



Ross Memorial



ROSS MEMORIAL
HOSPITAL
Kawartha Lakes

Energy Conservation and Demand Management Plan (ECDM Plan): 2024-2028

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1.0 Executive Summary

The 2024–2028 Energy Conservation and Demand Management (ECDM) Plan marks a decisive shift in Ross Memorial Hospital's (RMH) approach to energy and water management—from compliance-driven actions to a proactive, outcome-based strategy that aligns directly with clinical performance, financial resilience, and environmental leadership.

Developed in alignment with Ontario Regulation 25/23, this plan lays the foundation for an integrated, long-term roadmap that prioritizes outcomes such as carbon emissions reduction, asset modernization, and operational excellence. It leverages historical data, current baselines, and targeted performance benchmarks to ensure that conservation measures directly support the hospital's strategic goals.

Ross Memorial Hospital is committing to transformative energy performance goals: a 25% reduction in energy intensity, a 30% cut in greenhouse gas emissions, and a 5% decrease in potable water use by 2028. These targets will be met through prioritized initiatives including high-efficiency steam and electric boilers, heat pumps, LED lighting, and upgraded building automation systems—each selected not only for their technical efficacy but also for their alignment with critical hospital operations and patient safety.

This plan is not merely a checklist of upgrades. It is a cultural and operational pivot toward embedded sustainability—supported by rigorous project governance, cross-departmental collaboration, and enhanced reporting frameworks. Energy and water conservation will be treated as organizational values, embedded within RMH's quality improvement processes, strategic capital planning, and community-facing commitments.

2.0 Introduction

2.1 About Ross Memorial Hospital

Established in 1902 in Lindsay, Ontario, Ross Memorial Hospital (RMH) serves as a vital regional healthcare provider for the City of Kawartha Lakes and surrounding communities. Founded through a bequest by James Ross in memory of his wife, RMH has grown into a modern acute care facility. Our purpose is to deliver high-quality, patient-centered care while advancing health outcomes.

RMH plays a critical role in the community by offering essential medical services, promoting wellness, and supporting public health initiatives.

2.2 Climate and Environmental Action

Climate change, primarily driven by greenhouse gas (GHG) emissions from fossil fuel combustion, poses escalating threats to human health and healthcare systems. Hospitals, as significant energy consumers, have a pivotal role in mitigating these impacts. By adopting energy-efficient technologies, optimizing building operations, and reducing reliance on carbon-intensive fuels, healthcare facilities can substantially lower their carbon footprint. The World Health Organization emphasizes that such actions are crucial for safeguarding health and ensuring resilient healthcare infrastructure in the face of climate change.

Ross Memorial Hospital takes a leadership role in environmental responsibility by integrating sustainability into our operations and long-term planning. Through the measures outlined in this ECDM Plan, RMH will actively be reducing greenhouse gas emissions, improving energy and water efficiency, and enhancing our system resilience.

Source: World Health Organization. (2024). COP29 Special Report on Climate Change and Health: Health is the Argument for Climate Action. Retrieved from https://cdn.who.int/media/docs/default-source/environment-climate-change-and-health/58595-who-cop29-special-report_layout_9web.pdf

2.3 Historical Commitment to Energy Management

During the previous ECDM reporting period (2018–2023), RMH experienced changes in our leadership and management structure, which presented challenges to the implementation of large-scale initiatives.

Despite these constraints, and in alignment with our ongoing commitment to efficient resource management, RMH focused primarily on low-cost and no-cost energy conservation measures (ECMs). Our efforts were directed towards optimizing operation of existing systems to reduce energy waste and improve overall efficiency.

2.4 Planning Horizon and Scope

The current ECDM planning horizon spans a five-year period, from 2024-2028 and has been developed in collaboration with Ecosystem Energy Services. Priority will be given to initiatives that renew aging infrastructure and improve energy efficiency that provide strong financial payback and those that address key opportunities related to environmental standards compliance and decarbonization. These efforts will be complemented by projects and organizational improvements aimed at enhancing occupant comfort and operational efficiency.

