

TEMISKAMING HOSPITAL ENERGY CONSERVATION AND DEMAND MANAGEMENT (CDM) PLAN



2019-2024

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Introduction

Temiskaming Hospital is a 59 bed facility that provides acute, rehab and complex continuing care patient services. Originally constructed in 1979, the single story 135,000 square foot facility provides emergency services, diagnostic imaging, laboratory, clinical, dialysis, chemotherapy, pharmaceutical, physiotherapy, community counseling and support services. An auditorium and clinics addition was added in 1993, with separate wings, housing a daycare and a family health team, added in 2004.

The purpose of Temiskaming Hospital's energy conservation and demand management (CDM) plan and policies is to promote good stewardship of our environment and community resources. In keeping with our core values of efficiency, concern for the environment, and financial responsibility, Temiskaming Hospital's energy conservation and demand management program will reduce overall energy consumption, operating costs, and greenhouse gas emissions. It will also enable us to provide compassionate service to a greater number of persons in the community.

Through past conservation and demand initiatives, Temiskaming Hospital has achieved the following results:

- 3% reduction in energy use
- Although we achieved a 3% reduction in energy consumption, due to increasing Hydro One rates, this did not equate to a decrease in cost.
- \$130, 000 saved annually moving forward from a review of Hydro One rates and qualifying subsidies
- 96,141 kWh decrease in electricity consumption
- 164,467 m³ decrease in gas consumption
- 315,687 kg, or 19%, reduction in carbon dioxide equivalent (kg CO₂e) emissions

Today, utility and energy related costs are a significant part of overall operating costs. Temiskaming Hospital's annual energy consumption and related costs/emissions for 2018 were:

- Utility costs were \$837,821.02 annually
- The Hospital's Energy Use Index (EUI) was 73.42 ekWh/ft²
- Energy related emissions for 2018 equaled 1,386,080 kg CO₂e.

With energy management an integral part of business decisions, Temiskaming Hospital can expect to achieve the following targets by 2024:

- 3% reduction in energy use
- 42,000 kg reduction in carbon equivalent emissions
- \$25,000 annually to the bottom line (\$125,000 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.

Results of Previous Measures from CDM Plan Posted July/2014

In July 2014, Temiskaming Hospital developed goals and devised green initiatives in an effort to decrease the facilities annual energy consumption and resulting greenhouse gas emissions. The following activities, completed between 2014 and 2019, are associated with managing overall energy consumption, lowering annual operating costs, and reducing greenhouse gas emissions. These activities may, or may not, have been included in Temiskaming Hospital's 2014 CDM plan and include the following:

LED Conversation on Exterior Lighting

Prior to 2018, Temiskaming Hospital was using mercury vapour or high pressure sodium bulbs for all outdoor lighting. With help from Hydro One's Save on Energy Program we able to change out approximately 43 bulbs for energy efficient LED bulbs throughout all of our external facility lighting and parking lot lighting. The retrofit was completed in January 2018. We received \$23,823.29 in funding from the Hospital Energy Efficiency Program (HEEP) for this project.

Fresh Air Dampers

In 2017 all of the existing louvers for our make-up air system were mechanically worn out and not operating efficiently. By replacing these louvers we have optimized our air handling system, allowing us to maintain proper heating and cooling throughout our facility in as efficient way as possible. We received \$70,612.88 in funding from the Hospital Energy Efficiency Program (HEEP) for this project.

Variable Frequency Drives for the OR & Environmental Services Departments

Prior to 2017, our air handling system was running 24 hours a day, 7 days a week bringing in full fresh air to both departments, even though these departments did not operate in a 24/7 environment. This forced us to constantly condition the air, either heating or cooling, to maintain room temperatures. By installing the VFDs in both departments as well as occupancy sensors, we are now able to reduce the airflow down to minimum set points during off hours, drastically lowering the amount of heating and cooling to those spaces. This has in turn, created a decrease in consumption for both hydro and natural gas. We received \$58,128.68 in funding from the Hospital Energy Efficiency Program (HEEP) for this project.

Results of the upgrades

As discussed in the introduction, these facility projects have had the following results;

- Energy consumption decreased by 96,141 kWh since 2013.
- Gas required to heat the location decreased by 164,467 m³ since 2013.
- Total greenhouse gas emissions decreased by 19% as a direct result of the decrease in energy and gas usage.

These upgrades would not have been possible without funding from the Hospital Energy Efficiency Program (HEEP).

Energy Management Vision

Vision Statement

To be a role model in energy innovation and efficiency for northern rural health care

Guiding Principles for Strategic Energy Management

Temiskaming Hospital's energy management will be guided by these principles:

Taking A Strategic Approach:

While Temiskaming Hospital actively manages energy costs by implementing opportunities as they are identified, by acting strategically, Temiskaming Hospital can significantly improve its energy-related performance. Internalizing energy management into our organization's every-day decision-making, policies, and operating procedures will help assure substantial and long-lasting reductions in energy, operating costs, and environmental impact.

Supporting Mission-Critical Goals:

Strategic energy management will directly support Temiskaming Hospital's mission-critical goals of caring for the environment and the community, improving the healing and working environment, and improving the hospital's financial bottom line by 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 Temiskaming Hospital'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 Temiskaming Hospital 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 Temiskaming Hospital. 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 Temiskaming Hospital's standard rate of return requirements applied through the hospital's capital budgeting process. Temiskaming Hospital will apply consistent financial analysis methods, including life-cycle costing, in order to reduce total cost of facility ownership and operation.

