



CONSERVATION AND DEMAND MANAGEMENT PLAN



**ESPANOLA REGIONAL HOSPITAL
AND HEALTH CENTRE**

2019-2024

Espanola Regional Hospital
825 McKinnon Dr.
Espanola, ON
P5E 1R4

RE: RENEWAL OF 5-YEAR CONSERVATION AND DEMAND MANAGEMENT (CDM) PLAN

June 2019

I am pleased to provide the enclosed update on our 5-year CDM Plan from 2014 along with a renewal of our focus on providing a comfortable environment for patients and staff while looking for ways to further reduce our energy intensity. This focus will remain the foundation of our CDM plan for the coming 5 years (2019-2024) while we look to leverage talented individuals who continually strive to improve our organization.

As an integrated facility, our organization realizes that conservation takes many forms and provides benefits which include but are not limited to:

- ✓ Improved patient and employee experience
- ✓ Reduced utility bills to focus money on direct patient care
- ✓ Limiting our Greenhouse Gas Emissions

In line with our initial CDM Plan in 2014, this document will act as a foundation for procurement, operational, and behavioural efforts over the coming years.

We look forward to providing an update on our efforts via our annual reporting and 2024 CDM Plan.

Sincerely,

Nicole Haley

Chief Executive Officer

Espanola Regional Hospital & Health Centre

TABLE OF CONTENTS

Senior Management Approval	2
Espanola Regional Hospital and Health Centre.....	4
Introduction.....	5
Renewal of Energy Management Goals	6
Guiding Principles for Strategic Energy Management	6
Supporting Mission-Critical Goals:	6
Pursuing Long-Term Change to Core Business Practices:	6
Fostering Organizational Commitment and Involvement:.....	6
Obtaining Solid Economic Returns:.....	6
Optimizing the Use of Resource.....	7
Strengthened Community Leadership and Environmental Stewardship.....	7
Broader Public Sector Energy Use and GHG Emissions.....	7
Results of Previous Conservation and Demand Initiatives	9
Conservation and Demand Management Initiatives 2014-2018	11
Business Proposition	11
Energy Management Goals	12
Adoption of Energy Conservation and Demand Management Plan	12
Implement Strategic Energy Management Practices.....	12
Going Forward.....	13
Appendix.....	14

ESPANOLA REGIONAL HOSPITAL AND HEALTH CENTRE

Espanola Regional Hospital and Health Centre (ERHHC) serves a population of approximately 15,000. Our 79-bed facility boasts a modern state of the art hospital that features a very busy, newly renovated, 24-hour emergency department, acute care, long-term care, and a full range of services including a medical lab, diagnostic imaging (e.g. x-ray and ultrasound), cardiac program, physiotherapy as well as a 30-unit Seniors Apartment Building and a 19-unit Assisted Living Complex and a Family Health Team that is equipped for six physicians and a team of allied health professionals. We are also home to an on-site Pharmacy, a 6-bed sleep lab and a Community Care Access Centre.

Espanola Regional Hospital and Health Centre is often referred to as a model health campus. Organizations such as the Ontario Hospital Association, the Ontario Ministry of Health and Long-Term Care (MOHLTC), the Northeast Local Health Integration Network and other well-respected healthcare organizations, believe that our health campus is a great example of how healthcare facilities and communities can integrate and coordinate health services all within shared walls – creating a “one-stop shop” for patients and their families.

Our facility is staffed with a team of dedicated and talented individuals who have many years’ experience and more importantly, render care that always puts patients first. We are committed to continuous learning and quality improvement and as a result, staff members regularly participate in ongoing education and training events to enable the provision of improved patient care.

Espanola Regional Hospital and Health Centre (ERHHC) has undergone an extensive, four-phase, redevelopment of its facility which began in July 2013. Taking just over two years, the project resulted in the creation of a new state of the art emergency department (ED) doubling in size to just over 10,000 sq. ft. These enhancements were made to improve patient flow, safety and quality of care. Other features of the redevelopment included a new medication room and registration area as well as an upgrade to the main entrance, auxiliary and foundation office.

- Message from Dave Pope, Chair and Nicole Haley, CEO

MISSION

To provide excellent health care programs and services to all we serve.

VISION

Leader in health care and Gateway to services.

