

**Energy Conservation and Demand Management
Plan
Made for Ontario Regulation 397/11
Green Energy Act, 2009**



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June 18, 2014

The Green Energy Act - Regulation 397

The Energy Conservation and Demand Management Plan outlined in the following report is the second component of a two part regulatory compliance measure of the Green Energy Act, 2009. The energy management plan is to accompany a summary of the public agency's annual energy consumption and greenhouse gas emissions and contain a description of previous, current, and proposed measures for reducing the organizations energy use. On July 1, 2013, the Energy Consumption and Greenhouse Gas Emission Template was posted on the internal website, internet site, and made available to the public in printed format at head office. On July 1, 2014, the Energy Management Plan will be posted on the internal website, internet site, and made available to the public in printed format at head office.

Summary of the Energy Conservation and Demand Management Plan

St. Joseph's Health Care London has formatted their energy conservation and demand management plan to fulfill the requirements of Regulation 397/11. The energy conservation and demand management plan is inclusive of all sites, namely Parkwood Hospital, St. Joseph's Hospital (SJH), Mount Hope Centre for Long Term Care (Mount Hope), Regional Mental Health Care London (RMHC London) and Southwest Centre for Forensic Mental Health Care (Southwest Centre) although Mount Hope Centre for Long Term Care is not included in the energy and greenhouse gas reporting to the ministry. RMHC London will demonstrate energy data from its current site until it is relocated to the new facility in 2014. The plan contains an energy use profile and a list of past, present, and proposed future energy saving measures for each hospital. Each subsequent year the plan may be updated with a review of how the year measured in correlation to the goals and objectives set the previous year. A mandatory update will be made in 2019. The plan will be made readily available according to the reporting requirements listed above. This report is based on the energy profile of the fiscal year 2011/2012 and corresponds to the regulatory requirements for submitting our energy consumption and greenhouse gas emission report for the calendar year 2012.

St. Joseph's Health Care London

Main Sites - St Joseph's Hospital, Mount Hope Centre for Long Term Care, Parkwood Hospital, Regional Mental Health Care London and Southwest Centre for Forensic Mental Health Care

Type of operation: Health Care Facilities (Ambulatory, Rehabilitation, Long Term Care, Veterans, Mental Health)

Total floor space: 3,080,062 square feet (BGSF) (does not include parking garages)

Hospital description: The majority of our services are across five major sites as follows:

St. Joseph's Hospital:

St. Joseph's Hospital continues to expand its role in day and short-stay surgery, ambulatory treatment of complex medical and chronic disease, illness prevention, research and education. Our interdisciplinary teams provide comprehensive assessment, diagnosis, treatment and follow up care through our many programs.

Parkwood Hospital:

Parkwood Hospital offers complex care, rehabilitation, palliative care, specialized geriatric services and veterans care for both inpatients and outpatients. Parkwood Hospital is also home to the Aging, Rehabilitation and Geriatric Care Research Centre.

Mount Hope Centre for Long Term Care:

Mount Hope provides care for residents who are 18 years of age or older and who may be cognitively impaired, physically and/or mentally challenged, and/or suffer from chronic illness.

Regional Mental Health Care London:

Regional Mental Health Care London offers specialized bed-based and community-based mental health care services for individuals with serious mental illness while strengthening community partnerships to help people regain their independence.

Southwest Centre for Forensic Mental Health Care:

Through intensive work with our teams patients are able to develop the skills and supports needed to successfully reintegrate back into their communities.

Energy Types: Steam, Natural Gas, and Electricity (Note: Steam and Electricity is purchased through the a District Energy system at either London Health Sciences Centre or London District Energy)

Energy Amounts:

Hydro	45,250,348	kWh
Natural Gas	4,556,388	m3
Steam	122,976,772	lbs

Energy Procurement

The energy procurement strategy (natural gas and hydro) consists of four components: program goals, development of a gas supplier portfolio, development of a risk management or hedging program, and measurement and refinement. Each of these components has been developed in partnership with an energy procurement agency and with our procurement service provider, Healthcare Materials Management Services (HMMS). The procurement agency connects with the facilities department on a quarterly basis to review the market prices, purchasing schedule, storage volume, and proposed future direction. The challenges faced have been forecasting the changing consumption at our sites and adapting to new construction, added equipment etc. Through constant review with a cross sectional team of stakeholders the sites have been able to meet this challenge with an energy procurement strategy that supports the appropriate levels of risk and flexibility.

Utility Monitoring and Tracking

The facilities' energy cost and consumption is profiled for each site by energy source on a monthly basis. This is an effective way to measure the energy performance of the facilities in comparison to previous years while being able to identify and explain any anomalies that result from changes to the building, weather, and utility rates. Each year the energy management plan will be presented to our corporate Resource Planning Council to allow for further education and understanding of utility costs and the positive impact of completed energy saving initiatives.

Communication and Employee Engagement

The final component of the Energy Stewardship master plan is a very successful and active employee engagement program. Initiated in 2003, and hosted by the mascot CHESTER, the program provides a fun and friendly method of inspiring active participation from employees toward helping the hospital save energy. By incorporating necessary behaviour change strategies and activities with information that is meaningful and of value to staff, the impact of the changed behaviour is realized at both the hospital and at home. In 2010, with the interest from other healthcare organizations, THE CHESTER NETWORK was created to aid other hospitals in the implementation and operation of this engagement program at their facilities. By exporting this program materials and resources while providing on-site teaching and training, The Chester Network has been able to provide this opportunity to hospitals that did not otherwise have the means. The Chester Network is now composed of several hospitals engaging over 25,000 employees.

Past and Current State of Energy Management

Interpreting the report...

Cost per Square Metres (Cost/SQM)

Cost per square metre is equal to the total cost in dollars of the hospital utilities divided by the total area of the hospital in square metres. This number, as used below, is an average for the hospital. The true cost per square metre will change depending on the type of space and the hours of use. When comparing one hospital to another we must be careful to compare similar types, ages etc; for example, an acute care hospital may have a higher energy cost per square metre than a long term care facility. The safest use of metrics like this is comparing a hospital's cost/consumption against itself from one year to the next.

Consumption per Square Metres (Consumption/SQM)

Consumption per square metre is a measure of how much energy the hospital uses in number of units divided by the total area of the hospital in square metres. The unit of energy consumption may be cubic metres, pounds, or equivalent kilowatt hours (EkWh). EkWh are used when we are dealing with two or more energy sources with different units. Each can be written in corresponding EkWh so that energy consumption can be interpreted as a single total entity – EkWh/m², a number we can refer to as our energy efficiency index.

Factors Affecting Cost

The cost of the hospital's utilities is driven by consumption (the quantity of energy consumed) and rate (the price per unit of energy consumed). There may not always be a direct relationship between our cost and consumption; for example, our consumption could decrease for a particular time period however, if the rate increases over that time period, we may see an overall increase in cost despite the decrease in consumption.

