Energy Conservation & Demand Management Plan 2024

Red Lake Margaret Cochenour
MEMORIAL HOSPITAL

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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 The Bill repealed the GEA and all its underlying Regulations, including O. Reg. 397/11.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 for Red Lake Margaret Cochenour Memorial Hospital ("Red Lake") 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 Red Lake's core values of efficiency, concern for the environment and financial responsibility, this ECDM outlines how we 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, Red Lake has achieved the following results since 2019:

- 40,487 kWh increase in electricity use
- 53,933 m^3 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) was 43.99 ekWh/sq. ft
- Energy-related emissions equaled 267 tCO_2e

To obtain full value from energy management activities, Red Lake 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, Red Lake can expect to achieve the following targets by 2029, compared with 2023:

- 4% increase in electricity consumption
- 5% reduction in natural gas consumption
- 1% tCO_2e decrease of GHG emissions

Blackstone Energy Solutions is recommending Red Lake prepares a new ECDM plan in 2029 to reflect on the results of the initiatives recommended in this ECDM plan and prepare for the new reporting cycle.

Red Lake's Energy Performance & Path Forward

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

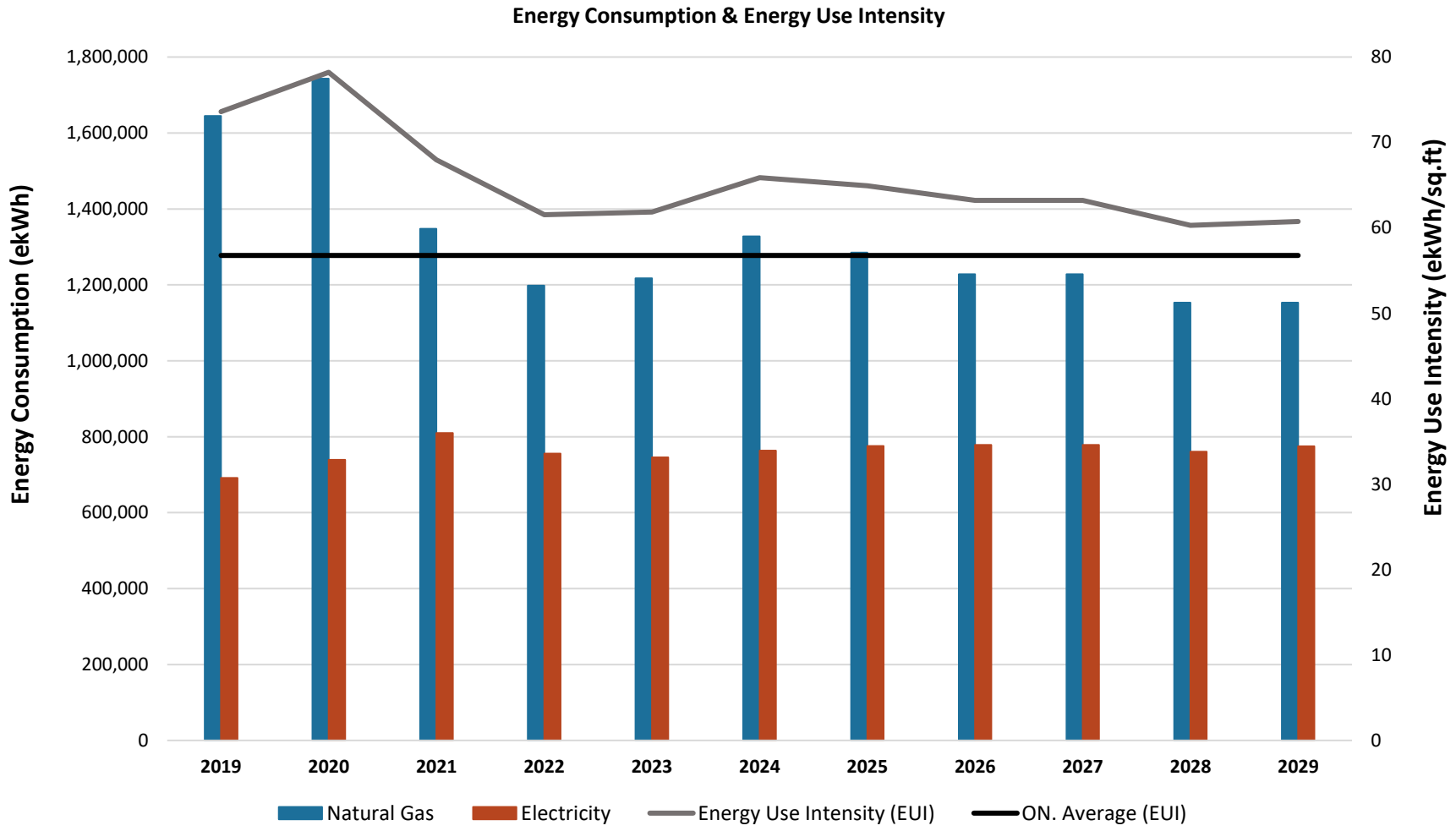

Figure 1. Energy Consumption Trends & Projections

3. About the Hospital

Figure 2. *Red Lake Margaret Cochenour Memorial Hospital*

