



ENERGY CONSERVATION & DEMAND MANAGEMENT PLAN 2024



Contents

- Contents 2
- 1. Regulatory Update 3
- 2. Executive Summary 4
- 3. About Nipigon Memorial Hospital 5
- 4. Historical Analysis 6
 - 4.1 Historical Energy Intensity 6
 - 4.2 Sustainability Strategies to Date 6
- 5. Site Analysis 7
 - 5.1 Utility Consumption Analysis 8
 - 5.2 GHG Emissions Analysis 9
 - 5.3 Proposed Conservation Measures 11
 - 5.4 Utility Consumption Forecast 12
 - 5.5 GHG Emissions Forecast 14
- 6. Closing Comments 15
- 7. Appendix 16
 - 7.1 Glossary of terms 16
 - 7.2 List of Tables, Figures and Pictures 17

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 The Bill repealed the GEA and all its underlying Regulations, including O. Reg. 397/11.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.

2. Executive Summary

The purpose of this Energy Conservation and Demand Management (ECDM) Plan from Nipigon District Memorial Hospital (NDMH) 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 NDMH's core values of efficiency, concern for the environment and financial responsibility, this ECDM outlines how the hospital 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, NDMH has achieved the following results:

- 32,000 m³ reduction in natural gas use
- 365,468 kWh reduction electricity
- 15% reduction in the hospital's total energy use since 2019

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

- NDMH's Energy Use Index (EUI) was 71 ekWh/ft²
- Energy-related emissions equaled 601 tCO₂e

To obtain full value from energy management activities, NDMH 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, NDMH can expect to achieve the following targets by 2029:

- 26% reduction in natural gas consumption
- 10% reduction in facility energy utilization
- 124-tonne reduction in carbon equivalent emissions

3. About Nipigon Memorial Hospital

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.

Nipigon District Memorial Hospital is committed to providing excellent healthcare and wellness promotion services in order to improve the health of the population and the quality of life for all residents in our communities. We are committed to changing and growing with the community and continue to build a sustainable, high quality, health system.

Nipigon District Memorial Hospital (NDMH) is an integral part of the Nipigon community in health promotion, prevention, diagnosis, treatment and patient care. The facility provides a unique component of health care services to the Ontario's northwestern communities. As a small hospital in a rural area, we believe we have a role beyond caring for the sick, our opportunities expand through integrative and collaborative partnerships with local and regional health care providers, the communities and the public.

Our Vision

Partnering for a Healthier Tomorrow.

Our Mission

The Hospital delivers excellence in rural health care with our partners for all residents in our communities.

Our Values

Patient and Resident Centered, Integrity, Respect, Responsible.

Our Philosophy

Patients, residents and their families are at the centre of everything we do.

4. Historical 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 **63.23 ekWh/sq. ft.**

Annual Consumption (EUI)					
Year	2019	2020	2021	2022	2023
Nipigon District Memorial Hospital	83	76	70	51	71