Factors Affecting Consumption

Many factors will affect the hospital's energy consumption. During a steady growth in the organization we would expect to see a similar growth in our energy consumption. As more space and services, new equipment, additional staff etc. are added to the organization, there is an additional energy load that accompanies them. Weather will also have a large impact on energy consumption. The more cooling degree days (CDD) and heating degree days (HDD) we have throughout the year, the more energy we will use to maintain our internal building temperature. Efficiency of our electrical and mechanical equipment has an impact on our energy consumption. Undergoing work to improve the energy efficiency of our existing equipment and systems can lower our energy consumption. All factors must be considered when explaining the trends and the nature of our energy profile.

Aggregate - Parkwood Hospital/St. Joseph's Hospital/Mount Hope
 – not including our two mental health sites

Total Equivalent kWh (excluding water & sewage)

Parkwood Hospital/St. Joseph's Hospital/Mount Hope					
Total Aggregate EkWh					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$5,830,011	\$5,463,138	\$5,534,177	\$6,158,924	\$7,038,056
Consumption	98,972,222	88,985,368	95,986,489	93,842,825	89,409,676
Square Metre	174,574	174,574	174,574	174,574	174,575
Cost/SQM	\$33.40	\$31.29	\$31.70	\$35.28	\$40.32
EkWh/SQM	566.94	509.73	549.83	537.55	512.16

Parkwood Hospital/St. Joseph's Hospital/Mount Hope - Electricity (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$3,088,444	\$2,854,519	\$3,425,859	\$3,870,144	\$3,982,428
Consumption	35,061,979	31,829,667	35,801,693	37,183,234	35,275,867
Square Metre	174,574	174,574	174,574	174,574	174,575
Cost/SQM	\$17.69	\$16.35	\$19.62	\$22.17	\$22.81
EkWh/SQM	200.84	182.33	205.08	212.99	202.07

Parkwood Hospital/St. Joseph's Hospital/Mount Hope - Gas (m3)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$1,984,467	\$1,975,522	\$1,411,369	\$78,059	\$26,660
Consumption	4,984,401	4,446,265	4,761,958	237,069	343,946
Square Metre	174,574	174,574	174,574	53,380	53,381
Cost/SQM	\$11.37	\$11.32	\$8.08	\$1.46	\$0.50
m3/SQM	28.55	25.47	27.28	4.44	6.44

(note:2010-11 gas includes Parkwood, Mount Hope kitchen and misc SJH trails gas – sq.ft. does not apply)

Parkwood Hospital/St. Joseph's Hospital/Mount Hope - Steam (lbs)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$784,393	\$747,242	\$696,949	\$2,210,721	\$3,028,967
Consumption	40,568,235	36,663,414	35,905,644	177,051,999	165,197,001
Square Metre	53,380	53,380	53,380	174,574	174,575
Cost Per SQM	\$14.69	\$14.00	\$13.06	\$12.66	\$17.35
Lbs/SQM	759.99	686.84	672.64	1014.19	946.28

Note: In November 2009, St. Joseph's Health Care London shut down their stationary combustion to become part of a London District Energy System for steam supply. As a result, cost that would normally be allocated to the operation the stationary combustion plants is now built into the steam price. This accounts

for the increase seen in the cost/m² for 2010-2011 despite the fact that the consumption, EkWh has decreased. The cost for service capital is not included steam cost above.

Parkwood Hospital

Total Equivalent kWh (excluding water & sewage)

Parkwood Hospital - Total (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$1,878,896	\$1,772,697	\$1,742,542	\$1,930,403	\$1,975,044
Consumption	24,100,312	22,400,787	23,533,561	22,914,046	24,863,819
Square Metre	53,380	53,380	53,380	53,381	53,382
Cost/SQM	\$35.20	\$33.21	\$32.64	\$36.16	\$37.00
EkWh/SQM	451.48	419.65	440.87	429.25	465.77

Parkwood Hospital - Electricity (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$1,080,779	\$1,008,979	\$1,030,420	\$1,181,453	\$1,197,931
Consumption	11,306,900	10,715,501	12,023,471	11,619,028	11,023,600
Square Metre	53,380	53,380	53,380	53,380	53,380
Cost/SQM	\$20.25	\$18.90	\$19.30	\$22.13	\$22.44
EkWh/SQM	211.82	200.74	225.24	217.67	206.51

Parkwood Hospital - Gas (m3)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$13,724	\$16,476	\$15,173	\$16,528	\$13,041
Consumption	36,014	44,482	49,983	54,076	48,837
Square Metre	53,380	53,380	53,380	53,380	53,380
Cost/SQM	\$0.26	\$0.31	\$0.28	\$0.31	\$0.24
m3/SQM	0.67	0.83	0.94	1.01	0.91

Parkwood Hospital - Steam (lbs)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$784,393	\$747,242	\$696,949	\$732,422	\$764,072
Consumption	40,568,235	36,663,414	35,905,644	35,065,119	43,554,481
Square Metre	53,380	53,380	53,380	53,380	53,380
Cost/SQM	\$14.69	\$14.00	\$13.06	\$13.72	\$14.31
Lbs/SQM	759.99	686.84	672.64	656.89	815.93

St. Joseph's Hospital

Total Equivalent kWh (excluding water & sewage)

St. Joseph's Hospital - Total (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$2,992,356	\$2,707,750	\$2,784,749	\$3,224,451	\$3,888,819
Consumption	53,835,263	48,046,512	52,013,338	53,753,177	49,566,858
Square Metre	84,901	84,901	84,901	84,901	84,902
Cost/SQM	\$35.25	\$31.89	\$32.80	\$37.98	\$45.80
EkWh/SQM	634.09	565.91	612.64	633.13	583.81

St. Joseph's Hospital - Electricity (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$1,532,727	\$1,355,116	\$1,820,589	\$2,072,403	\$2,202,252
Consumption	17,262,583	15,427,388	18,406,656	19,782,281	19,036,557
Square Metre	84,901	84,901	84,901	84,901	84,901
Cost/SQM	\$18.05	\$15.96	\$21.44	\$24.41	\$25.94
EkWh/SQM	203.33	181.71	216.80	233.00	224.22

St. Joseph's Hospital - Gas (m3)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$1,459,629	\$1,352,634	\$964,159	\$58,106	\$10,543
Consumption	3,540,434	3,157,708	3,253,309	174,245	287,407
Square Metre	84,901	84,901	84,901	84,901	84,902
Cost/SQM	\$17.19	\$15.93	\$11.36	\$0.68	\$0.12
m3/SQM	41.70	37.19	38.32	2.05	3.39

St. Joseph's Hospital - Steam (lbs)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-2012
Cost				\$1,093,942	\$1,676,023
Consumption				105,070,291	90,015,465
Square Metre				84,901	84,902
Cost/SQM				\$12.88	\$19.74
Lbs/SQM				1,238	1,060

