
Aprio
Passionate for what's next™
EmpowerAI
Greenhouse Gas (GHG) Emissions Report 2023

Table of Contents

01. Summary

1. Summary

Aprio Advisory Group, LLC (Aprio) has measured Empower AI's Corporate Greenhouse Gas Inventory[1] for the calendar year 2023. This emissions inventory report provides a summary of Carbon Dioxide equivalent (CO2e) emissions generated by Empower AI's business activities using principles of GHG accounting and reporting as established by the World Resources Institute/World Business Council for Sustainable Development's Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard. The report includes relevant calculation methodology, assumptions made, and time-series comparisons. This report can be used to establish a greenhouse gas baseline, set future reduction targets, and develop future climate action strategies.

Aprio exclusively used Empower AI's provided data to measure emissions from their own business operations and does not include the performance or activities of its suppliers, contractors, or partners.

[1] **Inventory:** a comprehensive list of all greenhouse gas emissions produced by an organization within a defined boundary, quantified using standardized methodologies, allowing them to measure and manage their climate impact across various operational areas (GHG Protocol, 2003) https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

02. Organization Boundary and Scope

2. Organization Boundary and Scope

Consolidation Approach

The Greenhouse Gas Protocol provides a standardized framework for organizations to measure and manage greenhouse gas (GHG) emissions. One crucial aspect of this framework is setting organizational boundaries, that determine which emissions are included in an organization's GHG inventory. The Protocol offers two primary approaches for defining these boundaries: the equity share approach and the control approach. The control approach is further divided into financial control and operational control.

Aprio utilizes the operational control approach to determine Empower AI's GHG emissions boundary. This approach includes any asset or facility in which Empower AI has an operating interest and is consistent with the common practice of reporting emissions for each facility or plant operated by the reporting company. For instance, both owned and leased assets have been included in the inventory.

Scopes definition for GHG accounting and reporting purposes

- **Scope 1** (direct emissions): refers to emissions from sources produced by a company, such as emissions from combustion of fossil fuels and fugitive emissions from refrigerants.
- **Scope 2** (indirect emissions): refers to emissions from purchased electricity, heat, or steam consumption.
- **Scope 3** (indirect emissions): refers to emissions from the company's activities that occur outside its own operations and controlled sources.

Operating Limits

The list below details all emission sources captured in Empower AI's GHG inventory organized by scope:

- Scope 1 (**Stationary Combustion**): Onsite natural gas, diesel back-up generator, estimated refrigerant fugitive emissions
- Scope 2 (**Purchased Electricity**): Electric utilities
- Scope 3 (**Value Chain**): Purchased Goods and Services, Business Travel

Empower AI locations included in the report:

- Reston, VA HQ
- Richmond, VA Office
- Sierra Vista, AZ Office

03. Calculation Process and Emission Factors

3. Calculation Process and Emissions Factors

Main GHGs Categories & Calculation Methodology

- Carbon Dioxide (CO_2)
- Methane (CH_4)
- Nitrous Oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)
- Nitrogen Trifluoride (NF_3)

These gases are the primary focus of GHG inventories because they have significant global warming potentials (GWPs) and are included in international agreements, such as the Kyoto Protocol. Organizations reporting under the GHG Protocol typically account for emissions of these gases due to their impact on climate change.

Both primary and secondary data have been used in these calculations. Primary data is provided by suppliers or other property management representatives. Secondary data includes industry average data (e.g., from published databases, government statistics, literature studies, and industry associations), financial data, proxy data, and other generic data.

Primary data was provided for Scope 1 and 2 emission measurement. Industry-standard modeling methods and associated up-to-date published emission factors to convert activity data into associated GHG emissions is used to uncollectible data. The calculation processes for all emissions are based on multiplying activity data by proxy values known as emission factors. Emission factors are "calculated ratios relating GHG emissions to a proxy measure of activity at an emissions source" (GHG Protocol, 2004).

Calculating Greenhouse Gas Emissions Using Activity Data and Emission Factors

Basic Equation: activity data x emission factor = GHG emissions

Converting gases into CO_2 equivalents

Equation: Emissions of Gas (Kg) x GWP of Gas = Emissions in CO_2e (Kg CO_2e)

Calculation Tools

Emissions calculations were performed using the GHG Protocol cross-sector and sector-specific tools where appropriate.

Stationary Combustion Emissions

Generation of electricity, heat, or steam
Calculations were based on quantities of commercial fuels using published emission factors.

