2022 SUN LIFE FINANCIAL GHG REPORTING METHODOLOGY

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1.0 Background

Brightly Software Canada (Brightly) tracks utility consumption and greenhouse gas (GHG) emissions for Sun Life Financial's (Sun Life's) global portfolio, including real estate investment properties and corporate real estate (operations), capturing corporate offices, data centers, and business travel.

Each year, Brightly prepares an energy and emissions summary report, summarizing progress made in reducing energy / emissions across the overall property portfolio.

The goal of this exercise is to understand the energy and GHG emissions trend for Sun Life's global portfolio, following the guidance of the GHG Protocol¹. Sun Life includes four categories of scope 3 emissions in its GHG emissions reporting. These emissions have been calculated in accordance with the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

This document details the methodology used to derive the GHG emissions reported for the Sun Life portfolio for the 2022 emission reporting year (January 1, 2022 – December 31, 2022).

¹The GHG Protocol – A Corporate Accounting and Reporting Standard, Revised Edition (World Resources Institute, 2004)



2.0 Organizational Boundaries

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

2.1 Real Estate Investment Properties

Sun Life reports energy and emissions using the <u>financial control</u> approach, where Sun Life's financial control is determined individually at the property level. The GHG Protocol defines financial control as having the ability to direct the financial and operating policies of the operation, with a view to gaining economic benefits from its activities.

When properties are jointly owned by Sun Life and another partner, energy and emissions are prorated for Sun Life's equity share in the properties, in accordance with GHG Protocol guidance in Chapter 3, Table 1. Under this approach, in cases where Sun Life has partial ownership of a property, emissions are reported only for the portion of the property/operation owned by Sun Life.

2.1.1 Determining Responsibility for Emissions

Per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard² for reporting emissions from leased assets, the responsibility for emissions associated with leased assets depends on the economic substance of the lease (capital or operating) and the choice of organizational boundary approach (financial control, equity share, or operational control). Under the financial control approach, an operating lease is defined as follows:

Lessor has ownership and financial control, therefore emissions associated with fuel combustion are scope 1 and use of purchased electricity are scope 2.

Following the GHG Protocol description above, Sun Life and its agents, as the lessor of commercial, residential, and industrial spaces, have financial control at directly financed real estate investment properties. Therefore, all fuel and energy-related emissions will be reported under Scope 1 and 2, including where the tenant pays for utilities via submetering.

2.1.2 Submetered Consumption

At some commercial properties, tenants are charged back for utility consumption based on submeters. Where submetered tenant data is available, tenant energy consumption is reported separately from landlord/common-area usage in energy and emissions datasets. Emissions generated from submetered tenant energy consumption are reported under Scope 2.

2.2 Corporate Real Estate (CRE) Operations

Sun Life and its affiliates hold operating leases for corporate offices and financial centres. These CRE operating leases are reported using the financial control approach. Per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard, operating leases should be accounted for based on the following boundary under the financial control approach:

Lessee does not have ownership or financial control, therefore emissions associated with fuel combustion and use of purchased electricity are scope 3 (Upstream leased assets).

² Corporate Value Chain (Scope 3) Accounting and Reporting Standard: Supplement to the GHG Protocol Corporate Accounting and Reporting Standard (World Resources Institute, 2011)



2.2.1 CRE Spaces in Properties not owned by Sun Life

By the definition outlined in Section 2.2 above, for corporate offices where Sun Life does not have ownership of the facility, Sun Life is deemed not to have financial control. Therefore, fuel and energy-related emissions associated with these leased spaces will be reported under Scope 3 (upstream leased assets).

At leased corporate offices where whole-building utility bills are paid by the landlord, emissions are prorated for Sun Life's share of the building's total Gross Leasable Area (GLA) as per the Operational Boundaries discussed in Section 3.2.

For Corporate Real Estate leases where Sun Life is subleasing space to another tenant, the subtenant's emissions are not included.

2.2.2 CRE Spaces in Real Estate Investment Properties

In some cases, Sun Life has CRE leased spaces in Sun Life real estate investment properties, i.e., buildings that are both owned (fully or partially) and occupied (fully or partially) by Sun Life. In these cases, emissions are included in both the real estate investment and CRE emissions data. Fuel and energy for these spaces are categorized as scope 1 and 2 for real estate investment property emissions (Sun Life's financial control) and scope 3 for from the perspective of CRE operations as the lessee (upstream leased assets).

Per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard:

...a company's scope 3 inventory does not include any emissions already accounted for as scope 1 or scope 2 by the same company.

When real estate investment and CRE energy/emissions are consolidated for global reporting, double counting is avoided as follows:

Where emissions are Scope 1/2 from a real estate investment perspective, but Scope 3 from a CRE operations/tenant perspective, they are reported as Scope 1/2 in consolidated global GHG totals.

2.2.3 Global Data Centres

Sun Life operates data centres inside some leased spaces (part of CRE Operations). Emissions related to electricity required to operate these data centres is included in Scope 3.

In some cases, Sun Life operates data centres at facilities they own as Real Estate Investment properties. In this case, these data centre emissions are included within the Scope 2 emissions of the Real Estate Investment portfolio, and double counting is avoided per section 2.2.2.

2.3 Business travel

Emissions resulting from Sun Life's corporate air, rail, rental car, and employee-owned vehicle travel are reported using the distance-based³ method, as per the GHG Protocol, whereby the distance traveled is multiplied by the appropriate emission factor for the mode of transportation to calculate Scope 3 emissions.

³ Technical Guidance for Calculating Scope 3 Emissions – Supplement to the Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Word Resources Institute, 2013)



Where business travel expenses are available without associated travel distances, the GHG Protocol recommends the spend-based method, where travel expenses are multiplied by an appropriate emission factor expressed in terms of GHG emissions per unit of currency.