Mount Hope Centre for Long Term Care

Total Equivalent kWh (excluding water & sewage)

Mount Hope - Total (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$958,759	\$982,691	\$1,006,886	\$1,004,070	\$1,174,194
Consumption	21,036,647	18,538,068	20,439,589	17,175,602	14,978,999
Square Metre	36,293	36,293	36,293	36,293	36,294
Cost/SQM	\$26.42	\$27.08	\$27.74	\$27.67	\$32.35
EkWh/SQM	579.64	510.79	563.19	473.25	412.72

Mount Hope - Electricity (EkWh)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$474,939	\$490,424	\$574,849	\$616,287	\$582,245
Consumption	6,492,496	5,686,778	5,371,566	5,781,925	5,215,710
Square Metre	36,293	36,293	36,293	36,293	36,294
Cost/SQM	\$13.09	\$13.51	\$15.84	\$16.98	\$16.04
EkWh/SQM	178.89	156.69	148.01	159.31	143.71

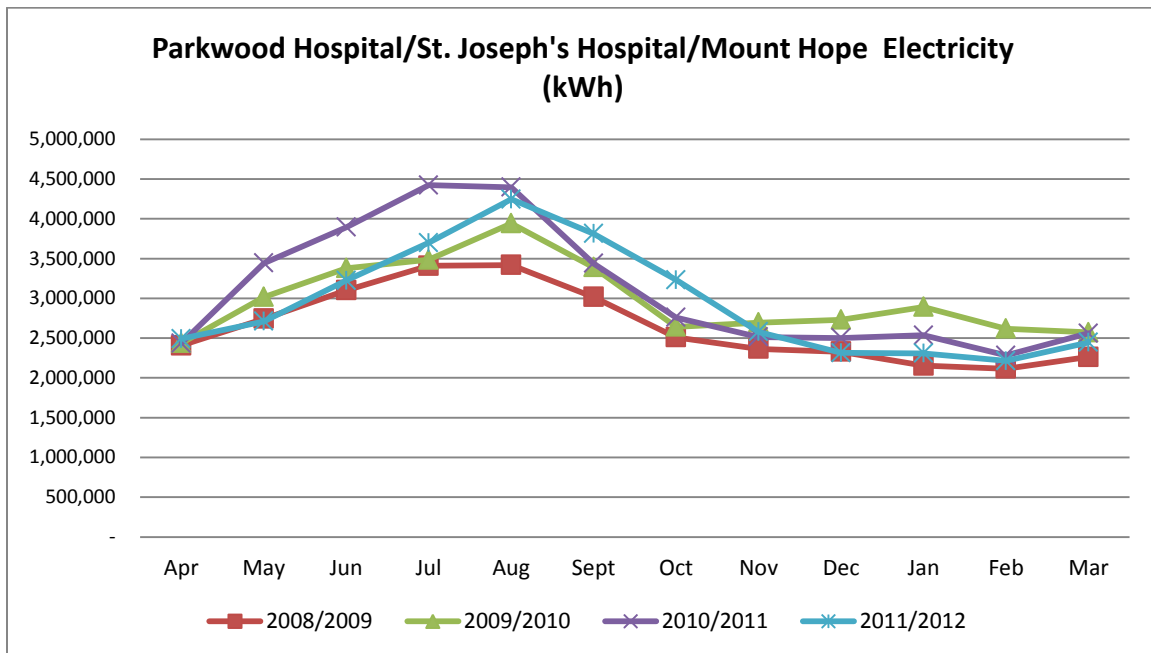
Mount Hope - Gas (m3)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost	\$511,113	\$606,411	\$432,037	\$3,425	\$3,076
Consumption	1,407,953	1,244,075	1,458,666	8,748	7,702
Square Metre	36,293	36,293	36,293	36,293	36,294
Cost/SQM	\$14.08	\$16.71	\$11.90	\$0.09	\$0.08
m3/SQM	38.79	34.28	40.19	0.24	0.21

(note: 2010-11 contains kitchen gas for 200 College only)

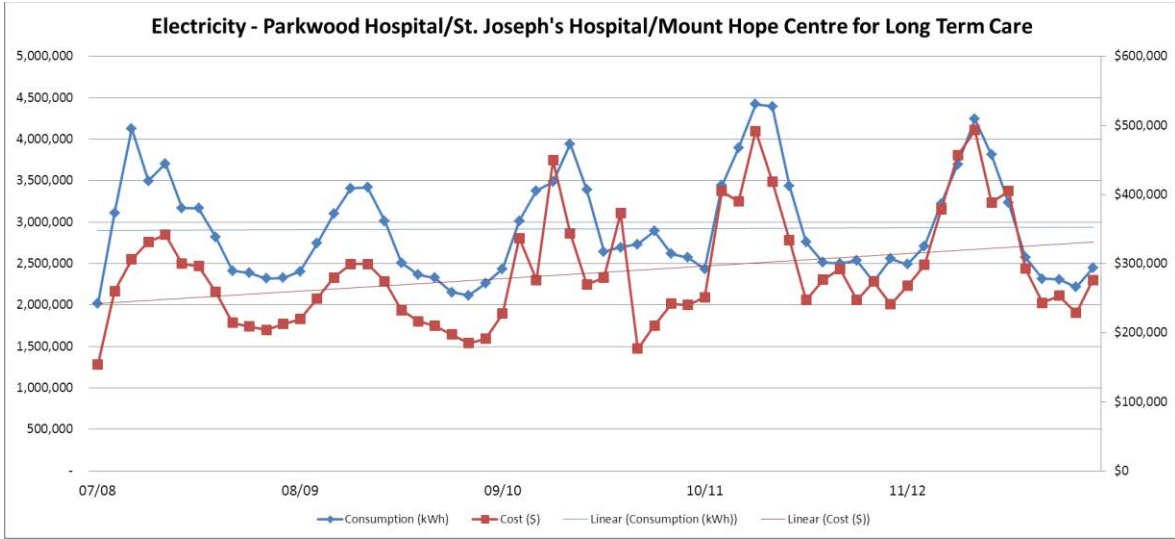
Mount Hope - Steam (lbs)					
Financial year	2007-08	2008-09	2009-10	2010-11	2011-12
Cost				\$384,358	\$588,873
Consumption				36,916,589	31,627,055
Square Metre				36,293	36,294
Cost/SQM				\$10.59	\$16.23
Lbs/SQM				1,017	871

