then calculated by assuming that if vacant space were occupied by a typical tenant, building consumption would increase by 10 kWh/ft^2/year[vii] for office properties, and 6,000 kWh/suite/year for residential. The impact of occupancy on energy consumption is determined as the difference between the gross-up factors in 2019 vs. 2015 and 2018, respectively.

Note that portfolio energy use may increase while emissions decrease, or vice versa, depending on the electricity emission factors in the regions where the changes to occupancy occur. For example, a small increase in energy use in Alberta may result in a larger increase in emissions than the decrease in emissions resulting from a large decrease in energy use in Ontario.

Exceptional Tenant Loads

Energy and emissions from submetered tenant data centres are reported under scope 3, as discussed in Section 2. In some cases, data centre energy consumption changes significantly from year to year due to the addition or removal of computer loads.

When reporting normalized results, energy and emissions resulting from submetered data centres are removed, since BentallGreenOak does not influence this energy use. Note that data centres are only removed from the analysis where BentallGreenOak has access to submeter data for the full reporting period (2015 - 2019 or 2018-2019, respectively).

Submetered tenant data centres are identified on a site-by-site basis through communications with property management staff, or in some cases via submeter cost allocation studies. Submeter data is acquired via automated submeter systems or via manual meter readings performed by site staff depending on the property.

10. Emission Factors

Emissions were calculated using emission factors from publicly available sources wherever possible. The following sections detail the emission factors used for Canada and the US along with the source for each factor.

United States

Electricity emission factors are regionally specific. The US Environmental Protection Agency (EPA) periodically publishes the Emissions & Generation Resource Integrated Database (eGRID). eGRID assigns electricity emission factors to 'eGRID subregions', shown in the figure below, based on the generation resource mix. The factors used for reporting are the 2016 values from eGRID2016, published in 2019.

Note that eGRID published 2018 emission factors in March 2020. These factors were not used for the following reasons:

1. Residual mix factors (used for the market-based reporting) are not yet available for 2018.
2. Using the 2016 factors result in a more conservative assessment of total emissions.
3. Using the 2016 factors is consistent with Sun Life Financial's reporting on many of the same assets, which was completed in February before the 2018 eGRID factors were published.

Emission factors for water all also regionally specific since they are partially based on the pumping energy used to deliver water to the properties.

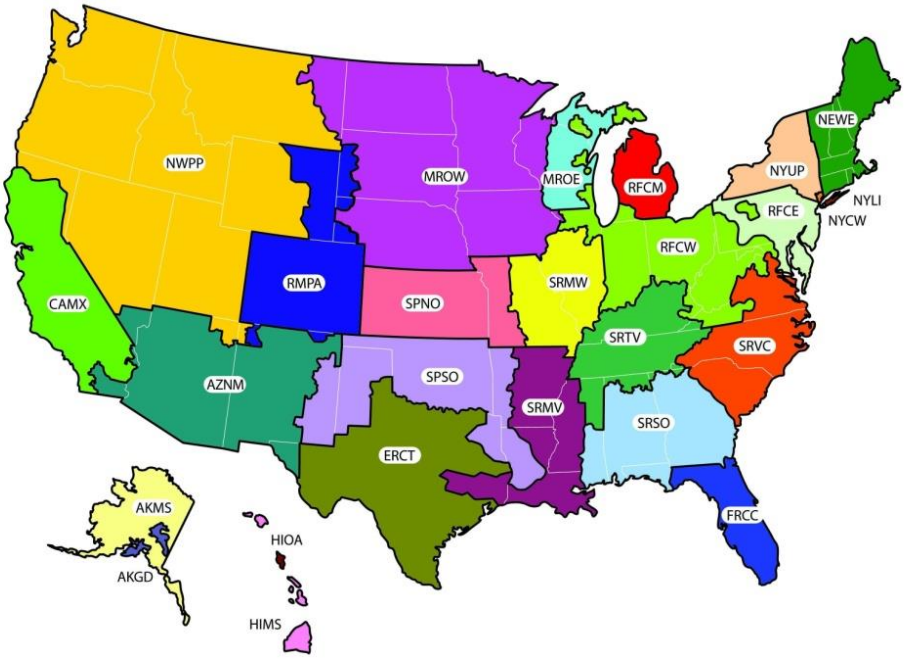


Figure 1: EPA eGRID Subregions

The following tables provide the source for each emission factor used.

