ENERGY CONSERVATION & DEMAND MANAGEMENT PLAN 2024

HÔTEL-DIEU GRACE HEALTHCARE

ESTD 1888

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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 The Bill repealed the GEA and all its underlying Regulations, including O. Reg. 397/11.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 Hôtel Dieu Grace Healthcare ("HDGH") 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 HDGH'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, HDGH has achieved the following results:

- 1,153,244 kwh reduction in electricity use
- 228,108 m3 reduction in natural gas use

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

- Energy Use Index (EUI) was 36 ekWh/ft^2
- Energy-related emissions equaled 3,719 tCO_2e

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

- 15% reduction in electricity consumption
- 19% reduction in natural gas consumption
- 20% reduction in carbon equivalent emissions

Hotel-Dieu Grace Hospital'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.

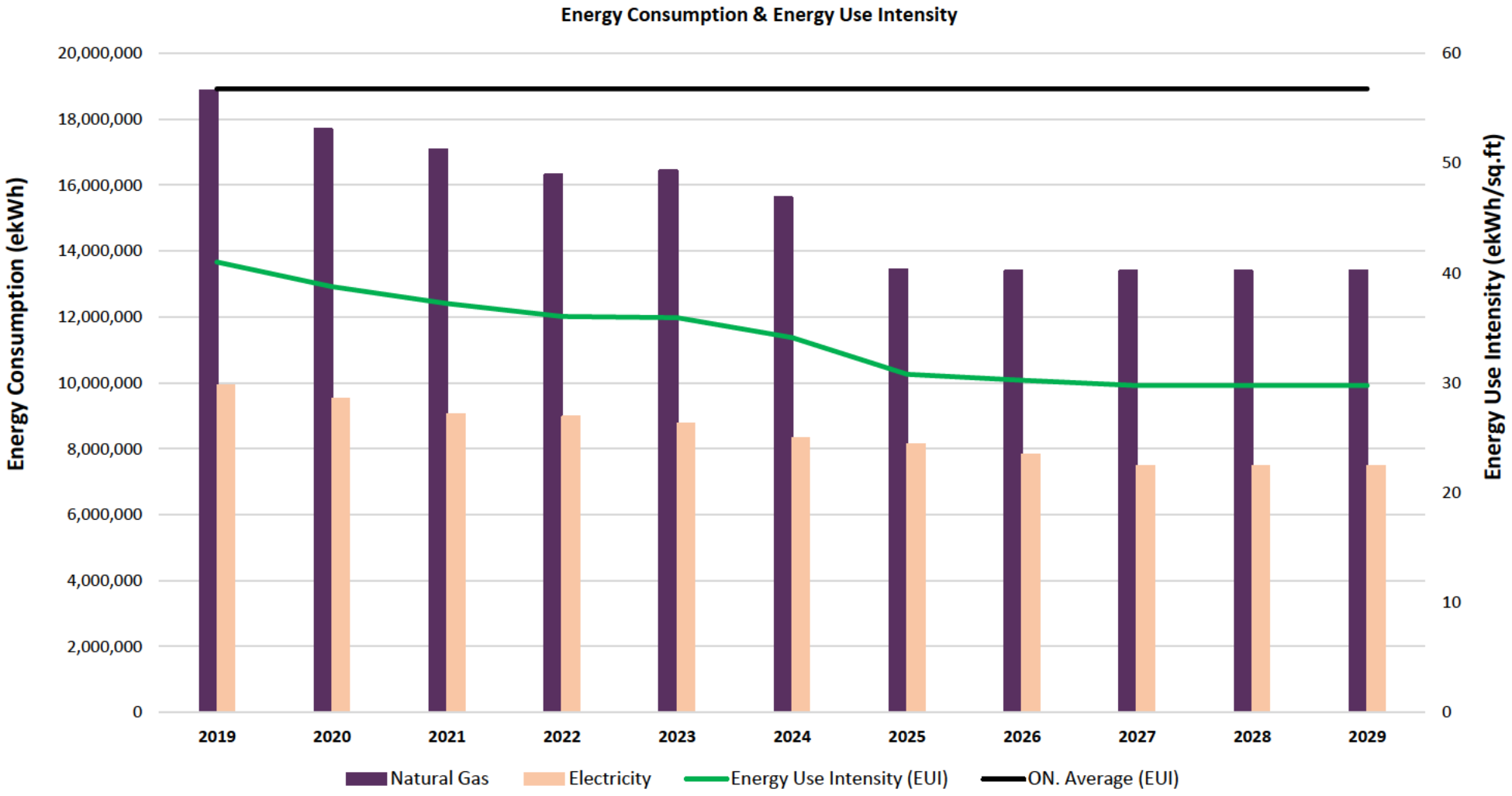

Figure 1. Energy Consumption Trends and Projections

3 About Hôtel-Dieu Grace Healthcare

Figure 2. Hôtel-Dieu Grace Healthcare

At Hôtel-Dieu Grace Healthcare we are committed to improving the health and wellbeing of the community through the delivery of patient-centered, valued based care. We offer a unique blend of services including but not limited to community and home-based