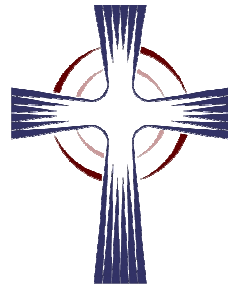


# **St. Joseph's Continuing Care Centre**

(The Religious Hospitallers of St. Joseph of Cornwall, Ontario)

## **Energy Conservation and Demand Management Plan**



**CENTRE DE SOINS PROLONGÉS**  
**ST. JOSEPH'S**  
**CONTINUING CARE CENTRE**

June 15<sup>th</sup>, 2014.

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## **1. Facility Description**

### **1.1 General**

SJCCC is a modern combination Long Term Care (117,000 ft<sup>2</sup>)/Continuing Complex Care 37,000 ft<sup>2</sup>) constructed over a 4-year period commencing with the completion of the CCC wing in July 2009. Totalling 154,000 ft<sup>2</sup> of floor space, it is located at 14 York Street in Cornwall, Ontario.

The SJCCC is part of the Religious Hospitallers of St. Joseph, a network of hospitals and long-term care homes in Ontario, New Brunswick, Nova Scotia, Illinois, Wisconsin and the Dominican Republic.

While this CDM Plan is only legislated for the hospital portion of the Centre's operation (Complex Continuing Care), SJCCC has decided to look at Energy savings measures for the whole building. Much of the energy consuming infrastructure of the building is actually shared between both operations, and it is for that reason that it makes sense to look at the whole building's energy consumption.

### **1.2 Space Utilization**

The SJCCC is split into three separate areas: administration/service, continuing complex care (CCC) and long term care (LTC):

- Administration and Service Areas

The administration and service area is comprised of staff rooms, mechanical service areas and the logistics services required operating a facility like SJCCC. The administration and service areas occupy approximately 20% of the floor area

- Long Term Care

The main section of the SJCCC is its 150-bed long term care facility. This space provides for residents who require 24-hour availability of nursing and/or personal care but do not require full hospital services. The SJCCC provides a more relaxing and welcoming home with the personal level of care that hospitals aren't typically able to provide. This space comprises approximately 50% of the total floor space in the building.

- Continuing Complex Care

In addition to the long term care space, the SJCCC also has a 58-bed Continuing Complex Care (CCC) wing constructed in 2009. CCC is provided for individuals with long term illnesses or disabilities requiring skilled, technology-based care not available either at home or in a typical long term care facility. In most operational concerns, this space would be akin to an acute care wing of a typical hospital and has high airflow rates and plug loads to suit. This space comprises the remaining 30% of the floor space.

### **1.3 Space Occupancy**

Due to the presence of operations and nursing staff on a constant basis, all spaces are considered to be occupied at all times.

## 2. Utility Data Analysis

This section presents the results of the analysis of electricity, natural gas and water consumption data over the most recent full year of data and includes the following:

- Baseline energy use
- Energy end-use estimates
- Utility rates.

The results of these analyses yielded valuable insights into all aspects of building energy performance and efficiency and helped to identify and quantify the proposed energy-efficiency measures.

### 2.1 Baseline Energy & Water Use

A review of the baseline energy and water cost profiles reveals that:

The total annual utility costs for the site are approximately \$429,169. Electricity costs amount to \$239,175 (56% of total costs), natural gas accounts for \$171,974 (40% of total costs), and water accounts for \$18,020 (4% of total costs).

The annual electrical consumption is 2,791 MWh and the annual natural gas consumption is 3,433 eMWh, resulting in a total site energy intensity of 38.9 ekWh/ ft<sup>2</sup>/yr.

This energy intensity places the facility below an average Long Term Care facility energy intensity of 44.7 ekWh/ ft<sup>2</sup>/yr. The GHG emissions factor for electricity is very low due to the hydroelectric source – measures which displace electricity to replace with natural gas will result in a GHG emissions increase.

## 3. SJCCC Energy Conservation Goals and Objectives (2014-2019)

In consultation with SJCCC's Environmental Management Team, and the Green Energy Audit performed in 2010, the following goals have been established for the organization:

1. Institute a monthly tracking and reporting process for all utilities consumed by the organization. This monthly process should include reporting and trending data which is circulated to the Director of Support Services, Executive Director, and Environmental team.
2. Include standing agenda item on the Environmental Management Team schedule to discuss Green initiatives and potential areas for improvement.
3. Provide ongoing staff education on concrete ways to reduce the organizations GHG emissions through responsible practices (lighting, heat, water consumption, etc.).
4. Implement a number of the infrastructure changes recommended by the Green Hospital Energy Audit:
  - a. Replace existing domestic hot water boilers with high-efficiency condensing equivalents.
  - b. Make improvements to Building automation system to further decrease energy consumption. Recommendations like turning off circulation pumps when boilers are

inactive and disabling pumps on Dishwasher DHW system during non-use periods will be investigated.

- c. The main kitchen and all services will have dish spray nozzles replaced with energy efficient low-flow equivalents.
- d. Install improved dampers in HVAC systems 1&2 to bypass reheat coils during summer months further improving spring and summer energy consumption.
- e. The Centre is current lit predominantly with fluorescent lighting and 32W bulbs. The organization will endeavor to replace all bulbs with 25W or 28W bulbs where possible.

#### 4. Cost Estimates

Some of the Energy Conservation Goals are difficult to cost out and are more about promoting responsible energy practices throughout the organization. The following represents some of the measurable proposed changes:

- a. Boiler Replacement with High-Efficiency Condensing Alternatives

**Exhibit 10 DHW Boiler Replacement Summary**

Energy Reduction Measure	Natural Gas		Total Savings	Total Cost	Simple Payback	GHG Reduction
	[m <sup>3</sup> ]	[\$]				
DHW Boiler Replacement	13,359	\$ 3,301	\$ 3,301	\$ 55,000	16.7	25.2

- b. Fluorescent Lighting Retrofit

**Exhibit 12 Fluorescent Lighting Measure Summary**

Energy Reduction Measure	Electricity			Natural Gas		Total Savings	Estimated Cost	Simple Payback	GHG Reduction
	[kW]	[kWh]	[\$]	[m <sup>3</sup> ]	[\$]				
Fluorescent Lighting	13	44,530	\$ 4,682	-5,520	-\$ 1,364	\$ 3,318	\$ 23,688	7.1	-9.9

- c. Other Programmatic changes to Direct Digital Controls

**Exhibit 13 Operations and Maintenance Measure Summary**

Energy Reduction Measure	Electricity			Natural Gas		Water		Total Savings	Estimated Costs	Simple Payback	GHG Reduction
	[kW]	[kWh]	[\$]	[m <sup>3</sup> ]	[\$]	[m <sup>3</sup> ]	[\$]				
O&M	-1	-1,225	-\$ 148	3,246	\$ 802	2,076	\$ 1,764	\$ 2,418	\$ 5,025	2.1	6.1

#### 5. Renewable Energy Generation

The organization currently has no renewable energy sources in use in the building (solar, ground source heating, etc.).