

*Aladaco Consulting Inc.*

# Corporate and Community Energy and Emissions Report (CCER)

Township of Cavan Monaghan

April 7<sup>th</sup>, 2025



# Agenda

- Introductions
- Project Scope and Outcomes
- Emissions 101
- Community Energy and Emissions Analysis
- Corporate Energy and Emissions Analysis
- Considerations/Key Takeaways



# Introductions - Aladaco

- Aladaco Consulting Inc
  - Founded in 2007
  - Energy professionals providing services to help organizations navigate and reach energy efficiency and decarbonization goals
  - Energy management and M&V, GHG inventorying and decarbonization pathways, CDM planning
  - IESO Industrial Technical Review Services



**Taylor Wilson**

Technical Lead - Energy &  
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CET, CEM, CMVP



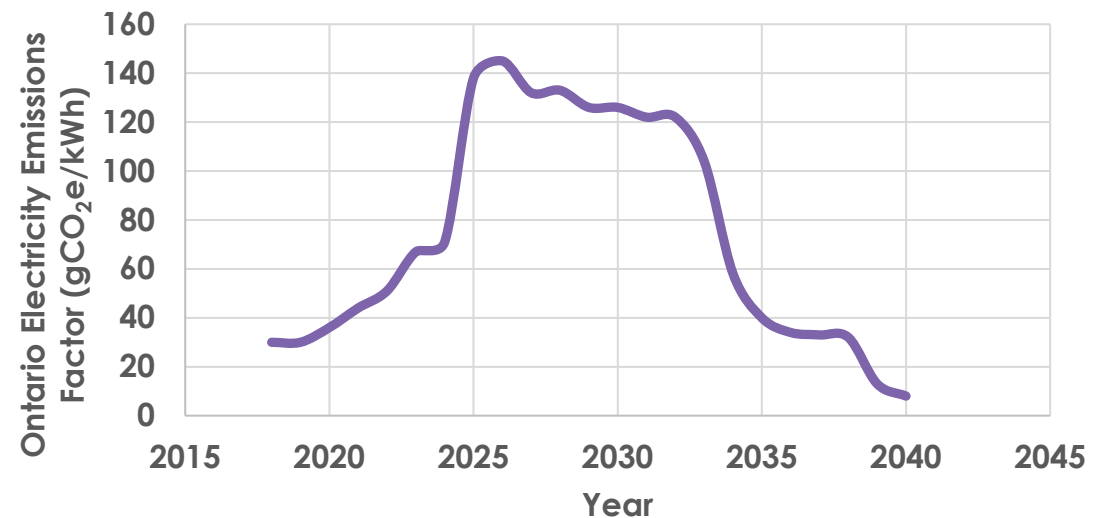
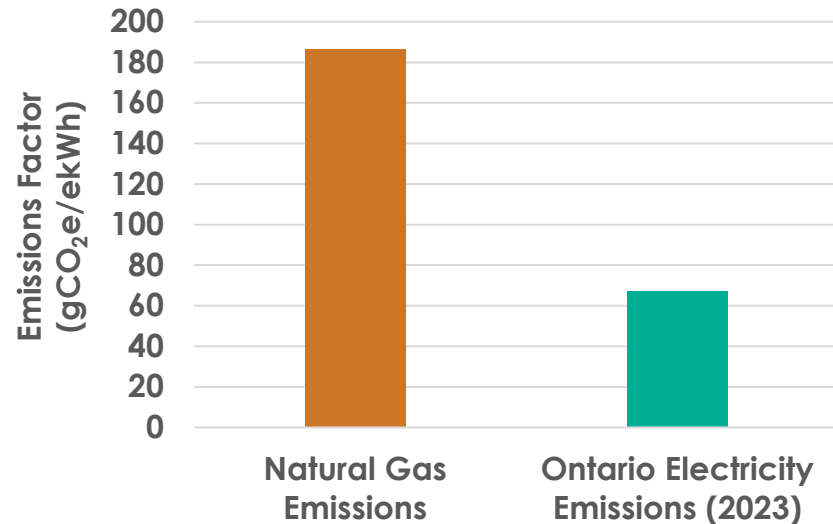
# Project Scope and Outcomes

- Develop a **CCER (specific to electricity and natural gas consumption)** that:
  - provides the Township with insights around Corporate and Community energy consumption and resultant emissions
  - benchmarks Community results against other municipalities
  - benchmarks Corporate facility results against industry standards (Energy Star)
  - provides recommendations to improve energy performance and reduce emissions
- Develop an **Energy Monitoring and Reporting Tool** that:
  - allows the Township to independently track annual energy and emissions results
  - provides the Township with a streamlined way to report on these results
- **Study period:** 2020-2023
- **Study scope:** Electricity and Natural Gas consumption