services. In collaboration with our healthcare and inter-sectorial partners, Hôtel-Dieu Grace Healthcare is providing care in new ways and in new locations throughout the region to address barriers, improve access and patient outcomes and improve the overall patient experience.

Facility Overview	
Facility Name	Hôtel-Dieu Grace Healthcare
Type of Facility	Healthcare Services
Address	1453 Prince Road, Windsor, ON
Gross Area (ft2)	701,930
Average Weekly Hours	168
Number of Beds	313
Number of Floors	4

Table 1. Hôtel-Dieu Grace Healthcare Overview

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.

At Hôtel-Dieu Grace we strive for service excellence in hospital operations and patient services through the implementation of best practices. We manage the affairs and resources of Hôtel-Dieu Grace Healthcare ethically, creatively and with accountability to achieve outstanding operational and financial performance.

Our Mission

HDGH is a specialty hospital, driven by the faith and compassion of the Religious Hospitallers of St. Joseph who cared for the most vulnerable and marginalized.

Our Mission is to provide physical, emotional, social, and spiritual care.

Our Vision

A trusted leader transforming healthcare and cultivating a healthier community.

Our Values

Kindness, teamwork, expertise, and social responsibility.

Figure 3. *HDGH*

3.1 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
Hôtel-Dieu Grace Healthcare	41	39	37	36	36

