Sun Life

2024 GHG Emissions Reporting Methodology

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1.0 Background

This document details Sun Life Financial Inc's ("Sun Life") methodology for calculating its 2024 greenhouse gas (GHG) inventory, covering January 1 to December 31, 2024. Sun Life annually reports GHG emissions to track global portfolio trends and measure progress toward emissions reduction goals.

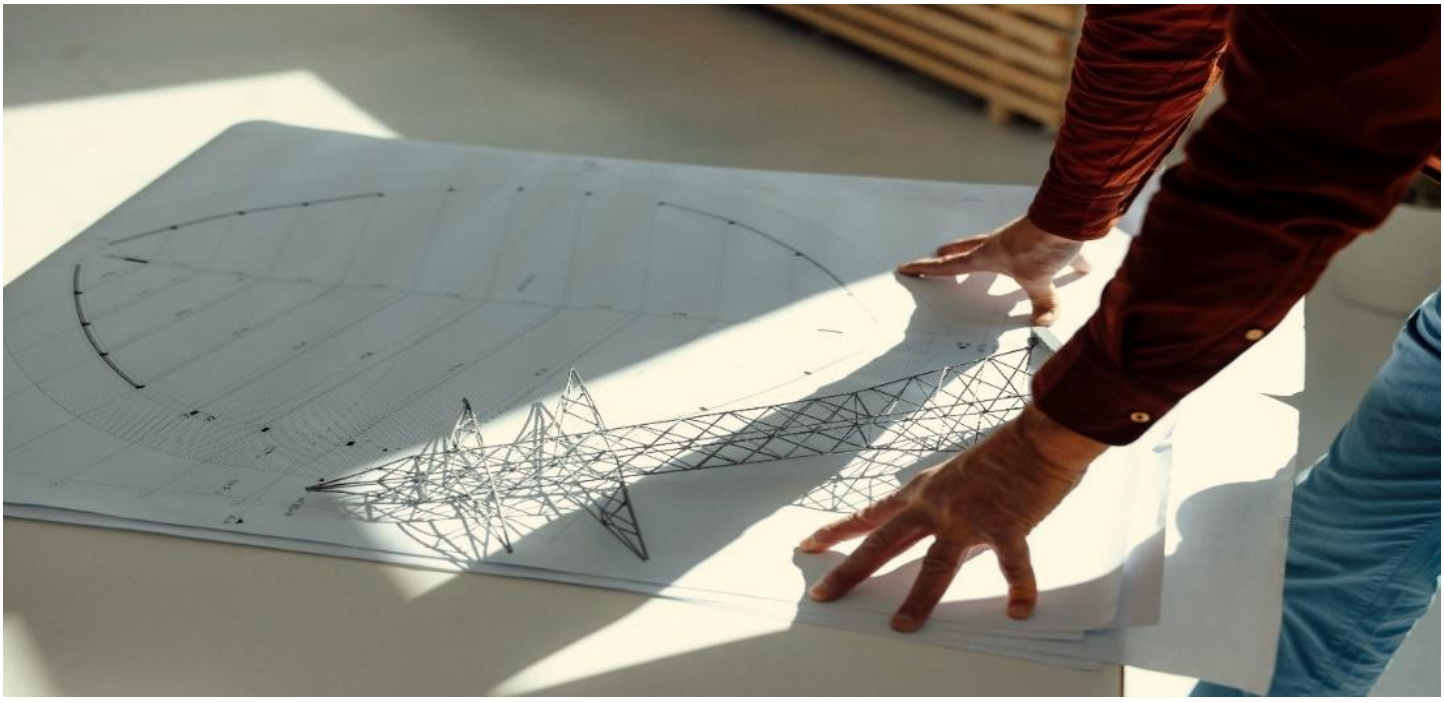
Sun Life calculates and reports GHG emissions for Scope 1, Scope 2, and select Scope 3 categories, in line with the following GHG Protocol standards:

- *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (revised edition)*
- *GHG Protocol Scope 2 Guidance: An amendment to the GHG Protocol Corporate Standard*
- *Corporate Value Chain (Scope 3) Accounting and Reporting Standard: Supplement to the GHG Protocol Corporate Accounting and Reporting Standard*

Scope 3, Category 15 financed emissions are calculated in line with The Partnership for Carbon Accounting Financials' (PCAF) The Global GHG Accounting and Reporting Standard Part A: Financed Emissions, Second Edition (2022).

Sun Life seeks limited assurance on select GHG metrics, including Scope 1 and Scope 2 emissions, and Scope 3 Categories 3, 6 and 8 emissions (refer to KPMG's 2024 Independent Limited Assurance Report).

This document includes information on reporting boundaries, calculation methodologies, assumptions and emission factors Sun Life used for the 2024 GHG inventory. Sun Life's annual GHG data collection process occurs between January and November to meet reporting deadlines; we estimate data that is not available by early November. For details on Sun Life's estimation approaches, refer to sections 4.1 to 4.6.



2.0 Reporting Boundaries

Sun Life determines which business entities and activities are in-scope for the annual GHG inventory using organizational and operational boundaries, in line with the GHG Protocol.

Organizational boundaries define the approach used to determine ownership or control over entities within the organization and the corresponding emissions sources of those entities. Sun Life uses a financial control approach to account for GHG emissions from operations it controls. This approach determines which parts of the organization are included in the GHG inventory.

Operational boundaries identify which emission sources across scope 1, 2, and 3 emissions are applicable based on business operations within the organizational boundary and are therefore considered in scope for the emissions inventory.

2.1 Sun Life's Reported Emissions

The graphic below represents Sun Life's operational boundaries for reported GHG emissions across scopes.[1]

Scope 1
refers to emissions associated with heating fuel consumption at owned properties (including leased offices within owned properties) in addition to emissions from fuel consumption of company-owned vehicles.

Scope 2
refers to emissions associated with purchased electricity, heat, steam and cooling at owned properties (including leased offices within owned properties).

Scope 3
refers to the emissions that occur upstream and downstream across Sun Life's value chain as a result of business activities, defined under the following categories.