# Emissions 101

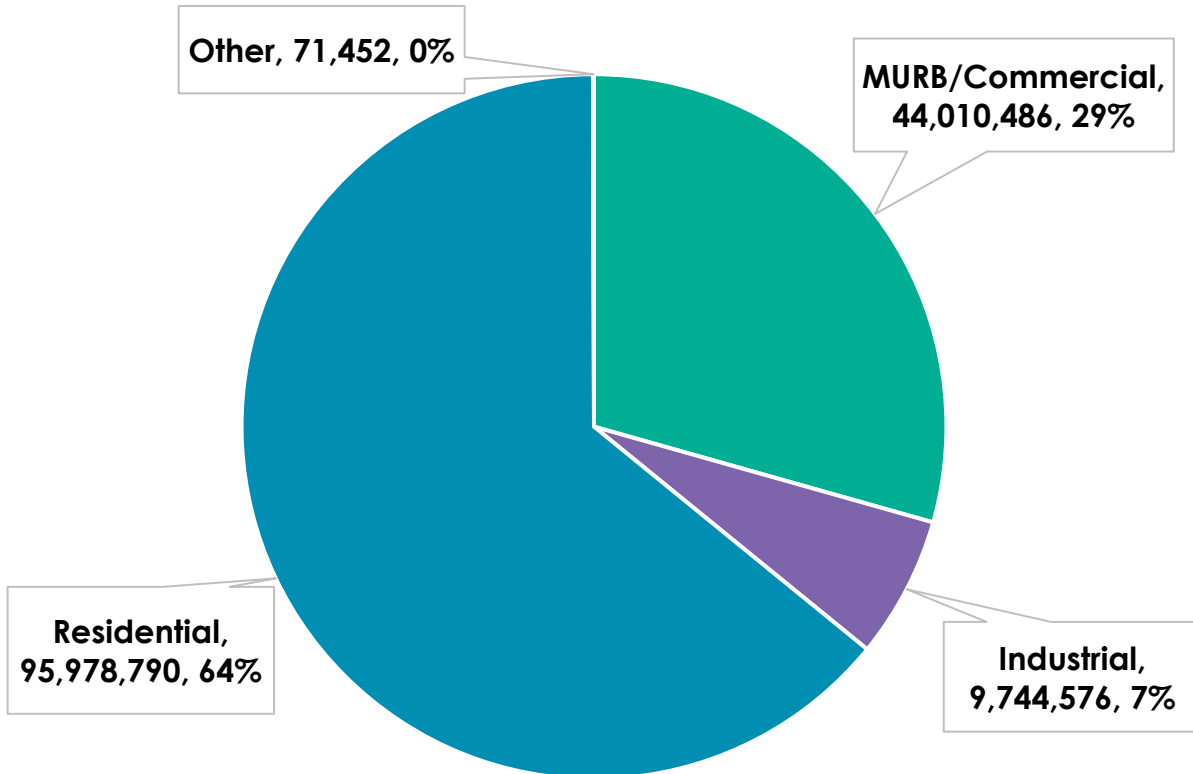
- **NG emissions** → **DIRECT** → Generated when NG is burned (exhaust)
- **Electricity emissions** → **INDIRECT** → Emissions from power generation and distribution
- **Resultant emissions value** → **tCO<sub>2</sub>e** → Calculated using “Emissions Factors”