2.4 Changes from 2021 Reporting Year

In Sun Life's historical GHG reporting, responsibility for emissions was assessed based on which entity was responsible for paying utility bills. This interpretation of financial control was based on guidance from REALPAC published in 2010 for emissions reporting in the real estate sector.

Under this interpretation of financial control, Sun Life reported scope 1 and 2 emissions for heating fuel and purchased energy wherever Sun Life paid the utility bills, either as a landlord for real estate investment properties, or as a tenant at leased offices and financial centres.

Sun Life reported fuel and energy-related emissions as scope 3 when another entity paid the utility bills, for example when a tenant paid for submetered electricity use at a Sun Life real estate investment property, or when Sun Life paid for its own utilities as a tenant at a CRE office.

The GHG Protocol's core guidance does not make reference to which entity pays utility costs as a mechanism to assess financial control. As of 2022 reporting, Sun Life no longer applies this interpretation of financial control. Responsibility for emissions is assessed as described in sections 2.1 and 2.2, and emissions for prior periods have been restated to reflect this change as well.

In previous years, normalized year-over-year emissions comparisons were reported for Real Estate Investment properties and major CRE properties as part of Sun Life's tracking of its GHG emissions reduction target. For the 2022 emissions reporting year, GHG emissions reductions are not calculated on a normalized basis.

2.5 Future Considerations

Technical Guidance for the Accounting and Reporting of Financed Emissions for Real Estate Operations is in development by the Partnership for Carbon Accounting Financials (PCAF) for financial institutions investing in Commercial Real Estate, which may result in revision of Sun Life's organizational boundary approach in future years.

3.0 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, as well as for business travel. Scope 1, 2 and 3 emissions are reported, as follows:

3.1 Real Estate Investment Properties

Scope 1 emissions are direct emissions that originate at properties. These include natural gas and fuel oil consumption for space heating, water heating and, in some cases, cooking.

Scope 2 emissions are indirect emissions from purchased electricity, steam, and chilled water that is consumed at properties, but generated elsewhere.

Scope 3 emissions are reported for water consumption (category 4: upstream transportation and distribution) and waste generation (category 5: waste generated in operations) where data is available at properties.



3.2 Corporate Real Estate (CRE) Operations

Scope 3 emissions (Category 8: Upstream Leased Assets) are reported for heating fuel, purchased energy and water consumed at corporate real estate spaces operated by Sun Life. The landlord is deemed to have financial control over these activities. Landlord-paid whole-building utilities are pro-rated for Sun Life's share of the building's total gross leasable area (GLA).

Per section 2.2.2, Sun Life operates some corporate offices within properties it owns as Real Estate Investments. In these cases, landlord-controlled utilities are in Sun Life's financial control. These emissions are Scope 3 from the perspective of CRE Operations and Scope 1/2 from the perspective of Real Estate Investments. Therefore, in consolidated global GHG totals, these emissions are excluded from the CRE Operations totals and are included only in the Real Estate Investment totals.

3.2.1 Global Data Centres

Sun Life operates data centres inside some leased offices (part of CRE Operations).

Scope 2 emissions are reported for purchased electricity to operate data centres located at facilities owned by Sun Life. These emissions are a subset of emissions reported for Real Estate Investments (section 3.1). Double-counting is avoided per section 2.2.2.

Scope 3 emissions (Category 8: Upstream Leased Assets) are reported for purchased electricity to operate these data centres. These emissions are a subset of emissions reported for Corporate Real Estate Operations (Section 3.2).

3.3 Business travel

Scope 3 emissions from the transportation of employees for business related activities in vehicles owned or operated by third parties are reported (classified as Category 6: Business Travel, per the GHG Protocol).

3.4 Inventory Exclusions

Of the relevant emissions applicable to Sun Life, the following sources are not included in the 2022 reporting year:

Fugitive emissions from refrigerants: Information regarding chiller specifications and refrigerant types has not been compiled. Fugitive emissions from refrigerants are anticipated to be of low materiality.

Diesel fuel for back-up generation: Diesel fuel use for back-up generation is not available. Emissions resulting from back-up generation are anticipated to be of low materiality.

Upstream scope 3 emissions: Upstream scope 3 emissions from purchased goods and services, capital goods, fuel- and energy-related activities and employee commuting are outside of the scope of this report as reliable data cannot currently be obtained.

Downstream scope 3 emissions: Downstream scope 3 emissions from transportation and distribution, processing, use, and end-of-life treatment of sold products, franchises, and non-real-estate investments are outside of the scope of this report as reliable data cannot currently be obtained.

DentaQuest corporate offices: Sun Life acquired DentaQuest in mid-2022. Emissions from utility consumption in DentaQuest offices are excluded for the 2022 reporting cycle as utility data cannot be obtained.



4.0 Application of Boundaries

The following table summarizes the application of the Operational and Organizational Boundaries detailed in Sections 2 and 3 above.

Reporting Boundaries by Portfolio Segment

Portfolio Segment	Scope 1	Scope 2	Scope 3
Real Estate Investments			
Heating fuel			
Purchased electricity, steam, and chilled water			
Water			
Waste			
Corporate Real Estate (Leased Offices) All fuel and energy Water			
Business Travel			
Air travel			
Rail travel			
Car travel (rental, employee-owned)			

5.0 Comparison to Historical Years

5.1 Base Year Selection

For comparative purposes, Sun Life reports GHG emissions relative to a 2019 base year. This method has been selected to allow for a meaningful presentation of historical performance, while ensuring that comparisons are still relevant given the significant turnover in properties in the portfolio over time.

5.2 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.
- 2. Spaces owned / occupied in past years, but previously excluded from scope.
- 3. Travel occurring in past years, but previously excluded from scope.
- 4. Corrections to historical data based on availability of more accurate information.
- 5. Changes to the 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' approach, meaning that buildings only owned for a portion of the reporting year (2022) 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 2022.

