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## 1. Background

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

Energy Profiles Limited (EPL), in concert with Bentall Kennedy, 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<sup>i</sup>, 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 Bentall Kennedy on behalf of their clients for the 2017 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 Bentall Kennedy’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.

### Bentall Kennedy Reporting

The operational control approach has been selected for the purposes of reporting Bentall Kennedy’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 Bentall Kennedy or their agents are responsible for managing utility consumption. In cases where a third-party is hired by Bentall Kennedy to manage a property on their behalf, the third-party property manager is considered to be an agent of Bentall Kennedy.

### Bentall Kennedy Client Reporting

When reporting emissions for a specific Bentall Kennedy 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 Bentall Kennedy 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 Bentall Kennedy or the property owner are defined to be within the operational control of Bentall Kennedy since Bentall Kennedy has the authority to introduce operating policies as they relate to these accounts. Utility accounts paid directly by the tenant are outside of Bentall Kennedy'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, Bentall Kennedy 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**

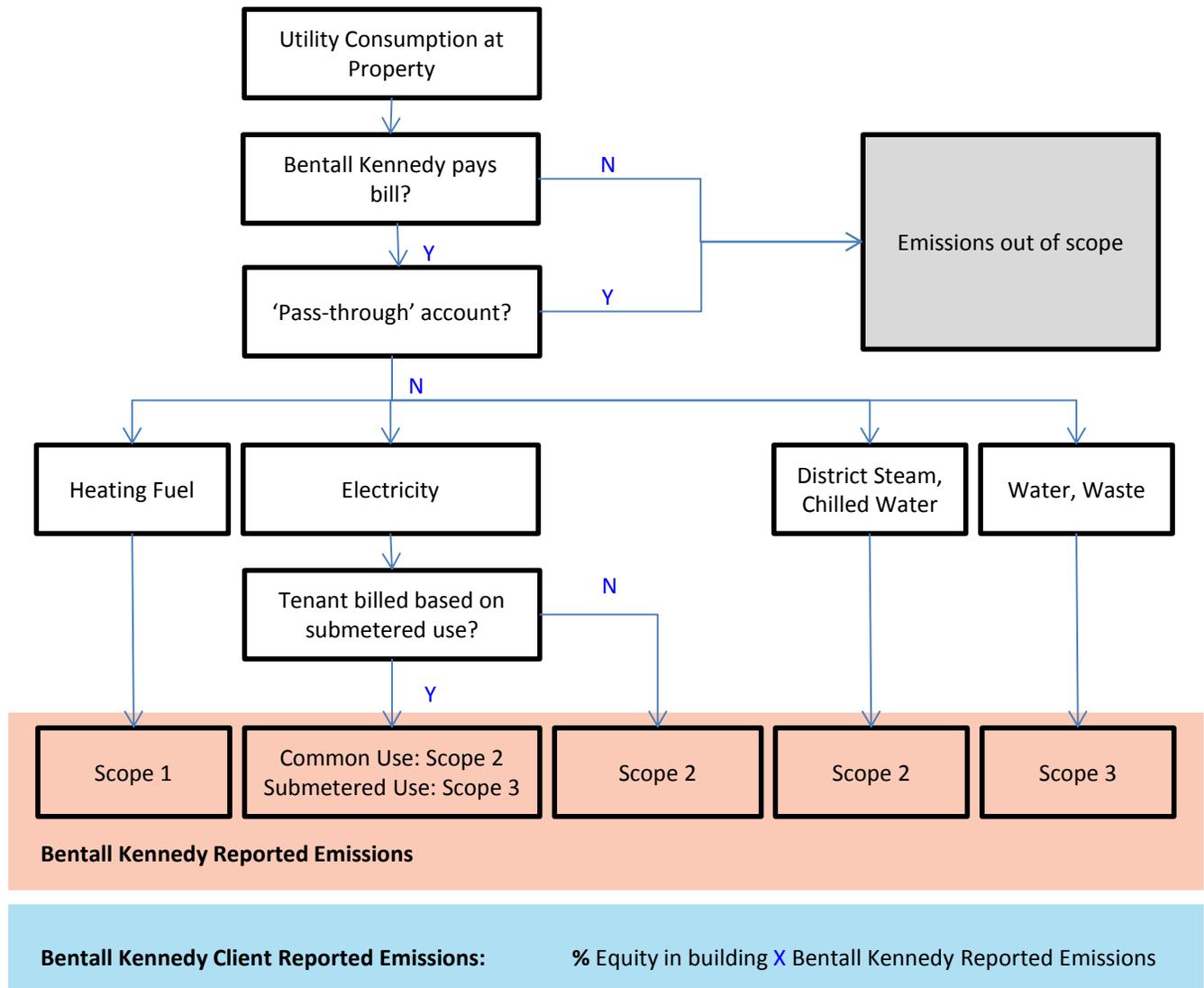
Submetered energy use billed to tenants by Bentall Kennedy is outside of the organizational boundary of Bentall Kennedy and the building owner, as recommended by REALpac<sup>ii</sup>:

