



**CONSERVATION AND DEMAND MANAGEMENT
FIVE YEAR ENERGY PLAN FOR
LENNOX & ADDINGTON COUNTY GENERAL HOSPITAL
2014**





TABLE OF CONTENTS

- Introduction
- Energy Management Goals and Objectives
- Baseline Energy Use
- Energy Savings Opportunity Report
- Glossary



INTRODUCTION

The overall purpose of Lennox and Addington County General Hospital's energy management plan and policies is to promote good stewardship of our environment and community resources. In keeping with our core values of Efficiency and Financial Responsibility, our hospital's energy management program will ultimately result in reduced operating costs and enable the hospital to provide compassionate service to a greater number of persons in the community.

Public agencies are required to report their annual energy use to the Ministry of Energy by July 1, 2013 and each subsequent year. In addition, public agencies must develop, publish and initiate a five year Conservation and Demand Management (CDM) Plan by July 1, 2014 and every five years thereafter. The regulation affects municipalities, colleges and universities, school boards and hospitals. The intent is to help public agencies manage energy use and costs, identify best practices and energy saving opportunities, evaluate results by comparing to similar facilities, assist in setting goals by providing a benchmark and measure improvement over time.

To summarize, Lennox and Addington County General Hospital's energy management vision is to eliminate energy waste, wherever possible, through infrastructure improvement, through policy and process changes and through the embracing of best practice and technology changes. The plan will enable the hospital to achieve continual improvement of energy performance and cost reduction.



ENERGY MANAGEMENT GOALS AND OBJECTIVES

- Incorporate energy management considerations to business practices, policies, procedures and decision making.
- Become a leader in energy conservation and demand management among the hospitals in Ontario.
- Reduce Lennox and Addington County General Hospital's hydro usage by 6% and natural gas usage by 7% over a five year period.
- Reduce the hospital's greenhouse gas emissions.
- Identify energy saving opportunities and plan to implement.
- Establish purchasing specifications for energy efficient equipment and services.
- Improve building operating performance.
- Monitor and track progress.



BASELINE ENERGY USE

The baseline energy profile has been selected using the most recent full fiscal year with available utility data, which is 2013. This baseline was used to calibrate energy end use estimates and as the reference case for calculating energy savings. Exhibit 1 presents the baseline energy use; Exhibits 2 and 3 present the data in graphical format; Exhibits 5 and 6 present the data in end use breakdown.

KEY OBSERVATIONS

- The total annual energy costs, as a percentage, for the site in 2013 are as follows:

Total Electricity Charges 76% of total cost
Total Natural Gas Charges 24% of total cost

- The annual electrical consumption is 3,372,430 kWh and the annual gas consumption is 466,645 m³, resulting in a total site energy intensity 64.0 ekWh/ft²/yr. This places Lennox and Addington County General Hospital above the average of 61.8 ekWh/ft²/yr. based on a comparison to similar facilities in Ontario.
- At 26.3 kWh/ft² the electrical energy intensity is 25% above average, and the natural gas intensity is 8% below the average at 37.7 ekWh/ft².
- Lennox and Addington County General Hospital has 127,564 square feet of serviceable area.



EXHIBIT 1 2013 BASELINE ENERGY CONSUMPTION

ELECTRICITY

NATURAL GAS

TOTAL

2013	USAGE	ENERGY INTENSITY	GHG EMISSIONS	USAGE	ENERGY INTENSITY	GHG EMISSIONS	USAGE	ENERGY INTENSITY	GHG EMISSIONS
	(kWh)	(kWh/ft ²)	(teCO ₂)	m ³	(ekWh/ft ²)	(teCO ₂)	(ekWh)	(ekWh/ft ²)	(teCO ₂)
Jan	237,277	1.9	49.8	59,743	4.8	113.7	855,024	6.7	163.5
Feb	209,891	1.6	44.1	71,924	5.8	136.9	953,590	7.4	180.9
Mar	232,002	1.8	48.7	51,868	4.2	98.7	768,320	6.0	147.4
Apr	238,645	1.9	50.1	36,996	3.0	70.4	621,185	4.9	120.5
May	314,076	2.5	66.0	26,402	2.1	50.2	587,068	4.6	116.2
Jun	344,754	2.7	72.4	22,634	1.8	43.1	578,789	4.5	115.5
Jul	398,311	3.1	83.6	21,076	1.7	40.1	616,236	4.8	123.8
Aug	357,651	2.8	75.1	21,982	1.8	41.8	584,949	4.6	116.9
Sep	301,264	2.4	63.3	20,679	1.7	39.4	515,088	4.0	102.6
Oct	270,853	2.1	56.9	30,056	2.4	57.2	581,631	4.5	114.1
Nov	230,425	1.8	48.4	46,089	3.7	87.7	706,990	5.5	136.1
Dec	237,280	1.9	49.8	57,194	4.6	108.8	828,666	6.5	158.7
TOTAL	3,372,430	26.3	708.2	466,645	37.7	888.0	8,197,535	64.0	1596.2