5.2.1 Changes from 2021 Reporting Year

In previous reporting years, **lease changes** for Sun Life corporate offices were treated similarly to property acquisitions and divestments. When Sun Life began a lease for a new office space, a base year recalculation was performed to include this office in all historical years. Likewise, when a lease ended, a base year recalculation was performed to remove this lease from historical years.

To better reflect the principles of the GHG Protocol and its guidance on recalculating base year emissions, this policy has been updated such that only office additions / removals related to organizational structure changes (when Sun Life acquires a company or divests a portion of the business) will be treated with a baseline adjustment. Otherwise, leases and their corresponding emissions will be reported as-is for the period in which Sun Life occupies the lease, and only for that period.

6.0 Treatment of Waste

Sun Life reports emissions from waste generated at BentallGreenOak managed real estate investment office properties, and some other real estate investment properties. Emissions are reported for waste that is sent to landfill only. No emissions are reported for recycled or composted waste.

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

To conservatively estimate emissions from waste 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 waste to WTE facilities:

Landfilled waste = waste weight produced by site - 0.9 * waste weight sent to WTE facility

Emissions = landfilled waste * waste emission factor

Emissions produced from power production at WTE facilities are not included in this report on the basis that the waste is used as a fuel source, as opposed to being wasted. Similarly, 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.

⁴ Base year recalculation methodologies for structural changes - Appendix E to the GHG Protocol Corporate Accounting and Reporting Standard – Revised Edition (World Resources Institute, 2005)



7.0 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 real estate investment and CRE properties and are reported using the Market-based Approach, as discussed below.

7.1 Market-based Approach vs. Location-based Approach

In January 2015, the World Resource Institute published the GHG Protocol Scope 2 Guidance⁵, 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 <u>location-based approach</u> 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 <u>market-based approach</u> reflects the emissions from electricity that Sun Life has chosen to purchase via contractual instruments. This approach does account for REC purchases. Please note: since Sun Life reports landlord-controlled electricity use under scope 3 for their corporate office leases, some RECs purchased by Sun Life for CRE operations consumption are applied to scope 3 emissions.

Considering this guidance, both location-based and market-based emissions are reported for Sun Life's portfolio, per the Base Year Recalculation Policy detailed in Section 5.2.

7.2 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.

All RECs reported are Green-e certified or equivalent and specify 100% wind or solar power. Green-e has stated publicly that their certified RECs meet the Quality Criteria requirements⁶.

7.3 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 is 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.

⁶ Green-e Energy Summary of WRI Scope 2 Guidance (Centre for Resource Solutions, 2015)



⁵GHG Protocol Scope 2 Guidance – An amendment to the GHG Protocol Corporate Standard (World Resources Institute, 2015)

7.4 Market-based emissions calculations

Market-based emissions are calculated as follows, in accordance with 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% renewable generation sources.
- 2. For all other electricity consumed at a property, emissions are calculated using the appropriate "residual mix" emission factors, where available⁷. 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).

8.0 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. Offsets are subtracted from the total location-based and market-based emissions to report 'Net market-based' emissions.

9.0 Data Sources and Quality

The reported emissions data for each Portfolio Segment falls into three categories with respect to data quality:

Validated: Utility data entered directly from utility bills or meter readings by Brightly's Data Integrity

Analysts. Itemized flight data provided from 3rd party providers.

Not validated: Utility data provided by a third party (e.g. property manager) in spreadsheet format. Non-

itemized travel data provided by Sun Life staff and 3rd party providers. Waste data provided in spreadsheet format or entered into Brightly's utility data management

platform directly by building management or waste haulers.

Estimated: Consumption estimated based on a linear regression of historical consumption vs.

weather data or using the portfolio average consumption intensity.

Best efforts are made to capture actual, validated source data for all emission calculations. The following sections detail the data sources and quality for each Portfolio Segment.

9.1 Real Estate Investment Properties

Utility consumption data is obtained directly from monthly utility bills and entered in a central database by Brightly's Data Integrity Analysts. Manual and automatic validation procedures are in place to identify data entry issues, billing errors and consumption anomalies. Where issues are detected, Brightly follows up with

⁷ 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.



the appropriate parties to ensure accuracy of the data for reporting purposes. 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.

Adjustments for pandemic:

Estimated bills during the pandemic period (March 2020 forward) are adjusted based on the actual vs. estimated values for the past three actual bills available to consider reduced consumption during the pandemic.

9.2 CRE Operations Properties

Sun Life-paid accounts at stand-alone financial centers

Utility bills were provided for a subset of non-Investment properties where Sun Life pays utilities directly, and data was collected/entered in the same way as real estate investment properties.

Landlord paid accounts at multi-tenant buildings

Sun Life asked third-party property managers to enter consumption data from utility bills and submeters into a spreadsheet template. Data was reviewed by Brightly's Data Integrity Analysts and compared to other leased offices to identify atypical energy use intensities. Where anomalous data was identified, Brightly followed up with Sun Life to check consumption amounts.

Multiple attempts were made by Sun Life to obtain utility data from third-party managers. In cases where incomplete data was provided for a given utility account, the missing data was estimated by Brightly based on the data available. In cases where no data was provided for a given account, consumption was estimated by Brightly based on the average 2022 utility use intensity of properties of the corresponding asset classes tracked by Brightly.

9.3 Business travel

Distances traveled were provided by Sun Life in aggregate for each Business Unit and mode of transportation.

Where travel data was not available, emissions were estimated. Missing 2019 data was estimated based on 2018, if available. Missing 2020, 2021, and 2022 data was estimated based on data from the last year for which data was available, multiplied by a "Pandemic Adjustment Factor". The Pandemic Adjustment Factor was calculated for each year and mode of transportation based on the difference in distance travelled in other business units in the year requiring an estimate versus the most recent year with available data respectively for each travel region.