2.5 Outcome-oriented strategy for high-performance healthcare infrastructure

This ECDM Plan adopts an outcome-based approach focused on aligning energy improvement with Ross Memorial Hospital's key management priorities: asset longevity, GHG emissions reduction, and operational efficiency.

By addressing these strategic objectives, the targeted measures support both our short- and long-term business needs. The goal is for RMH to be a leader in energy performance, setting a path toward world-class standards in hospital energy use while reinforcing our commitment to sustainability and responsible stewardship of healthcare infrastructure.

3.0 Facility Overview

Ross Memorial Hospital (RMH) plays a vital role in delivering comprehensive healthcare services to the City of Kawartha Lakes and its surrounding regions. We ensure regional accessibility to emergency and specialized care while also serving as a significant economic and community cornerstone.

We serve more than 80,000 local residents and 35,000 seasonal visitors. Our hospital is one of the largest employers in the region, with more than 950 staff members, 140 credentialed physicians, and roughly 125 community volunteers. We provide compassionate, high quality patient care to more than 30,000 emergency patients and 6,000 inpatients each year.

Our essential services include:

- A 24/7 emergency department
- A 15-station dialysis unit
- A Level 3 Intensive Care Unit

Site	Address	Building Area (ft ²)	Description
Main hospital	10 Angeline Street N, Lindsay, ON	310,003	Acute care hospital

Ross Memorial Hospital has long been dedicated to energy and environmental stewardship. Senior management is fully committed to energy conservation initiatives, with a strong focus on total life cycle costs associated with retrofitting and equipment replacement. This approach ensures a sustainable, efficient, and reliable hospital operation, while maintaining high-quality services to the community.

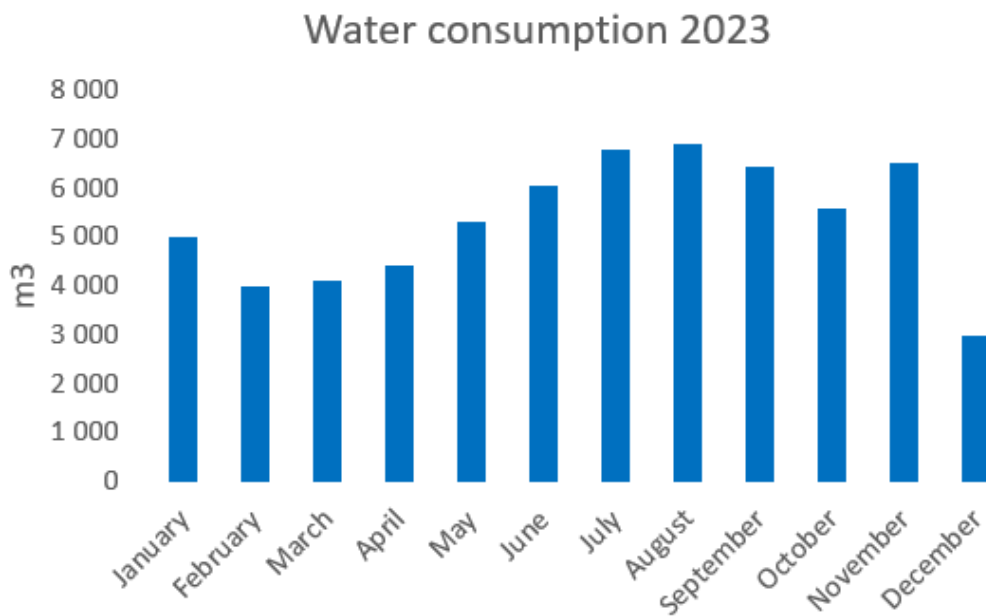
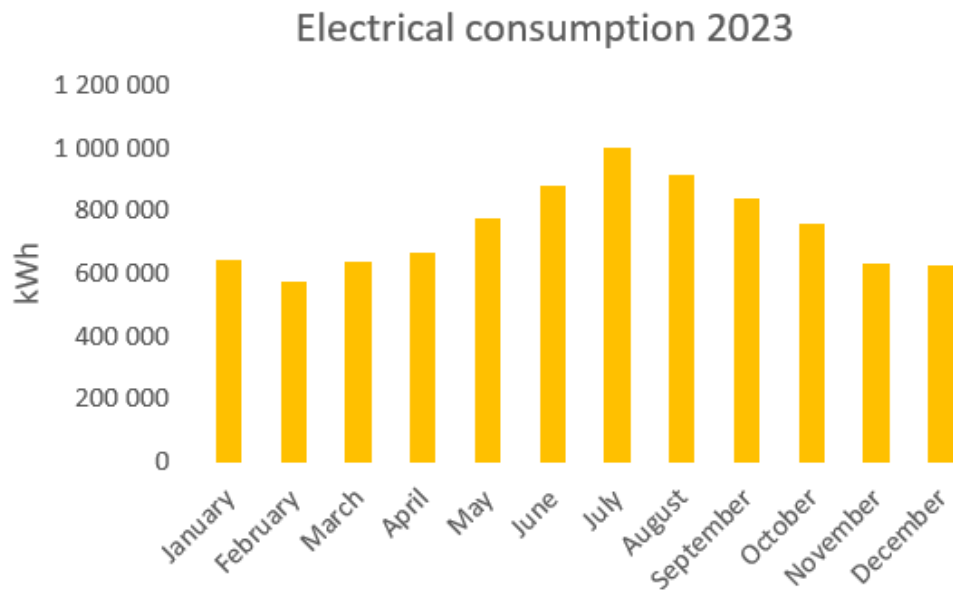
4.0 Performance in Recent Years