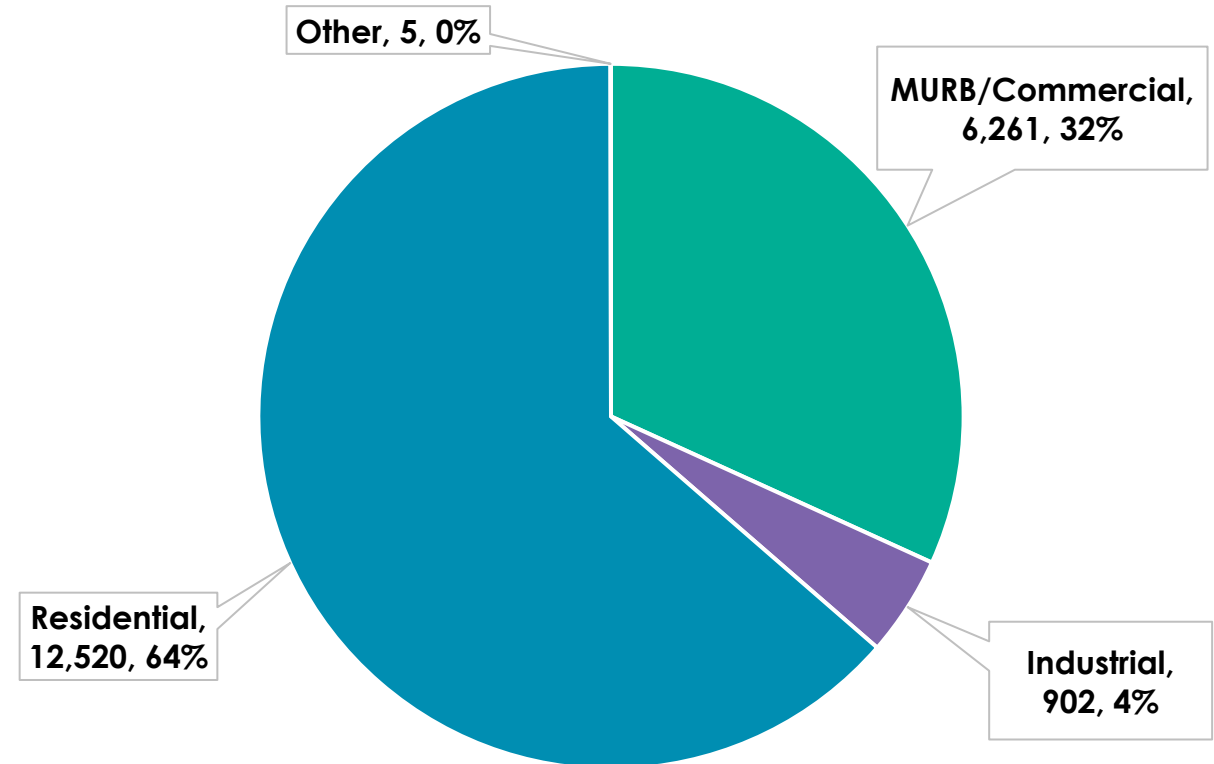
# Community Energy and Emissions Analysis

## 2023 Energy and Emissions by Sector

Community Energy Consumption (2023 - ekWh)



Community GHG Emissions (2023 - tCO<sub>2</sub>e)



# Community Energy and Emissions Analysis

## Benchmarking against other Municipalities

Metric	TCM (2023)	Durham Region (2016)	Town of Newmarket (2017)	City of London (2023)
Energy Consumption (ekWh) per capita	14,432	18,056	18,140	23,353
GHG Emissions (tCO2e) per capita	1.90	2.75	2.49	3.52



# Community Energy and Emissions Analysis

## Benchmarking Challenges and Opportunities for Improvement

- **Challenges:**

- Municipalities often report broader emissions sources (e.g., transportation fuels).
- Differences in reporting formats (e.g., by sector vs. by energy source).
- Manipulation of data from public sources necessary to form comparisons