Category

- **Fuel and energy-related activities**
  Upstream emissions from energy & fuel and transmission losses
- **Upstream transportation and distribution**
  Water used at owned properties
- **Waste generated in operations**
  Waste generated at owned properties
- **Business travel**
  Air, car, rail travel for business purposes
- **Employee commuting**
  Employee commuting to and from workplaces, in addition to remote working
- **Upstream leased assets**
  Energy and water use at unowned leased global offices and data centres
- **Investments**
  Financed emissions from investments

[1] Applicable categories to Sun Life based on current business operations. Refer to section 4.8 Inventory Exclusions for more detail on currently reported and unreported categories of emissions.

2.2 Application of Boundaries to the Real Estate Portfolio

Real estate-related emissions account for a notable portion of Sun Life's emissions inventory. Based on Sun Life's boundaries, consolidation approach, and asset-specific detail, these emissions fall under Scope 1, Scope 2, or select categories of Scope 3.

Sun Life utilizes the financial control[2] approach, as defined by the GHG Protocol and PCAF, to calculate emissions related to its real estate portfolio. This portfolio includes both owned properties (including real estate investment (REI) properties) and global offices. Detailed information about reporting of emissions from owned and leased properties across various scopes is outlined in the table below.

Scenario	Emissions Reporting across Scopes
Sun Life has financial control of wholly owned properties (including wholly owned REI properties), and majority control and ownership of joint venture properties. Control is determined at the asset level based on the ownership structure.	• Emissions from fuel and energy consumption are reported in **Scope 1 and 2**, respectively. • Upstream fuel and energy related activities (FERA) not included in Scope 1 and 2 are reported in **Scope 3, Category 3**. • Emissions from water use and operational waste at these properties are reported in **Scope 3, Category 4** and **Category 5**, respectively.
For REI properties that are jointly owned and financially controlled with another partner, we use an equity share approach for GHG accounting.	• Proportionate emissions from fuel and energy, water use, and operational waste are reported in **Scope 1, Scope 2**, and **Scope 3 Categories 3, 4, and 5** respectively based on percent ownership.
For REI properties where Sun Life is a non-controlling minority ownership partner, we use an equity share approach for GHG accounting.	• Proportionate emissions from fuel, energy, and water consumption are reported in **Scope 3 Category 15.**
For global leased offices, Sun Life does not have ownership or financial control.	• Emissions from fuel, energy, and water consumption are reported under **Scope 3 Category 8**, Upstream Leased Assets.
In certain cases, Sun Life maintains ownership and financial control over its occupied or leased office space (i.e., a leased office situated within an REI property).	• Emissions from fuel and energy, water use, and operational waste are reported **under Scope 1 and 2,** and **Scope 3 Categories 3, 4, and 5** respectively, instead of Scope 3 Category 8.[3]

[2] 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.

[3] This methodology prevents double counting and adheres to the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (p.27), which states, "a company's Scope 3 inventory does not include any emissions already accounted for as Scope 1 or Scope 2 by the same company."

3.0 Scope 1 and 2 Emissions

Data coverage: Sun Life reports emissions from fuel and energy use for all majority-owned properties, including REI properties and company-owned vehicles globally under Scope 1 and 2.[4]

Data sources: Scope 1 represents direct emissions from the on-site combustion of fuels (natural gas, propane, diesel, gasoline, fuel oils, etc.) at majority-owned properties and from company-owned vehicles (i.e. fleet). Scope 2 represents indirect emissions from purchased energy (electricity, district heating and cooling, steam, chilled water, etc.) that are consumed at majority-owned properties but generated offsite.

Sun Life obtains utility data from various sources, including monthly utility bills, utility meter readings, and reports from third-party property managers and government benchmark programs.

For company-owned vehicles, Sun Life obtains data on total fuel consumed. For business units where this data is unavailable, Sun Life gathers data on fuel limits assigned to employees with company-owned vehicles.

Data estimation approach: To address data gaps, Sun Life estimates utility data. Depending on data availability and the dependency of utility consumption on weather, Sun Life uses either an account-specific linear regression model that considers seasonal temperature variations (heating- and cooling-degree days), a generalized seasonality curve, historical proxy data (no older than two years), or industry average consumption intensities based on building type.

In cases where fleet fuel consumption is not directly available, Sun Life estimates consumption based on assigned fuel limits (Sun Life assumes the full fuel limit is used).

3.1 Location and Market Based Emissions

Sun Life follows the GHG Protocol's Scope 2 Guidance by reporting both location-based and market-based Scope 2 emissions for owned properties.[5] Location-based emissions are calculated using the average emissions intensity of the grids where energy is consumed. Market-based emissions use residual mix emissions factors (available in the US and Europe) and account for emissions reductions through Renewable Energy Certificates (RECs) and other agreements. If residual mix factors are unavailable, Sun Life uses location-based factors. For the emission factors used, refer to Appendix A.

[4] Sun Life applies the financial control approach, refer to section 2.2 Application of Boundaries to the Real Estate Portfolio.

[5] Sun Life also reports market-based Scope 3 emissions to account for contractual instruments such as Renewable Energy Certificates (RECs) acquired for global leased offices, as well as residual mix factors where available. Refer to section 5.0 Market-Based Instruments for additional information on RECs.

3.2 Inventory Exclusions (Scope 1 and Scope 2)

Due to the unavailability of data, Sun Life's Scope 1 and 2 emissions inventory excludes:

- Fugitive emissions from refrigerants used in air conditioning and kitchen appliances at owned properties.
- Diesel fuel consumed for back-up power generation at owned properties.

4.0 Scope 3 Emissions

Sun Life reports emissions from select business activities across its value chain in accordance with the GHG Protocol's Scope 3 Guidance and PCAF's Standard Part A: Financed Emissions.

For unreported categories and asset classes, refer to section 4.8 Inventory Exclusions (Scope 3).

4.1 Category 3, Fuel & Energy Related Activities

Data coverage: Sun Life reports emissions from Fuel and Energy-Related Activities (FERA) at owned properties not already included in Scope 1 or 2. FERA emissions include upstream emissions from purchased stationary and mobile fuels, purchased electricity, steam and cooling, as well as emissions from transmission and distribution losses. Upstream emissions refer to emissions from the extraction, production, and transportation of fuels, and exclude emissions from fuel combustion.

