



Energy Conservation & Demand Management Plan 2024 -2029

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1. Regulatory Update

O. Reg. 397/11: Conservation and Demand Management Plans was introduced in 2013. Under this regulation, public agencies were required to report on energy consumption and greenhouse gas (GHG) emissions and develop Conservation and Demand Management (CDM) plans the following year.

Until recently, O. Reg. 397/11 was housed under the Green Energy Act, 2009 (GEA). On December 7, 2018, the Ontario government passed Bill 34, Green Energy Repeal Act, 2018. The Bill repealed the GEA and all its underlying Regulations, including O. Reg. 397/11. However, it re-enacted various provisions of the GEA under the Electricity Act, 1998.

As a result, the conservation and energy efficiency initiatives, namely CDM plans and broader public sector energy reporting, were re-introduced as amendments to the Electricity Act. The new regulation is now called **O. Reg. 507/18: Broader Public Sector: Energy Conservation and Demand Management Plans (ECDM)**.

As of January 1, 2019, O. Reg. 397/11 was replaced by O. Reg. 507/18, and BPS reporting and ECDM plans are under the Electricity Act, 1998 rather than the Green Energy Act, 2009.

As of February 23, 2023, O. Reg. 507/18 was replaced by **O. Reg. 25/23, and BPS reporting and ECDM Plans** are under the Electricity Act, 1998 rather than the Green Energy Act, 2009.

2. Executive Summary

The purpose of this Energy Conservation and Demand Management (ECDM) Plan from Headwaters Health Care Centre is to outline specific actions and measures that will promote good stewardship of our environment and community resources in the years to come. The Plan will accomplish this, in part, by looking at future projections of energy consumption and reviewing past conservation measures.

In keeping with Headwaters Health Care Centre's core values of efficiency, concern for the environment and financial responsibility, this ECDM outlines how Headwaters Health Care Centre will reduce overall energy consumption, operating costs and greenhouse gas emissions. By following the measures outlined in this document, we will be able to provide compassionate service to more people in the community. This ECDM Plan is written in accordance with O. Reg. 25/23 of the recently amended Electricity Act, 1998.

Through past conservation and demand initiatives, Headwaters has achieved the following results:

- 70,747 m³ reduction in natural gas use

Today, utility and energy related costs are a significant part of overall operating costs. In 2023:

- Energy Use Intensity (EUI) Index for included facility was 77.80 kWh/sq.ft
- Energy-related emissions equaled 1,910 tCO₂e

To obtain full value from energy management activities, Headwaters Health Care Centre will take a strategic approach to fully integrate energy management into its business decision-making, policies, and operating procedures. This active management of energy-related costs and risks will provide a significant economic return and will support other key organizational objectives.

With this prominent focus on energy management, by implementing recommended initiatives, Headwaters Health Care Centre can expect to achieve the following targets by 2029, compared with 2022:

- 16% reduction in electricity consumption
- 65% reduction in natural gas consumption
- 55% reduction in GHG emissions

Headwaters Health Care Centre's Energy Performance and Path Forward

The results and the progress of the ECDM activities implemented over the past five years, and the projected impact of the new ECDM Plan is presented in the graph below.

