

HORNEPAYNE COMMUNITY HOSPITAL

Conservation and
Demand
Management Plan

2024-2029



Hornepayne Community Hospital
278 Front Street
Hornepayne, Ontario
P0M 1Z0

Renewal of 5 Year Conservation Demand Management Plan

July 2024

Hornepayne Community Hospital would like to put forward this five-year Energy Conservation and Demand Management (CDM) plan as the next chapter in our strategic pursuit to reduce our overall energy intensity and carbon footprint. This plan renews our 2019 CDM plan while providing an update on our successes and outlines possible opportunities for future conservation.

Our organization has continued to grow to meet the evolving needs of our community while implementing best practices when it comes to energy management. The sum of these efforts has not only made us more energy efficient but improved patient and staff experience and safety.

This document will act as a blueprint to focus and guide our efforts and actions toward furthering our energy vision over the coming years. We look forward to providing an update on our efforts via our annual reporting and 2029 CDM Plan.

Sincerely,

Linda Kozlowski
CEO
Hornepayne Community Hospital

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About HPCH and Our Energy Management Plan

Hornepayne Community Hospital (HPCH) is a fully accredited 20 bed facility with 12 long-term care and eight acute care beds. HPCH has a total floor space of 29,000 ft² and is used for hospital, long-term care, emergency and family medicine purposes. We are committed to excellence and accountability through our six main principles: respect, quality, education, partnerships, advocacy and accountability.

In 2014, HPCH developed our initial five-year conservation and demand management (CDM) plan to actively work towards decreasing our overall energy intensity and greenhouse gas (GHG) emissions. The plan outlined goals that our hospital wished to achieve over the five years and listed several initiatives that we had planned on taking to achieve these goals. That plan was then updated in 2019 and now again in 2024 as a reflection on our results over the past five years and a renewal of our commitment to reducing our environmental impact. In addition, we continue to promote good stewardship of our environment and community resources to both reduce our carbon footprint and create a better healing space while keeping with our core values of efficiency, concern for the environment, and financial responsibility.

Although HPCH is responsible for several utility accounts including four homes used by locum doctors during their stay in our community, this CDM Plan focuses on the primary meters which service the main hospital at 278 Front Street.



The below table compares HPCH's electricity, Greenhouse Gas (GHG) emissions and Energy Use Intensity (EUI) from before the first plan was made in 2019 and its current annual values. HPCH is happy to report that we have successfully reduced these totals by 34.1% since 2018. Note that electricity is continuously becoming greener in Ontario due to the increase in renewable energies powering the grid.

| Year | Electricity (kWhs) | GHG Emissions tCO ₂ e | EUI ekWh/ft ² |
|-------------|--------------------|----------------------------------|--------------------------|
| 2018 | 1,441,772 | 43.25 | 99.85 |
| 2023 Actual | 950,130 | 28.50 | 65.80 |
| Difference | 491,642 | 14.75 | 34.05 |

The energy consumption data from 2018 to 2023 for the hospital is summarized in the table below. This data illustrates the fluctuations in electricity usage and GHG emissions over the years. The significant reduction on electricity usage from 1,441,772 kWh in 2018 to 950,130 kWh in 2023 is a testament to our ongoing efforts in energy conservation and efficiency improvements.

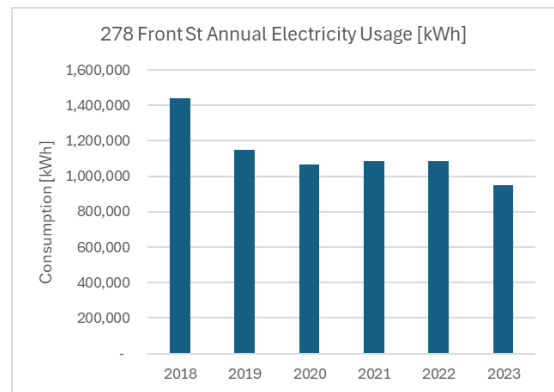
Energy Consumption 2018-2023

As part of Ontario Regulation 25/23 under the Electricity Act, 1998, HPCH prepares, publishes and makes available to the public our annual energy consumption and resulting greenhouse gas (GHG) production. The following is a summary of these values for the hospital since 2018, the last full calendar year reported in our 2019 CDM Plan.

It is important to note, HPCH's only uses electricity as natural gas is not available. Utilizing clean Ontario electricity dramatically reduces HPCH's carbon intensity compared to other hospitals in the province, making our site one of if not the cleanest in the province.

