Bio Basic’ s Emissions Decarbonization Goals;

A Path Towards Sustainability and Compliance with City of Markham Targets

December 2024

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Emission Reduction and Decarbonization Targets

Category	City of Markham
GHG Emissions Reduction Target	22% reduction by 2026 (from 2018 baseline)
Renewable Electricity Target	100% renewable electricity by 2030
CO2 Emission Target	Net-zero CO2 emissions by 2050
Decarbonization Target	City-wide decarbonization by 2050

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Objectives

- Scope 1 & 2 Emissions:
  - Present detailed calculations and sources of emissions for 2023.
- Scope 3 Progress:
  - Outline key categories and initial steps for Scope 3 data collection and reduction.
- City of Markham Goals:
  - Highlight alignment with Markham' s 22% GHG reduction by 2026 and net-zero by 2050.

Scope 1 Emissions Overview

Definition of Scope 1

- **Direct emissions** from owned or controlled sources, including:
  - **Fuel combustion** (natural gas, diesel)
  - **Refrigerant leakage** (HVAC systems)
- Action:
  - Report Scope 1 emissions and work towards a **50% reduction by 2030**.

Bio Basic' s Scope 1 Emissions

Source	Amount	Emissions (kg CO_2e)
Natural Gas	25,477 ln/m³	38,833.83 kg CO_2e
Refrigerant Leakage	~5 kg R-410A (3% loss)	310 kg CO_2e
Total Scope 1	39,143.83 kg CO_2e	

Key Take-Home Message

- Objective of Scope 1 Reporting:
  - Identify, track, and manage **direct emissions** (e.g., natural gas, refrigerants).
  - Support **the goal** of achieving a **50% reduction in Scope 1 emissions by 2030**.
- Alignment Achieved:
  - Scope 1 emissions have been **measured and reported** using standardized methodologies.
  - Data align with City of Markham' s requirements for **direct emissions tracking**.
- Next Steps:
  - Implement strategies to **reduce natural gas consumption** and **minimize refrigerant leakage**.
  - Maintain ongoing tracking to support long-term **decarbonization goals**.

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Scope 2 Emissions Overview

Definition of Scope 2

- **Indirect emissions** from the consumption of purchased energy sources, including:
  - **Purchased Electricity** (grid electricity used in operations)
  - **Purchased Heating and Cooling** (district heating, district cooling)
- Action:
  - Measure and report Scope 2 emissions and work towards a **50% reduction by 2030**.

Bio Basic' s Scope 2 Emissions

Source	Amount	Emissions (kg CO_2e)
Electricity	165,081 kWh	10,380 kg CO_2e
Total Scope 1	10,380 kg CO_2e	

Key Take-Home Message

- Objective of Scope 2 Reporting:
  - Measure and manage **indirect emissions** from purchased electricity.
  - Support the goal of achieving a **50% reduction in Scope 2 emissions by 2030**.
- Alignment Achieved:
  - Scope 2 emissions have been **measured and reported** using standardized emission factors.
  - Data align with City of Markham' s requirements for **indirect emissions tracking**.
- Next Steps:
  - Implement strategies to **improve energy efficiency** and **reduce electricity consumption**.
  - Explore opportunities for **renewable electricity procurement** to further reduce emissions.

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Alignment with City of Markham Targets

Definition of City of Markham GHG Reduction Goals

- 22% Reduction by 2026 (from 2018 baseline).
- Net Zero Emissions by 2050.

Bio Basic' s Progress Towards Alignment

Metric	Details
Scope 1 & 2 Total Emissions	49.52 metric tons CO_2e
Tracking and Reporting	Accurate data collection and reporting
Initial Energy Efficiency Efforts	Demonstrated commitment to reduction targets

Key Take-Home Message

- Objective:
  - Align with Markham' s targets to achieve a **22% reduction by 2026** and **net-zero by 2050**.
- Progress Achieved:
  - Scope 1 and 2 emissions are **tracked, reported, and managed**.
- Next Steps:
  - Enhance energy efficiency initiatives to support long-term goals.

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Scope 3 Emissions – Progress and Alignment Plan

Definition of Scope 3

- Indirect emissions from activities in the value chain, including:
  - Employee Commuting
  - Business Travel
  - Transportation of Goods (e.g., FedEx, UPS, Canada Post)
  - Purchased Goods and Services

Bio Basic' s Scope 3 Current Status

Category	Status
Employee Commuting	Identified, data collection in progress
Business Travel	Minimal data collected
Transportation of Goods	Identified key carriers (FedEx, Canada Post)
Purchased Goods/Services	Identified, methodology under development

Plan for Scope 3 Emissions Alignment

- Employee Commuting
  - Promote carpooling, public transit, and remote work options.
- Business Travel
  - Prioritize virtual meetings and low-emission travel methods.
- Transportation of Goods
  - Engage with shipping providers offering carbon-neutral options.
- Purchased Goods and Services
  - Prioritize suppliers with sustainability practices and targets.
- Next Steps:
  - Develop methodologies for data collection and reduction.

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Summary of Emissions Alignment

Scope 1:

- Fully measured and reported (39.14 metric tons CO_2e).

Scope 2:

- Accurately tracked (10.38 metric tons CO_2e).

Scope 3:

- Key categories identified; data collection in progress with reduction strategies outlined.

City of Markham Goals:

- On track to support a 22% GHG reduction by 2026 and net-zero emissions by 2050.

Commitment:

- Dedicated to continuous improvement and achieving City of Markham' s decarbonization goals.

References

- Supplier Handbook – Thermo Fisher Scientific
- City of Markham Corporate Energy Management Plan (CEMP)
- Greenprint Community Sustainability Plan – City of Markham
- 2023 Bio Basic Sustainability Report
- 2023 Bio Facility Energy and Emissions Report
- 2023 Annual Energy Consumption and GHG Emission Report
- EPA Emission Factors for Greenhouse Gas Inventories
    - Standardized emission factors for calculating CO_2e emissions from natural gas, electricity, and refrigerants.
    - Source: EPA.gov
- GHG Protocol – Scope 1, 2, and 3 Reporting Standards
    - Framework for measuring and managing greenhouse gas emissions.
    - Source: GHGProtocol.org
- IPCC Fifth Assessment Report (AR5)
    - Global Warming Potential (GWP) values for refrigerants (e.g., R-410A).
    - Source: IPCC.ch
- Government of Canada National Inventory Report (NIR)
    - Provides Canada-specific emission factors and guidelines for GHG emissions.
    - Source: Canada.ca