# GHG EMISSIONS AND METHODOLOGY

## What is greenhouse gas reporting?

Greenhouse gas reporting is the process of documenting the amount of greenhouse gases (GHGs) emitted by our organization. Total emissions are calculated from a variety of sources, including equipment fuel consumption and building energy consumption, and are reported on a recurring basis to inform business practices and policies.

## Why is it important?

Measuring our GHG emissions through an annual inventory process provides us with quantitative insights into the impact of our operations that we can report transparently to stakeholders. It also allows us to track our emissions over time and identify forward-looking pathways for reducing our emissions in line with our reduction targets and the Paris Agreement goal of keeping global warming below 1.5C.

## What sources of data are included in the Inventory?

The GHG inventory assessment covers regional corporate headquarters, business divisions, including major projects and joint venture projects, fleet vehicles, corporate travel, and relevant scope 3 categories as determined by the scope 3 scan (see below). The results of this inventory are published annually in Aecon's Sustainability Report [add link].

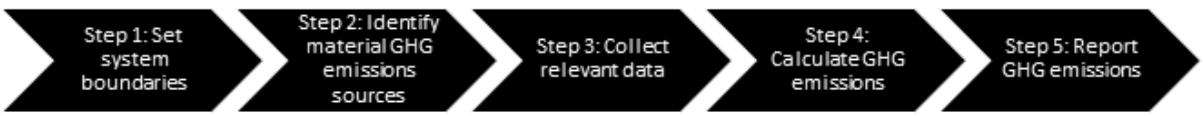
Aecon omits the following sources of GHG emissions due to lack of materiality:

- Fugitive emissions from use of compressed gases other than Acetylene and refrigerants (<0.1% of scope 1 emissions)
- Business travel outside of air travel and travel accommodations (<1% of scope 3 category 6 emissions)

## How do we calculate our greenhouse gas emissions?

Aecon's GHG inventory is prepared in accordance with The Greenhouse Gas Protocol (GHG Protocol) and aligned with ISO 14064-1:2018. The principles of GHG accounting in the GHG Protocol (relevance, completeness, consistency, accuracy and transparency) were used to guide the quantification and ensure that our inventory represents a faithful, true and fair account of Aecon's GHG emissions.
We followed a five-step process (see Figure 1) to select the appropriate methodologies and assumptions, establish organizational and operational boundaries, identify GHG emission sources, collect activity data and emission factor references, calculate and estimate GHG emissions, and compile our GHG inventory report.

*Figure 1: GHG Emissions Inventory Quantification Process*



## What are the reporting boundaries?

Aecon's GHG emissions inventory follows the calendar year and is in line with our financial reporting period, January 1 to December 31. We use an operational control approach, as defined by the GHG Protocol, to establish system organizational boundaries for the inventory. Using this approach requires accounting for all GHG emissions from operations over which Aecon has operational control, including construction activities and purchases for project owners within operational control. For joint venture projects, we assume that our operational control is equal to our revenue share in the project. Aecon reports GHG data for all subsidiaries maintained under Aecon Group Inc. and Aecon Construction Group Inc.

Emissions of carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$) are calculated using emission factors and conversions provided by government sources (See **Appendix A**). Emissions of HFCs, PFCs, $NF_3$ and $SF_6$ or other GHGs are not separately reported in this inventory but may be partially captured when data is presented in units of $CO_2$ equivalents.

We use the total global warming potential (GWP) from the IPCC's 4th Assessment Report (AR4), which is consistent with the GWPs used in Canada's latest National Inventory Report, as of Feb 29, 2024.

**Appendix B,** below, outlines all of Aecon's emission sources as well as their respective calculation methods.

## What about our indirect emissions (Scope 3)?

In 2021, Aecon conducted a Scope 3 Scan to provide an order-of-magnitude view of our total scope 3 GHG emissions across 15 categories defined by the GHG Protocol. This scan helped determine the scope and boundaries of our inventory by assessing the significance and materiality of our scope 3 emissions sources.

The results of the scan showed that Aecon's material scope 3 categories were category 1 (purchased goods and services), category 3 (fuel and energy related activities) and category 4 (upstream transportation and distribution), accounting for over 90% of Aecon's scope 3 emissions. Aecon therefore focuses our GHG quantification, supplier engagement and target-setting efforts on these 3 categories.

## How do we account data that is not available?

In some cases, data required for the GHG inventory is not available and Aecon must estimate to fill data gaps. Consumption data used to calculate GHG emissions may be estimated using spend data, partial year data, industry benchmarks or fuel / energy consumption from similar project types. 85% of Aecon's 2023 scope 1 and 2 emissions were calculated using actual primary data. We strive to increase data coverage year over year.