VALUES

- Patients and Residents First
- Integrity
- Caring and Compassion
- Continuous Quality Improvement
- Respect and Dignity
- The Contribution of All
- A Culture of Effective Communication

INTRODUCTION

In 2014 ERHHC developed our first conservation and demand management (CDM) plan required by all broader public sector agencies under Ontario Regulation 507/19. The plan and its policies were developed to promote good stewardship of our environment and community resources. Five years later, ERHHC is proud to report on the successes of our green initiatives that have reduced our overall energy consumption, operating costs, and Greenhouse Gas (GHG) emissions. Our 2019 plan is a reflection on our efforts from 2014 to 2018 and provides revision of our energy goals for the coming five years.

	Electricity [kWh]	Natural Gas [m ³]	GHG [kg CO ₂ e]	Energy Use Intensity [ekWh/ft ²]
2013	2,125,829	302,207	734,547	64.61
2018	2,108,587	302,481	646,726	63.82
2013 vs. 2018	-0.81%	0.09%	-14%	-1.27%

As our caring capabilities continue to grow, and our demand for energy to power our medical equipment continues to increase, ERHHC is committed to identifying areas to improve efficiencies and finding ways to decrease our overall environmental impact. ERHHC is committed to seeing the following results by 2024:

- ✓ 2% reduction in total energy use.
 - 42,171 kWh decrease in electricity
 - 6,049 m³ decrease in natural gas
- ✓ 12,9333-kilogram reduction in CO₂e.
- ✓ \$7,236 Annually to the bottom line (\$36,182 over 5 years).

To further strengthen and obtain full value from energy management activities, a strategic approach will be taken: the organization will fully integrate energy management into its business decision-making, policies, and operating procedures.

Active management of energy related costs and risks in this manner will provide a significant economic return to the organization and will support other key organizational objectives.



RENEWAL OF ENERGY MANAGEMENT GOALS

As communicated in our previous plan, ERHHC's goal is to maintain a comfortable environment for our patients and staff while continuously looking for ways to reduce energy consumption will remain constant. In addition, we will continue to look for opportunities to convert existing technologies to newer more energy efficient methods.

GUIDING PRINCIPLES FOR STRATEGIC ENERGY MANAGEMENT

ERHHC's energy management will be guided by the following principles when considering energy management initiatives:

Supporting Mission-Critical Goals:

Strategic energy management will directly support ERHHC's mission-critical goals of caring for the environment and the community, improving the healing and working environment, while reducing unnecessary energy costs. It will also serve to optimize the capacity of existing energy systems to meet current and expanding operational needs, while improving the operational resiliency of the organization. The impacts of ERHHC's 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 management into our organization's everyday practices and decision making. It also needs to be an integral part of 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 the economic analysis and procurement practices underlying these practices.

Fostering Organizational Commitment and Involvement:

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

Obtaining Solid Economic Returns:

Energy management investments will yield solid economic returns that meet ERHHC's standards applied through the hospital's capital budgeting process. ERHHC will apply consistent financial analysis methods, including life-cycle costing, in order to reduce total cost of facility ownership and operation.

Optimizing the Use of Resource

Recognizing that many of the most effective energy conservation and demand initiatives are expensive, Mattawa Hospital will continue to work with national, regional and local sources for strategic, technical and financial assistance to help achieve our goals. For example, leveraging the use of such programs as The Ministry of Health and Long-Term Care's Hospital Infrastructure Renewal Fund (HIRF) to help implement projects which complement our energy management values.