- Estimate: CO_2 emissions from a diesel back-up generator in one facility.
- Estimate: CO_2 emissions from natural gas use in one facility, presumably for water heating and cooling equipment.

Emission Factor
Kilogram of CO2 per gallon of diesel
Kilogram of CO2 per cubic feet natural gas (converted from mmBtu)

Fugitive Emissions

Emissions from the refrigeration and air conditioning that result from the leakage of the equipment during the reporting year.

Refrigerants used in each facility

- Actual: R-22 (Reston HQ & Sierra Vista)
- Modeled: HFC-1234a (Richmond)
- Actual: R410A (Sierra Vista)

Activity and Emission Factors
The Screening Method (IPCC, 2006) was used to determine the type of equipment, total refrigerant charge (lb.), annual leakage (%), and emission factors (%).

Assuming leakage of 5% annually and .0015 tons/sqft

Purchased Electricity

Approaches and Methodology

- Location-based method: reflects the average emissions intensity of grids on which energy consumption occurs.
- Market-based method: reflects emissions from electricity that companies have purposefully chosen (or defaulted due to lack of choice).

Greenhouse Gases and Emission Factors included in the calculations
Emissions = Quantity of electricity purchased x EF

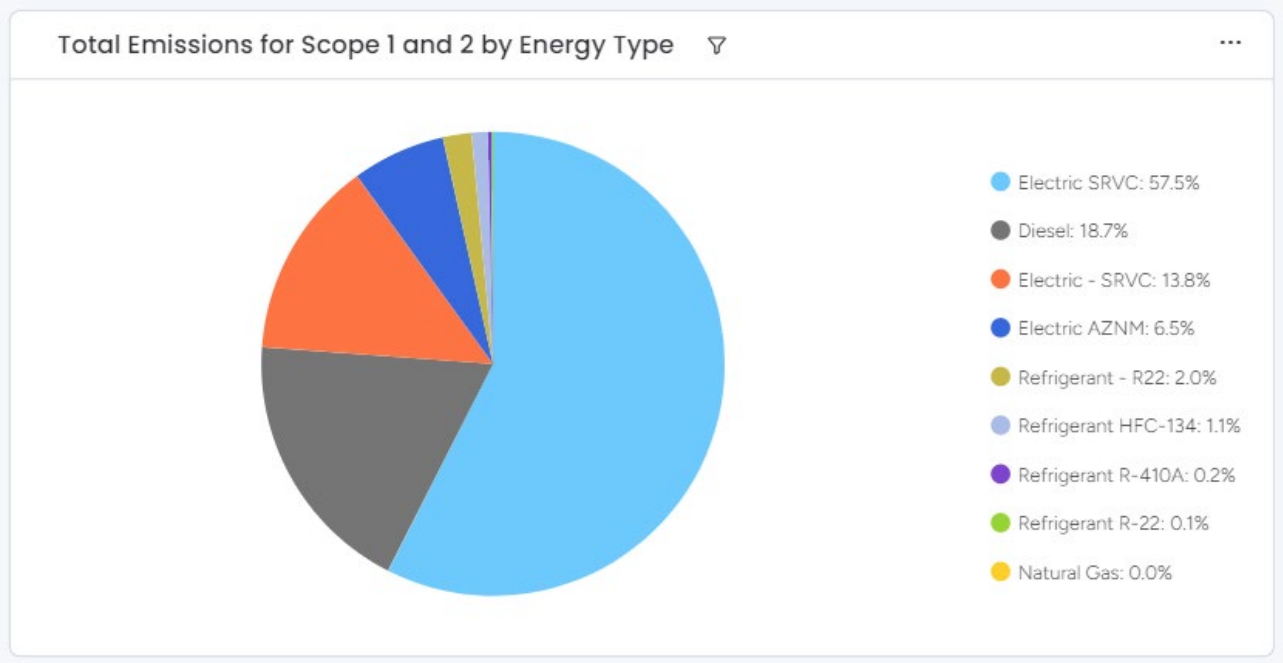
Where:
Emissions = Mass of CO_2, CH_4 and N_2O
EF = CO_2, CH_4 and N_2O emission factor

Options to find activity data

1. Actual electricity
2. Building-specific data emission (for facilities shared by more than one organization)
3. Similar building estimation (extrapolate based on buildings that are similar in location, size, efficiency, hours of operation, etc.)