- **Opportunities to Improve:**

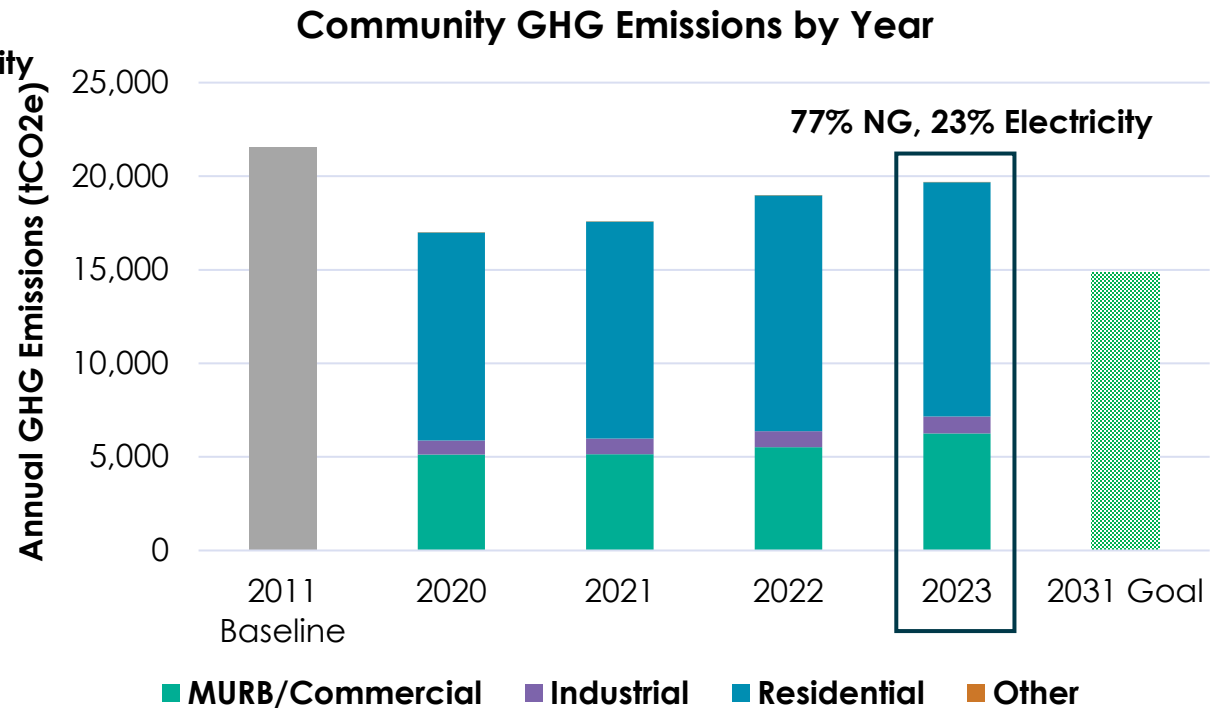
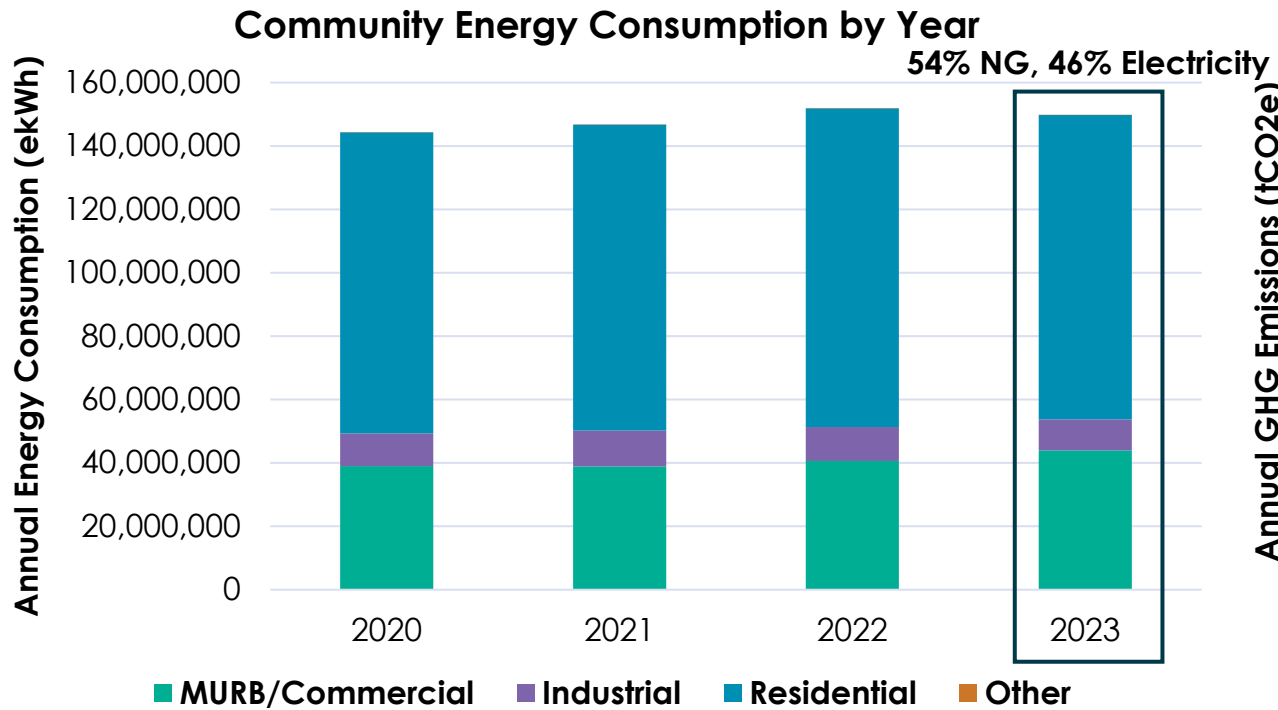
- Completing an updated GHG Inventory is recommended.
- This will improve comparability by including all emissions sources.
- Supports tracking progress toward 2031 GHG reduction targets (if valuable).





