



**Brockville
General Hospital**

Right here, with you.

CONSERVATION AND DEMAND MANAGEMENT PLAN



2024-2029



Brockville General Hospital
75 Charles St.
Brockville, ON
K6V 1S8

JUNE 2024

RE: CONSERVATION AND DEMAND MANAGEMENT PLAN

We are happy to confirm the enclosed Conservation and Demand Management Plan for Brockville General Hospital has been approved by our senior leadership team.

The implementation of this plan will continue to influence our budgeting, strategic plan, purchasing policy, preventative maintenance plans, environmental management plan, and the policy development processes. A communication plan will also be deployed to convey our energy efficiency commitment and priority to staff, patients, visitors, and other stakeholders.

Brockville General Hospital staff will incorporate energy efficiency considerations into all business processes and modify them as necessary as part of the ongoing cycle of program review.

Should you have any questions or concerns, please do not hesitate to contact the undersigned

We look forward to providing an update on this plan in 2029.

Sincerely,

Cameron McLennan
Cameron McLennan (Jun 17, 2024 15:00 EDT)

Cameron McLennan,
Vice President, People & Support Services

Nick Vlacholias
Nick Vlacholias (Jun 19, 2024 14:06 EDT)

Nick Vlacholias,
President & CEO



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BROCKVILLE GENERAL HOSPITAL

Brockville General Hospital is embedded in the community of Brockville. Brockville General Hospital is in the heart of the 1000 Islands region, and is a leading member of the Lanark, Leeds, and Grenville Ontario Health Team, a partnership of over 50 health, community, and social service organizations.

The original hospital was established in 1889, having a proud history of innovation and community service. The hospital has continuously evolved to accommodate the growing needs of its community with significant expansions and upgrades to its infrastructure, ensuring state-of-the-art care across all its services.

Brockville General Hospital is a comprehensive healthcare institution that serves as a hub for both acute and community healthcare services. It offers a wide variety of medical services including ambulatory and specialty clinics, a cardiovascular rehabilitation program, a stroke clinic, and Ontario Breast Screening Program (OBSP) to Brockville and the surrounding rural municipalities.

Our Mission

Driven by the needs of our community, we collaborate with our patients, their families, and our partners to deliver the best healthcare experience.

Our Vision

The hospital's vision is to “**achieve excellence together**”. To help achieve this vision the hospital has four areas of focus: Healthcare experience, Partnerships, Team well-being, and Resource sustainability growth.

Our Values

Together, we are **accountable** to deliver excellent healthcare

Everyone deserves **compassion** and **respect**.

Professionalism matters: be proud and be actively present.

Teamwork is key to our success.



Partnerships and Communication

We actively seek collaborative opportunities to integrate care and support community health. To ensure a patient-centred experience, we enlist the support of our Patient and Family Advisory Council, and we collect patient feedback through our patient relations processes.

Brockville and District Hospital Foundation plays a crucial role in supporting Brockville General's mission. Comprising dedicated staff and a volunteer board of community leaders, the Foundation manages and directs donations to foster the hospital's growth and service excellence.

ABOUT BROCKVILLE GENERAL HOSPITAL & OUR CDM PLAN

Brockville General Hospital is a leading member of the Lanark, Leeds and Grenville Ontario Health Team. A partnership of over 50 health, community, and social service organizations from across the Counties of Lanark, Leeds, and Grenville.

The hospital's Conservation and Demand Management (CDM) plan, which was first completed in 2014, then updated in 2019, is a step to understanding the impact of our operations on Greenhouse Gas (GHG) emissions, and to act by setting energy conservation and GHG reduction measures. Our 2024 plan reflects on what we have done since our most recent plan in 2019, monitor what we are doing, and outline what we are planning to do.

In 2018, Brockville General provided patient care across two locations (Garden Street and Charles Street sites) with a combined square footage of 280,440 square feet. Expansion and redevelopment of the Charles Street site over the years, and in particular opening of the Donald B. Green tower in 2020, allowed BGH to relocate all Garden Street services to Charles Street, and divest of the aging and inefficient building. This has resulted in an overall Charles Street site facility size of 417,188 square feet. The current facility includes three primary sections:

- Legacy Building (157,422 ft²) – built in three sections between 1949 & 1970.
- North Building (84,766 ft²) – built in 2003.
- Donald B Green Building (175,000 ft²) – completed in 2020.