Scope 2 emissions were calculated for each location using a combination of actual electricity used and building-specific data estimates. The electricity consumption data was collected from property management, supplier data and emission factors published by U.S EPA's eGRID numbers from 2023 & EPA's Emission Factors Hub from 2023.

Basic Equation = (Area of org. space) / (total building area) x (total building electricity use) = Approx. kWh or MWh



Scope 3 Emissions

Empower AI's majority of Scope 3 emissions come from Category 1 -Purchased Goods and Services and Category 6 -Business Travel.

Purchased Goods and Services

Based on screening, purchased goods and services contributed significantly to Scope 3 emissions. The spend-based method was used to calculation emissions in this category. Some extrapolation techniques were used to obtain cradle-to-gate factors. (Technical Guidance for Calculating Scope 3 Emissions, GHG Protocol)

Spend-based Method
This method involved gathering data on the economic value of acquired goods and services, then multiplying these by the appropriate EEIO emission factors using databases.

List of items/activities included in this category

- Appliances
- Electrical Equipment
- Computers & Electronic Products
- Education, Healthcare and Social Services
- Paper & Printing Materials
- Machinery
- Furniture
- Professional Services (accounting, repair and maintenance services, business support, legal services, etc.)
- Commercial Equipment Rental

Data Sources

- Internal data system
- Purchasing records

Activity Data
The expenditure on goods and services is reflected in dollar amounts. Where applicable, inflation data was utilized to adjust market values between the year of the EEIO emission factors and the year of the activity data.

Emission Factors
Unit of CO_2/$ (Kg CO_2/$)

Basic Equation = ∑ (value of purchased good or service ($) × emission factor of purchased good or service per unit of economic value (kg CO_2e/$))

Business Travel

Screening revealed that business travel greatly impacted Scope 3 emissions and the travel data aligned with business goals. The data available was selected on the types and quantities/cost of fuels consumed during travel. (Technical Guidance for Calculating Scope 3 Emissions, GHG Protocol)

Spend-based Method

The money spent on travel providers was allocated to this category. This approach involves multiplying the expense on transportation and hospitality by relevant EEIO emission factors.