Energy Profiling

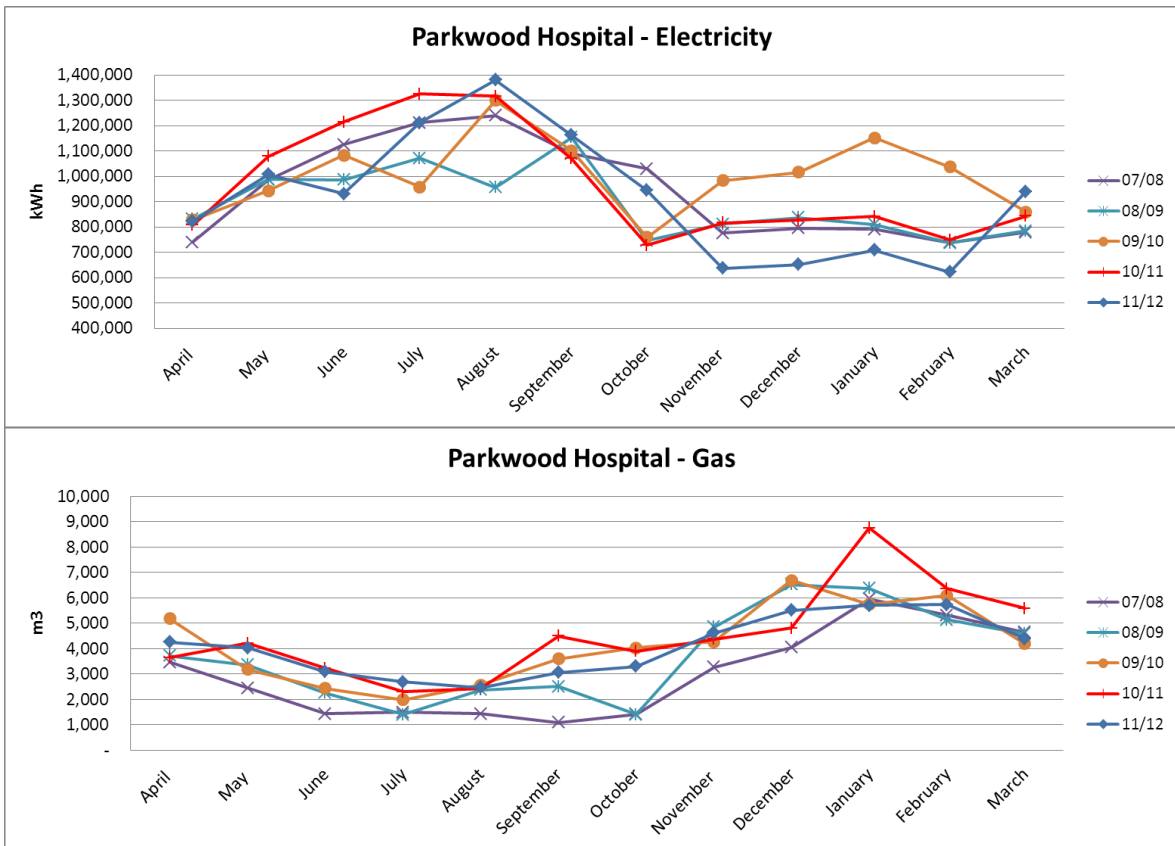
The hospital's energy cost and consumption is recorded for each hospital by energy source on a monthly basis. The graph below represents the last four years of monthly data for Parkwood Hospital/St. Joseph's Hospital/Mount Hope electricity consumption overlapped. This is an effective way to get a year to year comparison for a particular utility while being able to see the seasonal change. At a quick glance, one could identify a particular year outside of the norm and attribute it to changes within the hospital or an unusual weather pattern. In the case below, we can see an abnormal electricity increase during the summer months of the 2010/2011 fiscal year (purple). When comparing to the cooling degree days (reference section below) we see that July and August of 2010/2011 was particularly warm (more cooling degree days), hence this increase in electricity consumption can be attributed to the weather.