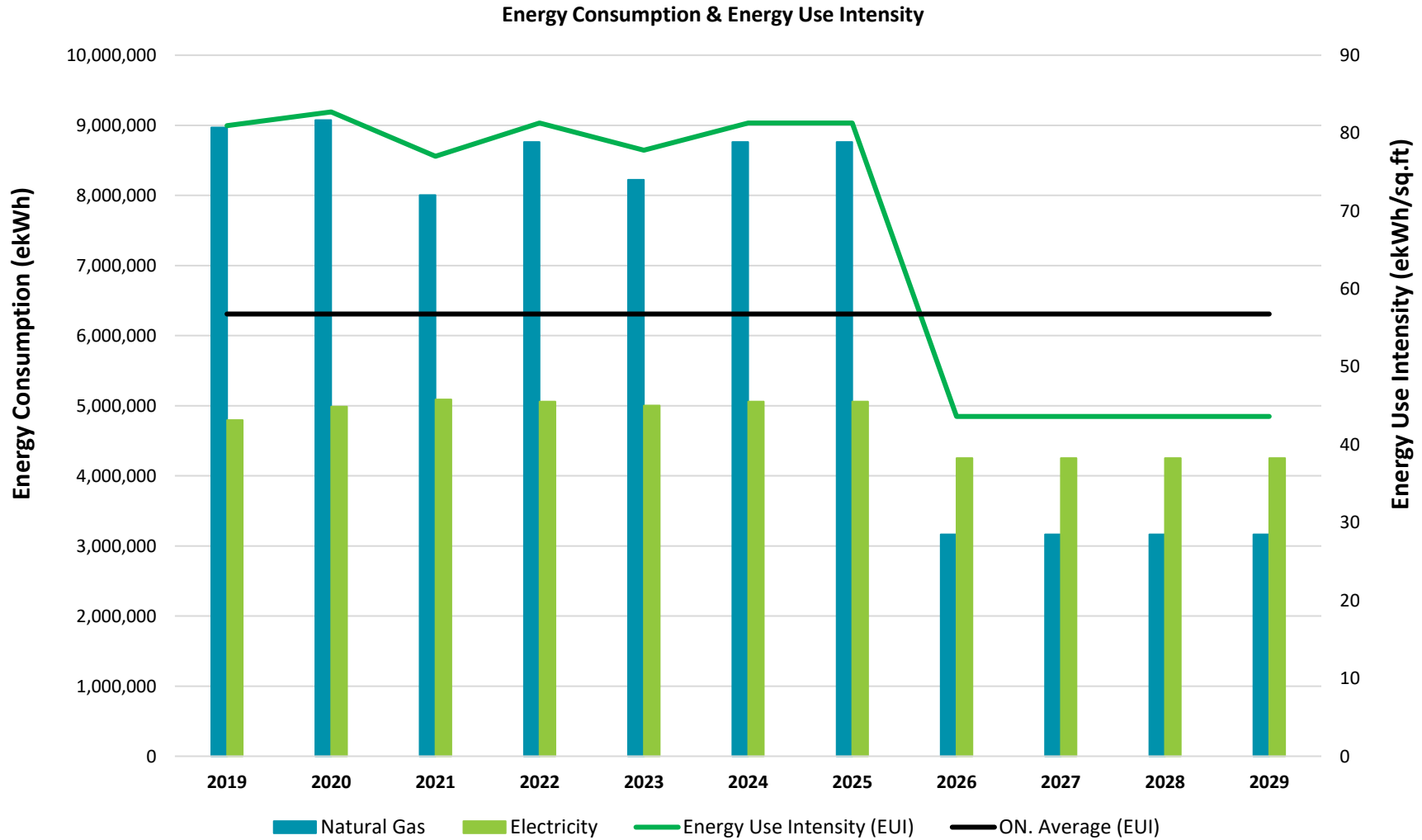


Figure 1. Energy Consumption Trends & Projections

3. About Headwaters Health Care Centre



Figure 2. Headwaters Health Care Centre

Headwaters Health Care Centre is an innovative hospital located in Orangeville, Ontario dedicated to quality patient-centred care together with our community in Dufferin County-Caledon. In addition to providing acute and complex continuing care with a 24/7 Emergency Department, and extensive Ambulatory Care outpatient services, Headwaters is accredited with Exemplary Standing by Accreditation Canada, certified as a Breast Assessment Centre by the Ontario Breast Screening Program, and will be offering MRI services in early 2025.

A proud member of the Rural Ontario Medical Program and a clinical affiliate of the Toronto Metropolitan University’s School of Medicine, Headwaters serves as a vital hub of health and wellness for over 140,000 residents in the region. With a workforce exceeding 800 staff, including 200 physicians and six midwives, Headwaters is not only a leader in healthcare but also a cornerstone of the local economy, supported by the dedication of over 200 volunteers.

Headwaters Health Care Centre	
Facility Name	Headwaters Health Care Centre
Type of Facility	Health Care Facility
Address	100 Rolling Hills Dr, Orangeville, ON L9W 4X9
Gross Area (Sq. Ft)	169,996
Average Operational Hours in a Week	168
Number of Floors	2
Number of Beds	86

Table 1. Facility Information

In order to obtain full value from energy management activities, and to strengthen our conservation initiatives, a strategic approach must be taken. Our organization will strive to fully integrate energy management into our practices by considering indoor environmental quality, operational efficiency and sustainably sourced resources when making financial decisions.

Our Vision

One Community, Caring Together.

Our Purpose

Provide Excellent Care, Close to Home

Our Values

- Kindness
- Accountability
- Respect
- Teamwork



Figure 3. Headwaters Health Care Centre's 2024-2029 Strategic Plan

4. Historical Site Analysis

4.1. Historical Energy Intensity

Energy Utilization Index is a measure of how much energy a facility uses per square foot. By breaking down a facility's energy consumption on a per-square-foot-basis, we can compare facilities of different sizes with ease. In this case, we are comparing our facility to the industry average for Ontario hospitals (derived from Natural Resources Canada's Commercial and Institutional Consumption of Energy Survey), which was found to be 56.77 ekWh/sq. ft.