Red Lake Margaret Cochenour Memorial Hospital ("Red Lake") was created to help meet the healthcare and wellbeing needs of the communities of Red Lake and Ear Falls. We strive to provide excellent healthcare while demonstrating our commitment to operating in a medically, social and financially responsible manner. We take pride in our efforts to keep these services within our community, and to ensure those services meet or exceed industry standards for quality of care.

Red Lake Margaret Cochenour Memorial Hospital	
Facility Name	Red Lake Margaret Cochenour Memorial Hospital
Type of Facility	Healthcare Services
Address	#51 Highway 105, Red Lake, ON
Gross Area (Sq. Ft)	31,740
Number of Floors	2
Average Operational Hours in a Week	168 hours

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.

Red Lake Margaret Cochenour Memorial Hospital services the communities of Red Lake and Ear Falls. We are dedicated to meeting the healthcare and well-being needs of the area, helping the people who live here and the ones who visit. We have a team of employees, physicians, volunteers and donors whose focus is to provide excellence in rural health care and exceed industry standards for quality of care.

Our Mission

Compassionate, quality care - every patient, every time

Our Vision

Working Together For Excellence in Northern Healthcare.

Our Values

Respect. Integrity. Advocacy. Resiliency.

Figure 3. *2024-2027 Priorities & Goals*

4. Historical Site Analysis

4.1. Historical Energy Intensity

Energy Utilization Index (EUI) is a measure of how much energy a facility uses per square foot in a year. The following charts depict Red Lake's facilities included in the energy utilization index analysis and overall energy intensity of Red Lake's buildings for the period of 2019 to 2023. As mentioned previously, these EUIs are compiled for the facilities included in this ECDM Plan.

Total Energy Utilization Index (EUI)					
Year	**2019**	**2020**	**2021**	**2022**	**2023**
Red Lake	73.62	78.21	67.97	61.56	61.85

***Table 2**. Historic Energy Use Intensity*

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.