The below table illustrates the hospital's change in energy consumption over the past five years, as well as Greenhouse Gas (GHG) emissions and Energy Use Intensity (EUI) for the remaining Charles Street site. The values from the baseline year (2018)



were compared to the last full calendar year covered in the previous plan (2023) to quantify our changes over the most recent five-year term.

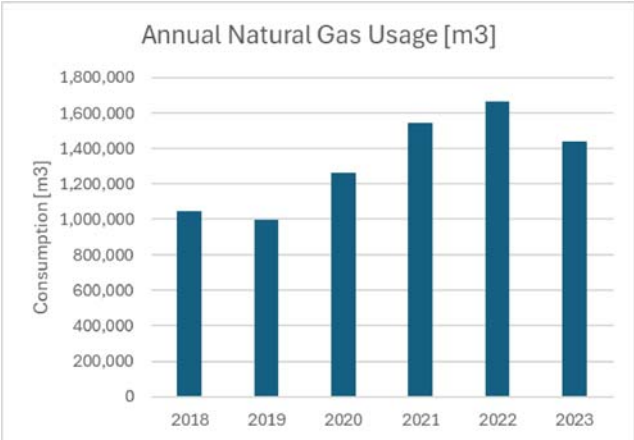
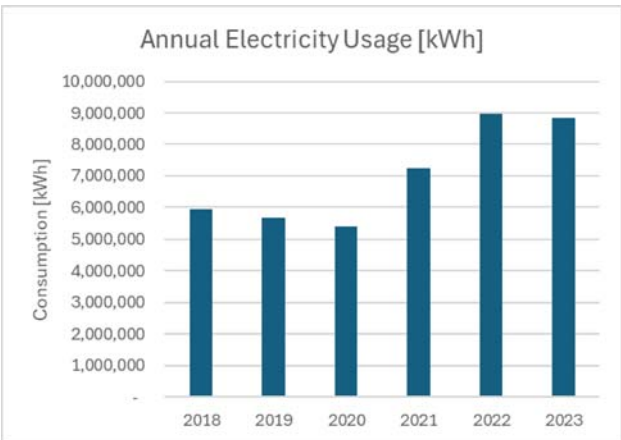
	Electricity [kWh]	Natural Gas [m ³]	GHG Emissions [kg CO ₂ e]	EUI [ekWh/ft ²]
2018	5,950,708	1,044,532	2,227	71.39
2023	8,859,208	1,436,725	3,083	56.64
2018 vs. 2023	49%	38%	38%	(21%)

With the consolidation and expansion of patient care to the newly redeveloped Charles Street site, the hospital experienced a 50% increase in facility size (square footage) which has no doubt driven the increase in overall energy usages and GHG emissions since 2018. However, the use of newer technologies, improved facility building standards, and conservation measures has yielded a 21% reduction in overall energy intensity. Our efforts over the past five years, including closure of the Garden Street site, have resulted in a more efficient hospital as well as increasing patient and staff comfort.

Brockville General will now use 2023 as our baseline for energy consumption and strive to reduce these values over the next five years. We are committed to identifying areas to improve efficiencies and finding ways to decrease our overall environmental impact. By doing so, we aim to achieve a further 3% reduction in total energy intensity by 2029.