In some instances, reimbursed travel costs were available without associated travel distances. To calculate emissions from travel cost data, an estimated cost per km travelled was determined for each mode of transportation. These cost per km figures were calculated based on available 2022 travel data from Sun Life and its affiliate companies where both distances and expenses were reported. Using the cost per km averages, a spend-based emission factor was calculated from the distance-based emission factors. The distance-based and calculated spend-based emission factors are summarized in section 11.4.



The following table outlines the scope of data included in 2022 business travel reporting. Categories in green indicate travel distance data received for the 2022 reporting year. Orange indicates travel cost data received for the 2022 reporting year. Travel data which was estimated for the 2022 reporting year is shown in light red. For estimated data, we have indicated the most recent year data was received for that business unit and mode of transportation.

<u>Travel Data Included in 2022 Reporting by Business Unit and Mode of Transportation</u>

Business Unit	Business Segment	Air	Rail	Car Rental	Employee Car
Global MFS	Global MFS				
BentallGreenOak Corporate Offices – Asia	SLC Management				
BentallGreenOak Corporate Offices – Europe	SLC Management				
BentallGreenOak Corporate Offices – North America	SLC Management				
Crescent Capital	SLC Management				
InfraRed	SLC Management			2021	
Ryan Labs	SLC Management	2018		2018	
Asia Service Center India	SLF Asia	2021		2016	
Asia Service Center Philippines	SLF Asia	2021		2017	
Bonifacio Global City Philippines	SLF Asia	2020			
Hong Kong	SLF Asia				
Indonesia	SLF Asia	2018			
Malaysia	SLF Asia				
Vietnam	SLF Asia				
Sun Life Canada, US, and Bermuda Offices and Financial Centres	SLF North America				
Ireland	SLF UK and Ireland				
Matrix House, Basingstoke, UK	SLF UK and Ireland	2019			



10.0 Sun Life Operations Performance vs. Target

10.1 GHG Target Overview

In November of 2021, Sun Life Financial announced renewed GHG targets that are in line with the latest science to ensure the company is doing its part to limit global warming. These targets include a 50% reduction of absolute GHG emissions in its operations by 2030 relative to 2019 while also committing to reaching net zero by 2050. The target scope includes emissions resulting from global corporate offices and data centres as well as from business travel, inclusive of majority-owned Sun Life affiliate companies. DentaQuest corporate offices are excluded for the 2022 reporting cycle.

10.2 Summary of Target Setting and Reporting Methodology

The following table summarizes Sun Life's target setting and reporting methodology.

Sun Life Target Setting and Reporting Methodology Summary

GHG Protocol: Steps in setting a GHG Target	Sun Life Target Methodology	Alignment with GHG Protocol
1. Obtain senior management commitment	Commitment from CEO	Yes
2. Decide on the target type	Absolute target	Yes
3. Decide on the target boundary	Operations Included:	Yes
	Corporate offices	
	Data centres	
	Business travel	
	Activities Included:	
	Energy	
	Water	
	Travel distance	
4. Choose the base year approach	Fixed base year (2019)	Yes
5. Define the target completion date	Long term: 2030	Yes
6. Define the length of the target commitment	Single year (2030)	Yes
period		
7. Decide on the use of offsets or credits	No use of RECs (i.e. location-based	Yes
	approach), no use of Carbon Offsets.	
8. Establish a target double counting policy	Leased corporate offices in properties	Yes
	owned by Sun Life as real estate	
	investments are not double counted in Sun	
	Life Global Reporting as per Section 2.2.2.	
9. Decide on the target level	50% by 2030 vs. 2019	Yes
10. Track and report progress	Annual emissions from corporate offices,	Yes
	data centres, and business travel	



11.0 Emission Factors

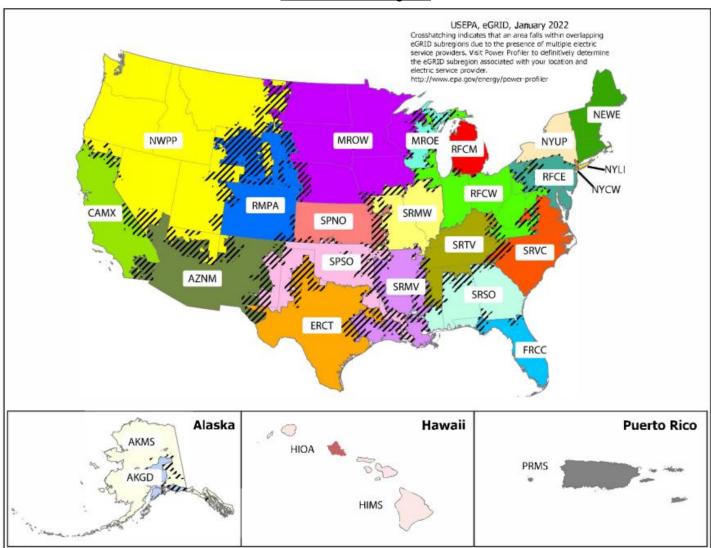
Emissions were calculated using emission factors from publicly available sources wherever possible. The following sections detail the emission factors used for reporting along with the source for each factor.

11.1 United States

11.1.1 Electricity

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 2022 reporting are the eGRID2020 factors published in 2022. The factors used for 2019-2021 emissions data are the eGRID2016, 2018, and 2019 factors published in 2018, 2020, and 2021 respectively. Residual mix data from eGRID is used for market-based reporting.

EPA eGRID Subregions



Source: eGRID Technical Guide with Year 2020 Data, Appendix B (United States Environmental Protection Agency, 2022)



The following table provides the electricity emission factors used for properties in the United States.