Table 1. Historic Energy Intensity

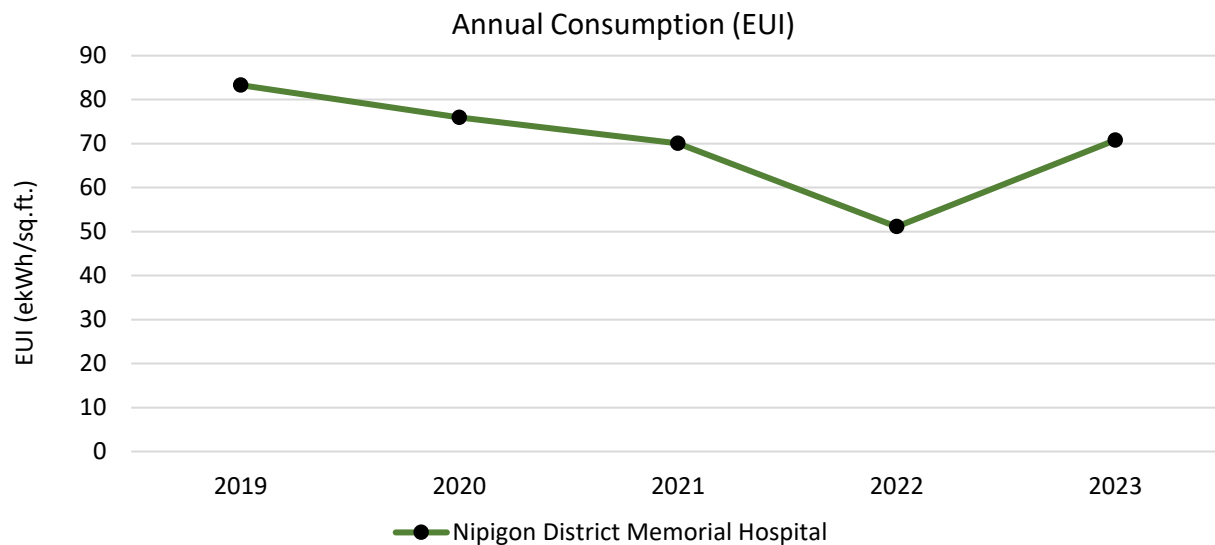


Figure 1. Historic Energy Intensity

4.2 Sustainability Strategies to Date

NDMH’s continuously reviews opportunities to conserve the facilities energy use. The chart below provides a brief description of the conservation measures completed in the past 5 years.

Completed Energy Conservation Measures	
Measure Name	Description
LED Lighting Retrofit	The hospital converted all pole lights, street lights, wall packs and canopy lights with LED lights.

Table 2. Current Sustainability Strategies

5. Site Analysis



Picture 1. Nipigon District Memorial Hospital

Nipigon District Memorial Hospital is an integral part of Nipigon community. The facility provides a unique component of health care services to the Ontario's northwestern communities. We are a 37-bed facility that provides services through in-patient and out-patient programs. The Hospital site has 15 acute care beds and 22 long term care beds. We are dedicated to delivering quality healthcare to this northern community.

Facility Information	
Facility Name	Nipigon District Memorial Hospital
Facility Type	Healthcare Services
Address	125 Hogan Road, Nipigon, ON
Gross Area (Ft.²)	56,125
Average Operational Hours in a Week	168
Number of Beds	37
Number of Floors	1

Table 3. Nipigon District Memorial Hospital Facility Information

5.1 Utility Consumption Analysis

In order to compare different energy sources within this report, energy will be expressed in units of ekWh – equivalent kilowatt-hours. The energy contained in a cubic meter of natural gas would be converted into the equivalent amount of the energy contained in a kilowatt hour of electricity.

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).

Annual Consumption					
Year	2019	2020	2021	2022	2023
Electricity (kWh)	1,602,032	1,579,319	1,599,069	1,532,614	1,236,564
Natural Gas (m³)	291,766	254,859	221,653	127,010	259,765