EXHIBIT 2 2013 BASELINE ELECTRICITY USE PROFILE

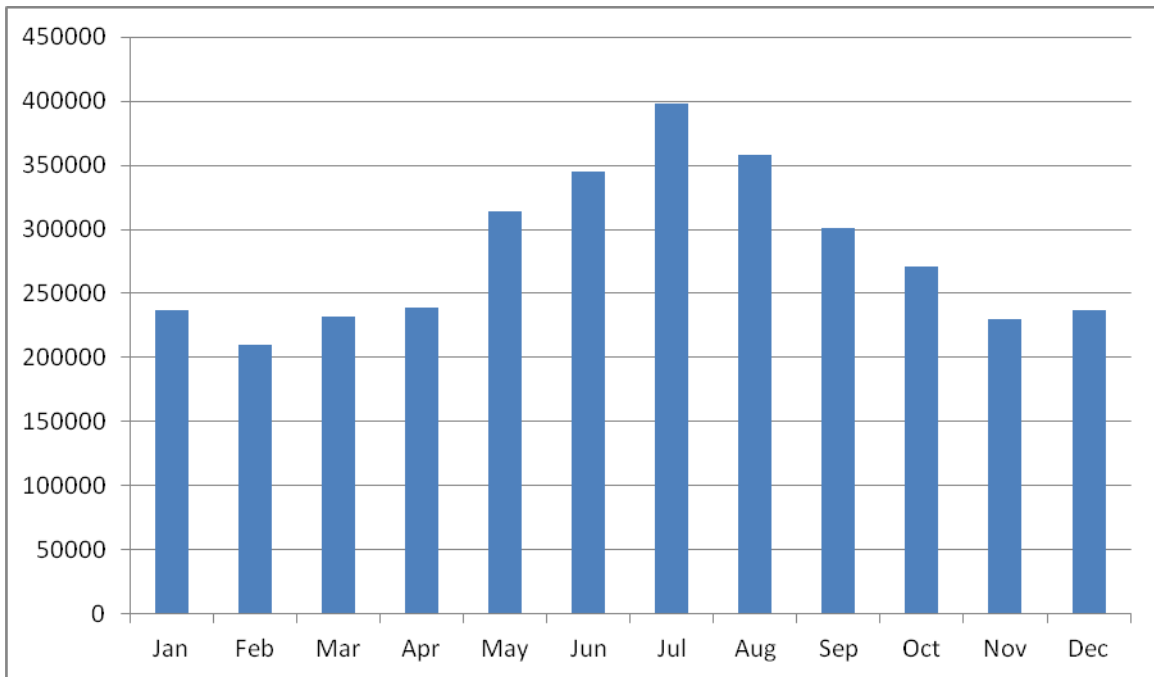


Exhibit 2 shows the monthly electricity use profile in kWh. The majority of the electricity consumption is baseload, with a summer peak due to cooling, and a smaller winter extra that is the result of increased pumping energy associated with the heating system.



