

# APPENDIX Methodology

The analysis and findings presented in this report, including both the calculated and forecasted information, are based on data obtained from various corporate reports. Since this is a bespoke analysis, we had to rely on estimates and assumptions to translate the emissions and targets set by each company to renewable energy demand and also to separate this demand by industry and province.

A detailed explanation of the methodology used in the analysis, including the key parameters and necessary assumptions for the calculations, is provided in the methodology below.

If you have any questions regarding our approach or if you are a company curious to understand how your industry metrics were calculated, please reach out to [info@businessrenewables.ca](mailto:info@businessrenewables.ca).

## Contents

|   |          |
|---|----------|
| <b>1. Data sources used.....</b>  | <b>2</b> |
| <b>2. Showing our work.....</b>   | <b>2</b> |
| 2.1. Data collection .....  | 2        |
| Determining the emissions gap using climate targets and Scope 2 emissions | 2        |
| Estimating Canadian emissions   | 4        |
| Provincial renewable energy breakdown                                     | 4        |
| 2.2. Emissions to renewable energy demand.....                            | 4        |
| <b>3. Key considerations.....</b>   | <b>5</b> |
| 3.1. Companies without emission targets.....                              | 5        |
| 3.2. Companies with climate targets beyond 2040.....                      | 5        |
| 3.3. Companies already achieved their climate target .....                | 5        |



# 1. Data sources used

This report examines the renewable energy required by the top 100 Canadian companies to meet their Scope 2 emissions target. These companies were selected from the TSX based on market capitalization. This method was chosen to highlight the largest and most financially significant companies in Canada.

The analysis and the related findings draw on publicly available corporate reports that provide data on:

- climate targets
- Scope 2 emissions
- greenhouse gas inventory
- company financials
- company operations

Due to variations in corporate disclosures, multiple types of reports were reviewed, including:

- environmental, social and governance reports
- sustainability reports
- annual financial reports

## 2. Showing our work

### 2.1. Data collection

This section covers the different parameters we evaluated, and how we gathered, calculated, and segmented the data.

#### Determining the emissions gap using climate targets and Scope 2 emissions

We started our analysis by identifying the emissions targets of the top 100 companies, specifically their Scope 2 emissions targets – what level of Scope 2 emissions is the organization trying to achieve, and by what date? These targets were taken from each company's ESG or sustainability reports.

It is important to highlight that while many companies have emissions targets, not all of them specify emissions target by scope (Scope 1, 2 and 3 emissions targets). Oftentimes, they instead have a Scope 1 and 2 emissions target – combined into a single number. For

these organizations, our analysis used their combined Scope 1 and 2 emissions target and created a separated, proportional Scope 2 goal.

Once the Scope 2 target was established, the next step was to determine each company's actual current Scope 2 emissions. The purpose here was to calculate the Scope 2 emissions gap, i.e., the difference between current emissions versus their stated targets. This data can then be used to estimate the corresponding renewable energy demand.

To calculate the emissions gap, three key Scope 2 emissions data points were identified:

- **Baseline emissions:** The company's emissions in their baseline year. Baseline year is the reference year against which companies set their climate target and use as a baseline to track emissions reduction progress over time. Baseline emissions were necessary for targets represented as proportional reduction of the baseline, i.e. 40% reduction from 2010 levels.
- **Current emissions:** The most recent emissions reported by the company in their reporting year. Although data collection for this project occurred in 2024, companies report on varying timelines, so the reporting year may differ across firms.
- **Target emissions:** The level of emissions a company aims to reach in its target year, based on the stated reduction target and baseline year. This data point is often not directly provided by companies and was calculated using the companies' Scope 2 emissions reduction target.
- For example, if Company ABC aims to reduce its Scope 2 emissions by 30% by 2030 from a 2019 baseline of 250,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e), the target emissions for 2030 would be:
- Target emissions =  $(1 - 0.30) \times 250,000 = 175,000$  tonnes of CO<sub>2</sub>e

Using these three data points, the **emissions gap** was calculated for each company with a climate target. This difference between current emissions and target emissions represents the reductions a company must undertake to meet their Scope 2 target. If a company closes the emissions gap, they have achieved their Scope

2 emissions reduction target. But to do so, companies need to increase the use of renewable energy to power their operations. This allows us to translate the emissions gap into the potential renewable energy demand companies require to achieve their targets.

Some of the key assumptions in the calculation were:

- Scope 1 and 2 emissions reductions are equal. This means for companies where Scope 1 and 2 emission targets were used, the same reduction rate was applied to Scope 2 emissions.
- Capacity factor of 30% is used to represent an even blend of wind and solar, while also accounting for regional differences. Capacity factor is the amount of energy a generating unit actually produces relative to the energy the unit could produce at continuous full power for the same time periods (in megawatt hours or gigawatt hours)
- Unless separately available, on-site solar is assumed to not be an option
- Assume electricity load remains constant until the emissions target date is reached
- If a company has purchased unbundled renewable energy certificates (RECs), the analysis assumes that the emissions offset by those RECs offset are still potentially unmet demand for vPPAs, because these RECs need to be purchased annually. Unbundled RECs are separated from a generating facility, and purchasing them does not help enable new renewable energy capacity being added to the grid. As a result, unbundled RECs have a reduced environmental impact compared to vPPAs with additionality constraints.
- Electricity carbon intensity values for each province and territory were taken from the Government of Canada's published reference values, updated for 2025.<sup>1</sup> The values are assumed to remain constant until 2050.