Table 4. Historic Annual Utility Consumption

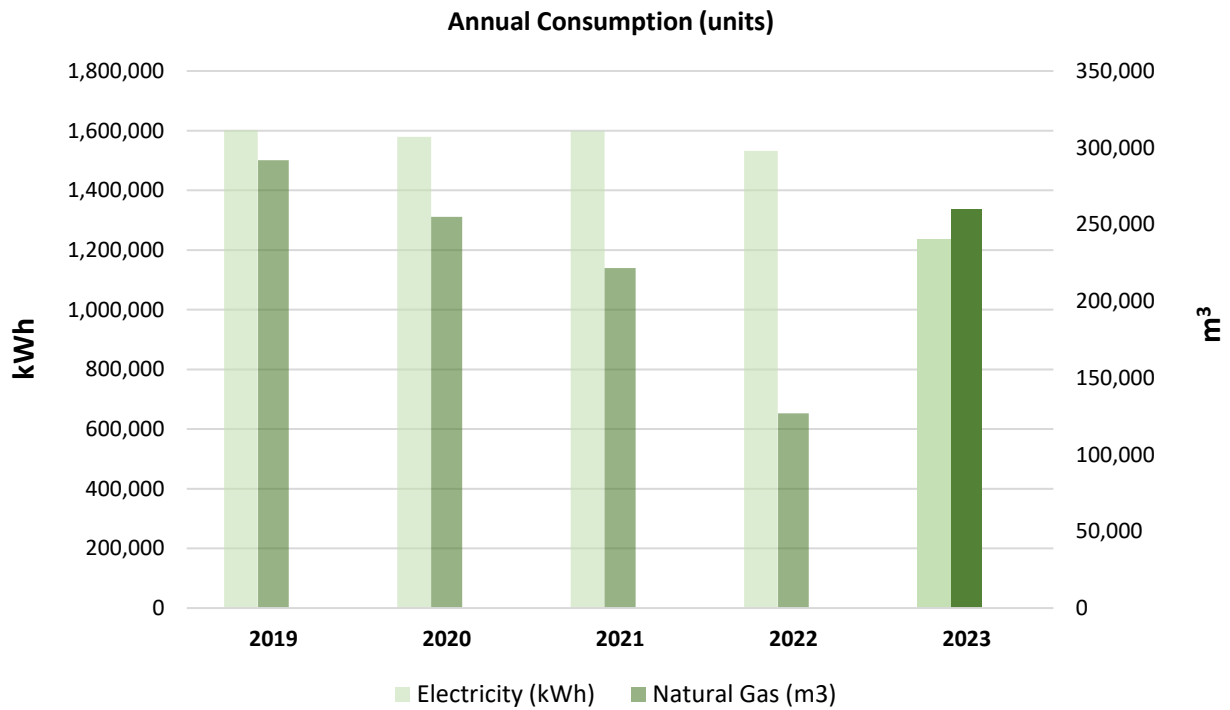


Figure 2. Historic Annual Utility Consumption

Consumption Summary (ekWh)	2019	2020	2021	2022	2023
Natural Gas Consumption	3,081,044	2,691,314	2,340,654	1,341,226	2,743,118
Electricity Consumption	1,602,032	1,579,319	1,599,069	1,532,614	1,236,564
Natural Gas Savings	0	389,730	350,660	999,428	-1,401,893
Electricity Savings	0	22,713	-19,750	66,455	296,051

Table 5. Consumption Summary in ekWh

5.2 GHG Emissions Analysis

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 hydroelectricity, and coal-fired plants have been phased out. Scope 1 (natural gas) and Scope 2 (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.