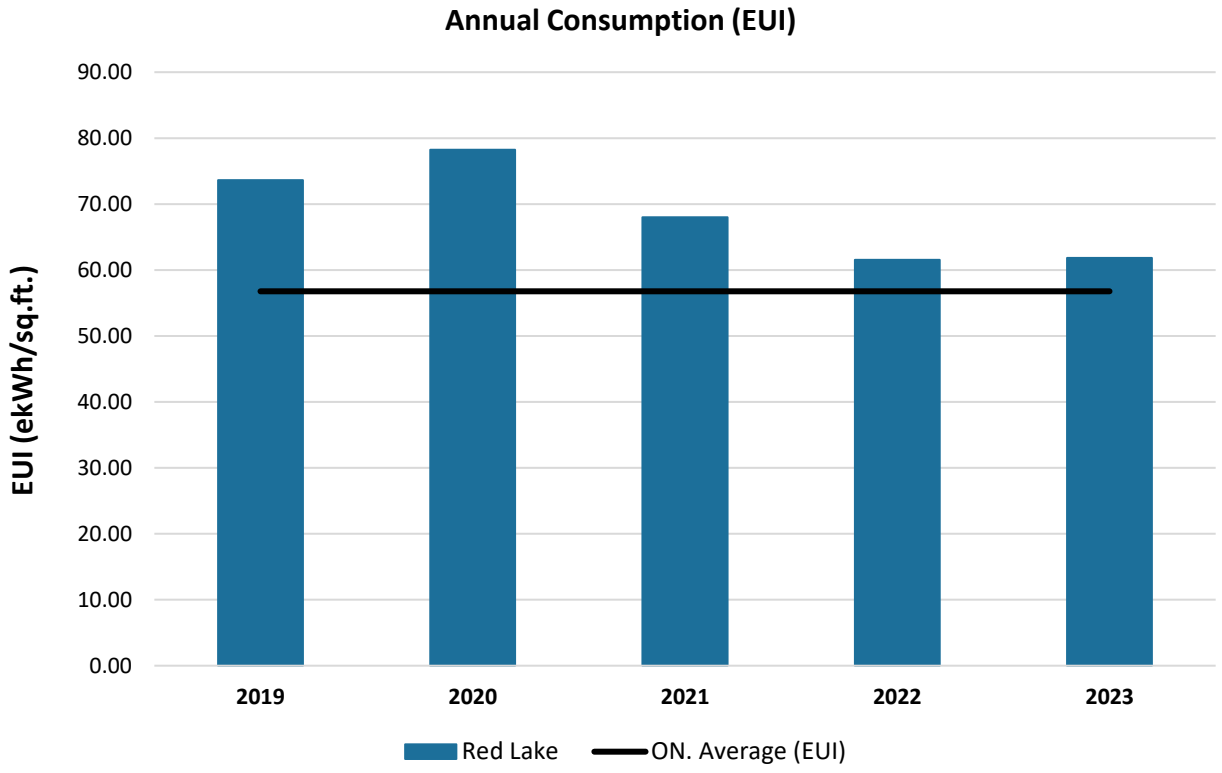

***Figure 4.** Historic Annual Energy Utilization Indices*

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).

Year	2019	2020	2021	2022	2023
Electricity (kWh)	691,680	739,167	809,823	755,628	745,613
Natural Gas (m^3)	155,785	165,087	127,623	113,468	115,298