Year	2019	2020	2021	2022	2023
Headwater Health Care Centre	80.97	82.72	77.03	81.29	77.80

Table 2. Historic Energy Use Intensity

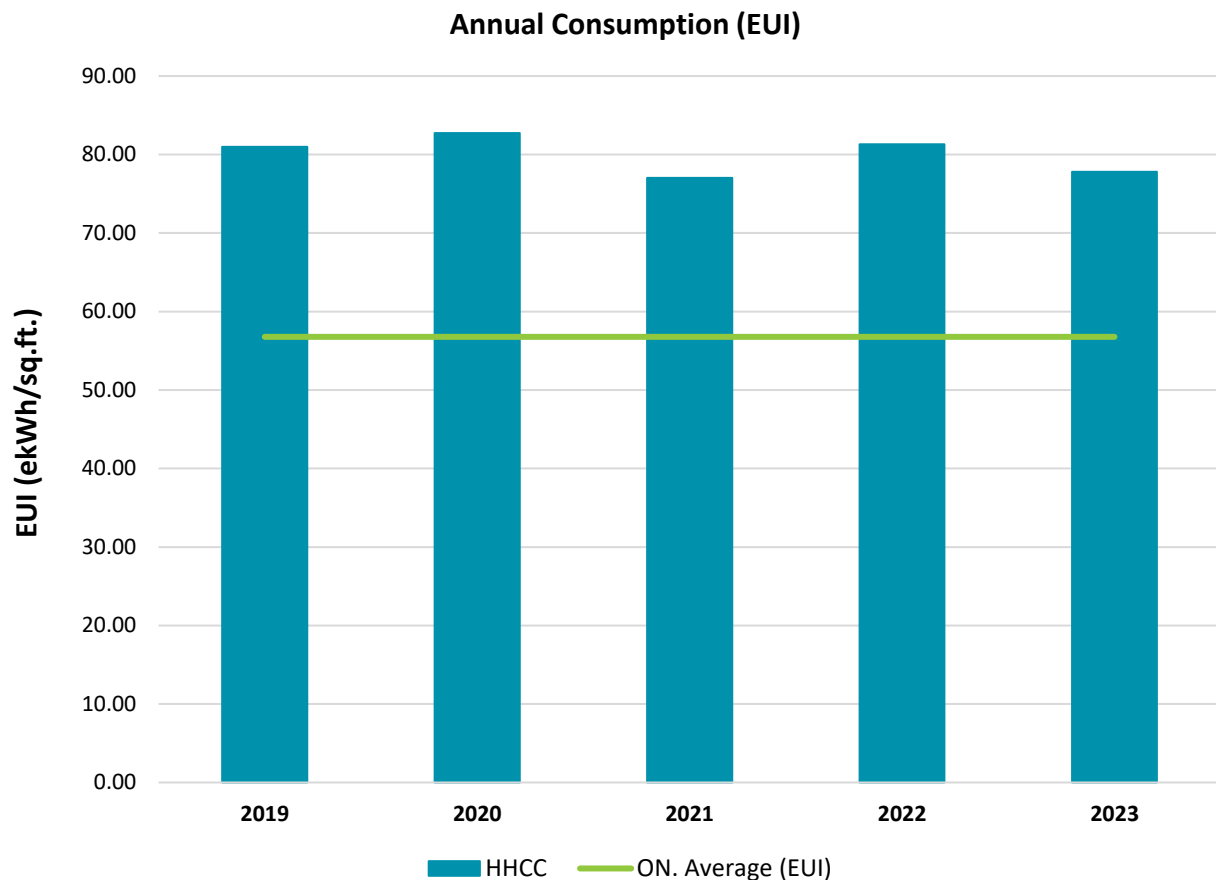


Figure 4. Historic Annual Energy Utilization Indices

4.2. Historical Utility Consumption Analysis

Utilities to the site are electricity and natural gas. The following table summarizes the accounts for each utility. Consumption for each respective utility has been adjusted to fit a regular calendar year (365 days).

Utility	2019	2020	2021	2022	2023
Electricity (kWh)	4,794,289	4,986,665	5,090,903	5,059,433	5,003,371
Natural Gas (m ³)	849,413	859,385	757,896	829,580	778,666