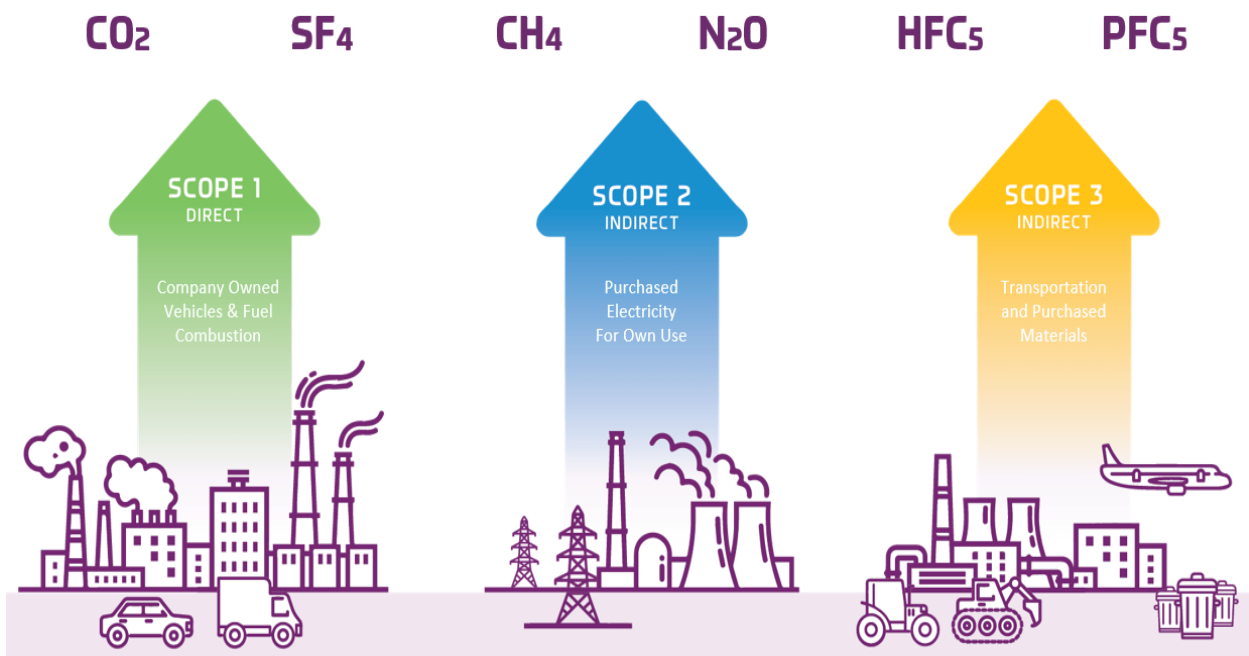


Figure 3. Examples of Scope 1 and 2

The greenhouse gas emissions for SJCG have been tabulated and are represented in the table and graph below.

GHG Emissions (tCO ₂ e)	2019	2020	2021	2022	2023
Electricity	40	41	42	108	102
Natural Gas	560	490	426	244	499
Totals	601	530	468	352	601