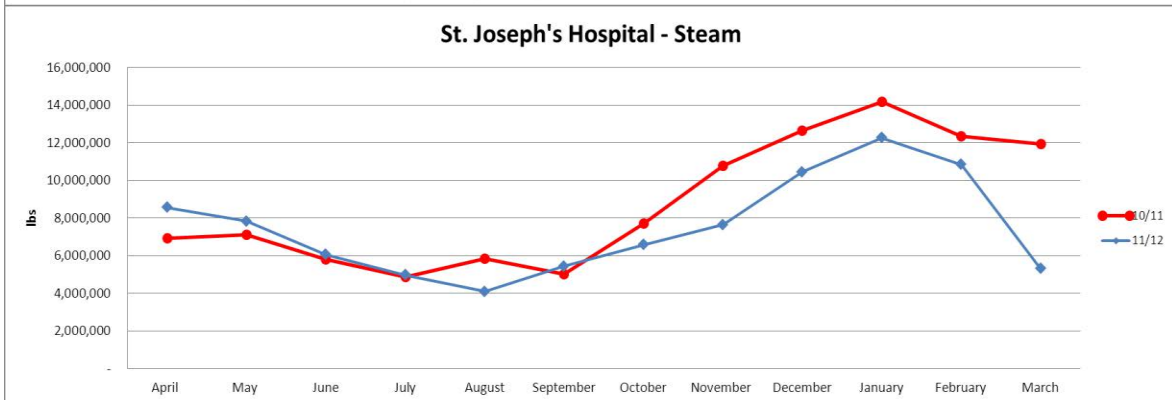
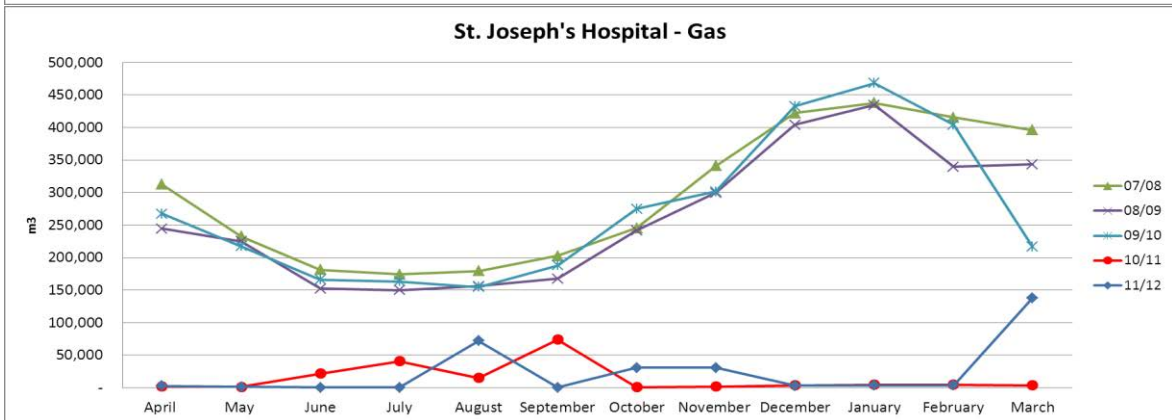
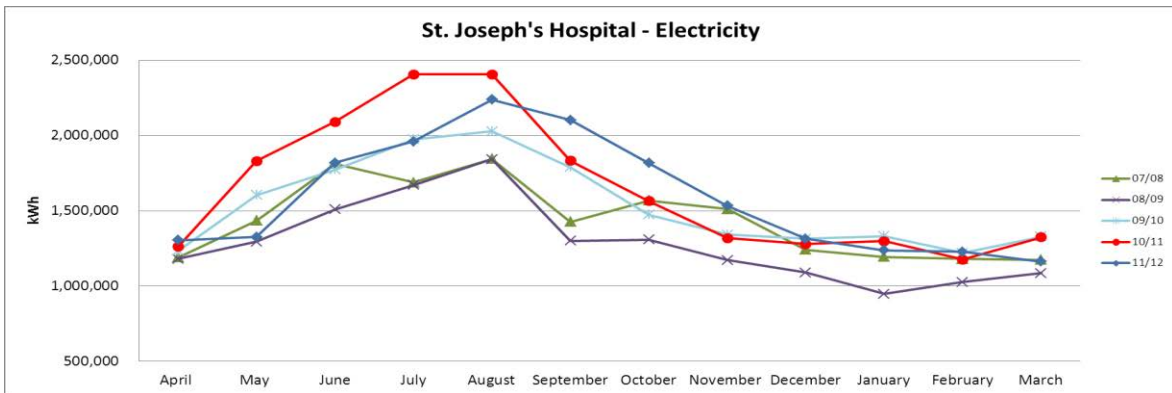
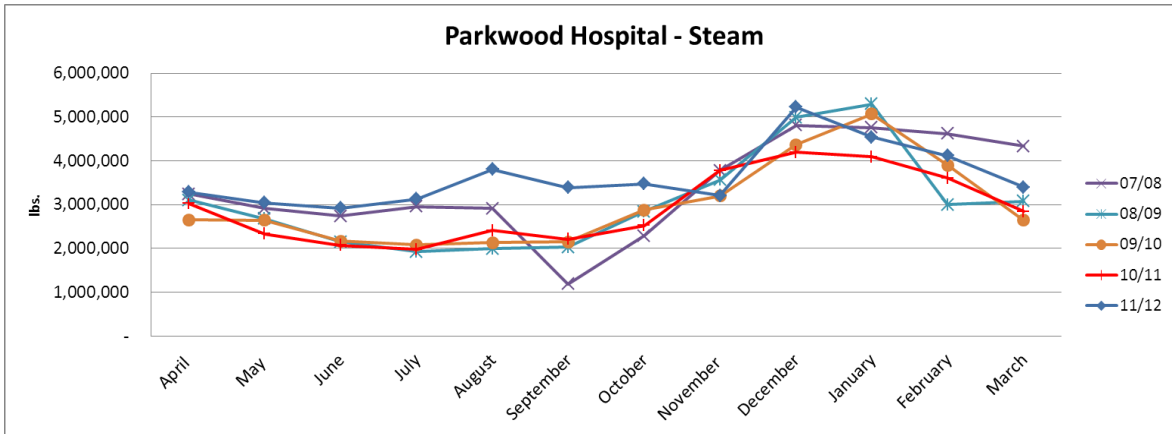


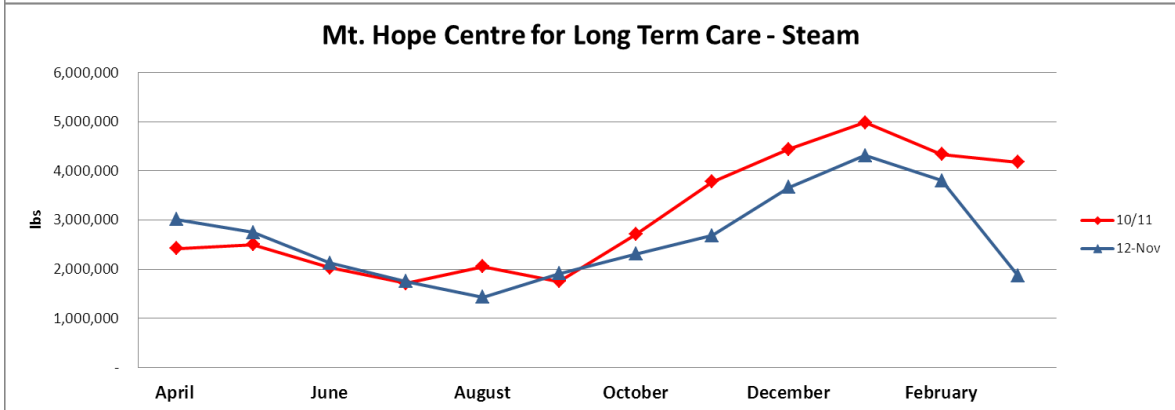
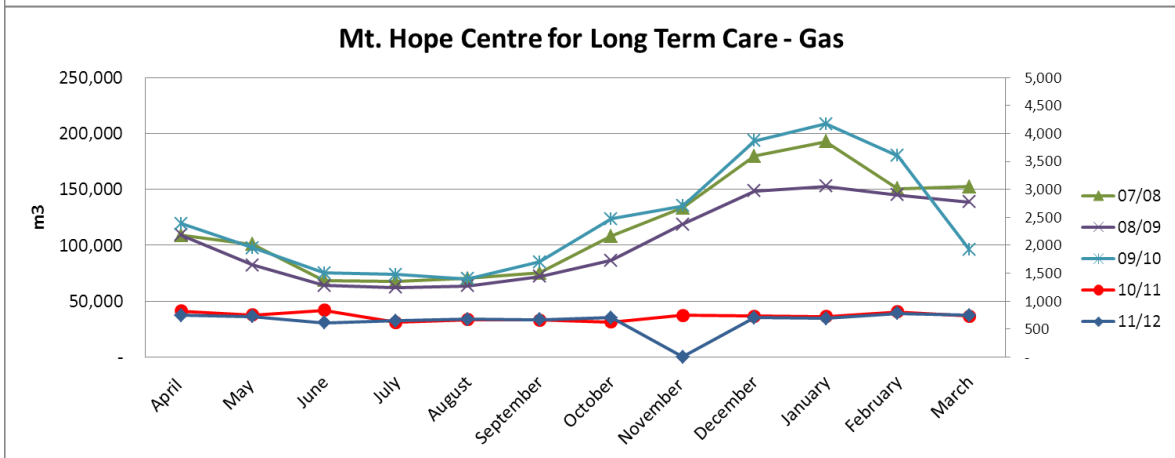
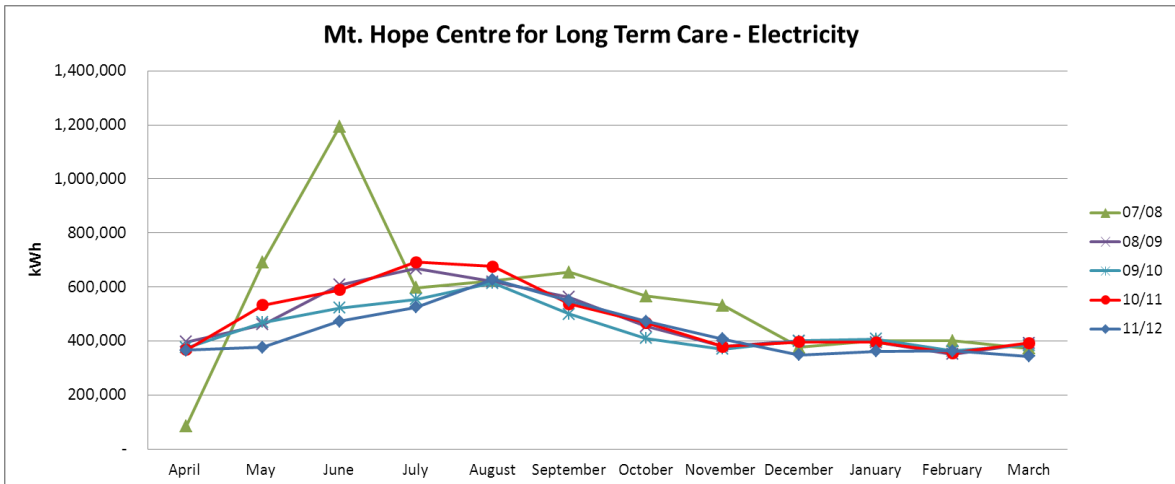
We can also trend an energy source over a number of years to get an overall long-term trend of the cost/consumption for the entire hospital. The graph below represents Parkwood Hospital/St. Joseph's Hospital/Mt. Hope total electricity cost and consumption for the last five years. Here we can see a slight increase in consumption since 2007/2008 and a larger increase in cost. This is a good example of how a utility rate can affect our cost. This graph depicts an increase in electricity cost over the last five years as a result of increasing electricity rates. Again, we see the higher cost/consumption for July/August of 2010/2011 as a result of a greater number of cooling degree days (warmer weather).