Data sources: The data inputs and sources for FERA calculations are identical to those used for Scope 1 and 2 emissions (refer to section 3.0 Scope 1 and 2 Emissions). This includes the amount of fuel and purchased energy used at owned properties and in company-owned vehicles. Sun Life applies emission factors that specifically account for the FERA portion of emissions that are not included in Scope 1 and 2.[6]

Estimation approach: Since Sun Life uses the same activity data for Category 3 as for Scope 1 and 2, the estimation approach for addressing utility data gaps is consistent. For further details, refer to section 3.0 Scope 1 and 2 Emissions.

4.2 Category 4, Upstream Transportation and Distribution

Data coverage: Sun Life reports emissions from the transmission and distribution of water consumed at owned properties. This encompasses emissions related to the energy required for pumping, processing, and delivering clean water to owned properties.

[6] Sun Life uses US EPA and UK DEFRA emission factors that account for the FERA portion of emissions. For geographic areas that do not publish emission factors for the FERA emissions (e.g., well-to-tank fuel impacts), Sun Life uses US EPA and UK DEFRA factors as a proxy. Refer to Appendix A for additional information about emission factors.

Data sources: Sun Life collects primary water consumption data from monthly utility bills, utility meter readings, and reports provided by third-party property managers and government benchmark programs.

Estimation approach: Dependent on data availability, Sun Life estimates water consumption using either portfolio average consumption intensities, industry average consumption intensities based on building type, or historical proxy data (no older than two years).

4.3 Category 5, Waste Generated in Operations

Data coverage: Sun Life reports emissions associated with waste by disposal type (landfill, recycling, compost, incineration) for 88% of owned properties. (Refer to estimation approach below for information on coverage due to data availability).

Data sources: Sun Life collects waste data from various sources including diversion reports from waste haulers that specify the weight or volume of waste disposed by type, as well as waste management invoices.

Estimation approach: To address gaps, Sun Life estimates missing data based on recent historical average waste generation. For properties without historical data, Sun Life uses average waste generation intensities specific to building type.[7] Waste emissions are excluded when an appropriate average waste generation intensity is not available.

4.4 Category 6, Business Travel

Data coverage: Sun Life reports global business travel emissions across all business groups from air, rail, car (employee claimed mileage and rentals), and other transportation modes (bus, taxi, ride-share). We calculate emissions using the distance-based method where data is available or the spend-based method when only expense data is available.

Data sources: We collect distance and spend data by transport mode from expense management systems and reports from third-party travel management companies.

Estimation approach: To address data gaps, Sun Life uses average emissions from prior months as a proxy. If data for the current year is unavailable, we use data from the prior year.

4.5 Category 7, Employee Commuting

Data coverage: Sun Life reports emissions from employee commuting and homeworking, which arise from transportation between homes and offices, as well as energy use in home offices.

[7] Average waste generation intensities are sourced from Brightly Software's database.

Data sources: For commuting, Sun Life uses a distance-based method based on number of employees, commuting frequency, mode of transport and distance, where available. Sun Life uses applicable well-to-tank (WTT) and tank-to-wheel (TTW) emission factors accordingly.

For homeworking, Sun Life uses an energy-based estimation method based on number of employees, homeworking days, and business homeworking policies. Local emission factors for fuel and energy are used to calculate homeworking emissions, following the methodology published in EcoAct's Homeworking Emissions Whitepaper (2020).

Estimation approach: To address data gaps on commuting emissions, Sun Life estimates emissions using location-specific commuting data from national census surveys. To address data gaps on homeworking emissions, Sun Life estimates energy consumption for each employee's home office. Assumptions include home office configuration (i.e., number of devices) and energy types and consumption based on national residential building survey data.

4.6 Category 8, Upstream Leased Assets

Data coverage: Sun Life reports global leased office emissions from fuel (e.g., natural gas for heating), purchased energy (electricity, steam, chilled water) and water consumption in Scope 3 Category 8.[8] Sun Life calculates location-based and market-based Category 8 emissions to account for contractual instruments such as RECs purchased for global offices, as well as residual mix emission factors where available. Refer to section 3.1 Location and Market Based Emissions for more details.

Data sources: Sun Life uses primary data such as utility bills, invoices, and meter-readings where Sun Life utility consumption is sub-metered. Where Sun Life utility consumption is not sub-metered, whole-building utility data is pro-rated based on Sun Life's share of the building's total gross leasable area.

Estimation approach: To address data gaps, Sun Life estimates consumption. Depending on data availability and the dependency of utility consumption on weather, Sun Life uses either an account-specific linear regression model that considers seasonal temperature variations (heating- and cooling-degree days), a generalized seasonality curve, prorated whole-building consumption data, historical proxy data (no older than two years), portfolio average consumption intensities or industry average consumption intensities.

[8] In unique circumstances where Sun Life has majority ownership of the leased office it occupies (i.e. a leased office is located within an REI property), emissions are reported in Scope 1 and 2 instead of Scope 3 Category 8 to avoid double counting. Refer to section 2.2 Application of Boundaries to the Real Estate Portfolio for additional information.

4.7 Category 15, Investments

Financed emissions refer to the emissions generated by investment and lending activities of financial institutions. It is important to recognize the evolving dynamic nature of the financed emissions accounting landscape, and the inherent limitations faced in this process. This includes challenges with data accuracy and availability, variability in emissions disclosures, the time lag between financial and emissions data, and the availability of appropriate methodologies. Sun Life plans to refine its methodology and approach to financed emissions analysis as data, industry guidance and market practices evolve.

Data coverage: Sun Life reports emissions from its general account for listed equities, listed corporate bonds, sovereign debt, and commercial real estate, covering approximately 30% of invested assets. This figure reflects emissions from investments categorized as Scope 3 Category 15 in addition to real estate investments under Sun Life's financial control and therefore categorized as Scope 1, 2, and applicable Categories of Scope 3. Refer to section 2.2 Application of Boundaries to the Real Estate Portfolio for more information on real estate investment accounting across Scope 1, 2, and 3.

Financed emissions are calculated in alignment with The Partnership for Carbon Accounting Financials' (PCAF) The Global GHG Accounting and Reporting Standard Part A: Financed Emissions, Second Edition (2022) ("PCAF Standard") and include Scope 1 and 2 emissions, as well as Scope 3 emissions where available, in all sectors as per the PCAF Standard for reports published from 2025 onwards. Note that as of 2024, the data coverage percent for financed emissions reporting has been updated to include commercial real estate invested assets in the general account as described above, in addition to accounting for sovereign debt, which was added to the reported financed emissions inventory in 2024.