## Community Energy and Emissions Analysis

### Study Period Trends



# Community Energy and Emissions Analysis

## Proposed Initiatives for Consideration

### Education & Awareness

- Renewable energy workshops
- Industrial energy/external funding education

### Incentives & Financial Support

- Community LED lighting program
- Energy efficiency rebates
- **Heat pump incentive program**
- Green Building incentives

### Programs & Implementation Support

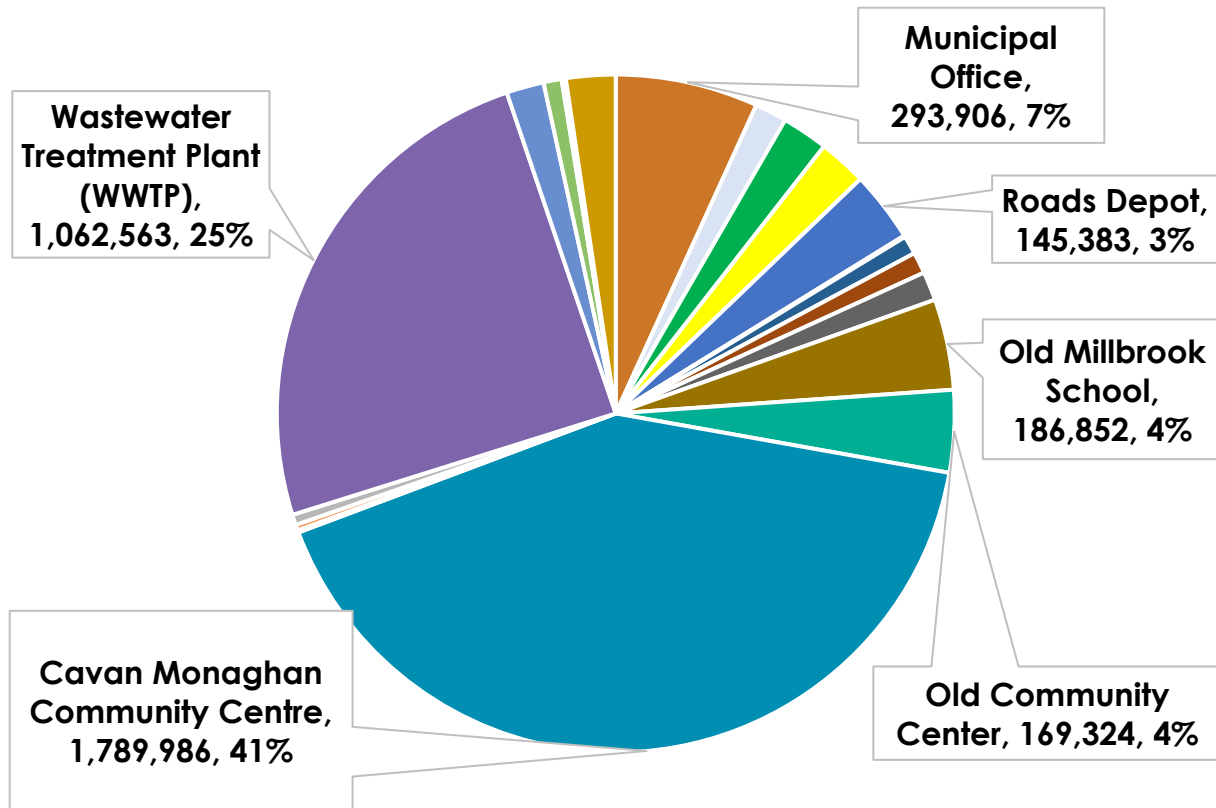
- Home energy audit program
- Solar panel group purchases
- Community solar projects
- Insulation and weatherization upgrade support