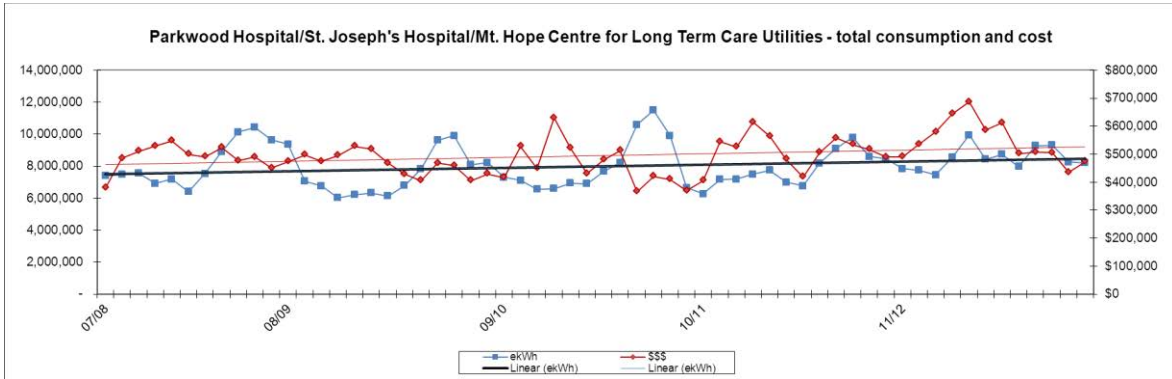
The following graphs depict the energy usage of St. Joseph's Health Care London by hospital and by utility separately.



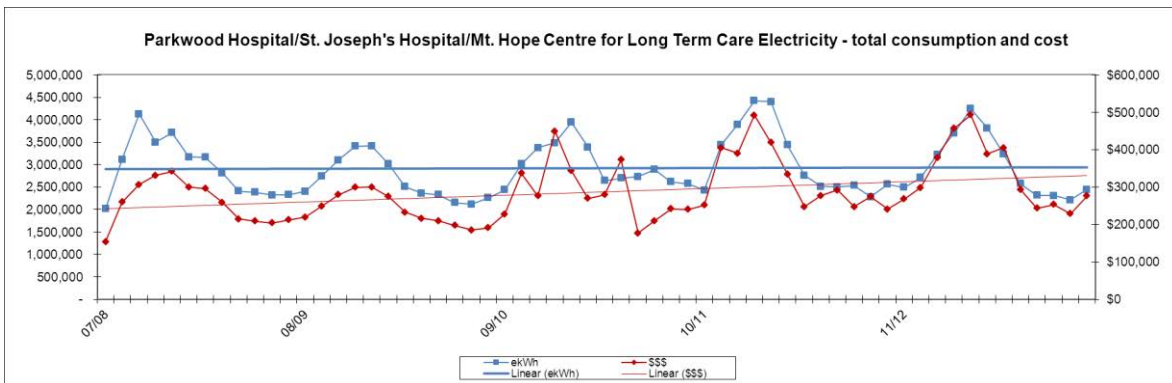




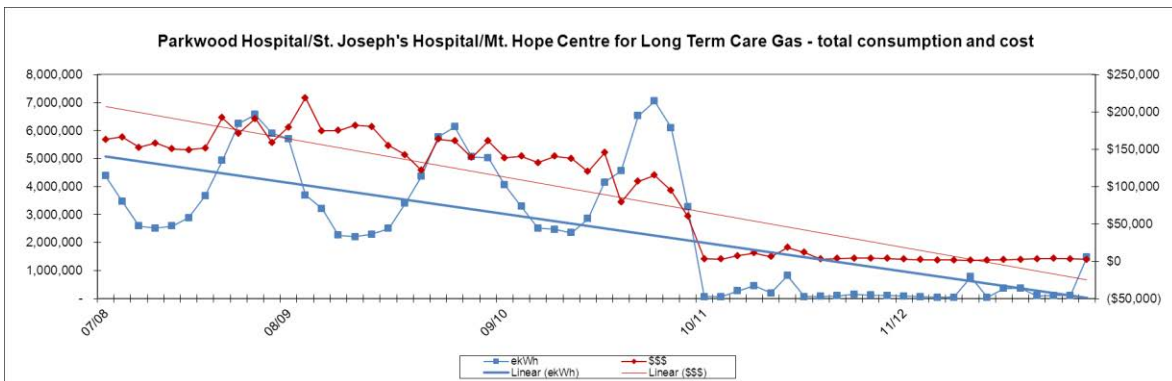
Parkwood Hospital/St. Joseph's Hospital/Mount Hope Total Consumption and Cost