Using Available Resources and Assistance:

Use of national, regional, and local sources of strategic, technical, and financial assistance to help to achieve the organization's energy management goals. These include utility, municipal, provincial and national government programs. It also includes established best practices through a community of practice approach.

The Business Case for Strategic Energy Management

Below are the central business arguments for Temiskaming Hospital's pursuit of strategic energy management. The following section then presents the business proposition – the results of analysis of the energy efficiency opportunities and their associated costs and internal rate of return.

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.

Enhanced Healing and Working Environment

In existing facilities, efficient operating practices improve patient, as well as employee, comfort with more stable environmental control, and better indoor air quality and lighting. In new facilities more daylight and personal control of comfort contribute to a healing and patient-focused environment, for an improved environment of care. For instance, recent research has found that natural light eases surgical pain and contributes to substantial savings in pharmacy costs.

Improved Financial Health and Operating Cost Reduction

Strategic energy management presents a highly leveraged opportunity to reduce operating costs and positively impact Temiskaming Hospital's bottom line. Dollars of operating cost savings directly improve the operating margin. Further, investments in energy projects typically have a lower risk of performance over time, relative to other investments, and savings from energy projects are easier to forecast reliably than savings or revenue increases expected from more variable investments.

Optimization of Capacity to Meet Current and Expanding Operational Needs

Energy efficiency optimizes inefficient or poorly designed and operated equipment/systems so wasted energy system capacity can be reclaimed for current and expanding operational needs. This "free capacity" can eliminate the need to add major new energy capacity and be much less expensive.

Considering all of the capital requirements of the Hospital, the Hospital Energy Efficiency Program (HEEP) accelerated the energy program at the Hospital. Similar funding packages are vital to timely investments in these initiatives.

Business Proposition

The following are considerations to be included in Temiskaming Hospital'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, Temiskaming Hospital's energy-related costs can be reduced by an *additional* 3% over a 5 year period.
- Based on 2018 utility rates, this will result in \$25,000 in annual value to the bottom line, or a total of \$125 thousand 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 of time.
- The Temiskaming Hospital has been in a deficit position in the prior two fiscal years; therefore it is improbable any increase in revenues would have the same impact on the organization's bottom line.
- To support the achievement of these financial benefits, Temiskaming Hospital will invest in energy-related capital and operating improvements, meeting an Internal Rate of Return (IRR) of 3% or better over the 5-year period (2019-2024).

Energy Management Goals

The following are proposed measures that Temiskaming Hospital intends to implement:

Goal: Energy Conservation and Demand Management Plan Approval

- 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.

Goal: Implement Financial Practices and Decision-Making Processes

- Money spent to achieve energy efficiency is viewed as an investment, not a cost.
- Financial decision makers consistently use life cycle cost analysis (LCCA) on all new construction, major renovations, and equipment replacements over \$25,000.
- Decisions about energy management investments will be part of Temiskaming Hospital's high-level, long range process of budgeting for capital and operations.

Goal: Implement Strategic Energy Management Practices

Establish Purchasing Specifications for Energy Efficient Equipment & Services

- Establish and consistently use 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).

- Establish efficiency guidelines that apply life cycle cost analysis (LCCA) for custom equipment purchases (e.g. chillers).
- Establish efficiency standards for design and construction, and for building operations and maintenance services.

Implement Enhanced Design & Construction (D&C) Practices

- Implement improved new construction practices in all projects over \$250,000 that specify early team collaboration and “integrated design” (ID).
 - Integrated design required for funding.
 - RFPs, contract terms & conditions, & fee structures will support ID.
 - Apply LCCA and financial hurdle rates described above to design decisions.
 - Apply established purchasing procedures and specifications.
 - Include incentives and tax credits wherever available.
 - Educate all owner’s project managers or construction managers and contractors on integrated design and their respective roles in master planning pre-design, design, construction, testing, commissioning, and monitoring.
- Set and meet clear energy performance targets for new buildings; measure and improve over time.
 - Establish baseline for measuring performance goals (e.g. code, or national reference standards like ASHRAE 90.1).
 - Set target for each building at 25% less than MNEC for buildings).
 - Measure performance and improve over time.
- Specify commissioning as a standard procedure.
 - Retain the services of an independent third-party commissioning agent.
 - 100 percent of fundamental building systems and elements will be designed, installed, and calibrated to operate as designed.
 - Design team, commissioning agent, and building operators will work closely throughout the design process and occupancy to ensure good transition.

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.
 - Achieve reductions in operating costs for existing facilities by an average of 3% over 5 years.
 - Reduce the system-wide Energy Use Index (EUI) from 73.42 ekWh/ ft² to 71.22 ekWh/ft² by 2024 . The EUI will be adjusted for variances in patient days and IT intensity.
 - Reduce energy consumption by 86,000 kWh per year equivalent to yearly savings of \$17,000 at 2018 rates.

Implement Cost-Effective Facility Upgrades

- 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.

Actively Manage Energy Commodity

- Minimize utility costs and exposure to market risks. Utility costs include natural gas, electricity, water, and sewer.
- Participate in the energy/utility regulatory process.

Goal: Monitor, Track, and Reward Progress

- Track progress on the CDM plan
- Track energy reductions annually
- Reward staff for successes.