Table 6. Historic Greenhouse Gas Emissions

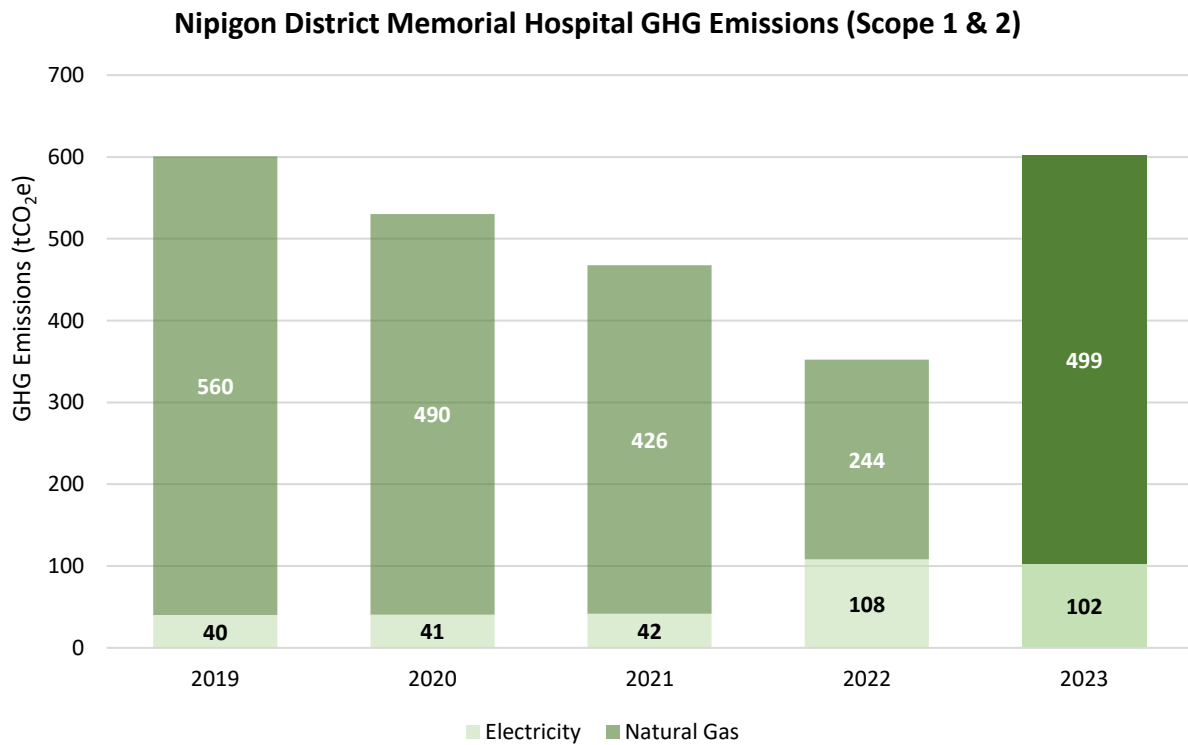


Figure 4. Historic Greenhouse Gas Emissions

5.3 Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the facility. NDMH’s proposed energy saving initiatives are summarized in the table below outlining the targeted utilities. These measures will remain in place until a more efficient and cost-effective technology is found.

Measure	Impacted Utility	Estimated Annual Savings		Year of Implementation
		kWh	m ³	
Supplemental Cooling for Laboratory	Electricity & Natural Gas	-13,125	6,379	2025
Redirect Walk-In Condenser Water Discharge to Sanitary Drain	Electricity	2,101	0	2025
Controls Upgrade	Electricity	13,244	0	2025
Kitchen Hood Controls	Electricity & Natural Gas	5,723	11,897	2025
Control System RCx	Electricity & Natural Gas	35,809	5,621	2025
Electrify Gas-Fired Humidifiers	Electricity & Natural Gas	-335,457	37,373	2025
Electrify Gas-Fired Dryers	Electricity & Natural Gas	-64,511	7,187	2025
Totals		-356,215	68,457	-

Table 7. Proposed Conservation Measures

5.4 Utility Consumption Forecast

By implementing the energy conservation measures stated in the previous section, the forecasted electricity and natural gas use could be generated based on the utility savings created by the individual measures. The forecasted utility consumption is tabulated below. The percentage of change is based off the data from the baseline year of 2023.

	Annual Consumption Forecast											
	2024		2025		2026		2027		2028		2029	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Electricity (kWh)	1,236,564	0%	1,592,779	29%	1,592,779	-29%	1,592,779	-29%	1,592,779	-29%	1,592,779	-29%
Natural Gas (m ³)	259,765	0%	191,308	26%	191,308	26%	191,308	26%	191,308	26%	191,308	26%

Table 8. Forecast for Annual Consumption

Consumption Summary (ekWh)	2024	2025	2026	2027	2028	2029
Natural Gas Consumption	2,743,118	2,020,216	2,020,216	2,020,216	2,020,216	2,020,216
Electricity Consumption	1,236,564	1,592,779	1,592,779	1,592,779	1,592,779	1,592,779
Natural Gas Savings	0	722,902	0	0	0	0
Electricity Savings	0	-356,215	0	0	0	0