Table 2. Historic Energy Intensity

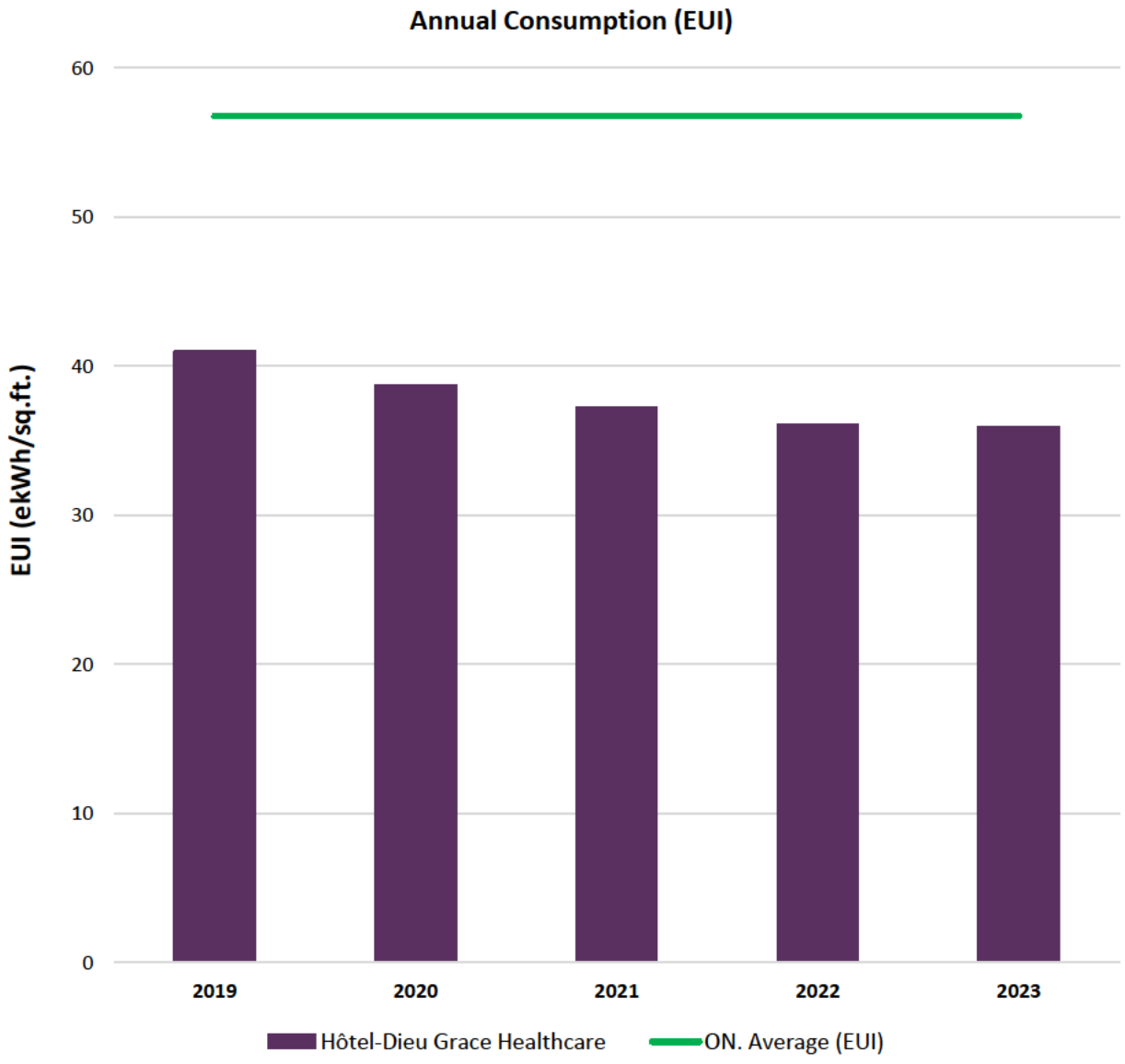

Figure 4. Historic Energy Intensity

3.2 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)	9,916,038	9,503,186	9,059,605	8,973,576	8,762,794
Natural Gas (m^3)	1,786,321	1,676,642	1,616,845	1,546,382	1,558,213