*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.

Emissions Scope Decision Tree



## 5. Comparison to Historical Years

For comparative purposes, Bentall Kennedy reports GHG emissions on a five-year-rolling basis. 2013 is the Base Year for the 2017 reporting year, and energy and emissions are trended from 2013-2017. 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 Bentall Kennedy 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'<sup>iii</sup> approach, meaning that buildings only owned for a portion of the reporting year (2017) 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 2017.

### 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 2017 NIR, used in the preparation of this emission report, contains annual electricity emission factors reflecting the electricity generation mix in each year from 2000-2015. Emissions could be calculated in two ways:

Method 1: Using the 2017 NIR annual emission factors for the corresponding year for each year prior to 2015, and the 2015 emission factors to report 2015-2017 emissions

Method 2: Using the 2015 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 Bentall Kennedy and their clients.

For Bentall Kennedy reporting, Method 2 has been applied in order to allow for a clear assessment of changes in emissions influenced by Bentall Kennedy. 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 2014 values from eGRID2014v2, published in 2017, are used for this report. The 2014 emission factors are applied across all years.

## 6. Treatment of Waste

Bentall Kennedy began reporting emissions generated from waste in January 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 Bentall Kennedy 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<sup>iv</sup>, 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 Bentall Kennedy 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 Bentall Kennedy'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 and 2017 and accounted for in the 2017 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<sup>v</sup>. RECs purchased for Bentall Kennedy 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 regional emission factor.<sup>vi</sup>
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 CO2 equivalent' (tCO2e) and are not related to electricity purchased or consumed at a property. Carbon Offsets are purchased for some properties in the Bentall Kennedy 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 Bentall Kennedy-paid utility accounts are known to exist, consumption is estimated based on the average 2014 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 Bentall Kennedy 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. 2017 vs. 2016, for properties managed for the duration of 2016-2017
2. 2017 vs. 2013, for properties managed for the duration of 2013-2017

In other words, properties acquired since 2016 and 2013, 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

2013 and 2016 energy and emissions are normalized to reflect 2017 weather conditions.

To do so, linear regression models are developed for 2013 and 2016 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 2013 and 2016 models are applied to 2017 weather data to calculate, in effect, what consumption in historical years *would have been* had they experienced 2017 weather. The difference between the actual historical year consumption, and the consumption modeled using 2017 weather provides a reasonable estimate of the impact of changes in weather on energy and emissions.

### Normalization for Occupancy

2013 and 2016 energy and emissions are normalized to reflect 2017 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 Bentall Kennedy's accounting system for each property for 2013 through 2017. 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<sup>2</sup>/year<sup>vii</sup> 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 2017 vs. 2013 and 2016, 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 Bentall Kennedy does not influence this energy use. Note that data centres are only removed from the analysis where Bentall Kennedy has access to submeter data for the full reporting period (2013 - 2017 or 2016-2017, 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