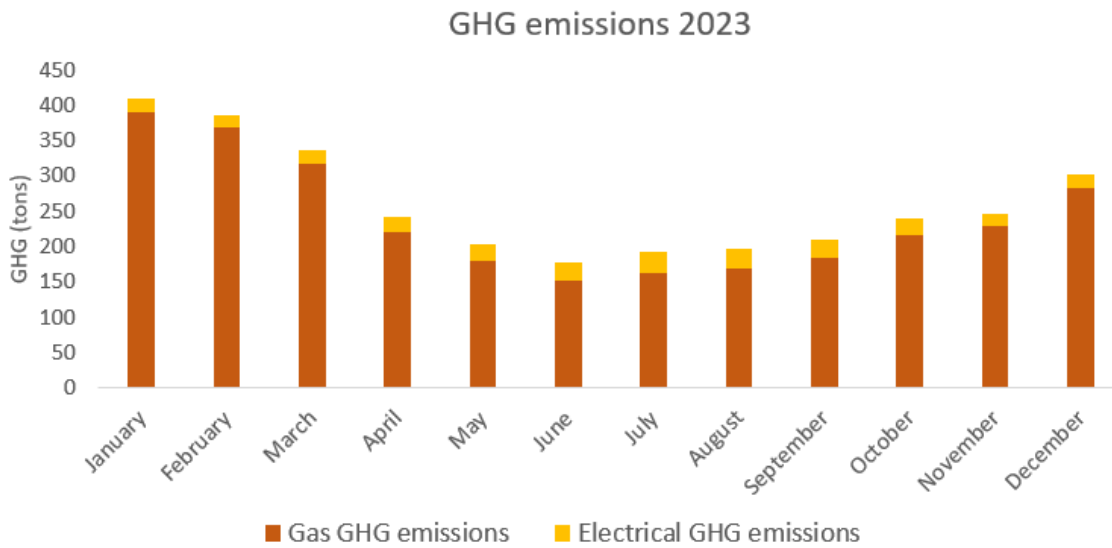
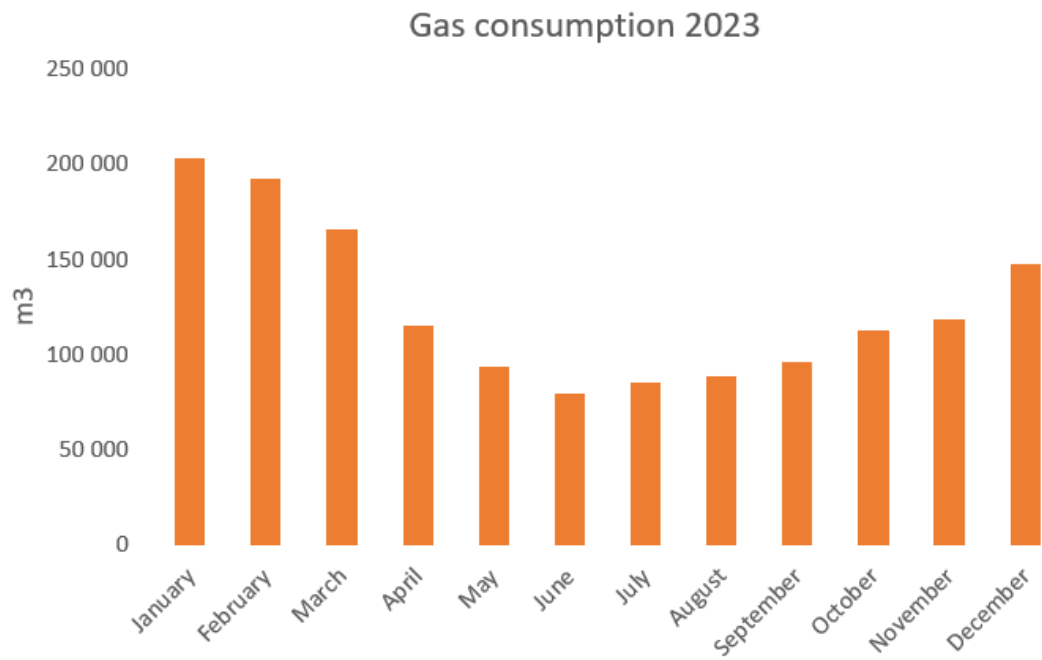
4.1 Baseline Year (2023)