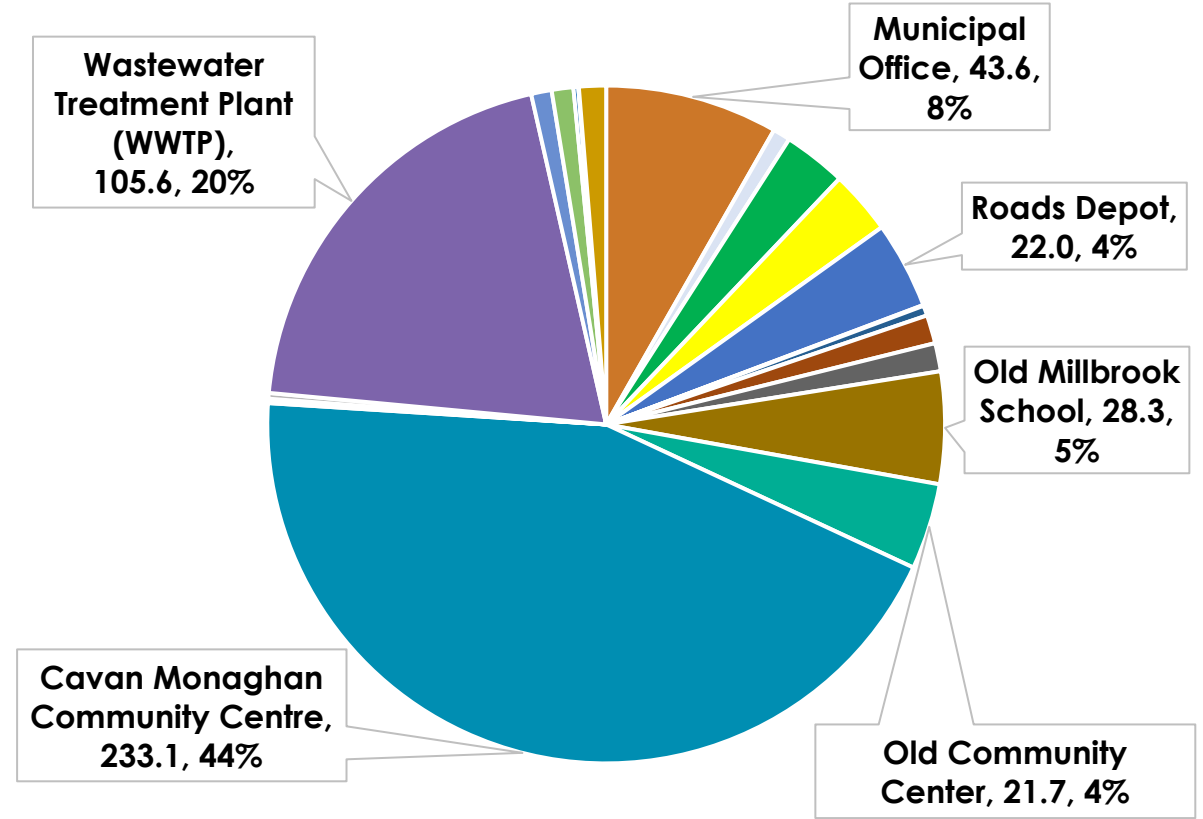
## Corporate Energy and Emissions Analysis

### 2023 Energy and Emissions by Asset

Corporate Energy Consumption by Asset (2023 - ekWh)



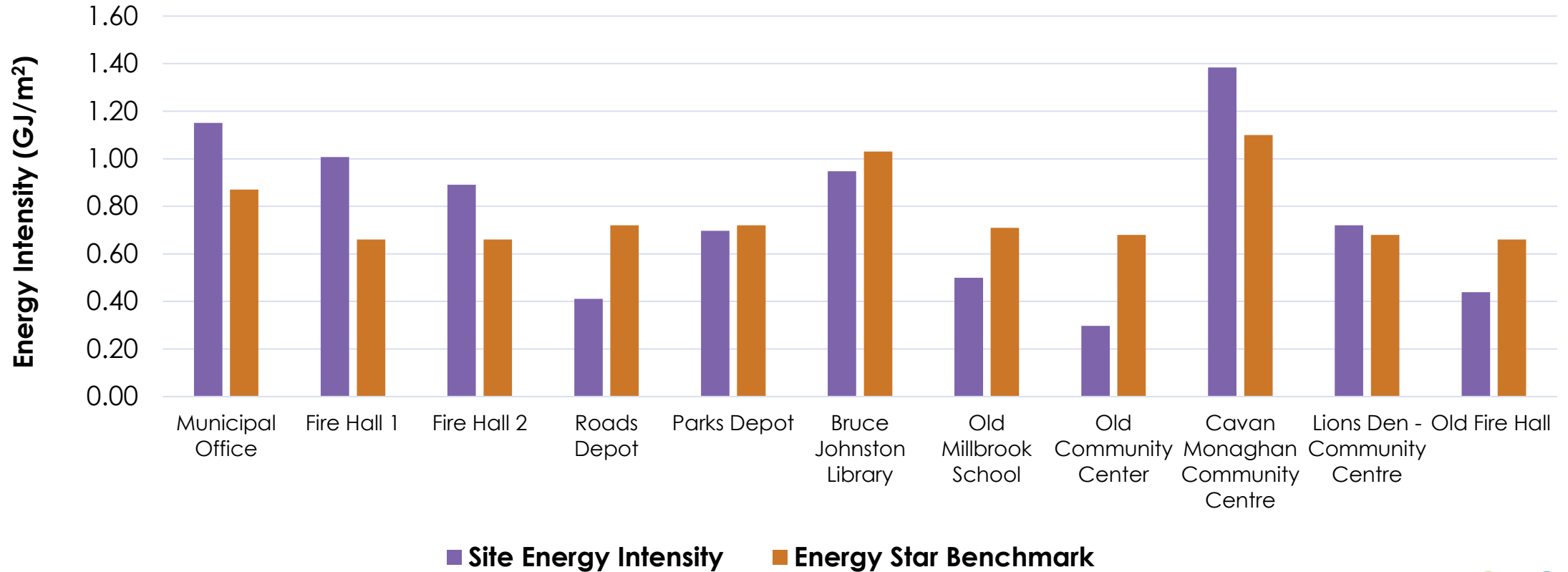
Corporate GHG Emissions by Asset (2023 - tCO2e)