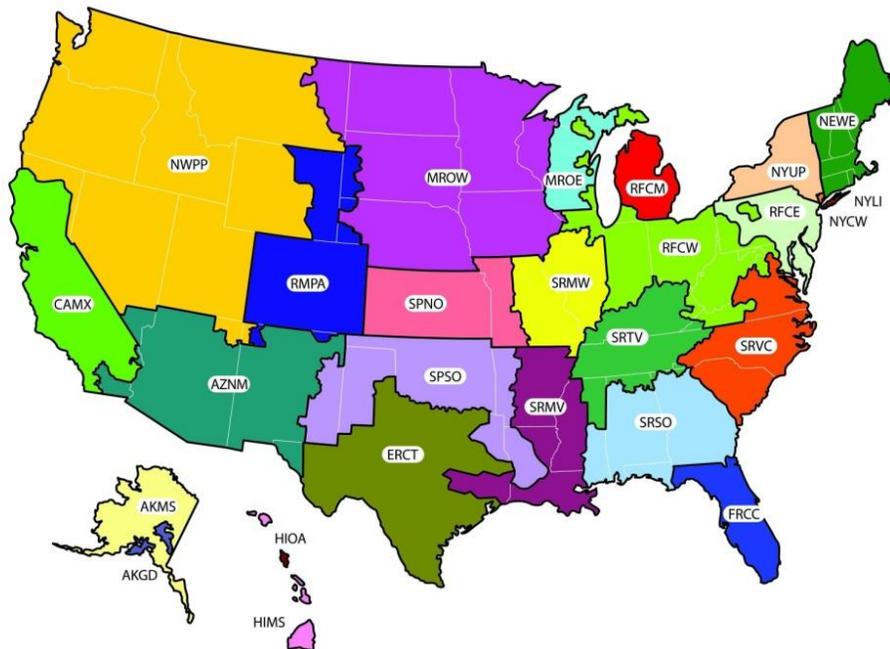
Emissions were calculated using emission factors from publicly available sources wherever possible. The following sections detail the emission factors used for Canada and the US along with the source for each factor.

## 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 2014 values from eGRID2014v2, published in 2017.

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

EPA eGRID Subregions



The following table provides the source for each emission factor used.

## Emission Factors and Sources - US

### Electricity

eGRID Subregion	Emission Factor (gCO <sub>2</sub> /kWh)	eGRID Subregion	Emission Factor (gCO <sub>2</sub> /kWh)
AKGD	421.7	NYLI	546.3
AKMS	309.9	NYUP	166.8
AZNM	399.1	RFCE	378.5
CAMX	258.8	RFCM	699.7
ERCT	520.7	RFCW	630.9
FRCC	490.2	RMPA	793.5
HIMS	429.8	SPNO	719.6
HIOA	676.0	SPSO	673.5
MROE	760.5	SRMV	465.9
MROW	624.0	SRMW	810.0
NEWE	261.6	SRSO	522.0
NWPP	414.3	SRTV	610.3
NYCW	302.5	SRVC	391.4

Source: EPA eGRID2014v2

### Water

eGRID Subregion	Emission Factor (gCO <sub>2</sub> /m <sup>3</sup> )	eGRID Subregion	Emission Factor (gCO <sub>2</sub> /m <sup>3</sup> )
AKGD	538.1	NYLI	697.0
AKMS	395.4	NYUP	212.8
AZNM	509.3	RFCE	483.0
CAMX	330.2	RFCM	892.8
ERCT	664.5	RFCW	805.0
FRCC	625.5	RMPA	1,012.5
HIMS	548.4	SPNO	918.2
HIOA	862.6	SPSO	859.4
MROE	970.3	SRMV	594.5
MROW	796.2	SRMW	1,033.6
NEWE	333.8	SRSO	666.0
NWPP	528.7	SRTV	778.7
NYCW	386.0	SRVC	499.4

Source: Maas, Carol. Greenhouse Gas and Energy Co-Benefits of Water Conservation. POLIS Project on Ecological Governance, University of Victoria, March 2009. Electricity factors from EPA eGRID2014,

### Other Utility Types

Utility Type	Emission Factor (gCO <sub>2</sub> /unit)	Units	Source
Natural Gas	1,934.2	cubic meters	EPA Clean Energy Department.
Trash	1,667.3	kilograms	US NIR 2016 Annex 3.14.
District Cooling - NWPP	414.3	ton-hours	EPA eGRID2014v2 (published 2016) - assumes 1 kWh/tonh
District Steam	73.2	pounds	Assumes a natural gas plant with 75% system efficiency.