Table 3. Historic Annual Utility Consumption

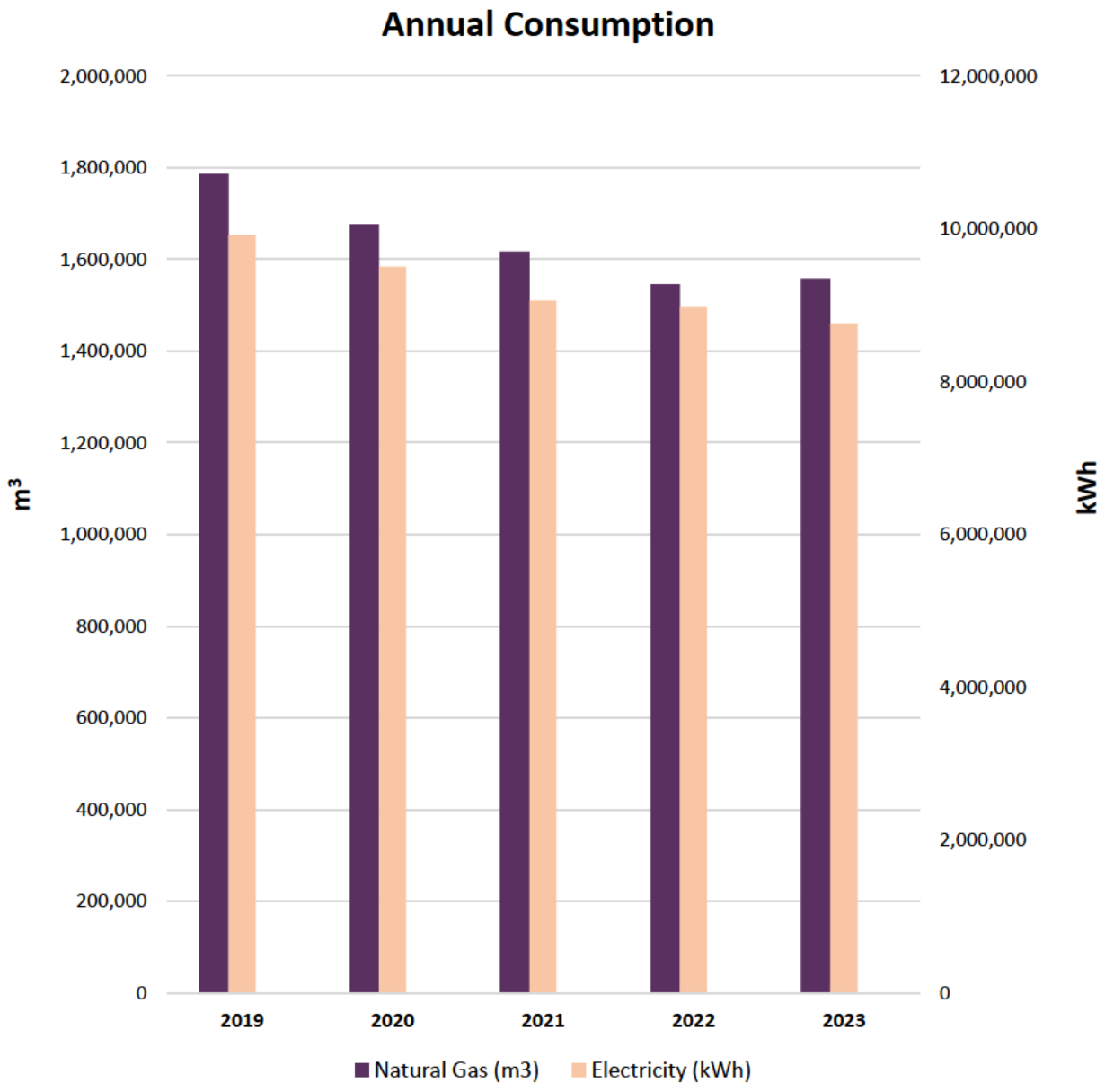

Figure 5. Historic Annual Utility Consumption

3.3 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 nuclear power and 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.