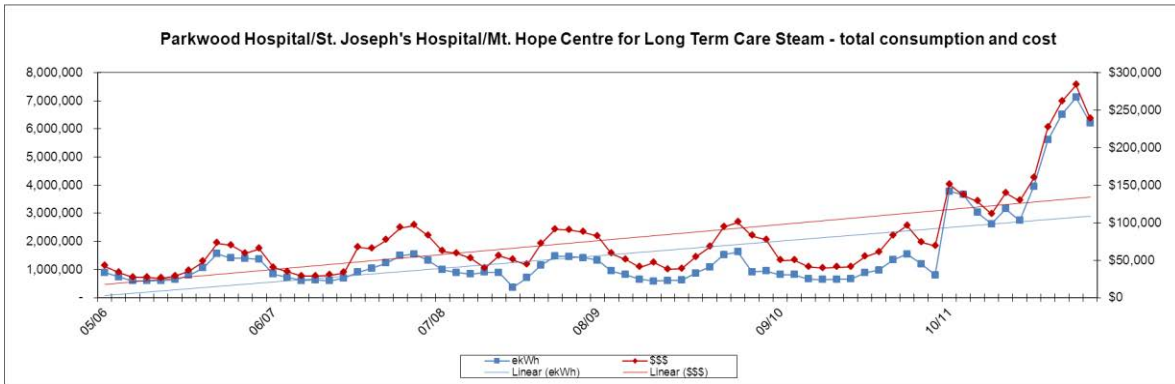


The above graph represents the total utility cost and consumption (equated to EkWh) for St. Joseph's Health Care London with the mental health sites omitted.



As we can see from the graph above, the increase in electricity prices has driven the cost up unproportionally to the consumption.





The two graphs above depict the change from producing our own steam from natural gas on site to purchasing steam directly from London District Energy, as mentioned above.

Energy Efficiency

The hospital has completed two major energy retrofit projects which have greatly reduced the overall energy consumption of the facility. Working in partnership with an Energy Services Company (ESCO), upgrades were made to the building's equipment and systems to allow the hospital to operate more efficiently with respect to energy use. Below is a list of projects and their impact on energy consumption and cost.

1995 – St. Joseph's Hospital

Project	Phase I-III
Year Implemented	1995
Project Cost	\$1,800,000
Guaranteed Savings	\$300,00
Guaranteed Payback	6 years
Avg. Actual Annual Savings	\$339,750



Phase I was a powerhouse project with upgrades to the boilers, new variable speed pumping, and installation of a flue gas economizer. Phase II replaced two chillers with environmentally friendly chillers and upgraded air handling units and domestic water fixtures. Phase III was a lighting retrofit at the Marian Villa site.

2006 – Parkwood Hospital

Project	Phase IV
Year Implemented	2006
Project Cost	\$1,200,000
Guaranteed Savings	\$170,000
Guaranteed Payback	7 years
Avg. Actual Annual Savings	\$220,176



St. Joseph's Health Care London completed another retrofit project in 2006 at Parkwood Hospital. Upgrades were made to lighting, air-flow controls (to match occupancy), the building automation system, and a thermal pool cover was installed on the therapeutic pool. St. Joseph's Health Care London was awarded a grant from Natural Resources Canada in the amount of \$79,000 and from Union Gas in the amount of \$3,600.

Completed projects – annual energy reduction and cost avoidance

Project	Electricity (kWh)	Gas (m ³)	Steam (lbs)	Total (\$)
St. Joseph's Health Care London				
St. Joseph's Hospital/Mount Hope Centre for Long Term Care (1995-)	2,707,976	401,064		\$339,750
Parkwood Hospital project (2006-)	1,847,749	18,167	2,139,000	\$215,417
Total Savings - All Sites	4,555,725	419,231	2,139,000	\$555,167

(Note on table above: 2010/2011 savings were used for the Parkwood Hospital project)

Greenhouse Gases

PH/SJH/MHCLTC Greenhouse Gases (CO ₂)							
Financial year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-2012
Provincial CO ₂ Coeff.	0.278	0.237	0.27	0.216	0.112	0.143	0.052
Electricity	8,829,673	8,074,208	9,466,734	6,875,208	4,009,790	5,137,963	4,882,762
Gas	8,336,213	9,425,010	9,365,689	8,354,531	8,947,719	445,453	646,275
Steam	2,651,272	2,642,960	2,824,272	2,552,427	2,499,672	12,325,973	10,909,644
Total CO₂	19,817,158	20,142,178	21,656,695	17,782,166	15,457,181	17,909,389	16,438,681

Note: the provincial coefficient for the amount of CO₂ released per kWh has changed over time with the ratio of Hydro/Thermal/Nuclear power generation. A lower carbon future is part of the OPG energy plan.

Completed projects – annual greenhouse gas emission reduction

In addition to saving the hospital an annual total of \$555,167 dollars, St. Joseph's commitment to energy sustainability realizes the following annual emission reductions.

St. Joseph's Health Care London - Annual Emission Reduction				
Emission Type	Electricity	Gas	Steam	Total
Annual CO ₂ Reduction (kg)	651,469	787,735	486,348	1,925,552
Annual SO ₂ Reduction (kg)	1,959			1,959
Annual NO ₂ Reduction (kg)	820			820

**based on 2010 emission factors from Ontario Power Generation*

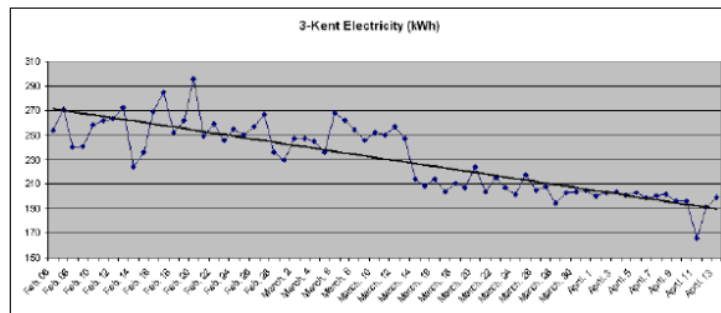
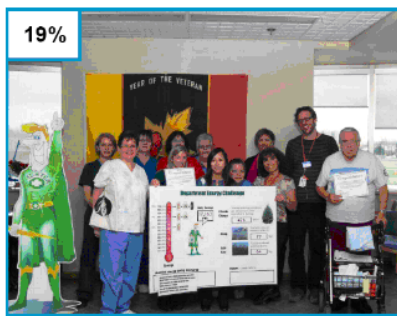
Employee Engagement



St. Joseph’s Health Care London has been running an active employee engagement program since 2003. The program inspires active participation toward helping the hospitals save energy and is hosted by the energy mascot CHESTER to keep the program fun and friendly. The program incorporates behaviour change strategies and activities that help to educate staff on energy efficient practices while increasing their awareness around energy and environmental issues.