# Corporate Energy and Emissions Analysis

## Energy Star Benchmarking

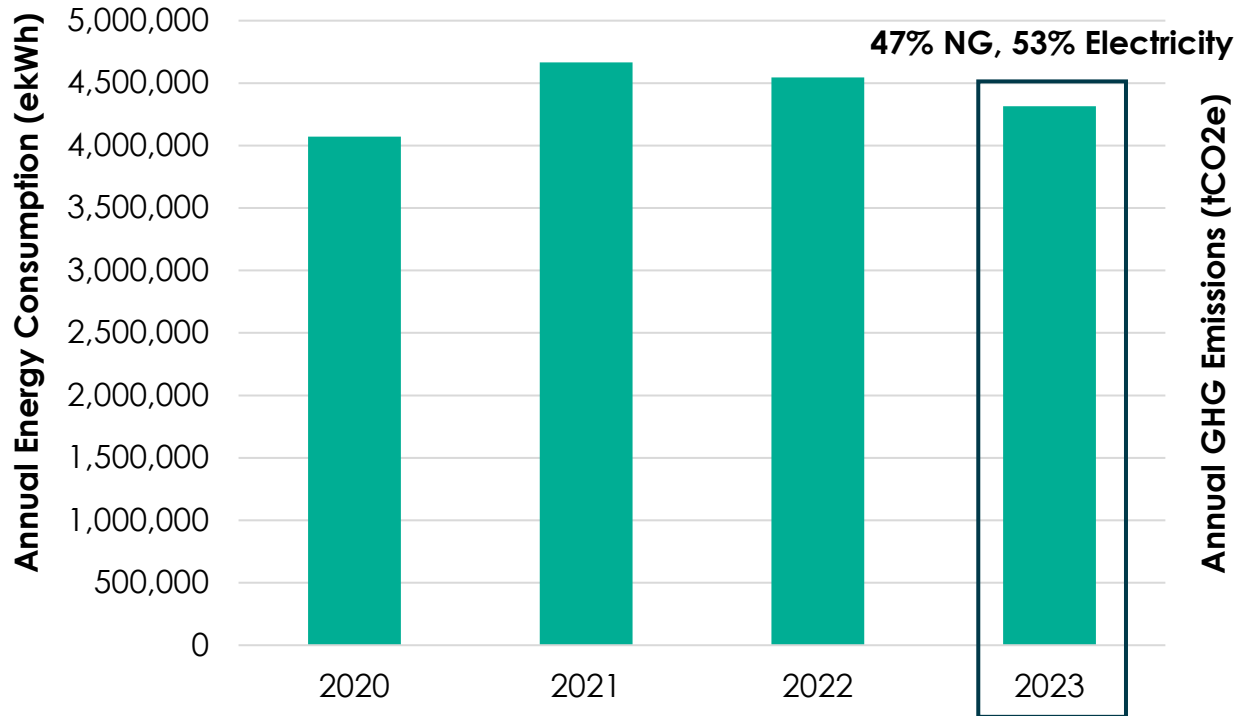
Site Energy Intensity vs Energy Star Benchmark (2023)