Data sources: Sun Life obtains data for financed emissions both internally from investment managers (portfolio holdings and weights) and externally (investee Enterprise Value Including Cash (EVIC), equity, debt, and absolute emissions, and purchasing power parity (PPP)-adjusted gross domestic product (GDP)). For data obtained externally, Sun Life uses MSCI and S&P Trucost for all directly reported emissions (e.g., company sustainability reports) and indirectly reported emissions (e.g., estimated based on third-party data providers such as CDP and the United Nations Framework Convention on Climate Change (UNFCCC) for sovereign debt).

In alignment with the PCAF Standard, Sun Life prioritizes the use of data source Option 1: reported emissions using verified or unverified emissions data where possible. Where Option 1 data is not available directly or indirectly via third-party data providers, Sun Life uses an estimation approach based on PCAF Option 2: physical activity-based emissions or PCAF Option 3: economic activity-based emissions. When data required for estimation is unavailable, Sun Life excludes the asset from measurement.

Calculation and attribution approach: Sun Life uses holdings data from December 31, 2024, and the latest available GHG emissions data for calculating emissions. The attribution factor calculation differs by asset class, as outlined below.

For **listed equity and corporate bonds**, Sun Life calculates emissions using data directly from the investee company or third-party sources as listed above. We determine the attribution factor by dividing the issuer's outstanding value by either EVIC for listed companies or total equity plus debt for private companies. Emissions for listed equities and corporate bonds are generally calculated at the parent company level, except for publicly traded subsidiaries and non-corporate-owned investees, where it is calculated at the investee level.

For **commercial real estate**, Sun Life collects energy consumption data from each investment property where available, and estimates missing data as per the approach above in section 3.0 Scope 1 and 2 Emissions. The attribution factor for each building is equivalent to Sun Life's equity ownership in the building, in alignment with the PCAF Standard guidance for Commercial Real Estate assets, such that when a commercial real estate asset is jointly financed by a group of asset owners, the attribution factor is determined based on the share invested by each asset owner. While an alternative attribution factor approach within the PCAF Standard relies on outstanding investment amount and property value at origination, Sun Life leverages the equity approach for attribution of emissions to account for potential valuation fluctuations without changes to ownership share, in addition to potential changes due to market factors.

For **sovereign debt**, Sun Life sources verified country emissions from MSCI and calculates the attribution factor using the outstanding investment amount and PPP-adjusted GDP, in line with the PCAF Standard. We only report on Scope 1 emissions defined as production emissions by UNFCCC.

Once we source financial and emissions data, we multiply the attribution factor by the corresponding asset's (company, country, or building) Scope 1, 2, and 3 emissions (where available). This calculation results in a financed Scope 1, 2, and 3 emissions data point for each asset in accordance with the PCAF Standard.

4.8 Inventory Exclusions (Scope 3)

Sun Life does not currently report on the following Scope 3 categories. Some of these categories are not relevant to Sun Life's business, while others are expected to be relevant but currently lack available or reliable data. Sun Life is working to enhance data availability and advance our methodology to improve coverage and detail of emissions reporting over time. Details regarding these exclusions are outlined below:

Scope 3 category	Reason for exclusion
1. Purchased Goods and Services	Expected to be relevant and/or material to Sun Life's operations; assessing data availability and quality to determine GHG emissions.
2. Capital Goods	
9. Downstream Transportation and Distribution	Not currently applicable to Sun Life's operations.
10. Processing of Sold Products	
11. Use of Sold Products	
12. End of Life Treatment of Sold Products	
13. Downstream Leased Assets	
14. Franchises	

Below is a summary of the invested assets which Sun Life excludes from the scope of Category 15: Investments reporting with respect to general account asset classes:

PCAF asset class	Percent excluded from Scope 3 Category 15	Reason for exclusion
Listed Equity and Corporate Bonds	19.3%	Lack of PCAF methodology, actual data unavailable, and/or incomplete or unreliable data.
Sovereign Debt	1.5%	
Commercial Real Estate	99.1%	In accordance with Sun Life's Financial Control boundary, the Commercial Real Estate emissions excluded from Category 15 can be found within Scope 1, 2 and applicable Scope 3 Categories (other than Category 15). For more information refer to section 2.2 Application of Boundaries to the Real Estate Portfolio. This asset class also includes mortgages for commercial properties on the general account balance sheet, which are excluded from the currently-reported financed emissions inventory. We are in the process of assessing the availability and quality of data for this asset class.
Business Loans and Unlisted Equity	100%	Assessing data availability and quality to determine GHG emissions.
Project Finance	100%	

We exclude asset-level financed emissions with a data quality score of 5 (as defined by the PCAF Standard) due to lower accuracy and higher variability. For more details, refer to section 6.2 Data Quality and Controls: Scope 3, Category 15.

Note that some of the invested assets in Sun Life's general account do not currently have an associated measurement methodology and are therefore excluded from the scope of reported emissions. Sun Life also excludes insurance-associated emissions from its inventory as there is no dedicated PCAF methodology for life and health insurance as of this document's publication date.

5.0 Market Based Instruments

5.1 Renewable Energy Certificates (RECs)

Renewable Energy Certificates (RECs) are market-based instruments that represent the rights to the environmental attributes derived from generating electricity using renewable sources. Each REC is unique and retired on behalf of Sun Life to verify the renewable origin of the energy purchased. Sun Life reports its purchased RECs for both owned properties and leased offices. Through this approach, Sun Life applies a zero emissions factor to calculate the portion of energy covered by RECs and uses residual mix emission factors (where available) for the electricity consumption not covered by RECs.

5.2 Carbon Offsets

Carbon offsets, also referred to as carbon credits, are market-based instruments designed to finance activities that either prevent or capture GHG emissions.[9] Carbon offset registries verify, issue, and retire credits that are generated by carbon offset projects, ensuring their carbon reduction or removal activity adheres to specific standards. Each credit purchased by Sun Life corresponds to one tonne of carbon dioxide equivalent (tCO_2e) of actual emissions reduction and has been verified by third-party carbon offset registries, such as Verra, Gold Standard, and American Carbon registry, to meet their methodologies for assessing additionality and permanence. The specific registries are subject to change in the future based on the carbon offset projects Sun Life chooses to support.