Strengthened Community Leadership and Environmental Stewardship

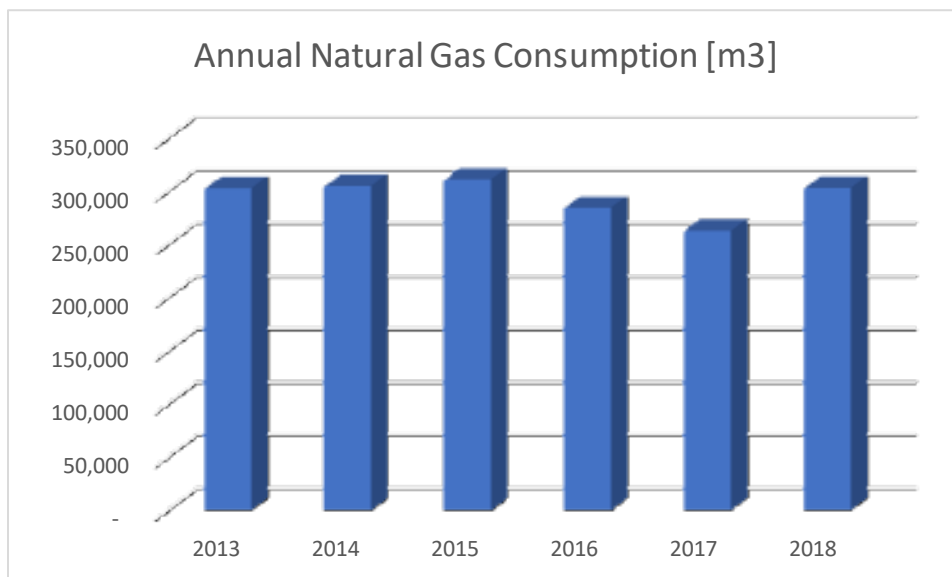
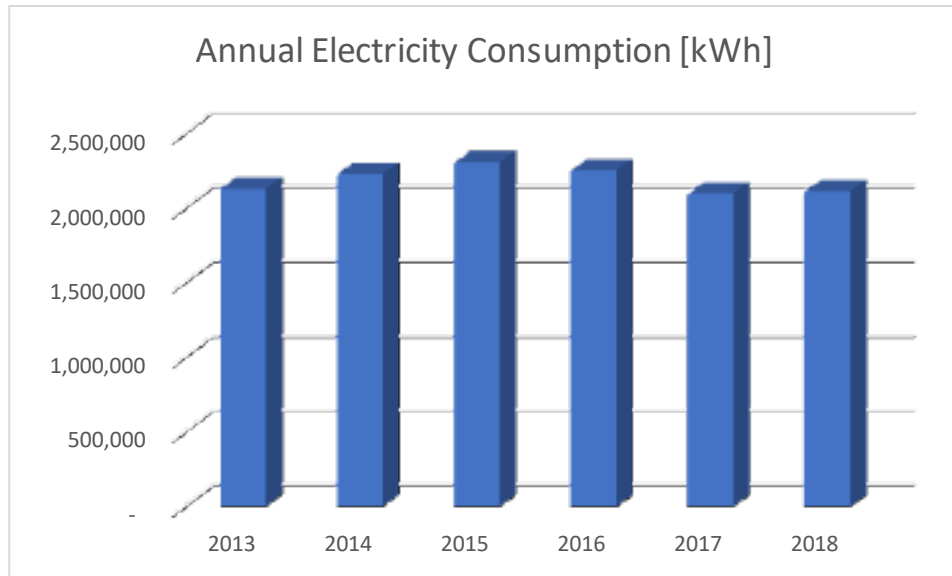
Energy management is a visible public commitment to the community and environment. Through energy management, the hospital can provide leadership in promoting sustainable communities, efficient business practices, and environmental stewardship. Faced with a tough market environment that has forced cut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

BROADER PUBLIC SECTOR ENERGY USE AND GHG EMISSIONS

In addition to the CDM plan, Ontario Regulation 507/18 encourages broader public sector agencies to publish and make available to the public their annual energy consumption and resulting greenhouse gas (GHG) emissions. Additional information including the Hospital's total indoor floor area, its annual operational hours, and energy intensity factors are also reported. The table below summarizes ERHHC's reporting information from 2013 forward. Please note that the information which will be reported on July 1, 2019 is for the calendar year 2017 as reporting dates are two years behind.

Year	Total Floor Area (ft ²)	Electricity (kWh)	Natural Gas (m ²)	GHG Emissions (tCO ₂ e)	Energy Intensity (ekWh/ft ²)
2013	83,043	2,125,829	302,207	734,547	64.61
2014	83,043	2,224,143	306,599	669,734	66.36
2015	83,043	2,303,012	244,265	555,079	59.24
2016	83,043	2,249,546	238,416	530,605	57.68
2017	83,043	2,094,649	262,130	569,942	58.53
2018	83,043	2,108,587	302,481	646,726	63.82

The total annual electricity and natural gas consumption values have been plotted from 2013 to 2018 to better demonstrate ERHHC's trends over the past five years. Our monthly consumption trends have also been included in the appendices of this report.



Looking at ERHHC's annual electricity and natural gas consumption sees 2015 and 2016 being outliers in terms of total usage. This may be attributed to the expansion and redesign of the emergency department between those years. The construction saw the emergency department double its patient capacity and a new medication room and ambulance bay being added. During this time electricity usage decreased by 15% and natural gas by 20%. Following the completion of the new emergency department, annual usage values returned to just below previous amounts, indicating that ERHHC's CDM initiatives did create a positive impact.