Table 3. *Historic Annual Utility Consumption*

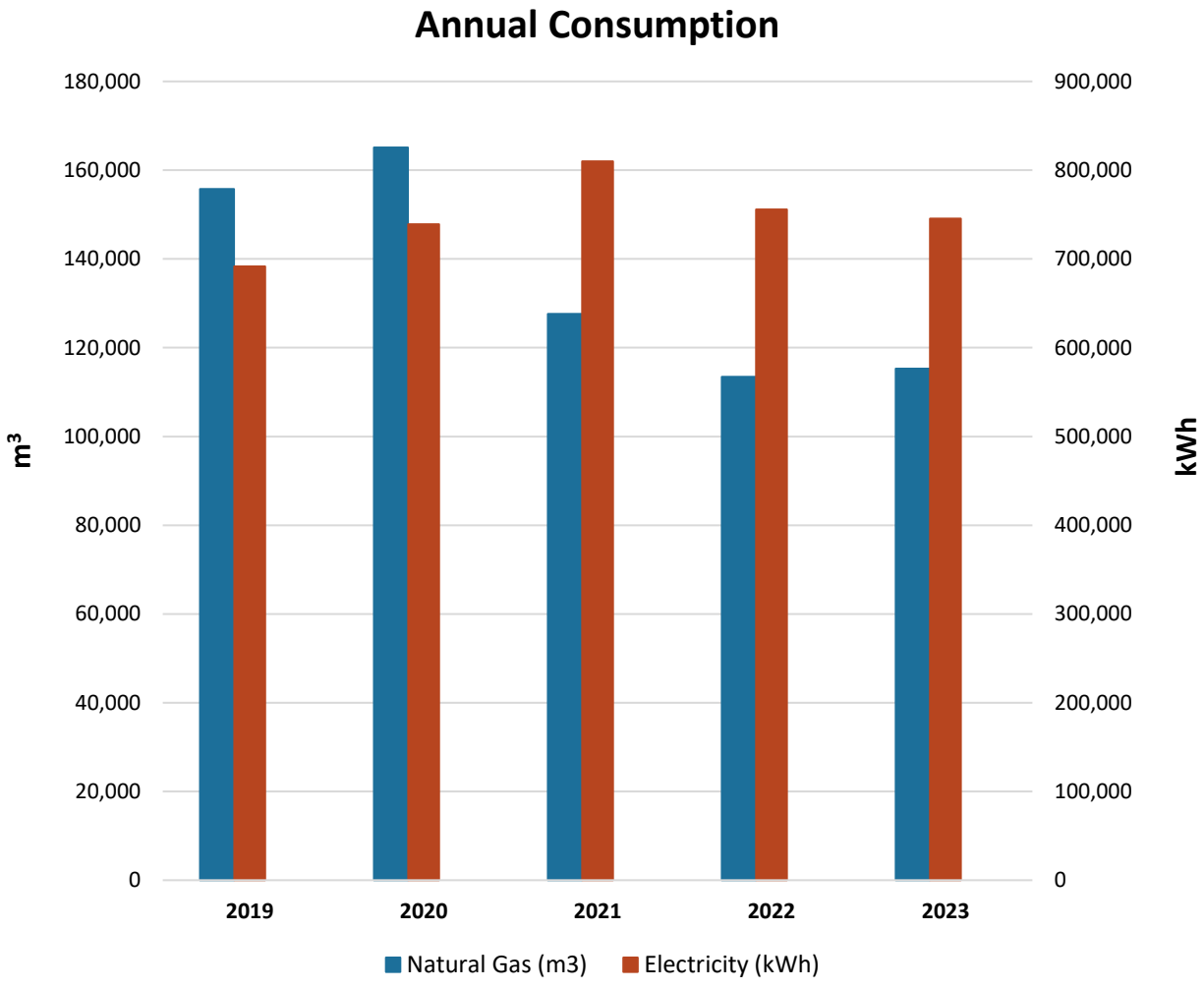

Figure 5. *Historic Annual Utility Consumption*

4.3. Historical GHG Emissions

Greenhouse gas (GHG) emissions are expressed in terms of equivalent tonnes of Carbon Dioxide (tCO_2e). 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 (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.