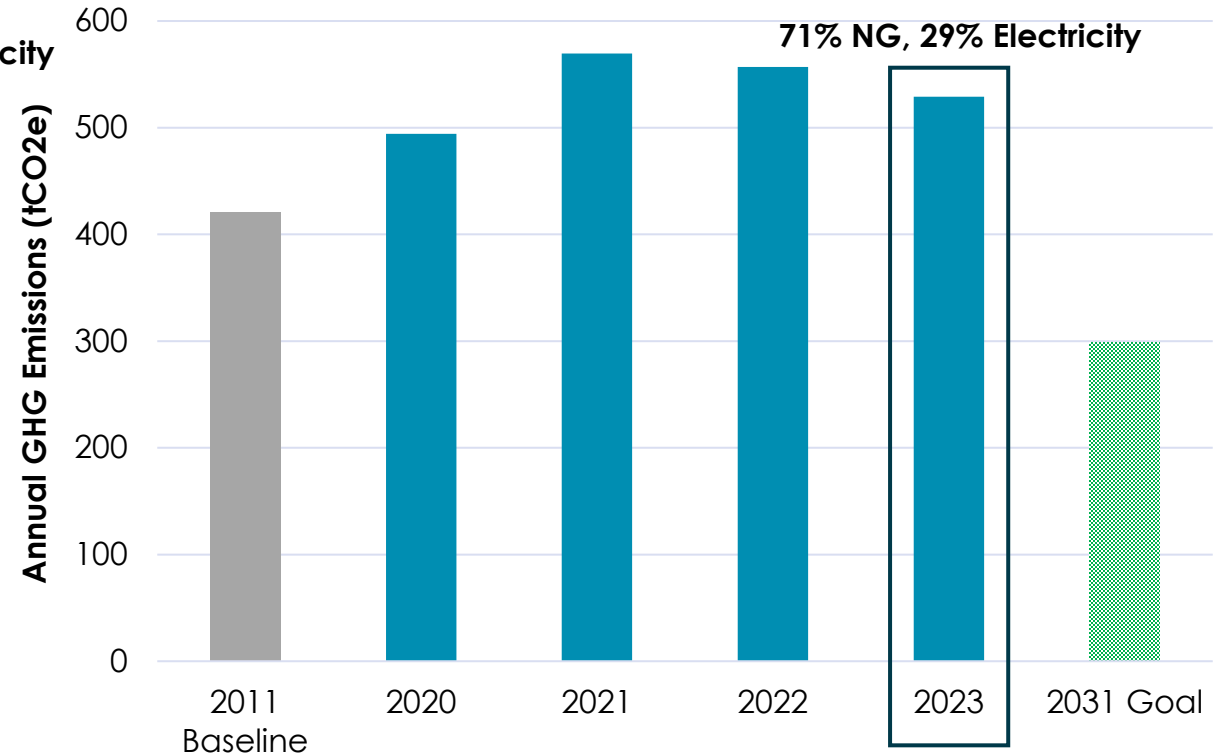
## Corporate Energy and Emissions Analysis

### Study Period Trends

#### Corporate Energy Consumption by Year



#### Corporate GHG Emissions by Year



## Corporate Energy and Emissions Analysis

### Proposed Initiatives for Consideration

#### 5-Step Decarbonization Framework



##### Conduct Energy Audits for Key Facilities

- Conduct strategic energy audits to identify energy inefficiencies and upgrade opportunities



##### Implement Energy Efficiency Measures

- Upgrade lighting, insulation, windows, HVAC systems and controls for improved energy performance.
- Prioritize low-cost, high-impact improvements with short payback periods.



##### Retrofit Heating Systems to Low-Carbon Alternatives

- Transition from natural gas heating to low-carbon options (e.g., heat pumps, electric or bioenergy-based systems) during system replacements.



##### Pursue Renewable Generation

- Explore installing on-site renewable energy systems (e.g., solar) at high-demand facilities like CMCC and WWTP.
- Investigate power purchase agreements (PPAs) with renewable energy providers.



##### Leverage Reductions in Other Sectors

- Consider leveraging emissions reductions in other sectors (e.g. transportation) to help bridge the overall GHG emissions gap to target.



# Considerations/Key Takeaways

- Completing both updated Community and Corporate GHG inventories is recommended
  - Transportation emissions reductions are a significant opportunity not addressed in this scope
- Investments will be required to achieve the CCAP targets
  - Facility audits will inform opportunities
  - Natural gas reduction or electrification measures will have the largest impact
    - To be successful, investment policy must put a value on GHG reduction target as these projects will fall short on economics alone
  - Future emissions factors for Ontario electricity grid are uncertain, but trending higher in the near-term
    - Renewables (e.g. solar) may be necessary to hit targets





# Questions?



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