The baseline year uses site energy use, and the data is presented in the table below:

Energy type	2023 Use	Units	2023 Costs (\$)	Energy (GJ)	GHG Emissions
Electricity	8,964,484	kwh	1,152,683	32,272	269
Natural Gas	1,498,201	m ³	465,850	56,767	2,878
Water	65,262	m ³	305,424	-	-

4.1.1 Monthly Energy and Water Use





4.2 Benchmarking

RMH's current site energy use intensity (EUI) is 3.1 GJ/m² which is significantly higher than the Canadian median for similar healthcare facilities, set at 2.4 GJ/m². This 30% gap suggests a substantial opportunity for energy efficiency improvements. The elevated EUI indicates that RMH consumes more energy per square metre than the national average, highlighting the need for targeted measures to reduce consumption, lower operational costs, and align with national performance benchmarks for sustainable healthcare infrastructure.

Source : <https://natural-resources.canada.ca/energy-efficiency/energy-star/energy-benchmarking-data-snapshot-hospitals>

4.3 Measures Implemented between 2019-2023

Over the past five years, LED light technology was installed in some area and efforts were made to implement no-cost and low-cost operational improvements to enhance energy efficiency. Additionally, certain air handling units were optimized using daily temperature forecasts to improve system performance.

4.4 Lessons Learned

As many building systems and equipment are approaching the end of their useful life, significant effort is required just to maintain operational reliability—leaving limited time and resources to focus on optimizing energy performance.

To achieve a more efficient and sustainable operation, it is essential to first define our highest priorities and what our desired outcomes are. Aligning the replacement of aging assets with these priorities will be the most effective path towards long-term operational efficiency and sustainability.

Without this proactive approach, resources will remain tied up in reactive maintenance and emergency repairs, reducing our capacity to invest in long-term improvements and energy efficiency initiatives.