RESULTS OF PREVIOUS CONSERVATION AND DEMAND INITIATIVES

In July 2014, ERHHC developed goals and green initiatives to decrease the facilities annual energy consumption and resulting greenhouse gas emissions. The following activities, completed between 2014 and 2019, are the results of these past measures and include managing overall energy consumption, lowering annual operating costs, and reducing greenhouse gas emissions. These activities may, or may not, have been included in ERHHC's 2014 CDM plan and include the following:

Replaced Windows

2017 Annual Savings:

Several windows in the Hospital's acute care department were replaced in 2017 to reduce energy leakage. This project provided savings in both natural gas and electricity along with other tangible benefits for users of this space like:

- ✓ Reduced noise from outside
- ✓ Improved comfort with enhanced views
- ✓ Reduced dust and allergens

\$707
1,853 kWh
1,606 m³
3,102 kgCO₂e

Phase 1, 2, 3 of LED Lighting Upgrade

2017-2019 Annual Savings:

As part as the Hospital's LED retrofit, ERHHC began lighting upgrades in the Hospital's front parking lot and throughout the main building. A total of 1,600 LED tubes were installed by hospital staff to replace the previously used fluorescent tubes in a cost-effective manner. While a fluorescent bulb may last around 8,000 hours, an equivalent LED bulb can last up to 25,000 hours, making it a much more efficient option. As of the writing of this plan, ERHHC has upgraded approximately 70% of the lighting identified in an audit. In addition to reducing power usages and power bills, the ongoing upgrade to LED has also improved lighting levels which increases patient and staff safety and experience.

\$20,142
154,944 kWh
5,500 kgCO₂e

Upgraded Ventilation System

2016-2017 Annual Savings:

The Hospital's ventilation system was upgraded between 2016 and 2017 from a manual to electronically controlled system. The new Building Automation System (BAS) enables our operations team to control and monitor temperatures throughout the hospital using computer software. Energy savings is generated from the ability to turn down heat or air conditioning in vacant areas and/or overnight which decreases ERHHC's energy consumption and demand.

\$18,079
112,477 kWh
11,921 m³
26,531 kgCO₂e

Replaced Domestic Hot Water Boiler

2016-2017 Annual Savings:

ERHHC replaced our 30-year old domestic hot water boiler with a new natural gas condensing boiler. Condensing boilers can be up to 25% more efficient than non-condensing ones through the recycling of their waste heat in flue gas to preheat the cold water entering the boiler.

\$49,113
169,357 m³
320,186 kgCO₂e



Replaced Reciprocating Chiller Plant

Before it was replaced in 2017, ERHHC had a reciprocating chiller plant that was installed when the Hospital was first built in 1987. This type of chiller typically has a higher maintenance requirement, increased noise, vibration, and often consumes more energy per tonne of refrigeration than newer chiller models. As part of ERHHC's building upgrades, the chiller was replaced with a new scroll type.

Annual Savings:

\$10,923
84,024 kWh
2,983 kgCO₂e

Upgraded Receiving Bay Garage Doors

Prior to being replaced, the receiving bay garage doors consisted of two 8'x8' steel insulated doors and had an insulation rating (based on its thermal resistance capabilities) of R5. The garage doors were upgraded to polyurethane injected R18 panels complete with artic grade vinyl door stops. The added insulation prevents a loss of heat during the winter months and air conditioning in the summer, thereby decreasing the energy consumption of our HVAC systems.

Annual Savings:

\$5.83
35.9 kWh
4 m³
9 kgCO₂e

Upgraded Maintenance Shop Garage Doors

The maintenance shop had two 10'x10' Plexiglas doors which were rated close to R0. These doors were upgraded to the same polyurethane injected R18 panels that were installed on the receiving bay doors. Upgrading from uninsulated doors to ones with a high R-value should generate large annual energy usage savings as less heating and cooling is lost.

Annual Savings:

\$791
4,879 kWh
540 m³
1,194 kgCO₂e

Replaced Roof Top Exhaust Fans

To better control all the inefficient one speed roof top exhaust fans (55) were replaced with new variable speed units.