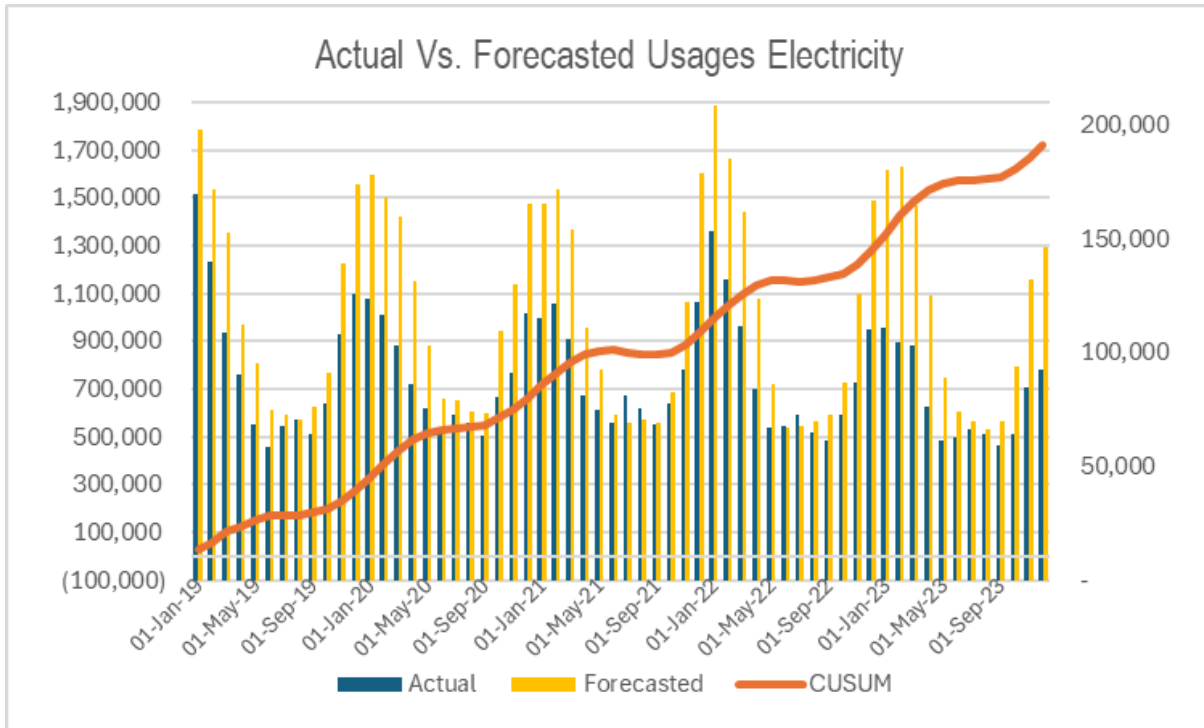
The table and graph below summarize our annual reporting values.

| Year | Electricity (kWhs) | GHG Emissions (tCO ₂ e) | EUI (ekWh/ft ²) |
|------|--------------------|------------------------------------|-----------------------------|
| 2018 | 1,441,772 | 43.25 | 99.85 |
| 2019 | 1,149,841 | 33.25 | 79.63 |
| 2020 | 1,064,242 | 29.80 | 73.70 |
| 2021 | 1,087,621 | 32.63 | 75.32 |
| 2022 | 1,084,384 | 32.53 | 75.10 |
| 2023 | 950,130 | 28.50 | 65.80 |



To better compare the change in usages between, the consumption data can be weather normalized. Weather normalization uses Degree Days (DDs) to account for how hot and/or cold a given year is in comparison to another. Heating Degree Days (HDD) indicate the demand for heating energy, with higher HDD values correlating with increased electricity usage for heating during colder months. Conversely, as temperatures rise, HDD values decrease, leading to reduced heating energy needs. Cooling Degree Days (CDD), which measure the demand for cooling energy, are generally low or zero during winter and early spring, reflecting minimal cooling requirements. The Total Degree Days (TDD), a combination of HDD and CDD, provide a comprehensive measure of overall energy demand.

The above consumption data was weather normalized using TDD for 2018 as the base year of 2018 given it was the last full calendar year before the 2019 plan was generated. The graph below plots the actual and forecasted monthly usages along with the Cumulative Sum of Differences (CUSUM) which tracks the positive change in weather normalized usage intensity compared the base year 2018.



The above analysis shows the continued improvement in energy usage at the hospital despite varying weather conditions. The difference in actual (dark blue) compared to forecasted (yellow) consumptions which utilizing 2018 as a base year and normalized for weather is quite evident. The upward sloping CUSUM line (orange) illustrates the ongoing benefit of the conservation measures implemented since 2018. In total HPCP has offset 1,719,668 kWhs in electricity consumption which represents 51.59 tonnes of CO₂e and approximately \$223,557. This exceeds all expectations outlined in our 2019 CDM plan.

CDM Initiatives Implemented

Outlined in our 2019 CDM plan, HPCH identified several projects which were dependant on Hospital Infrastructure Renewal Fund (HIRF) for funding from the province. These projects along with a couple additional Energy Conservation Measures (ECMs) implemented since 2019 have improve the infrastructure and efficiency of our hospital, which in turn reduced our electricity consumption.