1. Government of Canada, "Emission factors and reference values," Table 5.2, May 10, 2024.  
<https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/output-based-pricing-system/federal-greenhouse-gas-offset-system/emission-factors-reference-values.html>



## Estimating Canadian emissions

The calculated emissions gap for a company is for its operations across all facilities and regions. However, to match renewable energy demand to use within the same country, our analysis focuses only on Canadian emissions. For this reason, the emissions gap of a company for only its Canadian operations needs to be determined. Since most companies do not provide Canadian specific emissions, various assumptions and estimations had to be made to derive it.

To find the Canadian contribution, a proxy measurement to approximate the distribution of electricity consumption in Canada had to be estimated. The analysis looked at various proxy measurements based on the

type of industry the company fell under. For example, while estimating the electricity usage distribution for a bank in Canada that has branches across the world, we looked at the number of offices the bank has in Canada and used that as a proportion to estimate the electricity consumption in Canada which we then used as an indicator to assume the Scope 2 emissions.

The estimation uses the company's operations as a key factor to assign a proxy measurement. For example, for a pipeline company, the main operation is to transport oil and gas, so the length of pipelines was used to estimate the amount of emissions the company would have in Canada.

Some of the proxy measurements include:

- Financial institutions: Number of offices, number of employees
- Oil and gas, mining and quarrying companies: Length of pipelines, number of facilities, production volumes
- Manufacturing companies: Number of manufacturing facilities
- Technology companies: Number of data centres

The electricity consumption/load is assumed to be the same or constant across all proxy measurements.

## Provincial renewable energy breakdown

A similar process to the one outlined above was applied at a more granular level to determine the proportion of corporate renewable energy demand required across different provinces. Canadian provinces and territories vary widely in what types of sources generate electricity, resulting in different carbon intensities across the jurisdictions. A proxy was developed based on the scale of a company's operations in each province.

The main regions the analysis focused on were British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and Nova Scotia. There were only negligible Scope 2 emissions in the two other provinces and the northern territories and for this reason the region was not included in the analysis.

## 2.2. Emissions to renewable energy demand

To this point, we have calculated the total emissions gap and narrowed that down to emissions from Canadian operations. We also developed a provincial proxy to help estimate the distribution of a company's electricity use across provinces.

This data was used to translate the emissions gap into renewable energy demand in gigawatt-hours (GWh). The subsequent value was then multiplied with the provincial proxy to allocate the renewable energy across

each province where the company operates.

Once the renewable energy required in each province was determined, the renewable energy capacity or demand in megawatts (MW) was calculated. An average capacity factor of 30%, representing a balanced mix of wind and solar energy and accounting for regional variations, was used while estimating the renewable energy capacity.



## 3. Key considerations

### 3.1. Companies without emission targets

Out of the 100 companies evaluated, 20 companies did not have any targets and were excluded from the analysis. The data presented in the report is based on the remaining 80 companies.

The 20 companies without any specific targets fall under

a mix of industries including finance and insurance, mining and oil and gas, technical services, and real estate.

It's interesting to note one company in this list of 20 companies is already carbon neutral.

### 3.2. Companies with climate targets beyond 2040

Federally, Canada has a goal to reach net-zero emissions by 2050. This was made official through the Canadian Net-Zero Emissions Accountability Act, which became law in June 2021. **The Act requires the government to set emission reduction targets every five years, create detailed plans to meet them, and report publicly on progress.** It legally binds Canada to long-term climate planning. This effort, while it aligns with Canada's commitment under the Paris Agreement, is also rooted in domestic priorities in environmental protection, economic resilience and public health.

Canada's commitment to achieving net-zero emissions by 2050 implies a fully decarbonized economy. As a result, organizations in 2050 would be operating on

a decarbonized electricity grid, leading to negligible Scope 2 emissions from their operations. Organizations that only have 2050 Scope 2 emission reduction targets would, as a result, already be relying on clean electricity by that time. For this reason, the analysis focuses primarily on companies with emissions targets set between 2025 and 2040. However, emissions intensity for companies with only 2050 targets has also been reviewed to illustrate the potential emissions and corresponding renewable energy demand from these organizations.

Using this consideration, nine companies have 2050 targets, so unless stated otherwise, the data below will only consider the remaining companies.

### 3.3. Companies already achieved their climate target

Four companies in the scoped list have already achieved their climate targets. These companies belong in the mining, quarrying, and oil and gas extraction industry; agriculture; forestry, fishing and hunting; and the

manufacturing industry. We have excluded these companies from a majority of the analysis, since they would not have any renewable energy demands to meet their Scope 2 emission reduction targets.