Table 3. Historic Annual Utility Consumption

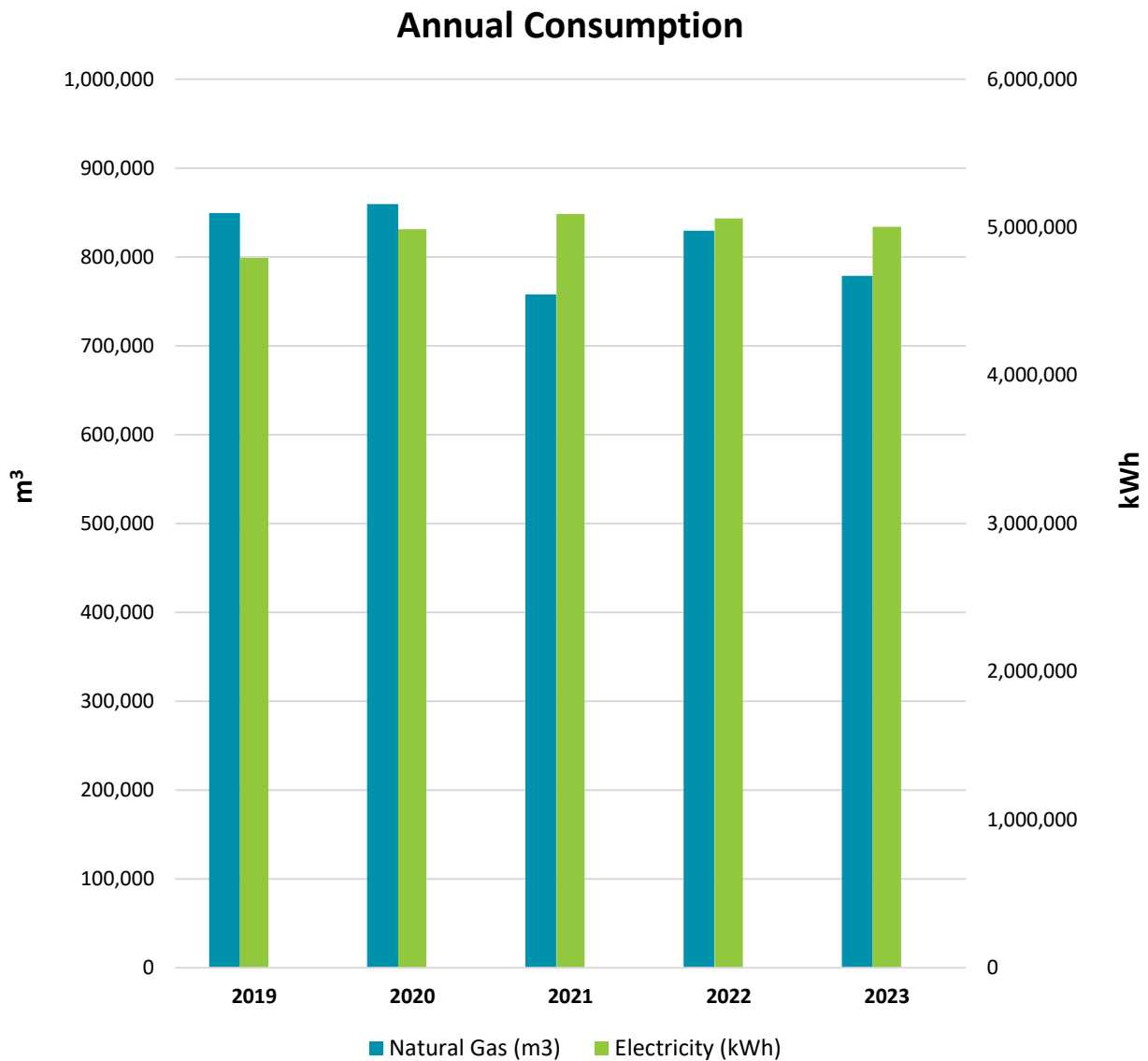


Figure 5. Historic Annual Utility Consumption

4.3. Historical GHG Emissions

Greenhouse gas (GHG) emissions are expressed in terms of equivalent tonnes of Carbon Dioxide (tCO₂e). The GHG emissions associated with a facility are dependent on the fuel source — for example, hydroelectricity produces fewer greenhouse gases than coal-fired plants, and light fuel oil produces fewer GHGs than heavy oil.

Electricity from the grid in Ontario is relatively “clean”, as the majority is derived from low-GHG nuclear power and hydroelectricity, and coal-fired plants have been phased out. Scope 1 (such as natural gas directly used in facilities), and Scope 2 (such as purchased electricity) consumptions have been converted to their equivalent tonnes of greenhouse gas emissions in the table below. Scope 1 represents the direct emissions from sources owned or controlled by the institution, and Scope 2 consists of indirect emissions from the consumption of purchased energy generated upstream from the institution.