List of items/activities included in this category

- Transportation (air, rail, road)
- Hotels & Food Services

Data Sources

- Internal data system

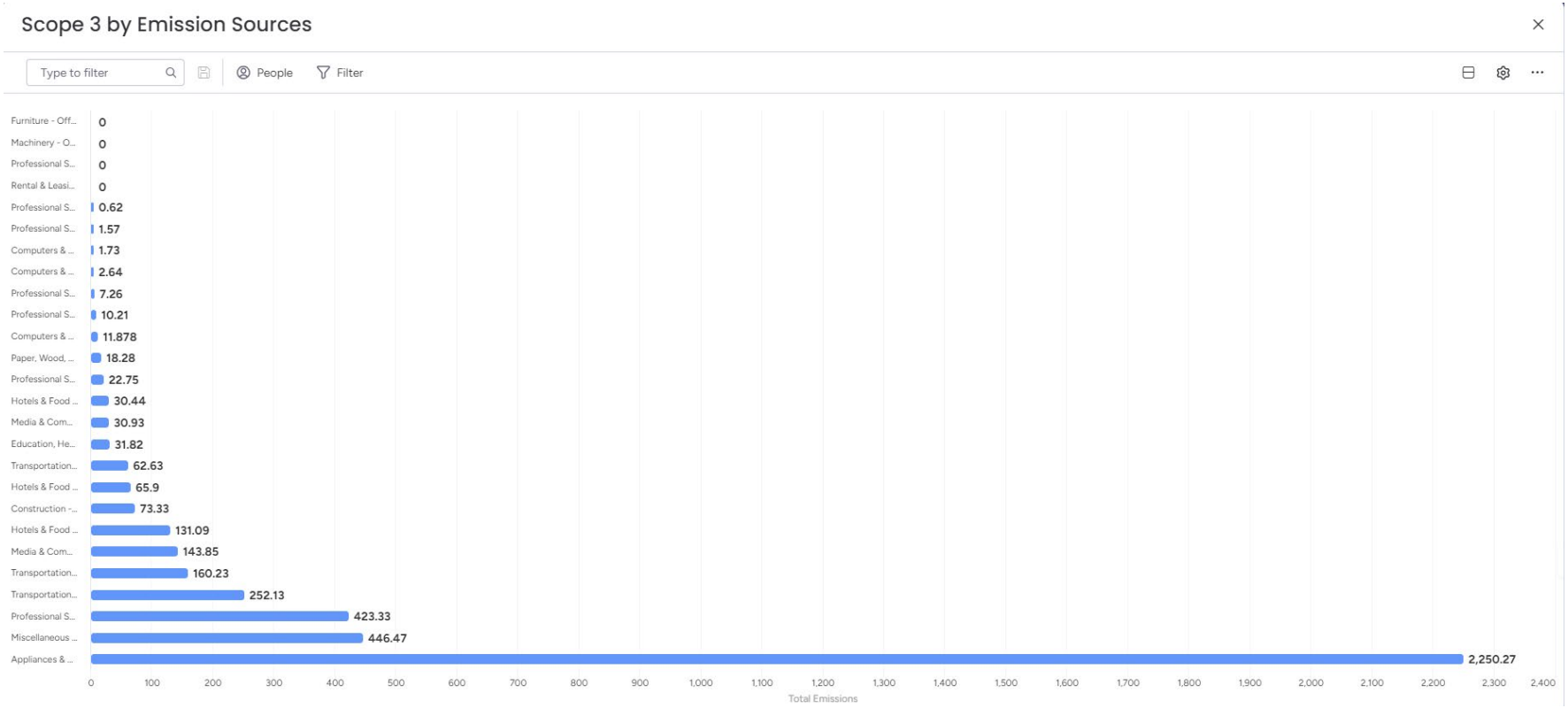
Activity Data

Activity data for business travel is based on estimates of emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties.

Emission Factors

Unit of CO_2/$ (Kg CO_2/$)

Basic Equation = ∑ (amount spent on transportation by type ($) × relevant EEIO emission factors per unit of economic value (kg CO_2e/$))


Scope 3 by Emission Sources
Type to filter
People
Filter
Furniture - Off... 0
Machinery - O... 0
Professional S... 0
Rental & Leasi... 0
Professional S... 0.62
Professional S... 1.57
Computers & ... 1.73
Computers & ... 2.64
Professional S... 7.26
Professional S... 10.21
Computers & ... 11.878
Paper, Wood, ... 18.28
Professional S... 22.75
Hotels & Food ... 30.44
Media & Com... 30.93
Education, He... 31.82
Transportation... 62.63
Hotels & Food ... 65.9
Construction -... 73.33
Hotels & Food ... 131.09
Media & Com... 143.85
Transportation... 160.23
Transportation... 252.13
Professional S... 423.33
Miscellaneous ... 446.47
Appliances & ... 2,250.27
0 100 200 300 400 500 600 700 800 900 1,000 1,100 1,200 1,300 1,400 1,500 1,600 1,700 1,800 1,900 2,000 2,100 2,200 2,300 2,400
Total Emissions

04. Exclusions

4. Exclusions

This inventory excludes emissions that are minor in representation or where quantifiable evidence was impractical to obtain. Within the inventory boundary, the following categories in Scope 3 emissions were excluded from this report:

- Category 2 (**Capital Goods**): There were no significant capital goods purchases related to manufacturing or production equipment.
- Category 3 (**Fuel and Energy-Related Activities Not Included in Scope 1 and 2**): Fuel and energy-related activities beyond those included in Scope 1 and 2 are not under the control or influence.
- Category 4 (**Upstream Transportation and Distribution**): The company did not engage in the production or physical distribution of goods.
- Category 5 (**Waste Generated in Operations**): Waste management services are provided and controlled by building management at operation sites. Emissions from this category are excluded due to lack of operational control and insignificance.
- Category 8 (**Upstream Leased Assets**): There are no upstream leased assets that contribute significantly to the company's GHG emissions.
- Category 9 (**Downstream Transportation and Distribution**): The company did not have downstream transportation and distribution activities associated with delivering goods to customers.
- Category 10 (**Processing of Sold Products**): The company did not sell physical products that require further processing after sale.
- Category 11 (**Use of Sold Products**): There are no physical products whose use would generate GHG emissions.
- Category 12 (**End-of-Life Treatment of Sold Products**): There are no products that reach an end-of-life stage requiring disposal or recycling.
- Category 13 (**Downstream Leased Assets**): There are no significant emissions associated with lease assets to other companies.
- Category 14 (**Franchises**): The company did not operate under a franchise model and did not have any franchised operations.
- Category 15 (**Investments**): The company did not have an investment portfolio that includes equity stakes in other companies or projects that would necessitate accounting for associated GHG emissions.