eGRID Subregion	Emission Factor (gCO_2/kWh)	Residual Mix Factor (gCO_2/kWh)	eGRID Subregion	Emission Factor (gCO_2/kWh)	Residual Mix Factor (gCO_2/kWh)
AKGD	488.6	493.2	NYLI	538.0	538.0
AKMS	229.0	229.0	NYUP	134.2	134.3
AZNM	475.8	476.6	RFCE	345.7	345.8
CAMX	240.4	241.1	RFCM	580.1	580.4
ERCT	460.0	487.8	RFCW	567.7	567.9
FRCC	461.0	463.5	RMPA	624.5	629.8
HIMS	525.6	525.6	SPNO	645.1	691.7
HIOA	759.9	759.9	SPSO	569.2	645.2
MROE	761.7	762.0	SRMV	382.0	382.6
MROW	565.8	590.8	SRMW	735.9	743.7
NEWE	255.7	255.7	SRSO	496.7	499.2
NWPP	297.3	302.6	SRTV	541.0	541.2
NYCW	289.0	289.0	SRVC	367.5	368.4

Sources:

EPA eGRID 2016 (US EPA, 2018)

2019 Green-e® Residual Mix Emissions Rates (2017 Data) (Green-e, 2019)

Water

eGRID Subregion	Emission Factor (gCO_2/m3)	eGRID Subregion	Emission Factor (gCO_2/m3)
AKGD	469.1	NYLI	516.4
AKMS	219.8	NYUP	128.9
AZNM	456.8	RFCE	331.9
CAMX	1,285.9	RFCM	556.9
ERCT	441.6	RFCW	545.0
FRCC	442.6	RMPA	599.5
HIMS	504.6	SPNO	619.3
HIOA	729.5	SPSO	546.4
MROE	731.2	SRMV	366.7
MROW	543.2	SRMW	706.5
NEWE	245.5	SRSO	476.9
NWPP	285.4	SRTV	519.3
NYCW	277.4	SRVC	352.8

Sources:

Energy consumption for water use cycles in different countries: A review (Wakeel et al, 2016)

EPA eGRID 2016 (US EPA, 2018)

Utility Type	Emission Factor (gCO_2/unit)	Units	Source
Natural Gas	1,931.4	cubic meters	AP-42: Compilation of Air Emissions Factors, Supplement D (US EPA, 1998)
Trash	1,666.5	kilograms	US NIR 2019 Annex 3.14.
District Cooling - NWPP	297.3	ton-hours	EPA eGRID 2016 (US EPA, 2018) - assumes 1 kWh/tonh
District Steam - NYCW	37.6	pounds	NYC Local Law 97 and Energy Star Thermal Conversion to convert kBtu to lbs
District Steam - other regions	55.6	pounds	Energy Star Portfolio Manager, Aug 2019 Technical Reference, Figure 3

Canada

Provincial emission factors are published by Environment Canada. The factors used are primarily the 2017 values from Canada's Greenhouse Gas Inventory 2000 – 2017, published in 2019. The following table provides the source for each emission factor used.