- ✓ **Boiler Replacement (2020)** – Upgrading our boilers improved efficiency, which in turn reduced the systems demand substantially. In addition, the new boilers provide more reliable temperature control, which improves comfort for our patients and staff.
- ✓ **Replacing Exterior Doors** – Replacing our exterior front doors (2022) to the entrance of the hospital along with the two garage doors (2021) to the ambulance bay have decreased the demand on our heating and cooling systems. The replacement doors are now air-tight and have an increased R-value to reduce overall heat/cooling loss.
- ✓ **New Walk-in Fridge (2022)** –In some cases, new appliances can reduce overall energy usage by up to 25%. In most cases, not only is a reduction in energy usage achieved but performance and safety are also improved. Undertaking a complete replacement of our walk-in fridge, HPCP now benefits from more efficient compressors, increased R-value providing better insulation for the cooled space, and LED lighting.
- ✓ **Roof Replacement (2023)** – Replacing a roof presents an excellent opportunity to increase the insulation which prevents heat loss in the winter and heat penetration during the summer. The extent to which insulation resists heat flow is measured as an R-value. HPCP was able to increase the R-value providing more resistance which better insulates the hospital.
- ✓ **LTC Heating and Cooling Upgrade (2023)** – In this project, two Roof Top Units (RTUs) were installed with a high-efficiency Seasonal Energy Efficiency Ratio (SEER) of 19. A SEER rating that provides significant savings (~40%) over older less efficient models. In addition, ten split indoor wall mounted units were installed in patient rooms for improved patient and staff comfort.

Replacing End of Life Appliances and Equipment – Replacing end of life appliances and equipment with more energy efficient models is often an effective way to reduce overall energy intensity. For example, the televisions (2021) in all 20 patient rooms were replaced with new energy efficient models which also provide better viewing experience.

Strategic Energy Management Goals

HPCH would like to reaffirm the Strategic Energy Management Goals as put forth in our initial CDM Plan as work towards meeting our objectives over the next 5 years.

Fostering Organizational Commitment and Involvement:

Executive and organizational commitment and involvement is critical to successful strategic energy management. Senior management at HPCH will work with facility managers and other key staff to ensure adequate organizational support and resources are provided to maximize the benefits of our efforts. Energy management will also be integrated into our strategic planning and capital budgeting processes.

Strengthened Community Leadership and Environmental Stewardship

Through energy management, the hospital provides leadership in promoting sustainable communities, efficient business practices, and environmental stewardship. Faced with a tough market environment that has forced cutbacks on hospital support for community activities, this is an excellent opportunity to provide leadership and reduce costs at the same time.

Establish Purchasing Specifications for Energy Efficient Equipment & Services

HPCH will continually update and consistently use purchasing specifications that minimize life-cycle costs for energy efficient equipment and services. Developing efficiency specifications for standard equipment routinely replaced (e.g. lights, motors, and unitary HVAC equipment) will ensure energy efficient options are chosen.

Improve Building Operating Performance

Equipment tune-up and improved operations and maintenance (O&M) will achieve favourable results while supporting patient care, and facility comfort and safety. Ensuring that hospital equipment is operated at the proper settings and building automation/systems are set to the manufacturer's specifications can help to optimize building performance.

Monitor, Document, and Reward Progress

HPCH will monitor and document our energy consumption over the next five years to see the results of our CDM initiatives. Doing so will allow us to continuously track our progress towards reaching our goals. In addition, we will be able to identify areas for improvement and can thus learn from any setbacks we encounter.

Future Projects

Moving forward, HPCH has identified several energy conservation projects planned for the coming five years. Leveraging HIRF funding along with any incentive money from a National (NRCAN), Provincial (IESO), or local level will be critical to getting these projects off the ground.

Exterior Window Replacement – HPCH's exterior windows have become worn and need replacing. This project was outlined in our 2019 plan but did not get completed. Like insulation, windows can account for a significant (up to 25%) source of heat and/or cooling loss, impacting energy usage. The measure of how well a window insulates is measured by the U-Factor but in this case the lower the value the better it insulates. In addition, new window installation, if done correctly, can reduce air leakage. Typically, when looking to procure replacement windows, looking for the ENERGY STAR certification ensures the product adheres to strict energy performance standards. NRCAN states “ENERGY STAR” certified windows are about 20% more energy efficient than the average window.”

Optimize HVAC System – HVAC systems present the largest opportunity for energy savings and emissions reductions. In particular, balancing the flow of air along with heating and cooling within a building is often a difficult task. For example, one side of the building could be warmer when the sun shines on it versus the other that is not receiving direct sunlight. In this case, heating and cooling systems often compete with each other resulting in significant energy waste. With the recent replacement of the boiler and upgrade to the LTC's heating & cooling system, HPCP will look to engage a qualified third party to review current HVAC setup and make recommendations on how to best optimize the system.

Replacing End of Life Appliances and Equipment – As mentioned, replacing end of life appliances and equipment with more energy efficient models is often an effective way to reduce overall energy intensity. In addition, it also comes with additional technological benefits which improve care and safety for patients and staff. HPCP has already identified several pieces of medical and kitchen equipment which are coming to the end of their useful life and will be replaced with more modern energy efficient models.

- ✓ Medical Equipment – aging X-Ray machine which is becoming more difficult to service and ceiling lifts that protect both staff and patients when moving within patient rooms will be updated.
- ✓ Kitchen Appliances – new high efficiency commercial range, deep fryer and oven hood which could include on demand sensors minimizing run times.
- ✓ Purchased an electric lawn Mower (2024) to replace an aging gas-powered mower which increases power usage slightly but reduces overall emissions.