6.0 Data Quality and Controls

6.1 Data Quality and Controls: Scope 1, Scope 2, Scope 3 (Excluding Category 15)

Sun Life has established an internal process and controls framework integrated into the end-to-end processes for GHG emissions measurement and reporting. Sun Life applies several quality assurance and control steps across various stakeholder groups, categorized into preliminary, resource and organizational checks:

- Preliminary data checks focus on the completeness and accuracy of activity data for each individual dataset.

[9] Note that RECs are accounted for in market-based emissions accounting whereas carbon offsets are not.

- Resource level data checks ensure that activity data totals and emissions totals are within an expected range at the business unit level, based on historically reported values (if available) and public databases. For real estate assets, Sun Life uses average energy-use intensities for each utility resource to verify that total reported building energy usage is within an expected range for a specific building classification or geography (such as the Commercial Buildings Energy Consumption Survey (CBECS) and Energy Star).
- Organizational data checks verify that aggregated organization-wide emissions totals are within expected values based on historical data disclosures. For example, Sun Life calculates total emissions intensities using metrics such as square footage for the current and historic year for comparison purposes.

6.2 Data Quality and Controls: Scope 3, Category 15

Sun Life leverages data quality scores to indicate the accuracy of the source data used in financed emissions calculations. Following the PCAF Standard, Sun Life assigns data quality scores based on three calculation options: reported emissions, physical activity-based emissions and economic activity-based emissions.

Sun Life assesses data quality at the asset class and overall portfolio levels. Each data point in an asset class is assigned a data quality score, and we calculate a weighted average using outstanding amounts per borrower or investee.

Beyond PCAF scoring, Sun Life has established an internal process and controls framework integrated into end-to-end Category 15 measurement and reporting. Sun Life applies these controls across the Category 15 inventory process, categorized into accuracy and completeness checks and material issuers review:

- Accuracy and completeness checks involve reconciliation of measured assets to statement value as well as cross-checking the names of any assets automatically identified and obtained through a third-party database (i.e. S&P Trucost or MSCI). For completeness, Sun Life reviews assets for which no data has been sourced and confirms whether that is within expectations for the particular asset class or investee considering the size of the issuer, the industry, or whether it is private or public. We manually source missing data for material issuers as needed.
- A material issuers review ensures a detailed review is applied to the most significant contributors to portfolio emissions. We define material issuers as those that account for the top 80% of the total financed Scope 1 and 2 emissions within each asset class and review them by cross-referencing primary data sources. This review currently applies to listed equities and listed corporate bonds.

7.0 Key Methodology Changes

Sun Life aims to continuously improve its GHG methodology, including driving enhancements in data availability, quality, and calculation processes over time. The section below outlines the key methodological changes implemented in 2024 relative to the 2023 reporting year:

Expansion of emissions data coverage:

- Expansion of Scope 1 reporting to include emissions from company-owned vehicles.
- Expansion of Scope 1, 2, and Scope 3 Category 4 utility data coverage: In 2024, Sun Life included emissions from tenant-controlled spaces using estimates where necessary (refer to section 3.0 Scope 1 and 2 Emissions for data estimation approaches).
- Expansion of Scope 3 Category 5 waste data coverage: In 2024, Sun Life reported waste emissions from 88% of owned properties (compared to 51% in 2023), using estimates where needed.
- Newly reported categories:
    - Category 3 – Fuel and energy related activities not included in Scope 1 or 2
    - Category 7 – Employee commuting
- Newly reported asset classes (Scope 3, Category 15 general account investments):
    - Commercial Real Estate[10]
    - Sovereign Debt

Reclassification of emissions from select REI properties: Historically, emissions from fuel and energy at all REI properties were reported in Scope 1 and 2 based on ownership percentage. In 2024, for REI properties where Sun Life is a minority partner without financial control, Sun Life reported proportionate emissions from fuel, energy, and water in Scope 3 Category 15, per the PCAF Standard.

Reclassification of emissions from water use at owned properties (including REI): In 2023, we accounted for the emissions associated with both the water delivery and treatment at owned properties under Scope 3 Category 4, Upstream Transportation and Distribution. In 2024, emissions associated with water delivery remained in Scope 3 Category 4, while emissions associated with wastewater treatment were reported under Scope 3 Category 5.

Emission factor updates: Generally, Sun Life maintains the use of emissions factor sources year-over-year for consistency. However, in 2024 the following updates were made:

- Sun Life consolidated Scope 2 electricity grid emission factors where possible by leveraging the following sources: US Environmental Protection Agency (EPA), Canada's National Inventory Report (NIR), EU Association of Issuing Bodies (AIB), and International Renewable Energy Agency (IRENA).
- Sun Life added emission factors relevant to Scope 3 Category 3 and Category 7.
- In 2024, Sun Life adjusted spend-based Exiobase emission factors used for Category 6 Business Travel for country-specific inflation (in 2023 they were adjusted for average global inflation).
- For a complete list of emission factor sources Sun Life used for the 2024 inventory, refer to Appendix A.

[10] Refer to section 2.2 Application of Boundaries to the Real Estate Portfolio for categorization of commercial real estate investments across Scope 1, 2, and 3.

8.0 Base Year Recalculation & Historical Restatements

To consistently track emissions over time, Sun Life recalculates emissions for two prior historical years where data is available in addition to the base year when relevant for tracking progress toward its emissions reduction goal for global offices (refer to section 9.0 Sun Life's Emission Reduction Goals). This approach aligns with the GHG Protocol and accounts for specific factors and corresponding materiality thresholds:

1. Structural changes that have a material impact on Sun Life's base year emissions - mergers, acquisitions and divestments.
2. Calculation methodology changes and discovery of errors.
3. Addition of net new data sources and/or improvements in the accuracy of emissions factors or activity data.

Instances in which recalculation would not occur

Recalculation of historical and base-year emissions is not performed in the following circumstances:

- Facilities or an acquired company did not exist in the base year.
- Changes due to organic growth, decline, acquisition, or divestment of general account invested assets occurring as part of standard investment management practices.
- Newly reported Scope 3 categories that are not included in the global offices goal.
- Newly reported asset classes that are not included in existing Sun Life general account goals.