<u>Electricity Emission Factors - US</u>

eGRID	·	cation-based	Electricity M	
Region	Emission Facto	r (gCO ₂ e/kWh)	Emission Facto	r (gCO ₂ e/kWh)
	2019	2020-2022	2019	2020-2022
AKGD	508.4	500.9	513.7	505.0
AKMS	250.1	243.2	250.1	243.2
AZNM	434.0	385.6	435.2	386.3
CAMX	206.5	233.8	210.3	238.8
ERCT	395.7	372.9	422.4	409.7
FRCC	392.1	380.2	395.0	382.0
HIMS	542.3	522.1	542.3	522.1
HIOA	774.5	755.5	774.5	755.5
MROE	686.1	696.6	686.1	698.7
MROW	501.9	447.5	525.3	473.5
NEWE	224.0	241.8	224.9	241.9
NWPP	326.5	273.9	335.0	281.2
NYCW	251.8	288.5	251.8	288.5
NYLI	552.9	550.1	552.9	550.1
NYUP	105.7	106.4	105.7	106.4
PRMS	700.0	729.6	707.7	729.7
RFCE	316.8	297.3	316.9	297.3
RFCM	542.9	526.1	543.2	527.0
RFCW	487.3	449.4	487.5	450.2
RMPA	567.2	522.4	582.0	529.0
SPNO	488.8	435.8	524.2	479.8
SPSO	456.6	424.5	540.5	492.3
SRMV	367.2	336.8	368.0	338.0
SRMW	723.9	676.5	727.5	683.6
SRSO	441.8	392.0	444.8	394.5
SRTV	433.4	380.7	433.5	380.8
SRVC	308.1	284.1	309.4	285.9



11.1.2 Water

Emission factors for water are also regionally specific since they are partially based on the electrical pumping energy used to deliver water to the properties. The emission factors applied for water are based on the eGRID electricity emission factors summarized above along with assumed energy intensities of upstream pumping and treatment of water, from Wakeel et al. (2016)⁸ and Maas (2009)⁹.

Water Emission Factors - US

eGRID	Water Emission Factor		
Region	(gCO ₂ e/m ³)		
	2019	2020-2022	
AKGD	488.1	480.8	
AKMS	240.1	233.4	
AZNM	416.7	370.2	
CAMX	1,104.8	1,250.9	
ERCT	379.9	358.0	
FRCC	376.5	365.0	
HIMS	520.6	501.3	
HIOA	743.6	725.2	
MROE	658.7	668.8	
MROW	481.8	429.6	
NEWE	215.0	232.1	
NWPP	313.5	262.9	
NYCW	241.7	276.9	
NYLI	530.8	528.1	
NYUP	101.5	102.1	
PRMS	672.0	700.4	
RFCE	304.2	285.4	
RFCM	521.2	505.0	
RFCW	467.9	431.5	
RMPA	544.6	501.5	
SPNO	469.2	418.4	
SPSO	438.4	407.5	
SRMV	352.5	323.3	
SRMW	695.0	649.4	
SRSO	424.1	376.3	
SRTV	416.1	365.4	
SRVC	295.7	272.7	

⁹ Greenhouse Gas and Energy Co-Benefits of Water Conservation (Maas, 2009)



⁸ Energy consumption for water use cycles in different countries: A review. Applied Energy 178 (Wakeel et al., 2016)

11.1.3 Heating Fuels and Steam

Emission factors applied for heating fuels and steam in the United States are summarized below. There was no year-to-year variation in the applied emission factors from 2019-2022.

Heating Fuel and Steam Emission Factors and Sources – US

Utility Type	eGRID Region	2019-2022 Emission Factor	Unit of Measure	Source
Natural Gas	All	1,931.4	gCO2e/m3	AP 42, Fifth Edition, Volume I Chapter 1.4: Natural Gas Combustion
Oil	All	2,705.4	gCO2e/L	ENERGY STAR Portfolio Manager Technical Reference: Greenhouse Gas Emissions (December 2022)
Steam	All except NYCW	79.3	gCO2e/lb	ENERGY STAR Portfolio Manager Technical Reference: Greenhouse Gas Emissions (December 2022)
	NYCW	53.6	gCO2e/lb	New York City Local Law No. 97

11.1.4 Waste

Waste emission factors reflect the methane released by the decay of organic carbon in landfilled waste.

Waste Emission Factors and Sources – US

2019-2022 Waste Emission Factor (gCO2e/kg)	Source
1,666.5	USA National Inventory Report 1990-2015 & National Inventory Report 1990-2018



11.2 Canada

Emission factors for electricity, natural gas, and oil are sourced from Environment and Climate Change Canada's *National Inventory Report*¹⁰. The National Inventory Report (NIR) is Canada's annual submission to the UN Framework Convention on Climate Change.

11.2.1 Electricity

The following table summarizes the electricity emission factors from Table A-13 of Part 3 of the 2022 NIR.

Electricity Emission Factors - Canada

Province	Electricity Emission Factor (gCO ₂ e/kWh)		
FIOVINCE	2019	2020-2022	
AB	630.0	590.0	
ВС	18.0	7.3	
MB	1.2	1.1	
NB	300.0	290.0	
NL	27.0	24.0	
NS	690.0	670.0	
NT	170.0	180.0	
ON	26.0	25.0	
PE	300.0	290.0	
QC	1.2	1.5	
SK	670.0	580.0	
YT	100.0	580.0	

¹⁰ National Inventory Report 1990-2020: Greenhouse Gas Sources and Sinks in Canada (Environment and Climate Change Canada, 2022)



11.2.2 Water

The emission factors applied for water are based on the electricity emission factors summarized above along with assumed energy intensities of upstream pumping and treatment of water from Maas (2009)¹¹.