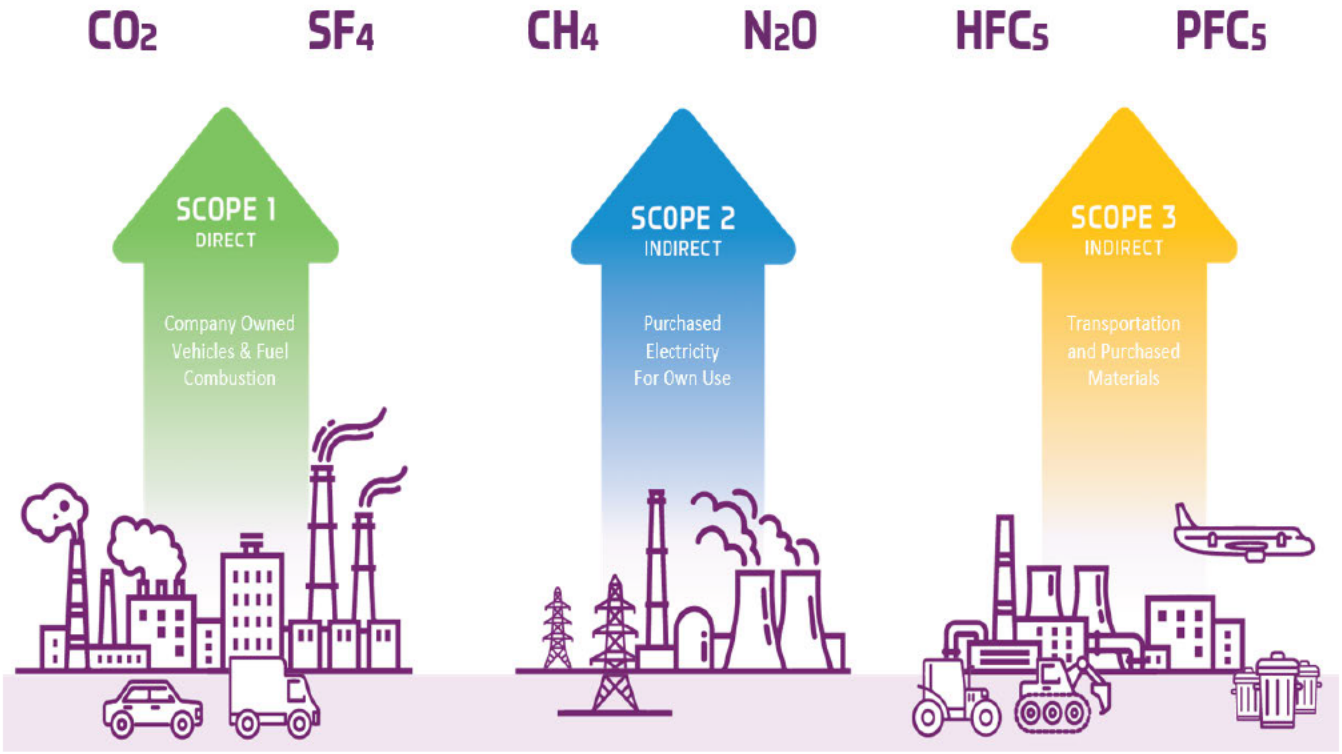

Figure 6. Examples of Scope 1 and 2

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

GHG Emissions (tCO2e)	2019	2020	2021	2022	2023
Electricity (scope 2)	248	245	237	634	726
Natural Gas (scope 1)	3,432	3,221	3,106	2,971	2,993
Totals	**3,679**	**3,466**	**3,343**	**3,604**	**3,719**