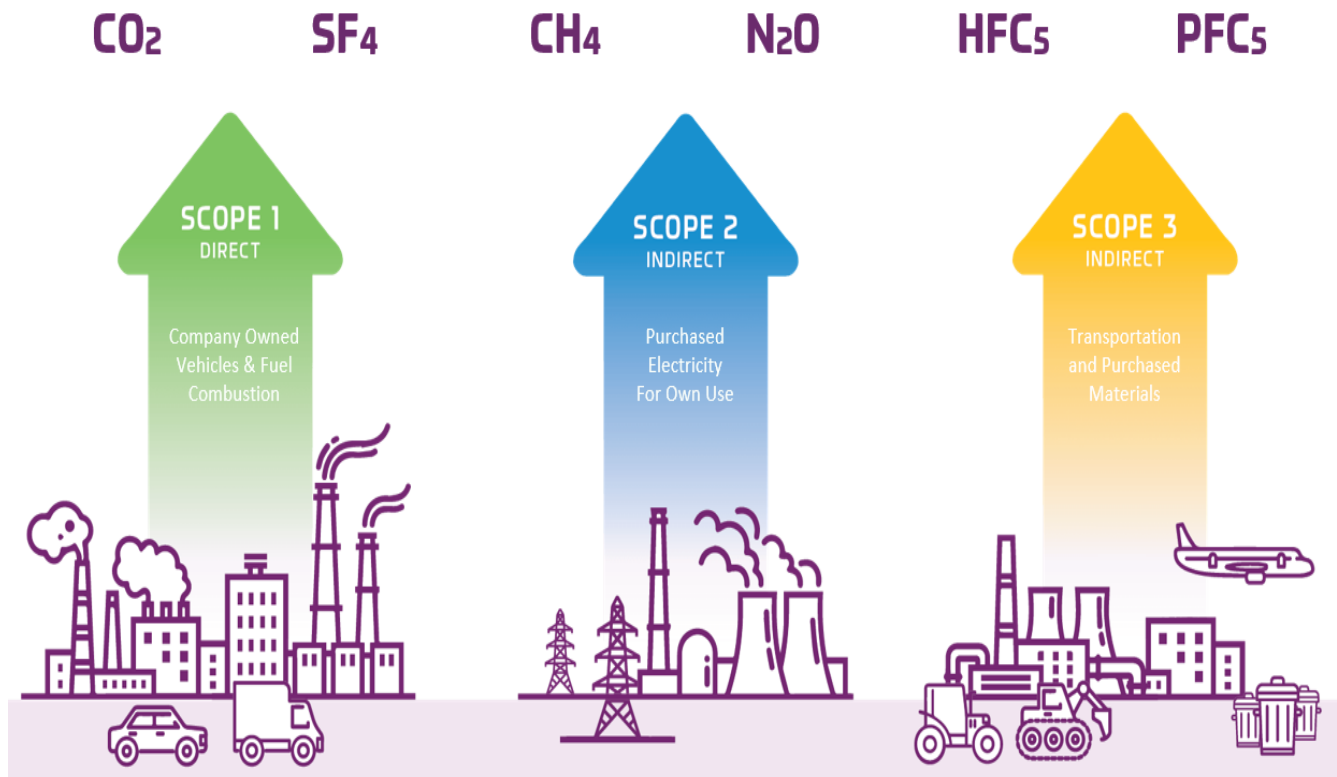


Figure 6. Examples of Scope 1 and 2

The greenhouse gas emissions for Headwaters Health Care Centre have been tabulated and are represented in the table and graph below.

GHG Emissions (tCO ₂ e)	2019	2020	2021	2022	2023
Natural Gas (Scope 1)	1,632	1,651	1,456	1,594	1,496
Electricity (Scope 2)	120	129	133	357	414
Total Scope 1 & 2 Emissions	1,752	1,780	1,589	1,951	1,910