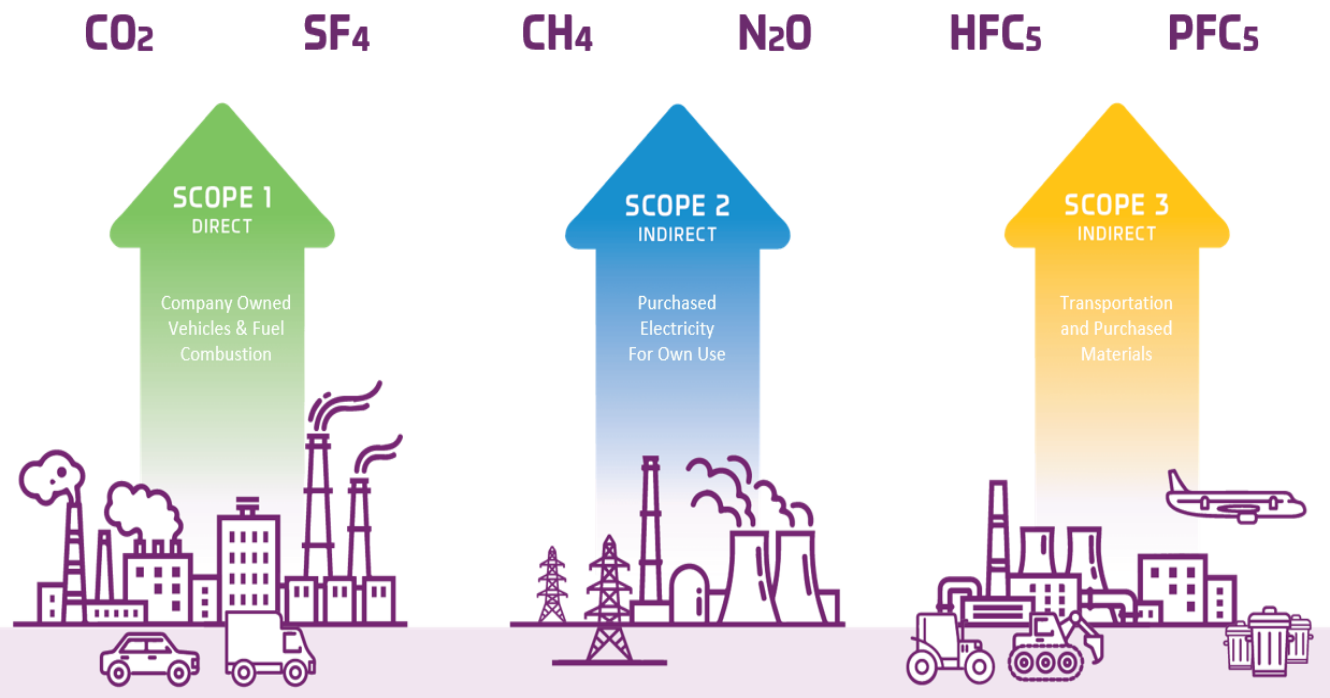

Figure 6. *Examples of Scope 1 and 2*

Greenhouse gas emissions for Red Lake have been tabulated and are represented in the table and graph below.

GHG Emissions	2019	2020	2021	2022	2023
Scope 1	301	319	247	219	223
Scope 2	20	27	35	37	44
Total Scope 1 & 2 Emissions	**321**	**346**	**281**	**256**	**267**