5.0 Five-Year Plan

5.1 Energy and Water Reduction Targets (2024-2028)

Along with implementing smart asset renewal, RMH has set the following targets for the next 5 years to be better positioned as a leader in sustainability and energy efficiency:

- Reduce energy use intensity by 25%
- Improve GHG performance by 30%
- Reduce potable water use by 5%

RMH has the potential to reduce our energy use intensity by 25%, which will place us above the national average for comparable facilities. This improvement will not only enhance operational efficiency but also significantly reduce our impact on the environment. Concurrently, RMH can achieve up to a 30% reduction in greenhouse gas (GHG) emissions—aligning with broader sustainability goals. In addition, potable water consumption can be decreased by at least 5% through targeted conservation measures.

The energy efficiency measures and their associated energy, water, and GHG savings potential are further described in the subsequent sections.

5.2 Summary of Energy Efficiency Measures

Measure	Description	Energy savings potential	GHG Savings	Cost
Steam Boiler Replacement	Installation of new high-pressure steam boilers to address urgent heating risks. This project ensures operational reliability and patient safety during winter.	3-6 %	4-6 %	\$4M-6M
Heat Pump Installation	Partial conversion from steam to hot water and electrification of space heating using high-efficiency heat pumps to replace gas-fired systems, reducing emissions and improving thermal system efficiency. This will also reduce water consumption.	10-15 %	15-20 %	\$5M-8M
Electric Boiler Installation	Addition of an electric steam boiler to supplement the natural gas system by using cleaner electricity to lower GHG emissions and support decarbonization while maintaining system reliability.	2-4 %	5-8 %	\$0.85M-1.2M
Building Automation Optimization	BMS upgrade on some system, recommissioning and optimize the system operation.	3-5 %	6-8 %	\$0.5M-1.5M
LED Lighting Retrofit	Replace all legacy fluorescent fixtures with high-efficiency LEDs	2-4 %	1-2 %	\$0.2M-0.3M
Water Fixtures Upgrade	Replace faucets and toilets with low-flow models.	N/A	N/A	\$50k-250k

5.3 Measure Descriptions

5.3.1 Steam Boiler Replacement

Replacing aging steam boilers with modern high-efficiency models reduces fuel consumption and improves operational reliability. Modern boilers offer better modulation, lower standby losses, and higher thermal efficiency—contributing to energy savings and reduced greenhouse gas emissions. This measure is fundamental in optimizing central heating and steam-based processes in institutional settings.

At RMH, this measure would involve decommissioning the current aging boilers and installing high-efficiency models with advanced controls. The new boilers will be sized to meet critical peak heating loads while ensuring redundancy for essential services like sterilization and domestic hot water. Integration with existing distribution systems and compliance with healthcare-grade standards will ensure minimal disruption during implementation and enhanced long-term performance.

5.3.2 Heat Pump Installation

Heat pumps provide efficient heating and cooling by transferring heat rather than generating it, making them significantly more energy-efficient than traditional combustion systems. Electrifying thermal systems with heat pumps support decarbonization and reduces dependency on fossil fuels. This solution is ideal for moderate temperature zones and buildings with steady year-round thermal loads.

At RMH, heat pumps can be installed to operate alongside existing systems—handling base heating and cooling loads while traditional systems manage peak demand. This hybrid approach will ensure reliability, reduce gas usage, and support a phased transition towards electrification. Integration with the building automation system (BAS) will optimize performance. In addition to improving thermal efficiency, the heat pump will reduce the use of water by the cooling tower.

5.3.3 Building Automation Optimization

Optimizing building automation systems will enhance control over HVAC, lighting, and other systems—enabling dynamic adjustments based on occupancy, schedules, and weather conditions. Improved BAS logic and sensor integration will lead to better energy management, reduced consumption, and improved occupant comfort. This low-disruption measure is highly cost-effective. Eliminating simultaneous heating and cooling in some area will also great help reduce wasted energy.

5.3.4 Electric Boiler Installation

Installation of an electric boiler will allow RMH to leverage Ontario's time-of-use electricity rates. This strategy will reduce greenhouse gas emissions by using lower-carbon power and enhance cost effectiveness—delivering both environmental and financial benefits to RMH.