Table 4. Historic Greenhouse Gas Emissions

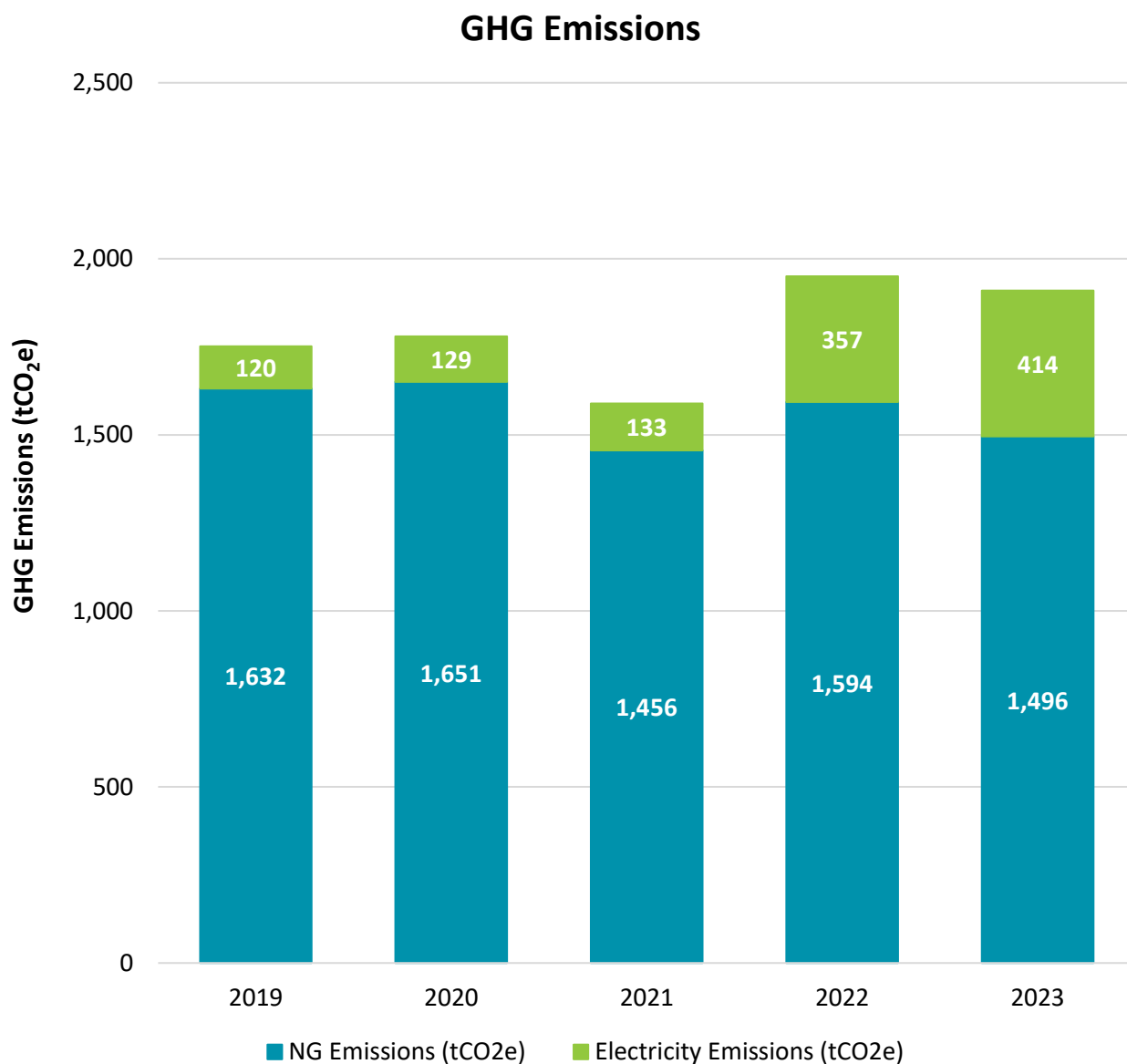


Figure 7. Historical GHG Emissions

5. Measures

5.1. Energy Conservation and GHG Reduction Strategies to Date

Over the previous years, Headwaters Health Care Centre has undertaken various energy conservation and demand management measures. The summary of the main activities is shown in the following table.

Measure Name	Scope/Results
Headwaters Health Care Centre has started a lighting retrofit throughout the hospital and external buildings.	This measure has resulted in improved light levels, improved energy efficiency and reduced GHG emissions.

Table 5. Previously Implemented Measures & Initiatives

5.2. Proposed Energy Conservation and GHG Reduction Measures

Our energy analysis has revealed potential for a number of conservation and GHG reduction strategies for the included facility. Evaluated and proposed initiatives are summarized in the table on the following page outlining savings potential of the targeted utilities and estimated project costs, and a recommended year of implementation for each measure, strategically chosen to maximize Headwaters Health Care Centre's energy conservation and GHG reduction benefits.

Measure	Estimated Annual Savings			Project Cost	Simple Payback (Years)	Implementation Year
	Electricity (kWh)	Natural Gas (m ³)	Cost (\$)			
Replace Steam Boilers with Condensing HW Boilers	52,978	149,987	\$94,199	\$1,133,655	12.0	2026
Install Heat Recovery Chiller	-88,128	69,591	\$28,645	\$307,273	10.7	2026
Building Automation System (BAS) & Ventilation Upgrades	898,358	147,280	\$255,920	\$1,773,046	6.9	2026
Heat Recovery Chillers & Heat Recovery from Exhaust Fans	-266,638	131,603	\$24,207	\$751,337	31.0	2026
Install BlackPAC for real time monitoring	0	0	\$0	\$199,966	N/A	2026
LED Retrofit and lighting controls	210,828	-1,309	\$42,926	\$460,075	10.7	2026
Install efficient water fixtures	0	1,275	\$51,109	\$361,165	7.1	2026
Steam Boiler for Kitchen, Sterilization & Humidification	0	31,595	\$25,651	\$1,517,919	59.2	2026
Total	807,398	530,022	\$522,657	\$6,504,436	12.4	-

Table 6. Proposed Measures

6. Headwaters Health Care Centre's Outlook

6.1. Utility Consumption Forecast

By implementing the recommended measures stated in the previous section, in each respective site, Headwater Health Care Centre's projected electricity and natural gas use could be forecasted based on the utility savings generated from individual measures. The forecasted utility consumption is tabulated below. The percentage of change is based on the data from the baseline year of 2022.