Water Emission Factors - Canada

Province	Water Emission Factor (gCO ₂ e/m³)		
	2019	2020-2022	
AB	803.9	752.8	
ВС	23.0	9.3	
MB	1.5	1.4	
NB	382.8	370.0	
NL	34.5	30.6	
NS	880.4	854.9	
NT	216.9	229.7	
ON	33.2	31.9	
PE	382.8	370.0	
QC	1.5	1.9	
SK	854.9	740.1	
YT	127.6	127.6	

11.2.3 Natural Gas and Oil

The emission factors for natural gas provided in Annex 6 of Part 2 of the 2022 NIR differ by province and indicate changes in emissions intensity over time related to the presence of complex hydrocarbons in marketable natural gas. The emission factors used for 2022 reporting are summarized below.

Natural Gas Emission Factors - Canada

Duardinas	Natural Gas Emission Factor (gCO ₂ e/m ³)
Province	2019-2022
AB	1,973.4
ВС	1,977.4
MB	1,926.4
NB	1,932.4
NL	1,932.4
NS	1,932.4
NT	1,977.4
ON	1,932.4
PE	N/A
QC	1,937.4
SK	1,931.4
YT	1,977.4

¹¹ Greenhouse Gas and Energy Co-Benefits of Water Conservation (Maas, 2009)



The emission factor for oil from Annex 6 of the 2022 NIR is as follows:

Oil Emission Factor - Canada

Province	Oil Emission Factor (gCO ₂ e/L)
Province	2019 - 2022
All	2,762.9

11.2.4 District Energy

Where available, emission factors for district energy (including steam, hot water, and chilled water) are obtained from the supplier. Otherwise, the emission factor for Canadian Steam from ENERGY STAR Portfolio Manager's Technical Reference for Greenhouse Gas Emissions is used. The emission factors and sources for Steam are summarized below.

Steam Emission Factors and Sources - Canada

Province	Steam	Emission F	actor (gC	O ₂ e/lb)	Source
FIOVINCE	2019	2020	2021	2022	Source
All except	105.7	105.7	105.7	10E 7	ENERGY STAR Portfolio Manager Technical
BC, ON	105.7	105.7	105.7	105.7	Reference: Greenhouse Gas Emissions
ВС	89.9	87.4	90.8	90.8	2021 Creative Energy GHG Calculator for
ВС	69.9	07.4	90.6	90.8	Customers
ON	74.9	71.4	76.6	76.6	2019, 2020, and 2021 Enwave EPL Studies

Enwave Energy Corporation operates a district chilled water system in downtown Toronto which uses water from Lake Ontario to deliver cooling energy to buildings. Emission factors for this district "deep lake water cooling" system are determined annually.

Deep Lake Water Cooling Emission Factors and Sources - Canada

	Deep Lo	ake Water	Cooling E		
Province	F	actor (gC	O ₂ e/ton-h)	Source
	2019	2020	2021	2022	
ON	25.0	20.1	00 E	00 F	National Inventory Report (NIR); 2019, 2020,
ON	ON 25.0 20.1 22.5		22.5	and 2021 Enwave EPL Studies	



11.2.5 Waste

Waste emission factors reflect the methane released by the decay of organic carbon in landfilled waste. Emission factors are calculated based on province-specific data from Canada's National Inventory Report, in accordance with the Intergovernmental Panel on Climate Change's methodology¹².

Emission factors for waste are summarized below.

Landfilled Waste Emission Factors - Canada

Province	Landfilled Waste Emission Factor (gCO ₂ e/kg)					
	2019 - 2022					
AB	2,210.8					
ВС	1,821.7					
MB	1,986.8					
NB	1,758.7					
NL	1,975.3					
NS	1,467.0					
NT	1,411.1					
ON	2,055.0					
PE	1,578.5					
QC	2,100.0					
SK	1,888.8					
YT	1,177.3					
NU	1,559.5					

¹² 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 5: Waste



11.3 International

Regional and supplier-specific emission factors for electricity are retrieved from a variety of sources. International electricity and water emission factors and their sources are summarized below. Unless otherwise noted in the table of sources, water emission factors are calculated from a region's electricity factor and assumed energy intensities for water distribution from Maas (2009).

<u>Electricity and Water Emission Factors – International</u>

Carratur	D	Electric	ty Emission f	actor (gCO ₂	₂ e/kWh)	Water Emission Factor* (gCO ₂ e/m ³)			
Country	Region	2019	2020	2021	2022	2019	2020	2021	2022
Argentina		269.0	307.0	288.1	288.1	343.2	391.7	367.6	367.6
Australia	NSWC	780.0	730.0	730.0	730.0	995.3	931.5	931.5	931.5
Australia	VCTA	910.0	850.0	850.0	850.0	1,161.2	1,084.6	1,084.6	1,084.6
Bermuda	-	662.6	660.9	659.3	659.3	845.5	843.3	841.3	841.3
Brazil		75.0	61.7	129.5	129.5	95.7	78.7	165.2	165.2
Germany		331.0	210.2	328.8	328.8	422.4	268.2	419.5	419.5
United Kingdom		212.3	193.5	193.5	193.5	270.9	246.9	246.9	246.9
Hong Kong	CLPG	500.0	370.0	390.0	390.0	623.5	620.5	634.6	634.6
Hong Kong	HKEC	810.0	710.0	710.0	710.0	623.5	620.5	634.6	634.6
India	INDG	684.0	708.2	713.2	713.2	872.8	903.7	910.0	910.0
Indonesia	INDO	804.0	717.7	784.8	784.8	1,025.9	915.8	1,001.4	1,001.4
Ireland		324.0	296.0	296.0	296.0	413.4	377.7	377.7	377.7
Italy		272.0	243.8	254.8	254.8	347.1	311.1	325.1	325.1
Japan		470.0	465.8	461.5	461.5	599.7	594.4	588.9	588.9
Luxembourg	-	146.4	21.8	192.7	192.7	186.8	27.8	245.8	245.8
Malaysia	PMAL	560.0	570.0	550.0	550.0	714.6	727.3	701.8	701.8
Mexico		439.0	431.4	300.0	300.0	560.2	550.5	382.8	382.8
Philippines	LUVI	690.0	690.0	690.0	690.0	880.4	880.4	880.4	880.4
Philippines	MIND	690.0	690.0	690.0	690.0	880.4	880.4	880.4	880.4
Singapore	1	408.5	407.4	405.7	405.7	521.2	519.8	517.7	517.7
South Korea	1	476.0	415.6	411.3	411.3	607.4	530.3	524.9	524.9
Switzerland	1	10.2	12.2	10.5	10.5	13.0	15.6	13.4	13.4
Vietnam		518.3	487.5	448.1	448.1	661.4	622.1	571.8	571.8