EXHIBIT 3 2013 BASELINE NATURAL GAS USE PROFILE

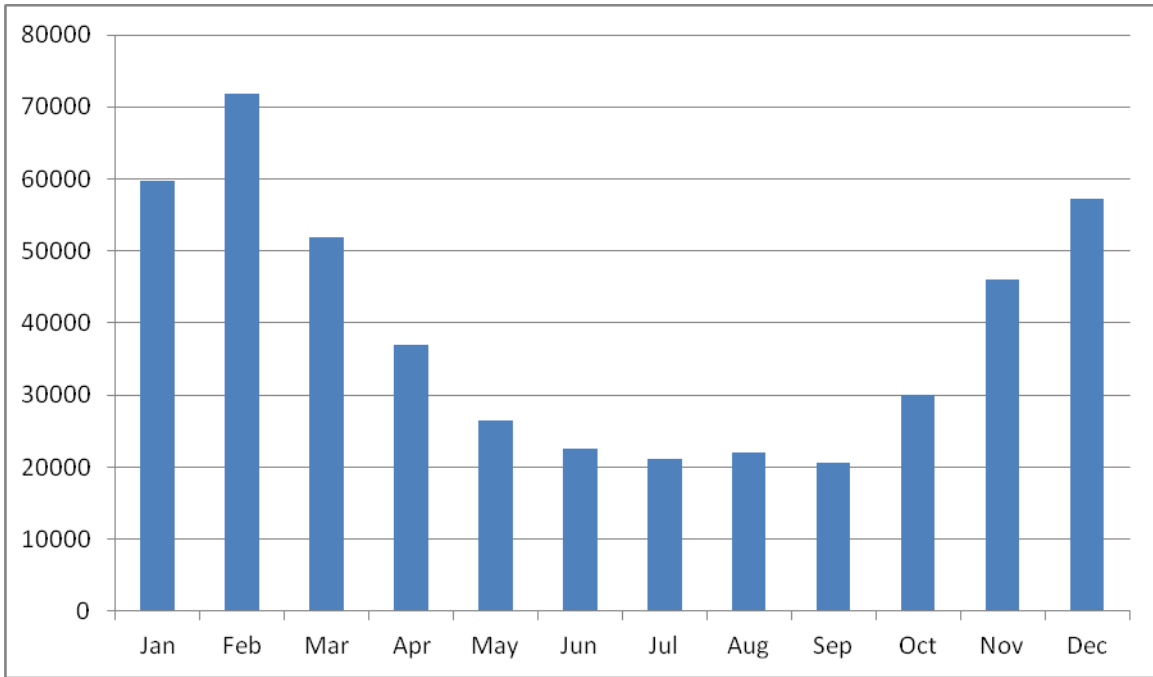


Exhibit 3 shows the monthly natural gas use profile in cubic meters. Approximately half of the gas is being used for the baseload, and there is a predictable winter increase that corresponds well with the heating demand.



EXHIBIT 4 ELECTRICITY END USE BREAKDOWN

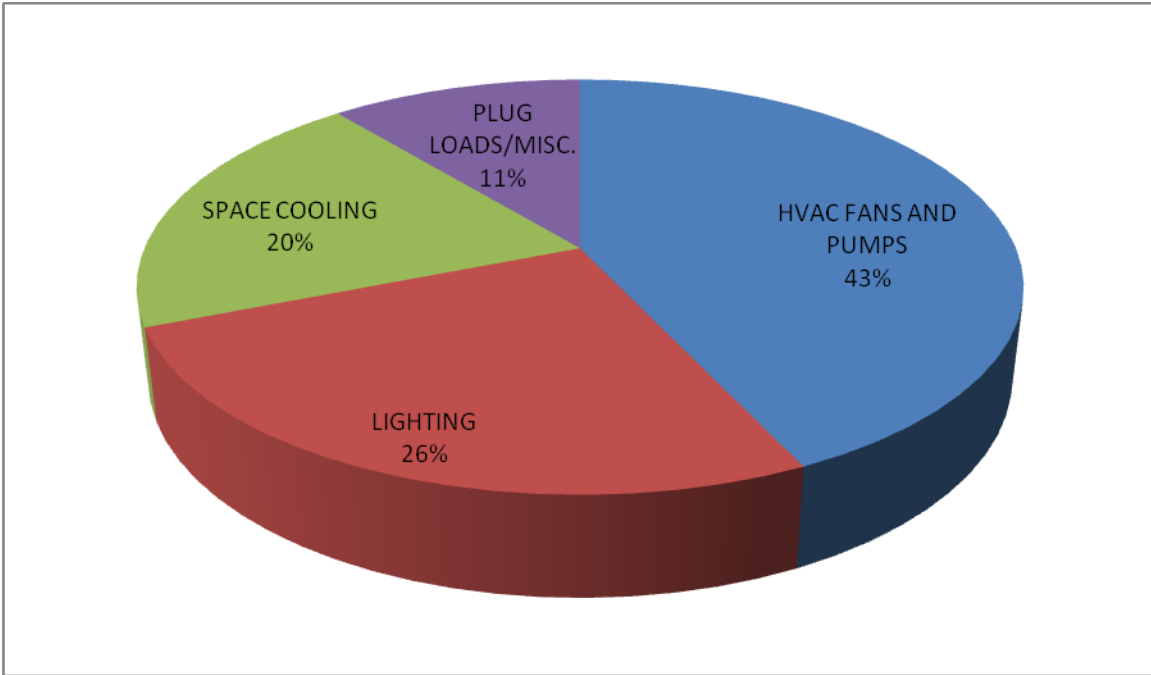
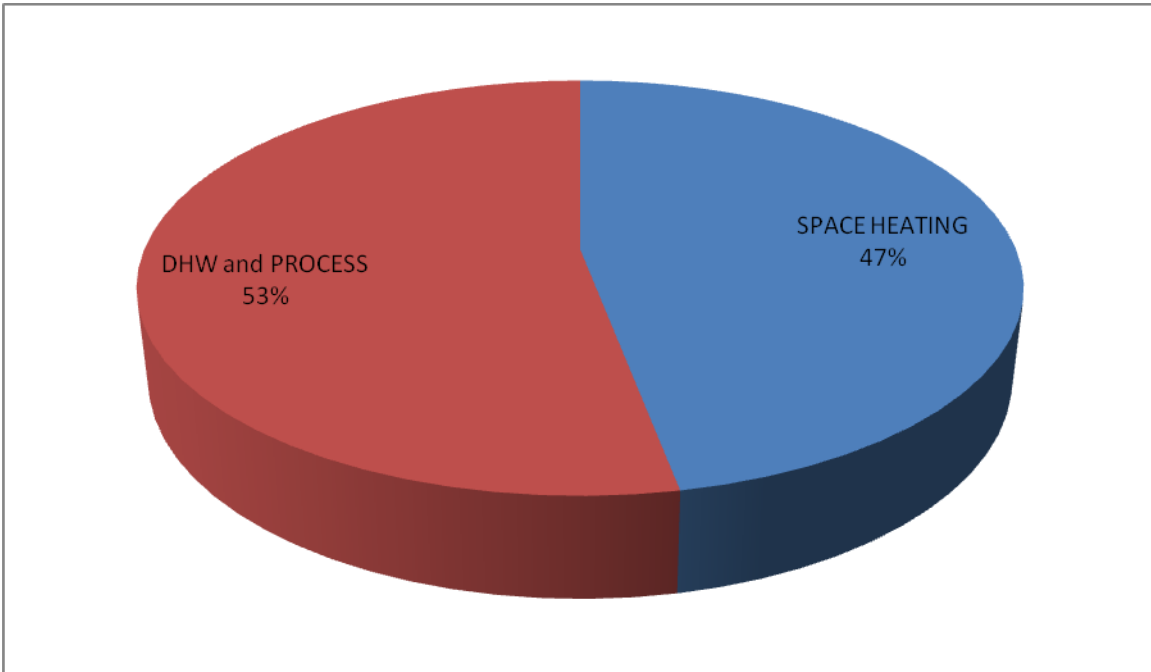