Table 4. Historic Greenhouse Gas Emissions

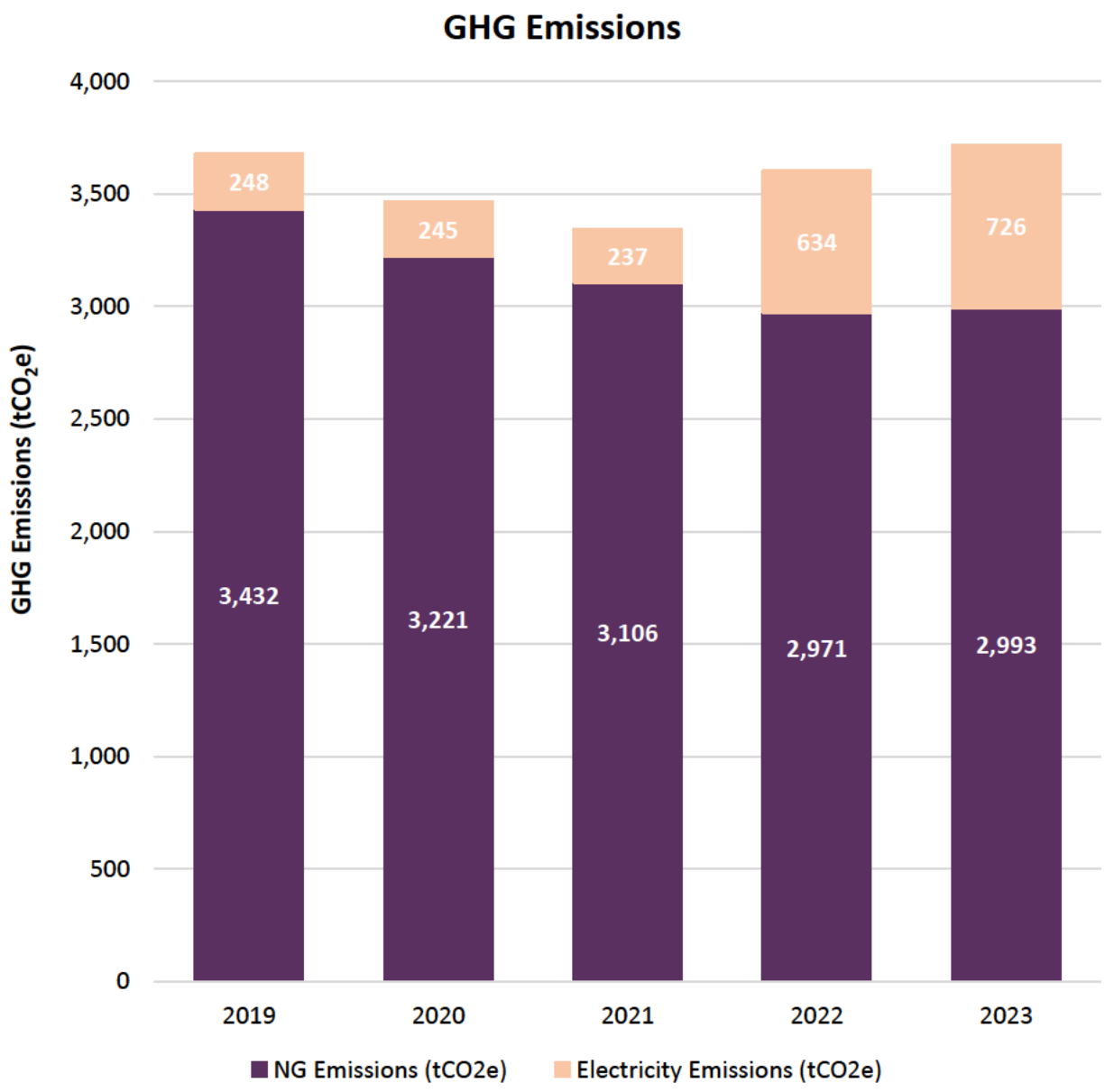

Figure 7. *Historic Greenhouse Gas Emissions*

4 Measures

4.1 Energy Conservation and GHG Reduction Strategies to Date

Over the previous years, HDGH has undertaken various energy conservation and demand management measures and sustainability initiatives. The summary of the main activities is shown in the table below.

Measure Name	Impacted Utility
Outdoor/ Indoor lighting upgrade	HDGH continuously reviews and upgrades their facility as required and has a commitment to energy conservation and demand management. These measures have resulted in more energy efficient and reliable operations, reductions in GHG emissions and reductions in energy use. HDGH has achieved annual savings of 2,008,582 kWh in electricity and 95,486 m3 in natural gas.
Building Envelope Upgrade	
Variable Kitchen Exhaust Fan	
Insulate Heating Plant equipment	
Replace steam trap	
Replace chiller	
Replace windows	
Replace water meter	

Table 5. Current Sustainability Strategies

4.2 Proposed Conservation Measures

Our energy analysis has revealed several conservation strategies for the facility. HDGH'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	Estimated Annual Savings			Project Cost	Simple Payback (Years)	Implementation Year
	Electricity (kWh)	Natural Gas (m^3)	Cost ($)			
Continuous Commissioning	438,140	77,911	$75,464	$125,000	1.7	2024
Solar PV Rooftop	344,000	0	$37,840	$610,500	16.1	2027
Install Variable Kitchen Exhaust System	176,811	50,667	$37,183	$100,000	2.7	2025
Insulate Heating Plant Equipment	0	4,496	$1,574	$3,375	2.1	2026
Boiler Plant Optimization	0	155,821	$54,537	$100,000	1.8	2025
Chiller Plant Upgrade and optimization	321,893	0	$35,408	$1,260,000	35.6	2026
Total	**1,280,844**	**288,895**	**$242,006**	**$2,198,875**	**9.1**	-

Table 6. Proposed Conservation Measures

5 Hotel Dieu-Grace Hospital Outlook

5.1 Utility Consumption Forecast

By implementing the energy conservation measures stated in the previous section, the forecasted 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 off the data from the baseline year of 2023.