## Canada

Provincial emission factors are published by Environment Canada. The factors used are 2015 values from Canada's Greenhouse Gas Inventory 2000 – 2015, published in 2017. The following table provides the source for each emission factor used.

Emission Factors and Sources - Canada

Utility Type	Province	Factor	Units	Source
Electricity	AB	790.0	gCO <sub>2</sub> e/kWh	2015 values from Canada's Greenhouse Gas Inventory 1990–2015.
	BC	12.9		
	MB	3.4		
	NB	280.0		
	NL	32.0		
	NS	600.0		
	ON	40.0		
	PE	20.0		
	QC	1.2		
	SK	660.0		
Natural Gas	AB	1,939.4	gCO <sub>2</sub> e/m <sup>3</sup>	Canada's Greenhouse Gas Inventory 1990–2015.
	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	1,008.0	gCO <sub>2</sub> e/m <sup>3</sup>	Maas, Carol. Greenhouse Gas and Energy Co-Benefits of Water Conservation. POLIS Project on Ecological Governance, University of Victoria, March 2009.  Canada's Greenhouse Gas Inventory 1990–2015.
	BC	16.5		
	MB	4.3		
	NB	357.3		
	NL	40.8		
	NS	765.6		
	ON	51.0		
	PE	25.5		
	QC	1.5		
	SK	842.2		
Trash	AB	2,210.8	gCO <sub>2</sub> e/kg	Canada's Greenhouse Gas Inventory 1990–2015. Assumes 200 years of waste emissions.
	BC	1,821.7		
	MB	1,987.0		
	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	1,890.7		
Steam	BC	73.3	gCO <sub>2</sub> e/lb	Canada's Greenhouse Gas Inventory 1990–2015. Assumes 75% plant efficiency.  2017 EPL Study for Enwave
	QC	71.9		
	ON	73.8		
Hot Water	AB	253428.7	gCO <sub>2</sub> e/MWh thermal	Gas factors from Canada's Greenhouse Gas Inventory 1990–2015. Assumes 74% plant efficiency.  2016 City of Vancouver report on SEFC NEU 2017 customer rates, does not apply to all of BC.
	BC	66000		
Chilled Water	ON	41.3	tCO <sub>2</sub> e/ton-h	2017 EPL Study for Enwave.

## 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 <sup>2</sup>	equivalent kilowatt-hours per square foot of Effective GLA
GHG	greenhouse gases, for the purposes of this report: CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O
CO <sub>2</sub> e	carbon dioxide equivalent
gCO <sub>2</sub> e	grams of carbon dioxide equivalent
tCO <sub>2</sub> e	metric tons of carbon dioxide equivalent
tCO <sub>2</sub> e /1,000ft <sup>2</sup>	metric tons of carbon dioxide equivalent per 1,000 square feet of Effective GLA

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<sup>i</sup> The GHG Protocol – A Corporate Accounting and Reporting Standard (World Resources Institute, 2004)

<sup>ii</sup> Whose Carbon Is It? GHG Emissions and Commercial Real Estate (Real Property Association of Canada, 2010)

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

<sup>iv</sup> GHG Protocol Scope 2 Guidance – An amendment to the GHG Protocol Corporate Standard (World Resources Institute, 2015)

<sup>v</sup> Green-e Energy Summary of WRI Scope 2 Guidance (Centre for Resource Solutions, 2015)

<sup>vi</sup> 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. Green-e has published Residual Mix Emission Rates for North America, however these factors correspond to NERC Regions which are not consistent the more regionally specific and widely accepted eGRID Regions (US) and Provincial factors (Canada). As such, the eGRID factors (US) and Provincial factors (Canada) have been used in place of Residual Mix factors for the purposes of this report.

<sup>vii</sup> Consistent with the method used by Bentall Kennedy for gross-up calculations with respect to electricity costs