EXHIBIT 5 NATURAL GAS END USE BREAKDOWN





ENERGY SAVINGS OPPORTUNITY REPORT

Interior Lighting Retrofit

There are several opportunities to reduce energy consumption with regards to interior lighting. The existing 32W T8 fluorescent fixtures that are illuminated 24/7 will be re-lamped with 28W T8 and 21W T8 LED lamps.

Exterior Lighting Retrofit

Propose relamping the exterior parking lot fixtures with a high efficiency low pressure sodium lamp, replacing the existing metal halide lamps. The replacement lamps life hours would be approximately (10) times that of the existing lamps.

Walk-in Refrigeration Replacement

Propose replacement of the (3) older, 40+ years, walk-in refrigerators with a single compartment high efficiency walk-in unit.

Boiler Controls

Propose to maximize boiler efficiency and improve combustion by modernizing and fine tuning boiler controls. This project would be considered if the boilers were not replaced during the five years covered by this plan. If upon assessment the boilers were to be replaced within the five year period, an energy savings would then be realized by the more efficient replacement boilers.

Miscellaneous Projects

The following are projects that will occur over the five year period:

- Change employee culture. Develop a culture where employees turn off power sources not needed at the time. For example, room lighting can be turned off when space is not occupied.
- Reduce lamping in over illuminated spaces.
- Replace end of life equipment with higher energy efficient equipment.



- Where ever possible scale energy usage to occupancy levels.
- Improve building envelope. When replacing exterior doors and windows ensure to replace with energy efficient types. Improve insulation wherever possible.
- Install motion sensors to trigger illumination in areas that are sporadically occupied.
- Re-evaluate HVAC usage at the facility to optimize performance.

OPPORTUNITIES EVALUATION CHART

Energy Reduction Measure	Target For Completion	Annual Electrical Savings (kWh)	Annual Natural Gas Savings (m ³)	GHG Reduction (teCO ₂)
Interior Lighting	2016	50245		10.6
Exterior Lighting	2015	29872		6.3
Walk-in Refrigeration	2014	12742		2.7
Boiler Controls	2015	8612	8740	18.4
Miscellaneous Projects	2019	115000	24000	69.8
TOTAL		216471	32740	107.8



GLOSSARY

ekWh	Kilowatt hour is a measure of energy with the e meaning it has been converted from another unit of energy, for instance Joules, for comparative reasons.
Energy Intensity	The quantity of energy required per a unit of measurement. Using less energy reduces the intensity.
Green House Gas (GHG)	GHG's are gases in the Earth's atmosphere that prevent heat from escaping into space. Carbon Dioxide is the most significant GHG with others being Methane, Nitrous Oxide, Hydrofluorcarbons, Perfluorocarbons and Sulfur Hexafluoride.
kWh	Kilowatt hour is a measure of energy.
teCO ₂	A measure of Carbon Dioxide in tons.