	2024		2025		2026		2027		2028		2029	
	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change	Units	% Change
Natural Gas (m^3)	1,480,302	5%	1,273,814	18%	1,269,318	19%	1,269,318	19%	1,269,318	19%	1,269,318	19%
Electricity (kWh)	8,324,654	5%	8,147,843	7%	7,825,950	11%	7,481,950	15%	7,481,950	15%	7,481,950	15%

Table 7. Forecast for Annual Utility Consumption

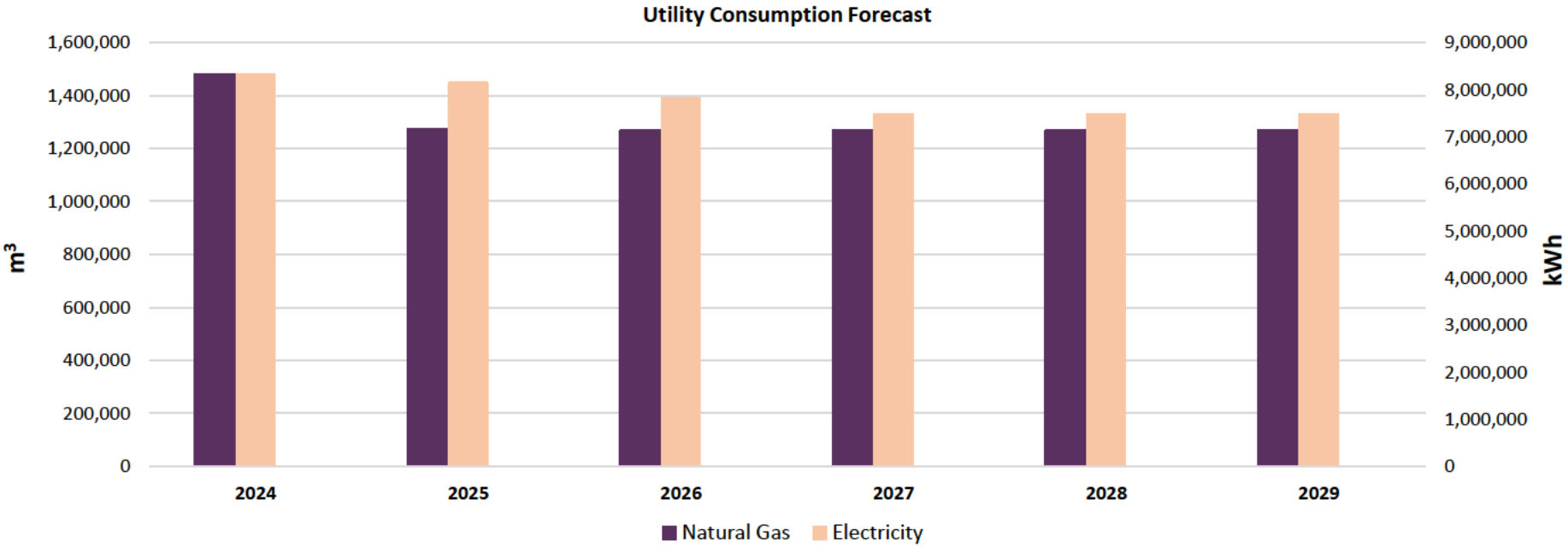

Figure 8. Forecast for Annual Utility Consumption

5.2 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.