05. Inventory Results

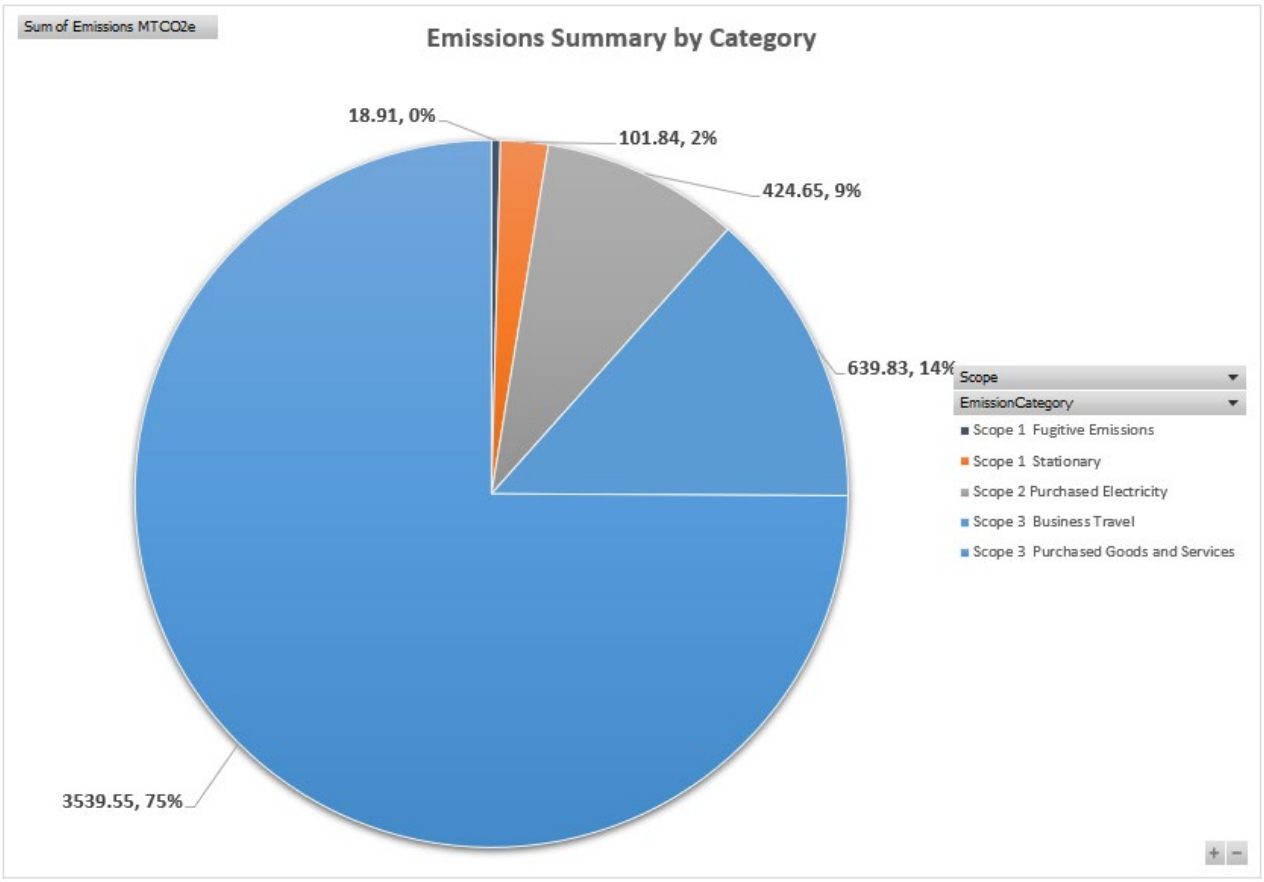
5. Inventory Results

Emissions Data

In 2023, total direct emissions amounted to 120.75 CO_2e (2.5%). Indirect emissions amounted to 4,604.03 CO_2e (97.44%) of total emissions.