Utility Type	Province	Factor	Units	Source
Electricity	AB	750.0	gCO2e/kWh	Canada's Greenhouse Gas Inventory 1990-2017 (NRCan, 2019)
	BC	9.3		
	MB	1.9		
	NB	310.0		
	NL	40.0		
	NS	670.0		
	ON	17.0		
	PE	14.0		
	QC	1.3		
	SK	660.0		
Natural Gas	AB	1,939.4	gCO2e/m3	Canada's Greenhouse Gas Inventory 1990-2017 (NRCan, 2019)
	BC	1,937.4		
	MB	1,897.4		
	NB	1,912.4		
	NL	1,912.4		
	NS	1,912.4		
	ON	1,899.4		
	PE	1,912.4		
	QC	1,898.4		
	SK	1,840.4		
Water	AB	957.0	gCO2e/m3	Canada's Greenhouse Gas Inventory 1990-2017 (NRCan, 2019) Greenhouse Gas and Energy Co-Benefits of Water Conservation (Mass, 2009)
	BC	11.9		
	MB	2.4		
	NB	395.6		
	NL	51.0		
	NS	854.9		
	ON	21.7		
	PE	17.9		
	QC	1.7		
	SK	842.2		
Trash	AB	2,210.8	gCO2e/kg	Canada's Greenhouse Gas Inventory 1990-2017 (NRCan, 2019)
	BC	1,821.7		
	MB	1,986.8		
	NB	1,758.7		
	NL	1,975.3		
	NS	1,467.0		
	ON	2,055.0		
	PE	1,578.5		
	QC	2,100.0		
	SK	1,888.8		
Steam	BC	74.2	gCO2e/lb	Energy Star Portfolio Manager, Aug 2019 Technical Reference, Figure 3
	QC	74.2		
	ON	74.9		2019 EPL Enwave Study (EPL, 2020)
Hot Water	AB	252,941.0	gCO2e/MWh thermal	Gas factors from Canada's Greenhouse Gas Inventory 1990-2017 (NRCan, 2019). Assumed 74% plant efficiency.
	BC	70,000.0		2018 City of Vancouver report on SEFC NEU 2019 customer rates
Chilled Water	ON	22.3	gCO2e/ton-h	2019 EPL Enwave Study (EPL, 2020), NIR 2019; incl. distribution losses
Thermal Heating/ Cooling	BC	78.0	gCO2e/ekWh thermal	FortisBC Alternative Energy Services (FAES)

11. Glossary of Terms

Base Year	the earliest year selected for inclusion in reporting for comparative purposes, as per Section 5
Effective GLA	gross leasable area, prorated for the period of ownership in the reporting year and the equity share of the owner for whom emissions are being reported.
WTE	waste to energy, as described in Section 6
kWh	kilowatt-hours of electricity
ekWh	equivalent kilowatt-hours (all energy types)
$ekWh/ft^2$	equivalent kilowatt-hours per square foot of Effective GLA
GHG	greenhouse gases, for the purposes of this report: CO_2, CH_4, N_{20}
CO_2e	carbon dioxide equivalent
gCO_2e	grams of carbon dioxide equivalent
tCO_2e	metric tons of carbon dioxide equivalent
tCO_2e /1,000ft^2	metric tons of carbon dioxide equivalent per 1,000 square feet of Effective GLA

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[i] The GHG Protocol – A Corporate Accounting and Reporting Standard (World Resources Institute, 2004)

[ii] Whose Carbon Is It? GHG Emissions and Commercial Real Estate (Real Property Association of Canada, 2010)

[iii] Base year recalculation methodologies for structural changes - Appendix E to the GHG Protocol Corporate Accounting and Reporting Standard – Revised Edition (World Resources Institute, 2005)

[iv] GHG Protocol Scope 2 Guidance – An amendment to the GHG Protocol Corporate Standard (World Resources Institute, 2015)

[v] Green-e Energy Summary of WRI Scope 2 Guidance (Centre for Resource Solutions, 2015)

[vi] As per the GHG Protocol Scope 2 Guidance, where available, 'Residual Mix Emission Rates' should be applied to electricity not purchased via contractual instruments (e.g. RECs) to avoid double counting of renewable energy attributes. Residual Mix factors are not published for Canada. As such, the provincial factors have been used in place of Residual Mix factors for the purposes of this report.

[vii] Consistent with the method used by BentallGreenOak for gross-up calculations with respect to electricity costs