Table 9. Utility Consumption Forecast in ekWh

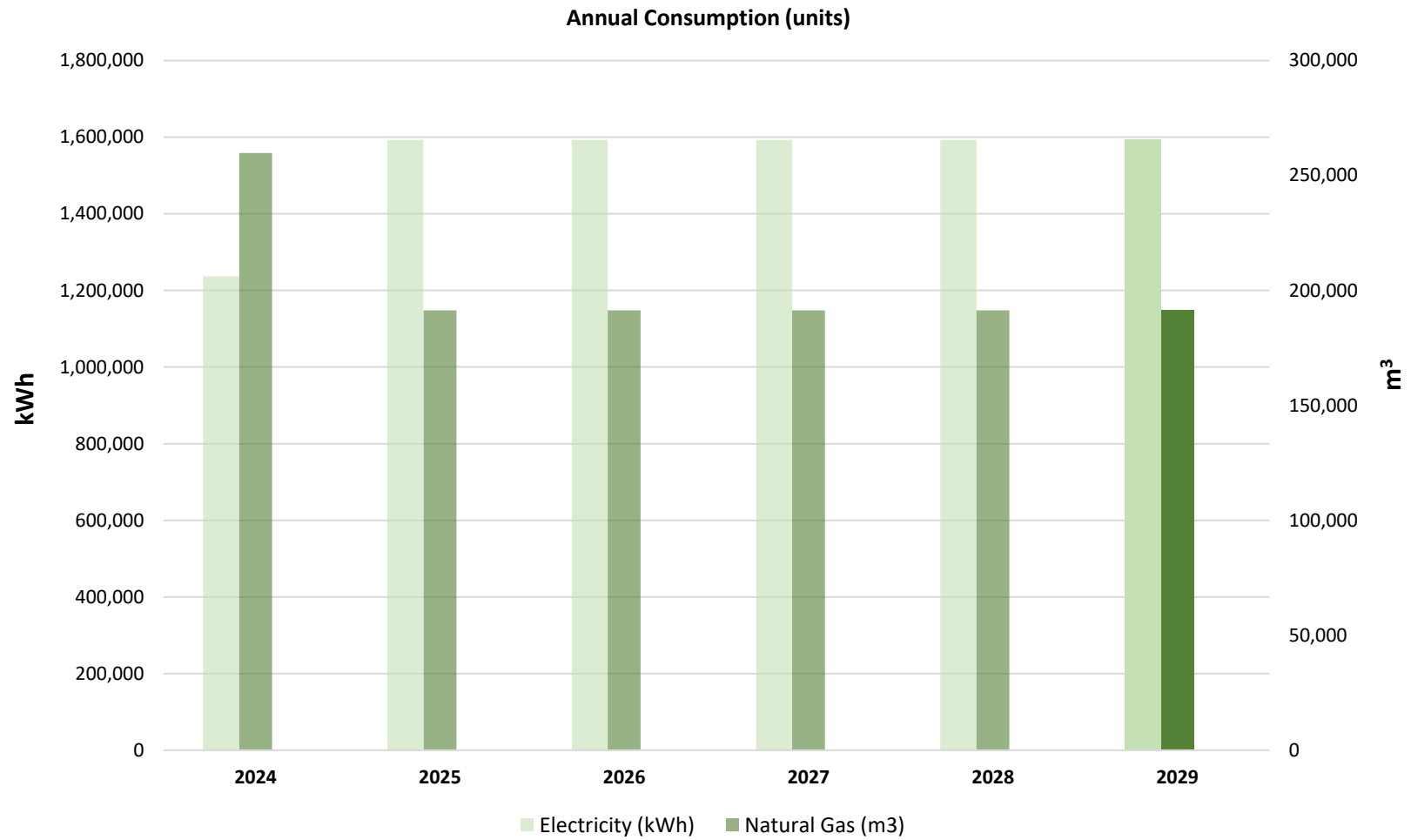


Figure 5. Forecast for Annual Utility Consumption

5.5 GHG Emissions Forecast

The forecasted greenhouse gas emissions are calculated based on the forecasted energy consumption data analyzed in the previous section and are tabulated in the following table. The percentage of reduction is based off the data from the baseline year of 2023.

Annual Emissions Forecast (tCO ₂ e)						
Utility Source	2024	2025	2026	2027	2028	2029
Electricity	81	140	122	139	120	110
Natural Gas	499	368	368	368	368	368
Totals	580	507	490	506	488	478
Reduction from Baseline	3.6%	15.6%	18.6%	15.8%	18.9%	20.5%

Table 10. Forecast for Annual Greenhouse Gas Emissions

Nipigon District Memorial Hospital Forecasted GHG Emissions (Scope 1 & 2)