Fuel	2024		2025		2026		2027		2028		2029	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Natural Gas (m ³)	829,580	0%	829,580	0%	299,558	65%	299,558	65%	299,558	65%	299,558	65%
Electricity (kWh)	5,059,433	0%	5,059,433	0%	4,252,035	16%	4,252,035	16%	4,252,035	16%	4,252,035	16%

Table 7. Forecast of Annual Utility Consumption from 2024 to 2029

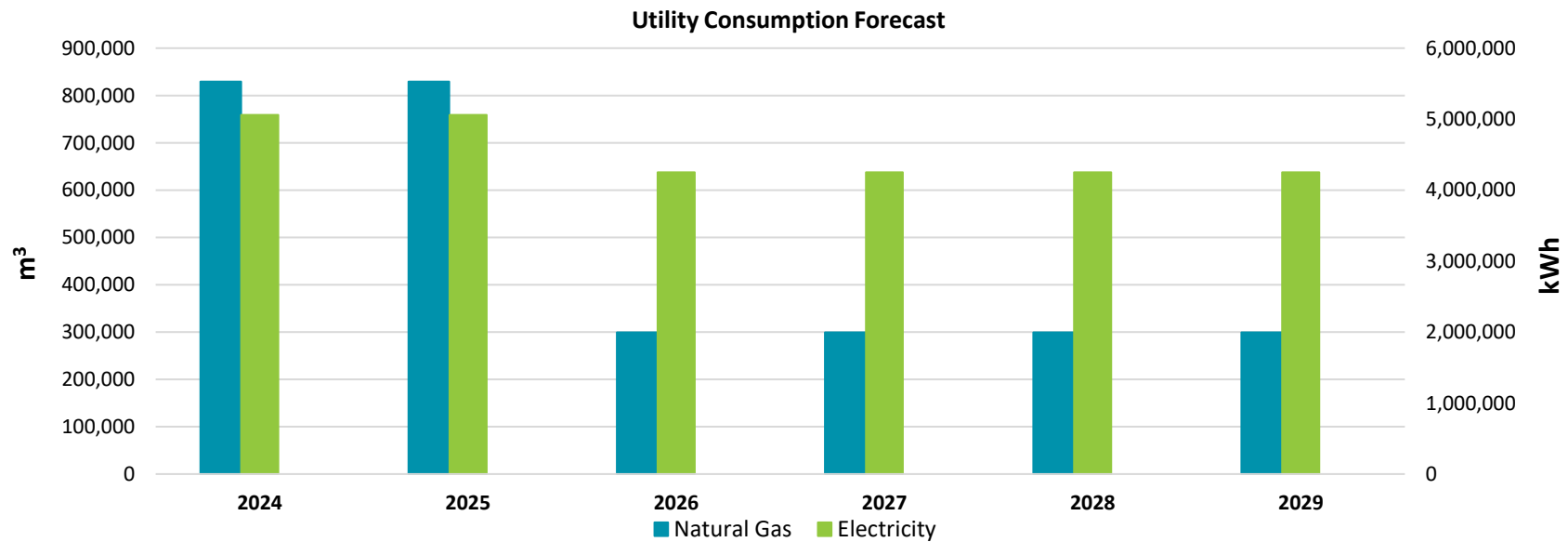


Figure 8. Forecast of Annual Energy Consumption

6.2. GHG Emissions Forecast

The organizational GHG emissions for Headwaters Health Care Centre are calculated based on the forecasted Site-wide energy consumption data analyzed in the previous section and are tabulated in the following table. The percent of reduction is based on the baseline year of 2022.

Utility Source (tCo2e)	2024	2025	2026	2027	2028	2029
Natural Gas (scope 1)	1,594	1,594	575	575	575	575
Electricity (scope 2)	331	444	326	370	321	295
Totals	1,925	2,038	902	946	896	870
Reduction from Baseline Year	1%	-4%	54%	52%	54%	55%