^{*} Except where otherwise stated, water emission factors calculated using the respective electricity factors and Greenhouse Gas and Energy Co-Benefits of Water Conservation (Water Sustainability Project, 2009)



<u>Electricity and Water Emission Factor Sources – International</u>

Country	Region	2019 Source	2020 Source	2021-22 Source		
Argentina		Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Australia	NSWC	National Greenhouse Accounts Factors (Commonwealth of Australia, 2021)	National Greenhouse Accounts Factors (Commonwealth of Australia, 2022)			
Australia	VCTA	National Greenhouse Accounts Factors (Commonwealth of Australia, 2021)	National Greenhouse Accounts Facto	rs (Commonwealth of Australia, 2022)		
Bermuda		Calculated Internally; US	S EIA Electricity generation and Default Emissic	ons Factors (IPCC, 2006)		
Brazil	-1	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Germany	-	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
United Kingdom		2022 Government	GHG Conversion Factors for Company Report	ting (UK BEIS, 2022)		
Hong Kong	CLPG	Electricity: (CL	.P, 2021) Water: DSD and WSD (2020-2021) ann	ual SR reports		
Hong Kong	HKEC	Electricity: (+	HKEI, 2021) Water: DSD and WSD (2020-2021) ar	nnual reports		
India	INDG	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Indonesia	INDO	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Ireland		Energy in Ireland - 2020 Report (SEAI, 2020) Energy in Ireland - 2021 Report (SEAI, 2021)				
Italy	-	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Japan		Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Luxembourg		Total Supplier Mix, European Residual Mixes 2019 (AIB, 2020)	Total Supplier Mix, European Residual Mixes 2020 (AIB, 2021)	Total Supplier Mix, European Residual Mixes 2021 (AIB, 2022)		
Malaysia	PMAL	2019 Sustainability Report (Tenanga Nasional Berhad, 2019)	2020 Sustainability Report (Tenanga Nasional Berhad, 2021)	2021 Sustainability Report (Tenanga Nasional Berhad, 2022)		
Mexico	-	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Philippines	LUVI	2020 Key Energy Statistics (Philippine Department of Energy, 2021)				
Philippines	MIND	2020 Key I	Energy Statistics (Philippine Department of End	ergy, 2021)		
Singapore	-	Electricity Grid Emission Factor, 2005-2019 (Energy Market Authority, Singapore Government)	Electricity Grid Emission Factor, 2005-2021 (Energy Market Authority, Singapore Government)			
South Korea		Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2021)	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2022)		
Switzerland		Total Supplier Mix, European Residual Mixes 2019 (AIB, 2020)	Total Supplier Mix, European Residual Mixes 2020 (AIB, 2021)	Total Supplier Mix, European Residual Mixes 2021 (AIB, 2022)		
Vietnam		Calculated; Electricity Gen. by Fuel (BP, 2020); Default Emissions Factors (IPCC, 2006)	Calculated; Electricity Gen. by Fuel (BP, 2021); Default Emissions Factors (IPCC, 2006)	Calculated; Electricity Gen. by Fuel (BP, 2021); Default Emissions Factors (IPCC, 2006)		



Region-specific emission factors for natural gas were sourced from publicly available, government sources as outlined below. Where required, an energy conversion of 1 Terajoule = 26,853 m³ natural gas was applied (National Energy Board of Canada).

Natural Gas Emission Factors and Sources - International

Country	Natural G	as Emissio	n Factor (g	CO ₂ e/m ³)	2019 Source	2020-22 Source
Country	2019	2020	2021	2022	2017 30urce	2020-22 30ui ce
					National Greenhouse Accounts	National Greenhouse Accounts
Australia	2,025.1	2,025.1	2,025.1	2,025.1	Factors (Commonwealth of	Factors (Commonwealth of
					Australia, 2022) - Table 3	Australia, 2022) - Table 3
Germany	2,078.1	2,081.8	2,081.8	2,081.8	Germany NIR 2021, Table 83 and 551	Germany NIR 2022, Table 76 and 537
					2021 Government GHG Conversion	2022 Government GHG Conversion
United Kingdom	d Kingdom 2,021.4 2,015.7 2,015.7 2,015.7	2,015.7	Factors for Company Reporting (UK	Factors for Company Reporting (UK		
					BEIS, 2021)	BEIS, 2022)
Ireland	2,088.8	2,094.1	2.094.1	2.094.1	Ireland NIR 2021, Table 3.1.1 (Annex	Ireland NIR 2022, Table 3.1.1 (Annex
ii cidi id	2,000.0	2,074.1	2,074.1	2,074.1	3.1)	3.1)
					Italy NIR 2021, table A6.1, pg 107,	Italy NIR 2022, table A6.1, pg 110,
Italy	2,149.6	2,160.3	2,160.3	2,160.3	table 1.7 (N2O emissions not tracked	table 1.7 (N2O emissions not tracked
					since "negligible")	since "negligible")
Luxembourg	2,094.6	2,109.1	2,109.1	2,109.1	Luxembourg NIR 2021, Table 3-81	Luxembourg NIR 2022, Table 3-81
Switzerland	2,102.4	4 2,094.9	2,094.9	2,094.9	Switzerland NIR 2021, Tables 3-13, 3-	Switzerland NIR 2022, Tables 3-14, 3-
SWILZGIANA	2,102.4	2,074.7	2,074.7	2,074.7	14 and 3-16	15 and 3-17

Emission factors for district chilled water in Indonesia and Malaysia were determined using each country's electricity emission factor with an assumed energy intensity for chilled water production and distribution.