ENERGY CONSUMPTION 2018-2023

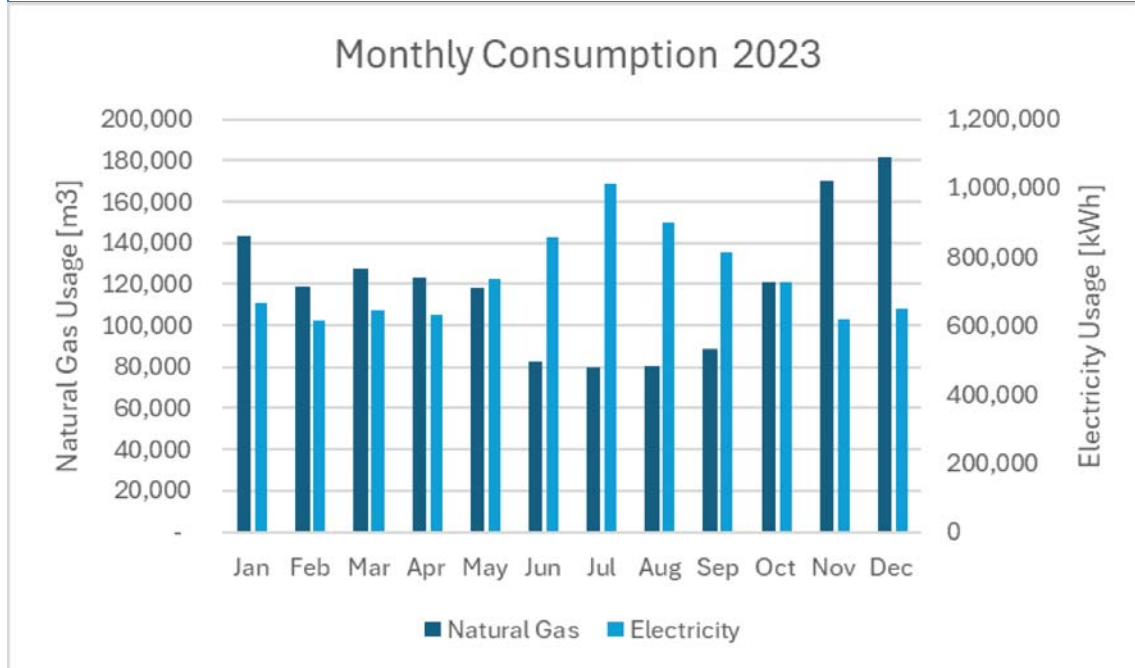
As part of Ontario Regulation 25/23 under the Electricity Act, 1998, Brockville General prepares, publishes, and makes available to the public our annual energy consumption and resulting greenhouse gas (GHG) emissions. The following is a summary of these values. Our energy consumption values were plotted to better display our usage trends





and have been included below. Appendix A also provides monthly usages for 2019-2023.

Year	Floor Space [ft ²]	Electricity [kWh]	Natural Gas [m ³]	GHG Emissions [tCO ₂ e]	EUI [ekWh/ft ²]
2018	233,754	5,950,708	1,044,532	2,227	71.39
2019	426,251	5,673,292	994,666	2,116	37.30
2020	458,545	5,380,706	1,261,108	2,624	40.01
2021	391,656	7,248,192	1,543,577	3,245	59.02
2022	391,656	8,962,125	1,668,947	3,543	66.69
2023	417,188	8,859,208	1,436,725	3,083	56.64



ENERGY MANAGEMENT VISION

Brockville General would like to reaffirm the energy management vision developed in 2019 for our facility that we have proudly strived towards over the past five years. This vision is:

‘Achieving excellence together.’

We consider our facilities a primary source of giving care and an integral part of the healing environment. Key to this equation is the ability to use our facilities efficiently and effectively. This results in being able to direct more resources toward patient care. Not only that, but by reducing our environmental footprint, we are also doing our part to create a healthier environment, and a healthier community. Something that is essential to the people we serve and that which helps them to lead healthier lives.



The hospital's energy management vision is to eliminate energy waste, wherever possible, through infrastructure improvement, through policy and process changes, and through the embracing of best practice and technology changes.

This energy management vision continues to fit with our mission statement: "Driven by the needs of our community, we collaborate with our patients, their families and our partners to deliver the best healthcare experience."

GUIDING PRINCIPLES TO ACHIEVE OUR VISION

To achieve our vision of energy efficiency and waste reduction, Brockville General also confirms the guiding principles developed in 2019 which will continue to be applied:

Taking A Strategic Approach: While the hospital actively manages energy and utility costs by implementing opportunities as they are identified, by acting strategically, the hospital can significantly improve its energy-related performance. Internalizing energy and utility management into our every-day decision-making, policies, and operating procedures will help ensure substantial and long-lasting reductions in energy use.

Supporting Mission-Critical Goals: Strategic energy management will directly support the hospital's mission-critical goals of caring for the environment and the community. It will also help the hospital to optimize the healing and working environment; improve the hospital's financial bottom line by reducing unnecessary energy and utility costs; and optimize the capacity of existing energy systems to meet current and expanding operational needs. The impacts of our energy management efforts on those goals will be tracked and reported wherever possible.