Annual Savings:

\$520
4,000 kWh
142 kgCO₂e



Conservation and Demand Management Initiatives 2014-2018

Past Initiatives		Annual Energy Savings			Implementation
Year	Measure	Electricity [kWh]	Natural Gas [m ³]	Greenhouse Gas [kg CO ₂ e]	Total Savings [\$ /yr]
2016-2017	Upgraded ventilation system	112,477	11,921	26,531	\$18,079
2016-2017	Replaced domestic hot water boiler	-	169,357	320,186	\$49,113
2017	Window replacement	1,853	1,606	3,102	\$707
2017-2018	Replaced reciprocating chiller	84,024	-	2,983	\$10,923
2017-2018	Replaced receiving bay door	35.9	4	-	\$5.83
2017-2018	Replaced maintenance garage door	4,879	540	1,194	\$791
2018	Replaced roof top exhaust fans	4,000	-	142	\$520
2017-2019	Phase 1,2,3: LED lighting upgrade	154,944	-	5,501	\$20,142
TOTAL		362,213	183,428	359,648	\$100,282

BUSINESS PROPOSITION

The following are considerations to be included in ERHHC's business philosophy and budgetary process. The business proposition is as follows:

- If energy management considerations are integral to relevant business practices, policies, procedures, and decision-making processes, ERHHC's energy-related costs can be mitigated further over the coming 5-year period.
- Considering the proposed CDM measures for 2019-2024 outlined below, ERHHC can expect to see the following reductions/avoidances in utility usage:
 - 6,049 m³ reduction in natural gas;
 - 42,171 kWh reduction in electricity consumption; and
 - 12,933 kg CO₂e reduction in greenhouse gas emissions.
- Based on 2019 utility rates, this will result in \$7,236 in annual value to the bottom line, or a total of \$36,182 over a 5-year period.
- Integration of energy management into organizational decision making and business practices will continue to produce value annually for a much longer period.

ENERGY MANAGEMENT GOALS

The following are proposed measures that ERHHC intends to implement:

Adoption of Energy Conservation and Demand Management Plan

- Executive approval and resources.
- Support from key staff (financial management, purchasing/procurement, construction, building operations, etc.).
- Creation of mechanisms/processes to make resources available.
- Clarification and communication of staff roles and responsibilities, performance goals, and energy management reporting.

Implement Strategic Energy Management Practices

✓ Purchasing Specifications for Energy Efficient Equipment & Services

- Utilize purchasing specifications that minimize life-cycle costs for energy efficient equipment and services.
- Establish efficiency specifications for standard equipment routinely replaced (e.g. lights, motors, and unitary HVAC equipment).
- Promote efficiency guidelines that apply LCCA for custom equipment purchases (e.g. chillers).
- Implement equipment and system upgrades where justified by life-cycle cost analysis.
- Expand use of qualified service providers as needed. Develop standard RFP documents, contract terms, and reporting standards.

✓ Improve Building Operating Performance

- Equipment tune-up and improved operations and maintenance (O&M) will achieve the following results while supporting patient care, and facility comfort and safety.
- Reduce/mitigate operating costs for existing facilities.
- Maintain or reduce energy intensity below current levels of 63.82 ekWh/ft².

GOING FORWARD

To continue our success with improving the hospital infrastructure and systems, ERHHC has several projects that we hope to complete over the next five years. These projects continue our focus on green initiatives and energy efficiency that we have strived for over the past five years.

Project Name	Current State	Proposed Upgrade	Annual Savings
Re-Insulate Exposed Piping	Sections of the heating boiler and chilled water system pipes has become worn and in some places is missing.	This project has been completed and saw 1 ½” and 2” thick insulation being added on the heating and cooling pipes, respectively. This increases biosecurity while minimizing heat/cooling leakage.	TBD
Phase 4 and 5 LED Lighting Retrofit	30% of the lighting in ERHHC is still provided by traditional bulbs.	As funding becomes available, these bulbs will be replaced with efficient LED bulbs., providing better and safer lighting conditions.	\$8,633 66,405 kWh 2,357 kgCO ₂ e
Replace Heating Boiler and Circulating Pumps	ERHHC’s heating boiler and circulating pumps are reaching the end of their service lives.	Replace with a high efficiency condensing boiler and new circulating pumps. This will offer more reliable temperatures and improved comfort for staff and patients.	\$14,197 48,954 m ³ 92,552 kg CO ₂ e
Upgrade Exterior Facility Doors and Windows	The doors and windows are original to the hospital (1988) and have become worn.	About 150 windows and 10 doors need to be replaced. The thermal insulation values will be increased which will limit heating and cooling leakage	TBD
Replace HVAC Roof Top Units (RTU)	The HVAC RTUs are nearing the end of their service life and need to be replaced.	Replace the units with high efficiency models and possibly variable speed drives.	TBD

APPENDIX

