



ENERGY CONSERVATION AND DEMAND MANAGEMENT (CDM) PLAN



2019-2024

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INTRODUCTION

Renfrew Victoria Hospital is a three storey hospital, located at 499 Raglan St. North, Renfrew, Ontario. It has undergone multiple additions and renovations since its original construction in 1926, 2,787 m² (30,000ft²), to bring it to its current approximate 9,172 m² (123,000 ft²). In 1960 a major addition around the building more than doubled the original size, 3,716 m² (40,000 ft²). 1992 saw a small addition of 46 m² (500ft²). In 1998 an addition to the South West (Front) of the building was added as the dialysis wing, 557 m² (6,000 ft²). In 2001 another significant addition was added to the South side of the building, adding new emergency and ambulatory areas, 1,950m² (21,000 ft²). 2005 saw a minor addition to the cafeteria on top of the basement mechanical and generator rooms, 46 m² (500 ft²). In 2009 another addition added a CT Machine and area to the X-ray Wing, 167 m² (1,800 ft²). The last addition in 2015 added another 2,136 m² (23,000 ft²) to move and upgrade the dialysis wing.

The purpose of Renfrew Victoria 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, Renfrew Victoria Hospital's energy conservation and demand management program will reduce overall energy consumption, operating costs, and greenhouse gas emissions.

There are a variety of low cost/no cost initiatives available to Renfrew Victoria Hospital, which can continue to contribute to energy consumption and dollar savings. Simple actions such as turning lights and appliances off, shutting off heaters in the summer, establishing efficient usage times, efficient production requirements, and many other actions can result in energy savings. Such actions, along with energy efficient capital and operating process improvements and project implementation, are key components which are outlined in this energy Conservation and Demand Management Plan (CDM Plan).

Today, utility and energy related costs are a significant part of the Hospital's overall operating costs. Renfrew Victoria Hospital's annual energy consumption and related costs/emissions for 2017 were:

- Utility costs were \$578,969.53 annually.
- The Hospital's Energy Use Index (EUI) was 61.60698 ekWh/ft²
- Energy related emissions equaled 1,161,431.0000 tCO₂e.

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

- 2% reduction in energy use
- 23,000.00 tonne reduction in carbon equivalent emissions

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 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, Renfrew Victoria Hospital developed goals and devised green initiatives in an effort to decrease the facility's 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 include the following:

- Boiler upgrades – replaced with more efficient models
 - Chiller replacements – replaced with H/E units
 - Replaced AHU's – replaced with H/E units
 - Lamp replacement (LED)
 - Replaced windows and some exterior doors on 1st Floor
 - Replaced exhaust fan motors with high efficiency motors
 - Non energy star appliances were replaced with energy star appliances
 - Replaced grab and go coolers
 - Replaced steam trap audits and reinsulated units
- Results of the upgrade's include:
 - Energy consumption decreased by 300470 kWh since 2015.
 - Gas required to heat the location since the addition in 2015 decreased by 3555 m3.

**picture of LED lamps*

**picture
chillers*



of

ENERGY MANAGEMENT VISION

The Renfrew Victoria Hospital will be recognized as one of the finest rural health care facilities that endeavours to improve the health status of the population, in a fiscally responsible manner, by mobilizing technology, responding to identified needs and partnering with others.

GUIDING PRINCIPLES FOR STRATEGIC ENERGY MANAGEMENT

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

Taking A Strategic Approach:

While Renfrew Victoria Hospital actively manages energy costs by implementing opportunities as they are identified, by acting strategically, Renfrew Victoria Hospital can significantly improve its energy-related performance. Incorporating energy management into our organization's everyday 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 Renfrew Victoria Hospital 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 Renfrew Victoria 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 operational 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. The current energy management team comprised of VP Corporate Services, VP Financial Services, VP Patient Care Services, President and CEO and the Director of Physical Plant and Grounds at Renfrew Victoria Hospital will work with the facility manager and other key staff to ensure that adequate organizational support and resources are provided to maximize the benefits of energy management to the Hospital. Energy management is integrated into the strategic planning and capital budgeting processes.

Obtaining Solid Economic Returns:

Energy management investments will yield solid economic returns that meet Renfrew Victoria Hospital's standard requirements applied through the hospital's capital budgeting process. Renfrew Victoria 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:

RVH will employ 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. They also include established best practices through a "community of practice" approach.

THE BUSINESS CASE FOR STRATEGIC ENERGY MANAGEMENT

Below are the central business arguments for Renfrew Victoria Hospital's pursuit of strategic energy management. The subsequent section 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.

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 an opportunity to reduce operating costs and positively impact Renfrew Victoria Hospital's bottom line. Operating cost savings through energy management initiatives 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.

BUSINESS PROPOSITION

The following are considerations included in Renfrew Victoria Hospital's business philosophy and budgetary process.

- If energy management considerations are integral to relevant business practices, policies, procedures, and decision-making processes, Renfrew Victoria Hospital's energy-related costs can be reduced by an additional 10% over a 5-year period.
- Based on 2017 utility rates, this will result in \$12,000.00 savings annually, or a total of \$180,000.00 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.
- Given Renfrew Victoria Hospital's current operating margin of 1%, RVH would have to generate \$1.2 million of gross revenue to achieve the same amount of net dollar benefit.

ENERGY MANAGEMENT GOALS

The following are proposed measures that Renfrew Victoria 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.).
- Communication of 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.
- Decisions about energy management investments will be part of Renfrew Victoria Hospital's 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 HVAC equipment).
 - Establish efficiency guidelines 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 \$1 million.
 - Consider integrated design when selecting projects for funding.
 - RFPs, contract terms & conditions, & fee structures will support ID.
 - 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.
- Establish 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).
 - 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.

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.