Pursuing Long-Term Change to Core Business Practices: The core of a strategic approach is the consistent incorporation of energy and utility management into our organization's core practices and decision making, such as the strategic planning and budgeting processes. Change in energy-related business practice will cover all applications of energy management – new construction and major renovations, existing facility operations and upgrades, and economic analysis and procurement practices.

Fostering Organizational Commitment and Involvement: Executive and organizational commitment and involvement is critical to successful strategic energy management. Upper management will work with facility managers and other key staff to ensure adequate organizational support and resources are provided to maximize the benefits of energy and utility management. Energy and utility management will be integrated into the strategic planning and capital budgeting processes.

Obtaining Solid Economic Returns: Energy management investments will yield solid economic returns that meet the hospital's expectations on Internal Rate of Return and Return on Investment. We will apply consistent financial analysis methods that consider life-cycle costs that reduce total cost of facility ownership and operation.



Using Available Resources and Assistance: The hospital will use national, regional, and local sources of strategic, technical, and financial assistance to help achieve our energy management goals. These include programs through local distribution companies, the Independent Electricity System Operator (IESO), Hospital Infrastructure Renewal Fund (HIRF), ENERGYSTAR, SaveONenergy, the Canadian Coalition for Green Health Care, the Canadian Healthcare Engineering Society, and EnerCan.

RESULTS OF OUR ENERGY MANAGEMENT STRATEGIES

Given the three distinct sections of the Charles Street Site, the hospital has worked to implement ECMs specific to their vintage of equipment, building envelope, and HVAC systems. As result, identifying opportunities and the nature of each solution varies greatly. Some of the initiatives that were undertaken are summarized below.

Roof Replacement – 2021 & 2023

Given the age (1949-1970) of the Legacy portion of the hospital, a comprehensive roof replacement plan is needed to ensure the integrity of the building envelope and keeping the elements, especially water/moister out. While undertaking these roofing upgrades, we were able to increase insulation values reducing heat loss in the winter and penetration during the summer.

Lighting Retrofit – Ongoing

Lighting in both the Legacy and North Building has been ongoing for the past several years as we transition from inefficient 14W Compact Florescent (CFL) light bulbs to new more efficient 6W LEDs. Not only has this transition reduced energy usage, emission, and costs it has also provided better lighting conditions for patients and staff. In the newer Donald B Green section, programmable lighting to optimize lighting conditions on existing LED lights.

HVAC Upgrades & Optimization - Ongoing

Brockville General has undertaken upgrades, preventative maintenance, and optimization of heating and cooling systems across all three sections of the building over the past 5 years. Upgrades of air conditioning and air handling units took place in the Legacy Building which drove significant savings and improved comfort. Chillers, cooling towers, and boilers, in the North and Donald B. Green Buildings received preventative maintenance and work to optimize how they run. In addition, as the expansion was completed re-conditioned boilers were installed along VFD drives which drove heating efficiencies.



The table below outlines some of the specific projects undertaken since 2019 as outlined above. In addition to the energy savings outlined the resulting reductions in operating costs, each of these measures provided additional benefits to the hospital and the community we support, including but not limited to: improved patient and staff comfort and safety with enhanced infection control measures.



Building	Project Description	Electricity Savings [kWh]	Natural Gas Savings [m ³]	Annual Savings [\$] *	GHG Emissions [tCO ₂ e]
Lighting Projects					
Legacy	Replaced 400 CFLs with 200 LED bulbs	38,544	-	\$5,011	1.16
North	Replaced 300 CFLs with 150 LED bulbs	28,908	-	\$3,758	0.87
Roofing					
Legacy	New Roof on 5 th floor	28,463	-	\$3,700	0.85
	New Roof 6 th floor	154,799	-	\$20,124	4.64
	New Roof Solarium	4,869	-	\$633	0.15
HVAC					
Legacy	Replaced 50 Window AC Units	29,866	-	\$4,181	0.90
	Replaced Split Duct AC Units	22,205	-	\$3,109	0.67
North	Chiller Optimization	400,000	-	\$52,000	12.07
Donald B Green	New re-conditioned boilers	-	104,324	\$37,557	204.64
	VFDs on boilers	16,114	-	\$2,095	0.48
	Cleaning of AHU Coil	106,407	-	\$13,833	3.19
	Cooling tower and chiller optimization				
Total		830,175	104,324	\$146,000	230