Materiality threshold

A materiality threshold is a qualitative and/or quantitative standard used to identify any major alterations to the data, inventory boundary, methods, or other relevant aspects. Sun Life's materiality threshold is set at 5%, consistent with industry best practice. The 5% threshold is applied separately to the combined Scope 1 and 2 emissions, the combined Scope 3 emissions (excluding Category 15), and global office emissions within the scope of the emissions reduction goal. When the cumulative effect of the above-mentioned factors results in a change of 5% or more in any direction, the base year emissions and emissions from two prior historical years are recalculated.[11]

For general account financed emissions, Sun Life applies this significance threshold individually to each asset class baseline where GHG emissions goals have been set. To account for the potential variability in data availability for estimates and estimation methodologies across third-party data providers, Sun Life excludes estimates with the lowest PCAF data quality scores (scores 4 and 5) from the base year recalculation assessment.

[11] For emissions out of scope for Sun Life's global offices goal, only the two prior years are recalculated.

9.0 Sun Life's Emission Reduction Goals

In 2024, Sun Life revised its operational emissions goal to drive greater alignment to its business operations and climate resilience strategy. This goal is a 50% reduction of absolute market-based GHG emissions from global offices by 2030 relative to a 2019 baseline, in support of Sun Life's goal to achieve net zero by 2050 for its operations. This goal replaces Sun Life's former goal to reduce operational emissions by 50% by 2030 (relative to 2019), which covered not only emissions from global offices, but also physical data centres and business travel. Effective December 31, 2024, this goal has been revised to cover emissions from global offices only, in addition to permitting the use of RECs. For further details on Sun Life's goal revision refer to the 2024 OSFI B-15 Climate Risk Management Report.

The following table summarizes Sun Life's global offices goal scope and reporting.

Goal type	50% absolute reduction
Goal boundary	Operations include: Global offices Activities include: Energy Water
Goal base year	Fixed base year: 2019
Goal achievement year	Long term: 2030
Offsets and credits	Use of RECs (i.e. market-based approach), no use of carbon offsets
Double counting policy	Emissions from global offices are categorized across Scopes 1 and 2, and Scope 3 Categories 8 and 15. Sun Life's approach to avoid double counting is outlined in section 2.2 Application of Boundaries to the Real Estate Portfolio.
Reporting	Annual emissions and progress against base year is reported in Sun Life's public disclosures (refer to the 2024 sustainability reporting suite).

For Sun Life's general account financed emissions, Sun Life has set goals for select asset classes as described below. Additional information about these goals can be found in Sun Life's sustainability-related disclosures (refer to the 2024 sustainability reporting suite).

Listed Corporate Bonds	
Goal type	Intensity reduction of 40%
Goal boundary	Scope 1 and 2 financed emissions
Goal base year	2019
Goal achievement year	2030

Listed Equities	
Goal type	Intensity reduction of 50%
Goal boundary	Directly managed equities Scope 1 and 2 financed emissions
Goal base year	2019
Goal achievement year	2030

Commercial Real Estate	
Goal type	Intensity reduction of 50%
Goal boundary	Scope 1, 2, and 3 of properties
Goal base year	2019
Goal achievement year	2030

10.0 Glossary of Terms

REI	Real Estate Investment
GHG	Greenhouse gas, for the purposes of this report: CO_2, CH_4, N_20
PCAF	Partnership for Carbon Accounting Financials
FERA	Fuel and Energy Related Activities (not included in Scope 1 and 2)
REC	Renewable Energy Certificate
WTT	Well-to-tank
TTW	Tank-to-wheel
Base Year	The earliest year emissions are reported, which is used as a reference point to compare present year emissions.
Residual mix emission factor	Measurement of grid emissions after the removal of voluntary green energy purchases
kWh	Kilowatt-hours (of electricity)
ekWh	Equivalent kilowatt-hours (all energy types)
CO_2e	Carbon dioxide equivalent
tCO_2e	Metric tons of carbon dioxide equivalent
kg	Kilogram
SCF	Standard cubic feet
gal	Gallons
L	Litre
m^3	Cubic metre
lb	Pound
km	Kilometer
mmBtu	One million British thermal units
ton-h	Ton-hour

Appendix A – Emission Factors 2024

Emissions are calculated using publicly available emission factors where possible. Emission factor sources are detailed below.

A.1 United States (US)

Resource	Geography	Emissions factor source
Grid Electricity, Location Based	US - emissions factor applied by eGRID subregion	2024 GHG Emissions Factor Hub | US EPA
Grid Electricity, Market Based	US - emissions factor applied by eGRID subregion	2023 Green-e Residual Mix Emission Rates
Natural Gas	US	2024 GHG Emissions Factor Hub | US EPA
Fuel Oil No. 2	US	2024 GHG Emissions Factor Hub | US EPA
Propane (LPG)	US	2024 GHG Emissions Factor Hub | US EPA
Steam	US- NYC	New York City Local Law 97
Steam	US- non-NYC	2024 GHG Emissions Factor Hub | US EPA (And US DOE btu to pound steam conversions)
Water Delivery	US - emissions factor applied by eGRID subregion	2024 GHG Emissions Factor Hub | US EPA Water delivery and treatment energy intensities extracted from Wakeel et al. (2016) via Brightly Software.
Wastewater Treatment	US - emissions factor applied by eGRID subregion	2024 GHG Emissions Factor Hub | US EPA Water delivery and treatment energy intensities extracted from Wakeel et al. (2016) via Brightly Software.
FERA, Natural Gas - WTT	US	UK DEFRA 2024
FERA, Fuel Oil #2 - WTT	US	UK DEFRA 2024
FERA, Electricity – WTT	US	IEA Emissions Factors published 2024 (2022 data)
FERA, Electricity – T/D Loss Rate (National)	US	IEA Data published 2024 (and Green Project Technologies internal calculations)
Waste, by material and mode of disposal	US	2024 GHG Emission Factors Hub| US EPA