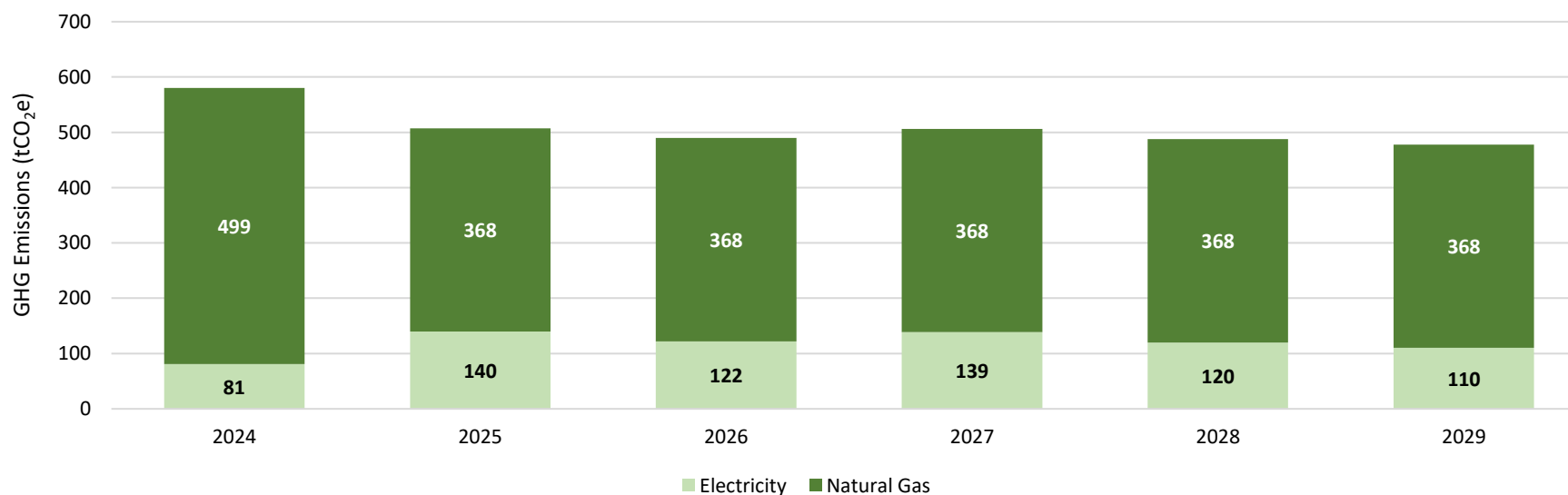


Figure 6. Forecast for Annual Greenhouse Gas Emissions

6. Closing Comments

Thank you to all who contributed to Nipigon District Memorial Hospital's Energy Conservation & Demand Management Plan. We consider our facility a primary source of care, and an integral part of the local community. The key to this relationship is being able to use our facilities 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 Nipigon District Memorial Hospital, we approve this Energy Conservation & Demand Management Plan.

x *L. Gilbert*

Lauren Gilbert, CFO

This ECDM plan was created through a collaborative effort between Nipigon District Hospital and Blackstone Energy Services.

7. Appendix

7.1 Glossary of terms

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,
Variable Frequency Drive	VFD	A variable frequency drive is a device that allows for the modulation of an electrical or mechanical piece of equipment.

7.2 List of Tables, Figures and Pictures

Tables

Table 1. Historic Energy Intensity	6
Table 2. Current Sustainability Strategies.....	6
Table 3. Nipigon District Memorial Hospital Facility Information	7
Table 4. Historic Annual Utility Consumption.....	8
Table 5. Consumption Summary in ekWh.....	8
Table 6. Historic Greenhouse Gas Emissions	10
Table 7. Proposed Conservation Measures	11
Table 8. Forecast for Annual Consumption	12
Table 9. Utility Consumption Forecast in ekWh	12
Table 10. Forecast for Annual Greenhouse Gas Emissions.....	14

Figures

Figure 1. Historic Energy Intensity	6
Figure 2. Historic Annual Utility Consumption.....	8
Figure 3. Examples of Scope 1 and 2.....	9
Figure 4. Historic Greenhouse Gas Emissions.....	10
Figure 5. Forecast for Annual Utility Consumption.....	13
Figure 6. Forecast for Annual Greenhouse Gas Emissions	14

Pictures

Picture 1. Nipigon District Memorial Hospital	7
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