Chilled Water Emission Factors and Sources – International

O a complete co	Chilled W	ater Emissior	n Factor (gC0	2019-22 Source	
Country	2019	2020	2021	2022	Z019-2Z Source
Indonesia	1,222.1	1,090.9	1,192.9	1,192.9	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020, 2021 & 2022); 1.52 ekWh/ton-h
Malaysia	851.2	866.4	836.0	836.0	Comparing G20 Climate Action Towards Net Zero (Climate Transparency, 2020, 2021 & 2022); 1.52 ekWh/ton-h

At one property in London, UK, the building manager provided an emission factor for the district heating serving the building.

Hot Water Emission Factors and Sources - International

	Hot Water Emission Factor				
Country	(gCO ₂ e/kWh thm)	2019-2022 Source			
	2019 - 2022				
United Kingdom	185	Provided by One Bartholomew Close Building Manager			



Supplier-specific steam emission factors were not available for district energy in Luxembourg. UK emission factors were applied as a proxy.

Stream Emission Factors and Sources – International

Country		ssion Factor ₂ e/lb)	2019 Source	2020-2022 Source
	2019	2020 - 2022		
			UK BEIS 2021 factor used as proxy in	UK BEIS 2022 factor used as proxy in
Luxembourg	50.2	50.2	absence of supplier-specific data for	absence of supplier-specific data for
		Luxembourg district steam.	Luxembourg district steam.	

11.4 Travel

The following table details the emission factors used to calculate emissions from business travel and their respective sources.

<u>Distance-Based Emission Factors and Sources - Travel</u>

Mode of Transportation	Emission Factor	Unit	Source					
One/Time 2 One)	2.3171	kgCO₂e/L fuel	Canada National Inventory Report (Environment Canada, 2022)					
Car (Tier 2 Gas)	0.2085	kgCO₂e/km	Canada National Inventory Report (Environment Canada, 2022), assumes 9.0 L/100 km (Natural Resources Canada)					
Electric Vehicle	0.1200	kgCO₂e/km	Government GHG Conversion Factors for Company Reporting (DEFRA, 2022)					
Rail	0.0355	kgCO ₂ e/pkm	Government GHG Conversion Factors for Company Reporting (DEFRA, 2022)					
Short Haul Flight (<785km)	0.1300		Government GHG Conversion Factors for Company					
Medium Haul Flight (785km - 3700km)	0.0812	kgCO₂e/pkm	Reporting (DEFRA, 2022): Business travel - Air (Without					
Long Haul Flight (>3700km)	0.1021		RF).					

Per the Carbon Neutral Protocol, DEFRA "domestic" emission factors should be applied for flights less than 785 km, DEFRA "short-haul international" emission factors should be applied for flights between 785 km and 3,700 km (we have called this "medium haul"), and DEFRA "long-haul" emission factors should be applied for flights greater than 3,700 km.

In some instances, travel expense data was available with no associated data on travel distance. In these cases, emissions were calculated using the spend-based method. To determine an appropriate spend-based emission factor, the distance-based factors above were used in conjunction with an estimate of travel cost per km travelled. The datasets which were used as the basis for the cost per kilometer estimate for each mode of travel, along with the resulting spend-based emission factors, are shown in the table below.



<u>Calculated Spend-Based Emission Factors and Sources - Travel</u>

Mode of Transportation	kgCO ₂ e/pkm (Air and Rail) or kgCO2e/km (Car)	\$/km	kgCO2e/\$	Source for \$/km
Air (Medium Haul)	0.0812	0.235	0.345	2022 BGO Egencia Airfare Summary
Car rental	0.2085	0.407	0.513	2021 Sun Life HERTZ Car Rental Expenses
Employee-Claimed Mileage	0.2085	0.563	0.370	2022 Sun Life North America Employee
Employee-Claimea Milleage	0.2085			Claimed Mileage
Rail	0.0355	0.478	0.074	2022 Sun Life North America Rail Expenses

Note: costs above are stated in CAD.



12.0 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/ft² Equivalent kilowatt-hours per square foot of Effective GLA

GHG Greenhouse gases, for the purposes of this report: CO₂, CH₄, N₂O

CO₂e Carbon dioxide equivalent

gCO₂e Grams of carbon dioxide equivalent

gCO₂e/L Grams of carbon dioxide equivalent per litre

gCO₂e/m³ Grams of carbon dioxide equivalent per cubic metre

gCO₂e/lb Grams of carbon dioxide equivalent per pound gCO₂e/kg Grams of carbon dioxide equivalent per kilogram

gCO₂e/ekWh Grams of carbon dioxide equivalent per equivalent kilowatt-hour

gCO₂e/ton-h Grams of carbon dioxide equivalent per ton-hour

gCO₂e/kWh thm Grams of carbon dioxide equivalent per thermal energy

tCO₂e Metric tons of carbon dioxide equivalent

tCO₂e /1,000ft² Metric tons of carbon dioxide equivalent per 1,000 square feet of Effective GLA

pkm Passenger-kilometre