A.2 Canada

Resource	Geography	Emissions factor source
Grid Electricity, Location & Market Based	Canada - emissions factor applied by Province	Canada NIR Part 3, Published 2024 (1990-2022 Data) - Part 3 Annex 13
Natural Gas	Canada	Canada NIR 2024, Part 2, Published 2024 (1990-2022 Data) - Part 2 Annex 6
Light Fuel Oil	Canada	Canada NIR 2024, Part 2 Annex 6
Steam	Ontario	Enwave 2023 Emissions Stakeholder Letter
Steam	Canada – non-Ontario	Energy Star Aug 2024 Publication (And US DOE btu to pound steam conversions)
Deep Water Lake Cooling	Ontario	Enwave 2023 Emissions Stakeholder Letter
Water Delivery	Canada - emissions factor applied by Province	Canada NIR Part 3, Published 2024 (1990-2022 Data) - Part 3 Annex 13 Water delivery and treatment Intensities Extracted from Maas (2009).
Wastewater Treatment	Canada - emissions factor applied by Province	Canada NIR Part 3, Published 2024 (1990-2022 Data) - Part 3 Annex 13 Water delivery and treatment Intensities Extracted from Maas (2009).
FERA, Natural Gas - WTT	Canada	UK DEFRA 2024
FERA, Electricity – WTT	Canada	IEA Emissions Factors published 2024 (2022 data)
FERA, Electricity – T/D Loss Rate (National)	Canada	IEA Data published 2024 (and Green Project Technologies internal calculations)
Waste, by material and mode of disposal	Canada	2024 GHG Emission Factors Hub| US EPA

A.3 International

Resource	Geography	Emissions factor source
Grid Electricity, Location & Market Based	China	IRENA 2024 (National Level)
Grid Electricity, Location Based	United Kingdom	UK DEFRA 2024
Grid Electricity, Market Based	United Kingdom	AIB 2024 (2023 Data; Residual Mix)
Grid Electricity, Location Based	Ireland	AIB 2024 (2023 Data)
Grid Electricity, Market Based	Ireland	AIB 2024 (2023 Data; Residual Mix)
Grid Electricity, Location Based	Germany	AIB 2024 (2023 Data)
Grid Electricity, Market Based	Germany	AIB 2024 (2023 Data; Residual Mix)
Grid Electricity, Location Based	Italy	AIB 2024 (2023 Data)
Grid Electricity, Market Based	Italy	AIB 2024 (2023 Data; Residual Mix)
Grid Electricity, Location Based	Luxembourg	AIB 2024 (2023 Data)
Grid Electricity, Market Based	Luxembourg	AIB 2024 (2023 Data; Residual Mix)
Grid Electricity, Location Based	Switzerland	AIB 2024 (2023 Data)
Grid Electricity, Market Based	Switzerland	AIB 2024 (2023 Data; Residual Mix)
Grid Electricity, Location & Market Based	Hong Kong - CLPG	CLPG Report 2023
Grid Electricity, Location & Market Based	Hong Kong - HKEC	HKEC Sustainability Report 2023
Grid Electricity, Location & Market Based	Bermuda	Harmonized IFI Default Grid Factors 2021 v3.2 (Published April 2022)
Grid Electricity, Location & Market Based	India	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Indonesia	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Malaysia	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	The Philippines	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Singapore	Singapore Energy Market Authority 2023
Grid Electricity, Location & Market Based	Vietnam	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Argentina	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Brazil	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Japan	IRENA 2024 (National Level)
Grid Electricity, Location & Market Based	Mexico	IRENA 2024 (National Level)

Grid Electricity, Location & Market Based	South Korea	IRENA 2024 (National Level)
Natural Gas	Ireland	Ireland NIR 2023
Natural Gas	United Kingdom	UK DEFRA 2024
Natural Gas	Germany	Germany NIR 2024
Natural Gas	Italy	Italy NIR 2023 (no 2024 release yet)
Natural Gas	Australia	Australia NIR 2024
Natural Gas	Korea	Kim et al. 2019
Natural Gas	Switzerland	Switzerland NIR 2024
Natural Gas	Luxembourg	Luxembourg NIR 2023 (no 2024 release yet)
Water Delivery	China, Bermuda, Hong Kong – HKEC, Hong Kong – CLPG, India, Indonesia, Malaysia, The Philippines, Singapore, Vietnam, Ireland, United Kingdom, Argentina	Derived using location-based grid intensities as listed above, and values for water intensities from Wakeel et al. (2016).
Wastewater Treatment	China, Bermuda, Hong Kong – HKEC, Hong Kong – CLPG, India, Indonesia, Malaysia, The Philippines, Singapore, Vietnam, Ireland, United Kingdom, Argentina	Derived using location-based grid intensities as listed above, and values for water intensities from Wakeel et al. (2016).
Chilled Water	Indonesia, Malaysia, India, Hong Kong (CLPG Grid), Singapore	Derived using location-based grid intensities as listed above, and 1.52ekWh/ton-h for the intensity of water chilling (via Brightly Software 2022).
Hot Water	United Kingdom	UK DEFRA 2024
Steam	United Kingdom	UK DEFRA 2024 (And US DOE btu to pound steam conversions)
FERA, Electricity – WTT	Malaysia	IEA Emissions Factors published 2024 (2022 data).
FERA, Electricity – T/D Loss Rate (National)	Malaysia	IEA Data published 2024 (and GPT internal calculations).
FERA, Electricity – WTT	The Philippines	IEA Emissions Factors published 2024 (2022 data).
FERA, Electricity – T/D Loss Rate (National)	The Philippines	IEA Data published 2024 (and GPT internal calculations).