*Savings calculated using 13cents/kWh for power and 36cent/m3 for natural gas

ENERGY MANAGEMENT OBJECTIVE AND GOALS

In 2019, our primary objective was to improve management of the hospital's energy usage, specifically, reducing our EUI 2019 by 15% by the end of 2023. We successfully exceeded this goal by reducing our total annual EUI by 21%. Even when adjusted for weather and square footage this represents a decrease of 16% in gas and power usage with a 14% (520tCO₂e) reduction in GHG emissions released. We will continue to work towards reducing our consumption and thereby our emissions for the coming five years.

Going forward, we have altered our goals slightly to reduce our energy consumption by 3% by 2029 based on 2023 values. In addition, we will be renewing our goals from 2019 to ensure we continue to be conscious of our energy consumption and environmental impact. The goals are as follows:

- ✓ Obtain Organizational Approval of CDM Plan and Commitment of Resources
- ✓ Implement Financial Practices and Decision-Making Processes; Establish Funding Resources.
- ✓ Implement Strategic Energy Management Practices
 - Purchasing/Procurement Procedures and Specifications
 - Enhanced Design & Construction Practices
 - Enhanced Facility Operating Practices
 - Cost-Effective Facility Upgrades



- Active Commodity Management
- ✓ Monitor, Track, & Improve Performance

To start the path toward further improvement in energy use and reduced emissions associated with the operation of Brockville General, several initial projects have been identified for implementation. These initial projects as outlined below focus on replacement of inefficient and antiquated equipment while further optimizing existing infrastructure. Once implemented, we will continue to identify opportunities for further ECM measures by reviewing and auditing current processes.

Replace End of Life Equipment

Replacing equipment that is at the end of its useful life with more modern versions is a great opportunity to reduce overall energy usages. In most instances, these new pieces of equipment and appliances are not only superior in their capabilities but are also more efficient in energy use. For example, we will be replacing an old Mammography Machine and Two lab analyzers with the latest technology while focusing on ones that will result in a net reduction in energy usage.

Introduction of New/Additional Equipment

Unlike replacing old, antiquated equipment/appliances, bringing in new or additional ones typically result in a net increase in energy usage. This does not mean the equipment is inefficient but rather introduces incremental energy use which was not there previously. Typically, this type of initiative is a direct result of increased or brand-new service offerings within the hospital. The new MRI Machine and chiller, which is being installed, is a perfect example where an additional piece of equipment will be added to the overall energy requirements where one did not exist historically.

Roof Replacement

Brockville General is working on a 10-year roof replacement plan which renews roofing of the remaining legacy portion of the building. An integral part of this plan is to replace existing insulation with newer higher R-Value materials. This will limit heat loss in the winter and heat gain during the summer months. In addition, the roof will also provide renewed protection from the elements such as rain.

HVAC Upgrades and Improvements

A major source of energy usage within the facility, heating and cooling continues to pose a large opportunity for conservation. Overall, this is where we see the greatest opportunity for reduction in energy intensity in the following two categories:

- 1) Replacing old, antiquated equipment with new more efficient and advanced equipment. In particular, replacing the remaining 10 split duct AC units in the Legacy section of the hospital will see a further 14,000kWhs/year reduction in electricity usage.



- 2) Optimizing the use of existing equipment will drive even further savings and is often the most cost-effective way to impact energy usage in a substantial way. Fine tuning how existing HVAC equipment runs, ensures systems are working in harmony versus against each other, for example, simultaneously heating and cooling the same space. One specific opportunity which has been identified, the North section of the building, is a chiller optimization project. This project will ensure peak performance of the cooling systems in this section of the building and is expected to reduce electricity usage by 461,538 kWhs/year or approximately \$60,000/year in energy costs. This project is also eligible for an incentive of ~\$70,000 which will cover a large portion of its cost of implementation.

It is important to note, the projects and efforts outlined throughout this report not only reduce overall energy intensity and emissions, but they also drive ongoing savings while providing a more comfortable and safer environment for patients, staff, and all users of the hospital.



APPENDIX A

Brockville General Hospital Monthly Usage Data from 2018-2023