Utility Source (tCO2e)	2024	2025	2026	2027	2028	2029
Natural Gas (scope 1)	2,844	2,447	2,438	2,438	2,438	2,438
Electricity (scope 2)	545	715	600	652	564	518
Totals	**3,389**	**3,162**	**3,039**	**3,090**	**3,002**	**2,957**
Reduction from Baseline Year	**9%**	**15%**	**18%**	**17%**	**19%**	**20%**

Table 8. Forecast for Annual Greenhouse Gas Emissions

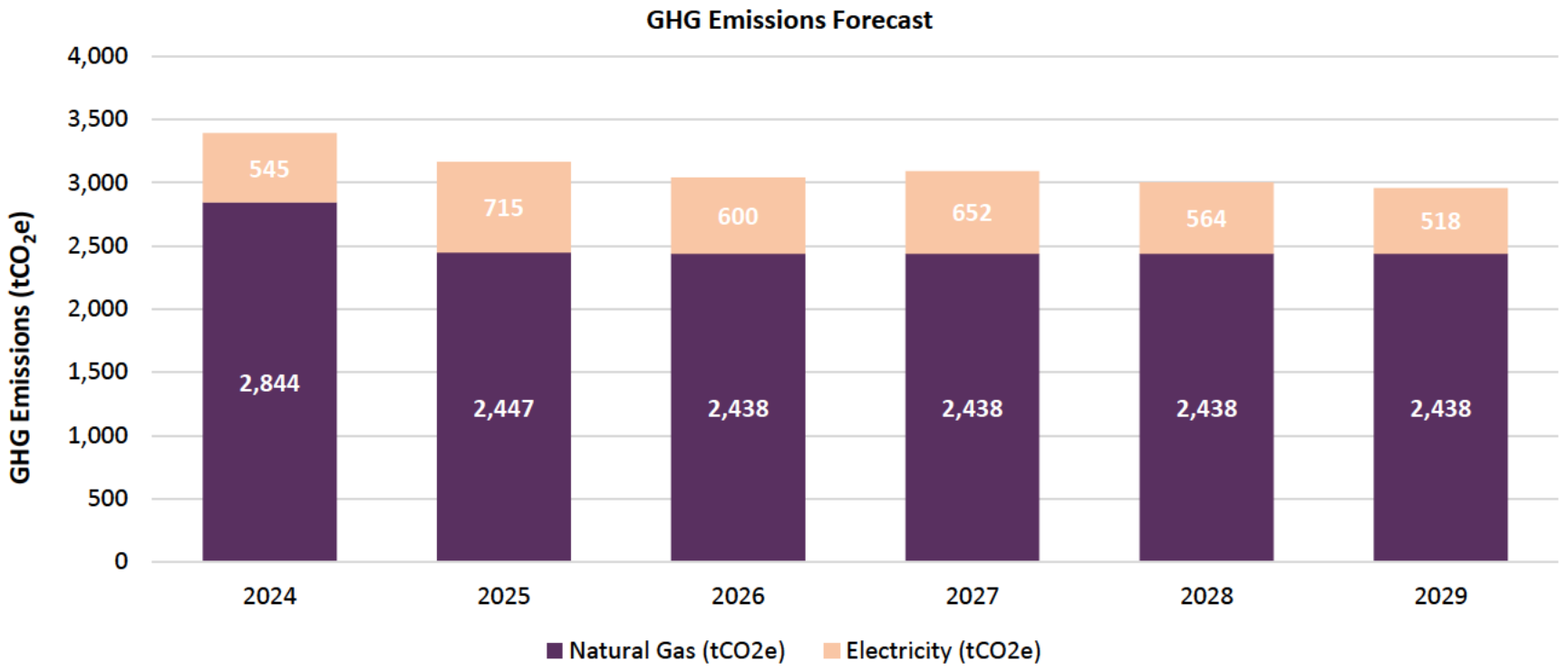

Figure 9. Forecast for Annual Greenhouse Gas Emissions

6 Closing Comments

Thank you to all who contributed to Hôtel-Dieu Grace Healthcare'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 Hôtel-Dieu Grace Healthcare, we approve this Energy Conservation & Demand Management Plan.

X [redacted]

This ECDM plan was created through a collaborative effort between Hôtel-Dieu Grace Healthcare 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	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 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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