Table 4. *Historic Greenhouse Gas Emissions*

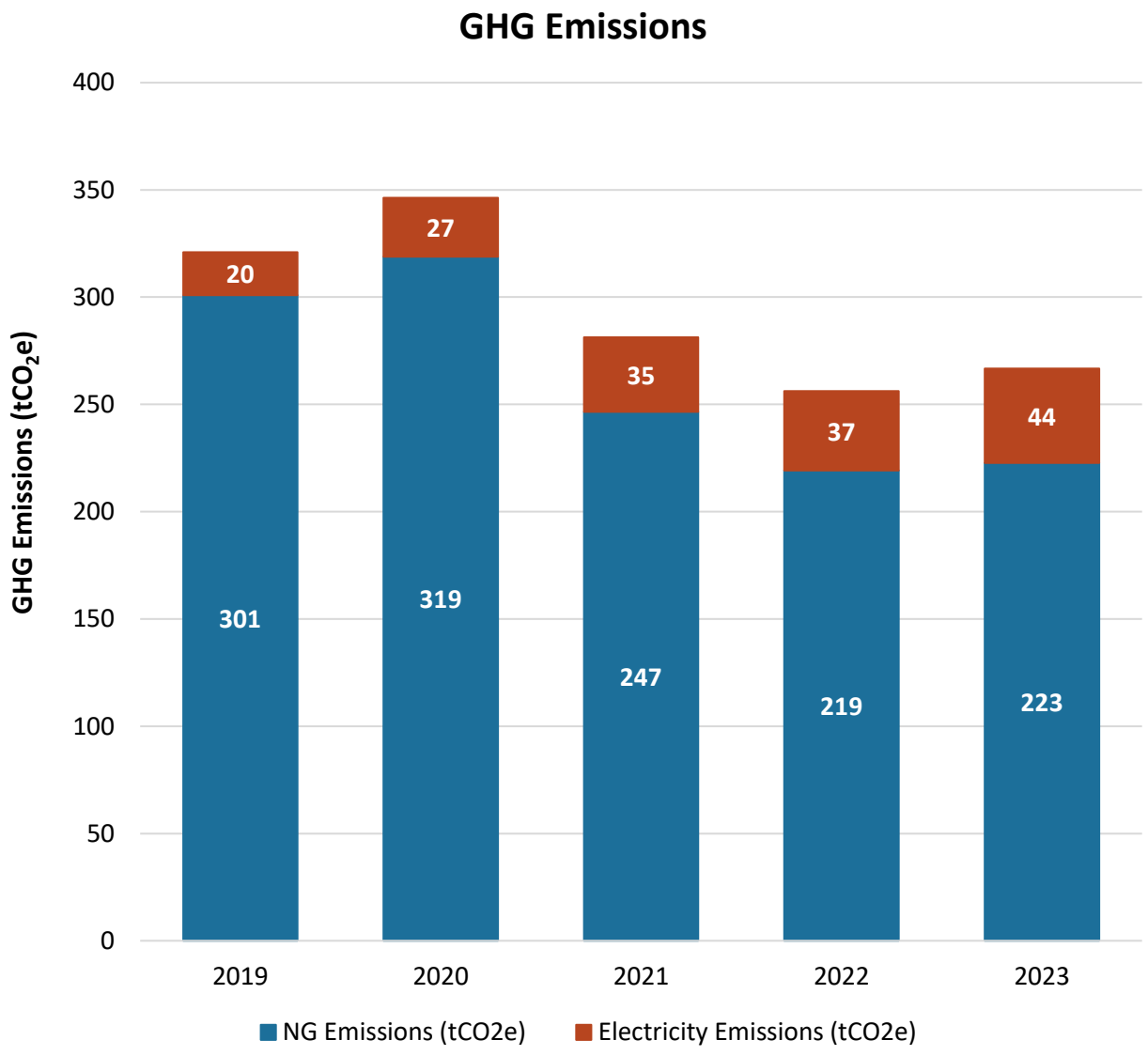

Figure 7. *Historical GHG Emissions*

5. Measures

5.1. Energy Conservation and GHG Reduction Strategies to Date

Over the previous years, Red Lake has undertaken various energy conservation and demand management measures. The summary of the main measures and associated savings are shown in the following table.

Measure Name	Electricity (kWh)	Natural Gas (m^3)	Oil #2 (L)	Propane (L)
Retrofit and New Lighting Fixtures	71,072	-731	-	-
Replace Outdoor Lighting by LED	8,448	-	-	-
Lighting Control	187	-	-	-
Upgrade and Expand Controls	52,378	-	15,908	-
Upgrade Room Temperature Controls	1,634	-	2,260	-
Car Plugs OAT Reset	9,421	-	-	-
P1, P2, P5 Fuel Conversions	-	-201,475	164,129	63,799
P3 Exhaust Fans Replacement	-	-	-	-
P4 Humidifiers Replacement	-15,299	-11,277	-	-
Total	**127,840**	**-213,483**	**182,297**	**63,799**

Table 5. *Previously Implemented Energy Conservation and GHG Reduction Measures and 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 facilities. Evaluated and proposed initiatives are summarized in the table on the following page outlining savings potential of the targeted utilities and estimated project costs. The table also lists a recommended year of implementation for each measure, strategically chosen to maximize Red Lake's energy conservation and GHG reduction benefits. Measure implementation is dependent on availability of funding and incentives.

Measure	Electricity (kWh)	Natural Gas (m^3)	Annual Utility Savings	Year of implementation
AHU-7 Upgrade with ERV	-13,923	0	($1,778)	2029
Install Kitchen Demand Ventilation for AHU-1 and EF-12	17,500	3,939	$4,062	2028
Window Replacement	173	3,185	$1,500	2026-2028
Air Curtain for Delivery Door	-5,285	3,605	$998	2026
Dryer Replacement	-12,139	4,061	$334	2025
Caulking and Weather Stripping	2,600	1,750	$1,144	2026
Total	**-11,074**	**16,539**	**$6,260**	**-**

Table 6. *Proposed Measures*

6. Red Lake Outlook

6.1. Utility Consumption Forecast

By implementing the recommended measures stated in the previous section, in each respective site, Red Lake'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 2023.