A.4 Business Travel

A. 4.1 – Air Travel

Distance range	DEFRA haul category (without RF)	Passenger class	Emissions factor source
≤ 785 km	Short Haul to/from UK	Average Passenger	UK DEFRA 2024
≤ 785 km	Short Haul to/from UK	Business Class	
≤ 785 km	Short Haul to/from UK	Economy Class	
> 785 km < 3,700 km	Long Haul to/from UK	Average Passenger	
> 785 km < 3,700 km	Long Haul to/from UK	Business Class	
> 785 km < 3,700 km	Long Haul to/from UK	Economy Class	
> 785 km < 3,700 km	Long Haul to/from UK	First Class	
> 785 km < 3,700 km	Long Haul to/from UK	Premium Economy Class	
≥ 3,700 km	International, to/from non-UK	Average Passenger	
≥ 3,700 km	International, to/from non-UK	Business Class	
≥ 3,700 km	International, to/from non-UK	Economy Class	
≥ 3,700 km	International, to/from non-UK	First Class	
≥ 3,700 km	International, to/from non-UK	Premium Economy Class	

A.4.2 – Ground Transport

Mode of transport	Geography	Emissions factor source
Car, non-electric vehicle	US and Canada	US EPA EF Hub 2024 - Table 10, and AR-5 for GWP
Car, non-electric vehicle	All other locations	UK DEFRA 2024
Car, electric vehicle	All locations	UK DEFRA 2024
Rail travel	All locations	UK DEFRA 2024

A.4.3 – Spend-Based Travel Emissions Factors

Geography – spend category (currency)	Emissions factor source
Canada - Air transport services (2023 CAD)	EXIOBASE, 2020 Data - Inflation Adjusted & Currency Converted
Canada - Other land transportation services (2023 CAD)	
United States - Air transport services (2023 USD)	
United States - Other land transportation services (2023 USD)	
Spain - Air transport services (2023 EUR)	
Spain - Other land transportation services (2023 EUR)	
Germany - Air transport services (2023 EUR)	
Germany - Other land transportation services (2023 EUR)	
Italy - Air transport services (2023 EUR)	
Italy - Other land transportation services (2023 EUR)	
Malaysia - Air transport services (2023 MYR)	
Malaysia - Other land transportation services (2023 MYR)	
Malaysia - Air transport services (2023 USD)	
Malaysia - Other land transportation services (2023 USD)	
Hong Kong - Air transport services (2023 HKD)	
Hong Kong - Other land transportation services (2023 HKD)	
Hong Kong - Air transport services (2023 USD)	
Hong Kong - Other land transportation services (2023 USD)	
United Kingdom - Air transport services (2023 EUR)	
United Kingdom - Other land transportation services (2023 EUR)	
Vietnam - Air transport services (2023 VND)	
Vietnam - Other land transportation services (2023 VND)	
The Philippines - Air transport services (2023 PHP)	
Indonesia – Air transport services (2023 IDR)	
Indonesia – Other land transportation services (2023 IDR)	

A.5 Employee Commuting & Homeworking

A.5.1 – Employee Commuting

Canada/US

Mode of transport	Emissions factor source
Passenger Vehicle – Car	2024 GHG Emissions Factor Hub | US EPA
Passenger Vehicle – Truck/Van	
Motorcycle	
Bus	
Transit Rail (Subway, Tram, Streetcar)	
Intercity Rail	

International

Mode of transport	Emissions factor source
Tank-to-Wheel (TTW) Emission Factors	
Passenger Vehicle – Car – Petrol	UK DEFRA 2024
Passenger Vehicle – Car – Diesel	
Passenger Vehicle – Car – Hybrid	
Passenger Vehicle – Truck/Van – Petrol	
Passenger Vehicle – Truck/Van – Diesel	
Passenger Vehicle – Truck/Van – Hybrid	
Motorcycle	
Bus	
Transit Rail (Tram, Streetcar)	
Transit Rail (Subway – underground)	
Intercity/National Rail	
Well-To-Tank (WTT) Emission Factors	
Passenger Vehicle – Car – Petrol	UK DEFRA 2024
Passenger Vehicle – Car – Diesel	
Passenger Vehicle – Car – Hybrid	
Passenger Vehicle – Truck/Van – Petrol	
Passenger Vehicle – Truck/Van – Diesel	
Passenger Vehicle – Truck/Van – Hybrid	
Motorcycle	
Bus	
Transit Rail (Tram, Streetcar)	
Transit Rail (Subway – underground)	

A.5.2 Employee Homeworking – Grid Electricity, Location based

Resource	Geography	Emissions factor source
Grid Electricity (Generation)	Canada – emissions factor applied by Province	Canada NIR Part 3, Published 2024 (1990-2022 Data) – Part 3 Annex 13
Grid Electricity	US – emissions factor applied by eGRID subregion	2024 GHG Emissions Factor Hub | US EPA
Grid Electricity	China	IRENA 2024 (National Level)
Grid Electricity	France	AIB 2024 (2023 Data)
Grid Electricity	Germany	AIB 2024 (2023 Data)
Grid Electricity	Ireland	AIB 2024 (2023 Data)
Grid Electricity	Italy	AIB 2024 (2023 Data)
Grid Electricity	Luxembourg	AIB 2024 (2023 Data)
Grid Electricity	Netherlands	AIB 2024 (2023 Data)
Grid Electricity	Portugal	AIB 2024 (2023 Data)
Grid Electricity	Spain	AIB 2024 (2023 Data)
Grid Electricity	Switzerland	AIB 2024 (2023 Data)
Grid Electricity	United Kingdom	UK DEFRA 2024
Grid Electricity	Bermuda	Harmonized IFI Default Grid Factors 2021 v3.2 (Published April 2022)
Grid Electricity	Chile	IGES List of Grid Emission Factors (2024) – Average operating margin
Grid Electricity	Hong Kong - HKEC	HKEC Sustainability Report 2023
Grid Electricity	Hong Kong - CLPG	CLPG Report 2023
Grid Electricity	India	IRENA 2024 (National Level)
Grid Electricity	Indonesia	IRENA 2024 (National Level)
Grid Electricity	Malaysia	IRENA 2024 (National Level)
Grid Electricity	The Philippines	IRENA 2024 (National Level)
Grid Electricity	Singapore	Singapore Energy Market Authority 2023
Grid Electricity	Vietnam	IRENA 2024 (National Level)
Grid Electricity	Uruguay	IGES List of Grid Emission Factors (2024) – Average operating margin

A.5.3 Employee Homeworking – Heating (Natural Gas & Fuel Oils)

Resource	Geography	Emissions factor source
Natural Gas	Canada – emissions factor applied by Province	Canada NIR 2024, Part 2, Published 2024 (1990-2022 Data) - Part 2 Annex 6
Light Fuel Oil	Canada	Canada NIR 2024, Part 2 Annex 6
Natural Gas	US	2024 GHG Emissions Factor Hub | US EPA
Fuel Oil No. 2	US	2024 GHG Emissions Factor Hub | US EPA
Propane (LPG)	US	2024 GHG Emissions Factor Hub | US EPA
Natural Gas	All Other Countries	UK DEFRA 2024