## What emissions reduction targets have we set?

In addition to quantifying GHG emissions annually, Aecon has set external GHG emission reduction targets. Our active targets are as follows:

- Target 1: Aecon has committed to a 30% reduction in direct CO2 emissions (Scopes 1 and 2) by 2030, as compared to a 2020 baseline. This is an intensity-based target, based on economic output and represents tonnes of CO2 per million dollars of revenue.
- Target 2 – Net zero: Aecon has committed to reaching net-zero GHG emissions across the value chain by 2050.

Aecon has submitted targets to the Science Based Target initiative (SBTi), and pending approval, will replace our existing net-zero target. Our SBTi targets are more ambitious in scope and levels of reduction than our existing targets.

## How do we track emissions over time to determine progress toward our targets?

To maintain a like-for-like comparison of emissions over time, historic emission data are recalculated and restated to account for:

- Historical adjustments following significant structural changes, like mergers and acquisitions
- Restatements following significant changes to quantification methodology or corrections in historical data due to error or improved data quality

Our threshold for what is deemed “significant” is whether cumulative impacts result in a change of greater than 5% compared to previously reported base year GHG emissions. This threshold applies to both adjustments and restatements.

## Appendix A: Emission factors

GHG emission factors are typically updated annually. As such, every year that Aecon quantifies their GHG emissions, the quantifier updates the GHG emission factors based on the most recently published factors, typically from government sources.
Emission factor publishers may include un-validated emission factors for the most recent year. The quantifier elects not to use the un-validated values, and instead uses the most recent available emission factor that has been validated.
Historical emission factors can change over time. When this happens, the quantifier updates the emission factors for prior inventories to recalculate the resulting emissions.

| Emission factor type | Source | Source link |
|---|---|---|
| • Electricity (Canada)<br>• Natural gas (Canada)<br>• Propane (Canada)<br>• Gasoline (Canada)<br>• Diesel (Canada) | National Inventory Report 2023 | URL |

| | | |
|---|---|---|
| • Electricity (US) | EPA eGRID2021, Jan 2023 (split-out by egrid region) | URL |
| • Natural gas (non-Canada)<br>• Propane (non-Canada)<br>• Gasoline (non-Canada)<br>• Diesel (non-Canada)<br>• Biodiesel<br>• Renewable diesel<br>• Ethanol | US Environmental Protection Agency (EPA) 2023 - Emission Factors for Greenhouse Gas Inventories - Table 1 - Stationary Combustion | URL |
| Acetylene | Methodology for Reporting 2011 B.C. Public Sector Greenhouse Gas Emissions; Table 1: Stationary Fuel Combustion; Acetylene | URL |
| Asphalt production | US Environmental Protection Agency (EPA) 2000 - Hot Mix Asphalt Plants Emission Assessment Report | URL |
| Airport passengers (Bermuda) | Airport carbon accreditation annual report 2019-2021 | URL |
| Purchased goods and services | 2021 Supply Chain GHG Emission Factors for US Commodities and Industries v1.2, United States Environmental Protection Agency, 2023 (split-out by spend category) | URL |
| Air business travel | US Environmental Protection Agency (EPA) 2023 - Emission Factors for Greenhouse Gas Inventories - Table 10 – Scope 3 Category 6: Business Travel and Category 7: Employee Commuting | URL |

## Appendix B: GHG emissions methodology by emission source

| Scope | Emission sources* | Calculation method |
|---|---|---|
| 1 | Natural gas combustion for building heating | Total natural gas paid for by Aecon (utility bills) multiplied by regional emission factor |
| | Fuel combustion for mobile / stationary equipment (including biogenic) | Total fuel paid for by Aecon (fuel tracking, fuel cards and utility bills) multiplied by regional emission factor (separated by fuel type) |
| 2 | Emissions indirectly associated with electricity consumption at Aecon's offices and project sites | Total electricity paid for by Aecon (utility bills) multiplied by regional emission factor |

| | | |
|---|---|---|
| 3 – C1 – Purchased goods and services | Upstream emissions associated with consumables and services purchased for corporate, and construction operations e.g. concrete, steel, subcontractors) | Total spent by Aecon for each spend category multiplied by a supply chain emission factor |
| 3 – C3 – Fuel- and energy-related activities not included in scope 1 and 2 | Extraction, production, and transportation of purchased fuels and energy | Total fuel and electricity paid for by Aecon multiplied by regional upstream emission factor (separated by energy type)** |
| 3 – C4 – Upstream transportation and distribution | Transportation services paid for by Aecon | Total spent by Aecon on upstream transportation and distribution multiplied by supply chain emission factor |
| 3 – C6 – Business travel | Transportation and travel accommodation of employees for business related activities<br><br>Non-air business travel and hotel accommodation emissions deemed immaterial based on GHG emission scan. Omitted from inventory and target. | Flight distances calculated based on routing data and multiplied by distance-based emission factors. Different emission factors are used depending on flight distance (e.g., short- vs. long-haul) |

*Aecon does not have material sources of the following categories of scope 3 emissions: 2, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15

**Aecon intends to quantify scope 3 category 3 emissions and include them in our reporting and target boundaries moving forward