Annual Consumption												
Utility	2024		2025		2026		2027		2028		2030	
	Units	% Reduction	Units	% Reduction	Units	% Reduction	Units	% Reduction	Units	% Reduction	Units	% Reduction
Natural Gas (m^3)	125,733	-9%	121,672	-6%	116,317	-1%	116,317	-1%	109,194	5%	109,194	5%
Electricity (kWh)	763,692	-2%	775,831	-4%	778,516	-4%	778,516	-4%	760,844	-2%	774,766	-4%

Table 7. *Forecast of Annual Utility Consumption*

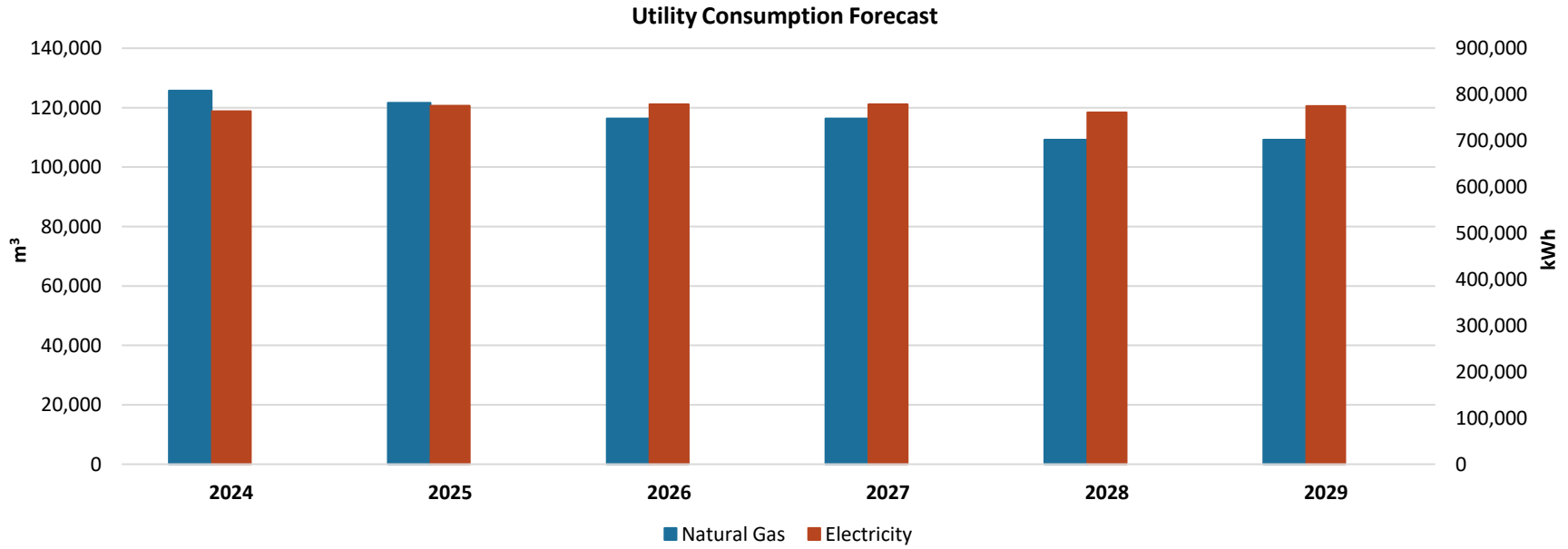

Figure 8. *Forecast of Annual Energy Consumption*

6.2. GHG Emissions Forecast

The organizational GHG emissions for Red Lake 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 reduction is based on the baseline year of 2023.