Table 8. Forecast of Annual Greenhouse Gas Emissions from 2024 to 2029

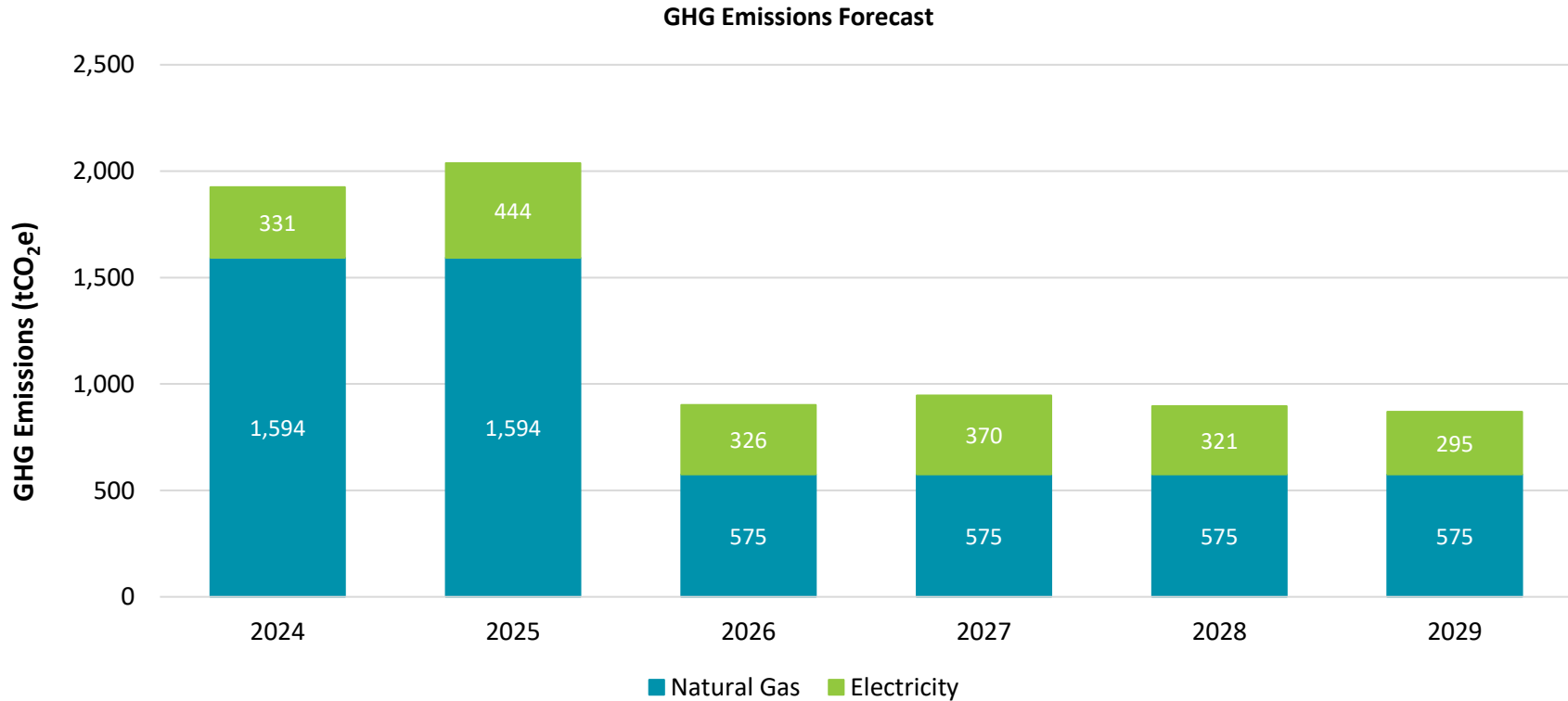
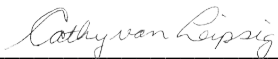


Figure 9. Forecast of Annual Greenhouse Gas Emissions

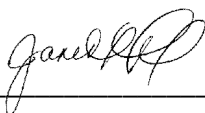
7. Closing Comments

Thank you to all who contributed to Headwaters Health Care Centre's Energy Conservation & Demand Management Plan. We consider our facility an integral part of the local community. The key to this relationship is being able to use our facility efficiently and effectively to maximize our ability to provide the highest quality of healthcare services while integrating environmental stewardship into all aspects of facility operations.

On behalf of the Senior Management Team here at Headwaters Health Care Centre, I approve this Energy Conservation & Demand Management Plan.

X  _____

Cathy Van Leipsig
Vice President & Chief Financial Officer

X  _____

Janet Minnich
Director – Facilities, Procurement & Support Services

This ECDM plan was created through a collaborative effort between Headwaters Health Care Centre and Blackstone Energy Services.

8. Appendix

8.1. Glossary

Word	Abbreviation	Meaning
Baseline Year	-	A baseline is a benchmark that is used as a foundation for measuring or comparing current and past values.
Building Automation System	BAS	<i>Building automation</i> is the automatic centralized <i>control</i> of a <i>building's</i> heating, ventilation and air conditioning, lighting and other <i>systems</i> through a <i>building management system</i> or <i>building automation system</i> (BAS)
Carbon Dioxide	CO2	Carbon dioxide is a commonly referred to greenhouse gas that results, in part, from the combustion of fossil fuels.
Energy Usage Intensity	EUI	Energy usage intensity means the amount of energy relative to a buildings physical size typically measured in square feet.
Equivalent Carbon Dioxide	CO2e	CO2e provides a common means of measurement when comparing different greenhouse gases.
Greenhouse Gas	GHG	Greenhouse gas means a gas that contributes to the greenhouse effect by absorbing infrared radiation, e.g., carbon dioxide and chlorofluorocarbons.
Metric Tonnes	t	Metric tonnes are a unit of measurement. 1 metric tonne = 1000 kilograms
Net Zero	-	A net-zero energy building, is a building with zero net energy consumption , meaning the total amount of energy used by the building on an annual basis is roughly equal to the amount of renewable energy created on the site,
Scope 1	-	direct emissions from sources owned or controlled by the institution (such as natural gas directly used in facilities)
Scope 2	-	Scope 2 consists of indirect emissions from the consumption of purchased energy generated upstream from the institution (such as purchased electricity)
Variable Frequency Drive	VFD	A variable frequency drive is a device that allows for the modulation of an electrical or mechanical piece of equipment.

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