5.3.5 LED Lighting Retrofit

Retrofitting fluorescent and incandescent fixtures with LED lighting will significantly reduce electricity consumption and maintenance costs. LEDs offer high luminous efficacy, longer life, and better controllability, leading to improved energy performance and lighting quality.

5.3.6 Water Fixtures Upgrade

Upgrading to low-flow water fixtures will reduce potable water consumption. Technology like low-flow faucets, showerheads, and dual-flush toilets maintain performance while conserving resources.

5.4 Energy Management Policy and Organizational Alignment

5.4.1 Management and Standards

Strategic Alignment

Sustainability will be embedded into RMH's quality improvement processes and broader strategic priorities, reinforcing its importance across hospital initiatives and deepening collaboration with local community partners to support environmental goals.

Sustainable Funding

Funding for energy and water efficiency projects will be integrated into long-term financial planning, with active pursuit of provincial and federal climate-related grants for energy and GHG emissions reduction initiatives.

High Operating Standards

Clear design and operational standards will guide all projects—from renovation to system upgrades—ensuring consistent delivery of high-performance outcomes at the end-use level. These standards will define expectations for operations levels, helping maintain comfort, energy efficiency, and system reliability across departments.

5.4.2 Stakeholder Onboarding

Integrated Building Performance Team

A cross-functional team will take full ownership of building automation systems, leveraging data trends and a closed-loop work order system to optimize performance, comfort, and responsiveness to operational needs.

Staff Training and Support

Ongoing staff development will include defined roles, hands-on training, and partnerships with service providers—supported by structured onboarding, continuous learning opportunities, and access to external support by specialized firms when needed.

Occupant Engagement and Communication

By prioritizing comfort and communicating results transparently, RMH will build broader trust and engagement within the hospital community, aligning occupant experience with our energy and water conservation goals.

5.4.3 Focus on Results

Project and Program Management and Support

To secure lasting energy savings, RMH will invest in rigorous project management, measurement, and system-level verification—supported by data integration and BAS trend analysis to guide decisions and adjustments.

Energy Management and Reporting

An integrated reporting system will be established to enhance transparency and motivation, with regular communication of energy savings, weekly reviews, and real-time tracking to drive continuous improvement and team accountability.

6.0 Conclusion and Next Steps

This ECDM Plan provides a clear, strategic roadmap to conserve energy and water while supporting RMH's mission of delivering high-quality care. The targeted measures are designed not only to ensure regulatory compliance but to also drive meaningful business outcomes—reduce greenhouse gas emissions, improve energy performance, and renew critical infrastructure.

These actions will strengthen resilience, reduce operational costs, and demonstrate environmental leadership in the healthcare sector. With careful planning and coordinated implementation, RMH will turn our vision into tangible results—enhancing sustainability while reinvesting savings into patient care and facility improvements. Our journey towards a greener, smarter hospital starts here.

The following five strategic next steps will support the implementation of this ECDM Plan:

- 1. Develop a Phased Implementation Plan**
Prioritize measures based on impact, feasibility, and alignment with hospital operations to ensure efficient and coordinated execution.
- 2. Secure Funding and Incentives**
Identify and secure external grants, utility incentives, and internal capital to support project financing and maximize return on investment.
- 3. Engage Key Stakeholders**
Involve clinical, facilities, and executive teams early to align objectives, reduce disruption, and build internal support for implementation.
- 4. Identify Feasibility Outcomes with Engineering and Construction Alignment**
Evaluate and refine technical parameters, validate key assumptions, and ensure readiness for integration with existing systems—guided by input from engineering and construction teams to support informed decision-making and execution planning.
- 5. Establish Monitoring and Reporting Protocols**
Define key performance indicators (KPIs) for GHG, energy, and water savings, and implement tracking tools to ensure transparency and continuous improvement.

7.0 Management Sign-Off

I confirm that senior management of Ross Memorial Hospital has reviewed and approved this 2024-2028 Energy Conservation and Demand Management Plan.

Signature _____

Name _____

Title _____

Date _____



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