Utility Source	2024	2025	2026	2027	2028	2029
Natural Gas (tCO_2e)	243	235	225	225	211	211
Electricity (tCO_2e)	50	68	60	68	57	54
Totals	**293**	**303**	**284**	**292**	**268**	**265**
Reduction from Baseline Year	**-10%**	**-14%**	**-7%**	**-10%**	**-1%**	**1%**

Table 8. *Forecast of Annual Greenhouse Gas Emissions*

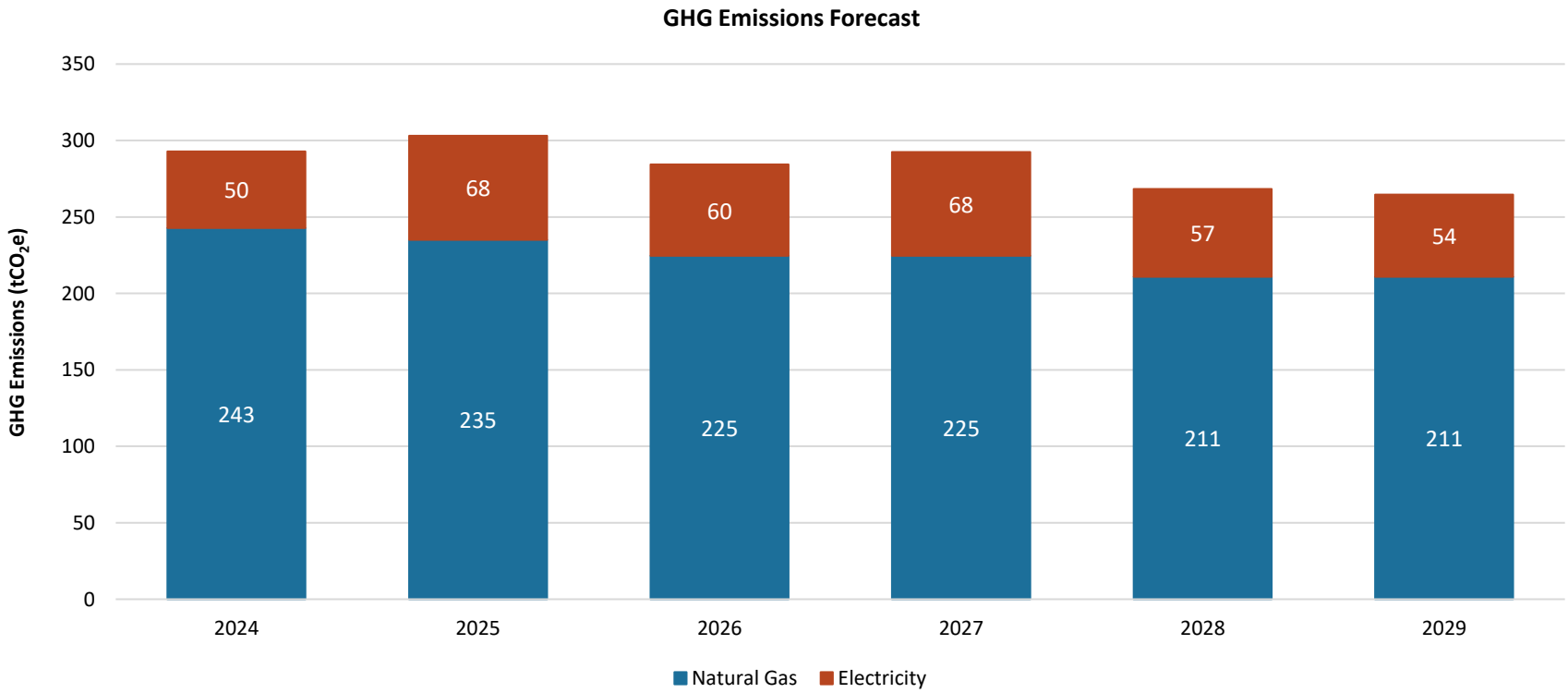

Figure 9. *Forecast of Annual Greenhouse Gas Emissions*

7. Closing Comments

Thank you to all who contributed to Red Lake Margaret Cochenour Memorial Hospital's Energy Conservation & Demand Management Plan. We consider our hospital 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 Red Lake, we approve this Energy Conservation & Demand Management Plan.

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This ECDM plan was created through a collaborative effort between Red Lake 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	*Building automation* is the automatic centralized *control* of a *building's* heating, ventilation and air conditioning, lighting and other *systems* through a *building management system* or *building automation system* (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.

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