Scope Categories	Sum of Emissions MTCO2e
Scope 1	**120.75**
Fugitive Emissions	18.91
Stationary	101.84
Scope 2	**424.65**
Purchased Electricity	424.65
Scope 3	**4179.38**
Business Travel	639.83
Purchased Goods and Services	3539.55
Grand Total	**4724.78**

The following graphs show the distribution of direct and indirect emissions by scope and category


Sum of Emissions MTCO2e
Emissions Summary by Category
18.91, 0%
101.84, 2%
424.65, 9%
639.83, 14%
3539.55, 75%
Scope
EmissionCategory
Scope 1 Fugitive Emissions
Scope 1 Stationary
Scope 2 Purchased Electricity
Scope 3 Business Travel
Scope 3 Purchased Goods and Services

06. Resources

6. Resources

Reporting Guidelines:

- GHG Protocol Corporate Accounting and Reporting Standard (2004).
- Greenhouse Gas Protocol Technical Guidance for Calculating Scope 3 Emissions (V1.0)
- 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories
- U.S. EPA Center for Corporate Climate Leadership – GHG Inventory Guidance

Global warming potential values:

- IPCC Sixth Assessment Report (AR5), 100-year time horizon
- U.S. EPA | Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021, EPA 430-R-23-002, April 2023 https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021.

Emissions Factor:

- U.S. EPA's eGRID and Emission Factors for GHG Inventories (2023).
- 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories
- U.S. EPA | Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021, EPA 430-R-23-002, April 2023 https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021.
- U.S. EPA Simplified GHG Emissions Calculator

07. Glossary

7. Glossary

Activity Data: A quantitative measure of a level of activity that results in GHG emissions. This data represents the amount of energy consumed, materials used, distance traveled, or any other measurable activity that produces emissions.

CO_2 Equivalent (CO_2e): The universal unit of measurement to indicate the global warming potential (GWP) of each greenhouse gas, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate the release (or prevention) of different greenhouse gases against a common basis.

Control: The ability of a company to direct the policies of another operation. More specifically, it is defined as either operational control (the organization or one of its subsidiaries has the full authority to introduce and implement its operating policies) or financial control (the organization has the ability to direct the financial and operating policies of the operation to gain economic benefits from its activities).

EEIO: Environmentally-extended input-output models estimate energy use and/or GHG emissions resulting from the production and upstream supply chain activities.

Emissions: The release of greenhouse gases into the atmosphere.

Emission Factor (EF): A factor that converts activity data into GHG emissions data.

Global Warming Potential (GWP): A factor that describes the relative warming impact of one unit mass of a greenhouse gas compared to carbon dioxide over a specific time horizon (usually 100 years).

Kyoto Protocol: International treaty adopted in 1997, under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). The protocol sets binding emission reduction targets for 37 industrialized countries and the EU.

Greenhouse Gases (GHGs): GHGs are the seven gases covered by the UNFCCC. Carbon dioxide (CO2); methane (CH4); nitrous oxide (N2O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); sulphur hexafluoride (SF6), and nitrogen trifluoride (NF3).

Intergovernmental Panel on Climate Change (IPCC): An international body of climate change scientists. The role of the IPCC is to assess the scientific, technical, and socioeconomic information relevant to the understanding of the risk of human-induced climate change.

Inventory Boundary: An imaginary line that encompasses the direct and indirect emissions included in the inventory. It results from the chosen organizational and operational boundaries.

Organizational Boundaries: The boundaries that determine the operations owned or controlled by the reporting company, depending on the consolidation approach taken (equity or control approach).

08.

About Aprio

8. About Aprio

“Aprio" is the brand name under which Aprio, LLP, and Aprio Advisory Group, LLC (and its subsidiaries) provide professional services. LLP and Advisory (and its subsidiary entities) practice as an alternative practice structure in accordance with the AICPA Code of Professional Conduct and applicable law, regulations and professional standards. LLP is a licensed independent CPA firm that provides attest services to its clients, and Advisory and its subsidiary entities provide tax and business consulting services to their clients. Advisory and its subsidiary entities are not licensed CPA firms. APRIO, the Aprio pentagonal pinwheel logo and “PASSIONATE FOR WHAT’S NEXT”, are registered marks of Aprio Advisory Group, LLC.

Disclaimer

This advisory report has been prepared by Aprio Advisory Group, LLC (Aprio) for the exclusive use of Empower AI and is based on the information provided to us by Empower AI. The information contained in this report is for informational purposes only and does not constitute professional advice. The findings, conclusions, and recommendations presented in this report are solely the opinions of Aprio and are subject to change based on additional information or changes in circumstances.

While we have made every effort to ensure the accuracy and completeness of the information presented in this report, we do not guarantee or warrant its accuracy, completeness, or suitability for any purpose. Aprio shall not be liable for any direct, indirect, or consequential loss or damage arising from the use of, or reliance on, the information contained in this report.