Employee engagement – department energy challenges

Probably the most effective activity of the employee engagement program is the department energy challenge. Using a portable power analyzer, the electricity used by departments is measured before and after employees are challenged to save. The challenges are run for a minimum of five weeks and are a great team building and engagement activity with respect to energy saving. Below is a list of department challenge successes.



Family Medical & Dental Centre.....	9% savings
Veteran’s Care – 3Kent.....	19% savings
Physical Medicine Department.....	10% savings
Cataract Suite.....	7% savings
Monsignor Roney Building.....	15% savings
Diabetes Education Department.....	14% savings
Centre for Diabetes, Endocrinology, and Metabolism.....	12% savings

The above % savings are measured results and are consistent with results achieved at other participating hospitals. Return visits to random departments have been made to identify whether this behaviour is continued after the challenges. In those cases, a 10% reduction is the minimum savings observed and so this is where the attribution of 10% electricity savings for behaviour change was derived.

The Chester Network – mentoring others

St. Joseph's Health Care London together with London Health Sciences Centre has taken on a mentoring role for employee engagement. The Chester Network, a not-for-profit network hosted by London's two hospitals, now has several additional members that are following our lead to achieve energy savings by this means.

The Chester Network is a growing not-for-profit system of hospitals cooperatively addressing energy management through an employee engagement program. By incorporating necessary behaviour change strategies and activities with information that is meaningful and of value to staff, the program generates additional energy savings while creating an energy efficient culture within the facilities. Most hospitals now recognize the value and importance of engaging employees, however the underlying question that lingers in peoples' minds is: how much will it save and are these savings measurable?

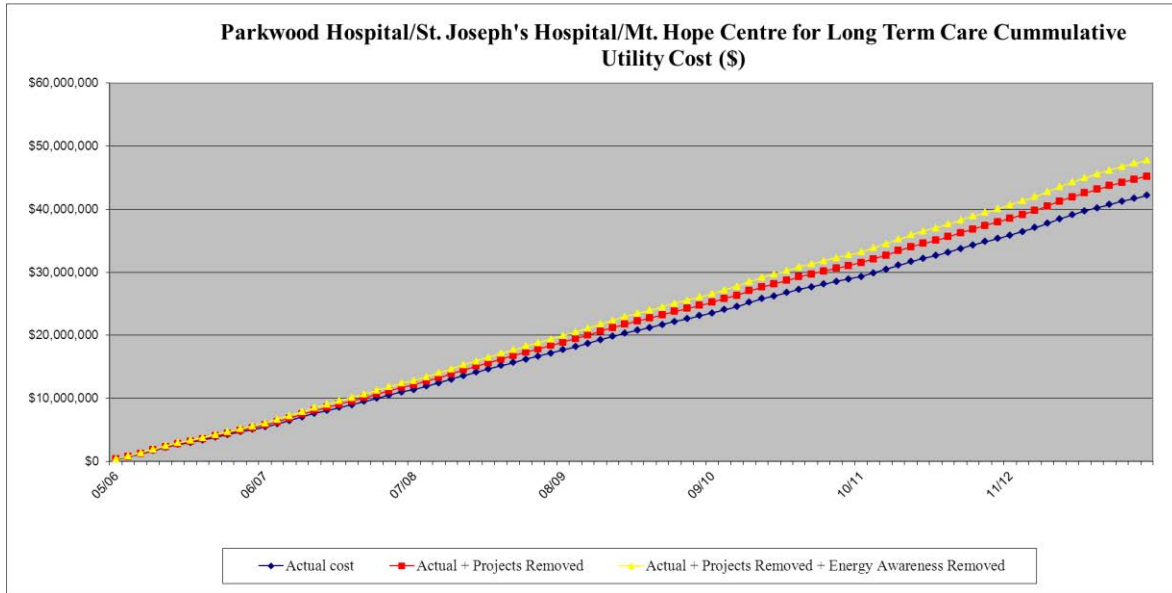
To answer this question, the Chester Program began running fun and informative 'Energy Challenges' a few times each year with willing departments in the original two network hospitals: London Health Sciences Centre (LHSC), and St. Joseph's Healthcare in London (SJHC). In these engagement activities, the department's baseline energy use is measured using a portable meter and the employees are then challenged to reduce their consumption by a customary 10 percent over the next several weeks. The monitoring continues during the challenge and the impact of their behaviour change is measured and made visible to the staff as they climb toward their goal. The challenge's success is celebrated upon completion, and the employees are educated as to the environmental and economic benefits of their effort.

This activity has proven to be a great team building exercise and provides immediate gratification and reward for improved efficiency. In terms of measured savings, the results have varied between a 10 percent and 30 percent reduction depending on the type of space. Like many hospitals, LHSC and SJHC have been in a constant state of flux with respect to other major energy influences. Therefore, to maintain a controlled environment in which to verify the savings from behaviour change, the measuring has been done at the department level only. That is, until now.



Employees celebrate the win at Clinton Public Hospital alongside CHESTER, The Chester Network mascot and Andrew Williams, Chief Executive Officer for Huron Perth Healthcare Alliance

St. Joseph's Health Care London without Energy Management



Sometimes, due to the growth and changes adding to our energy costs at the hospital, it is difficult to see our energy management efforts on the bottom line. The above cumulative projection helps us to understand what our energy costs would have been if we had not made an effort toward energy efficiency. The blue line represents our actual energy cost. The red line indicates what our energy cost would have amounted to had we not completed the retrofit projects, and the yellow line had we omitted both the projects and the employee engagement. As we can see, the cost avoidance over the last several years is in the millions of dollars. The commitment being made to reduce energy shows corporate financial responsibility, which is especially important to a publicly funded organization. It also shows environmental responsibility, which is important for a healthcare provider in the sense of protecting patients and the community from the many environmentally related health symptoms associated with burning fossil fuels. The culture at St. Joseph's Health Care London with respect to energy and environment has also proven to impact the culture of affiliated organizations and partners, initiate changes within employee homes, and improve the morale of the employees, patients and visitors, all of which are additional benefits to the organization.

References

Emission Coefficients

Electricity

Ontario Power Generation

CO₂ = 52 Tonnes/GWh

SO₂ = 0.43 Tonnes/GWh

NO₂ = 0.18 Tonnes/GWh

Natural Gas

Env. Canada (GHG registry 2009)

CO₂ = 1.879 kg/m³

CH₄ = 0.000037 kg/m³

N₂O = 0.000035 kg/m³

Boiler efficiency for steam generation was set at 80% for the purpose of assigning a carbon dioxide value.

lbs steam x (0.306185) = EkWh steam

m³ natural gas x 10.33 = EkWh natural gas

Energy Consumption in terms of number of homes

Electricity Consumption for average London home

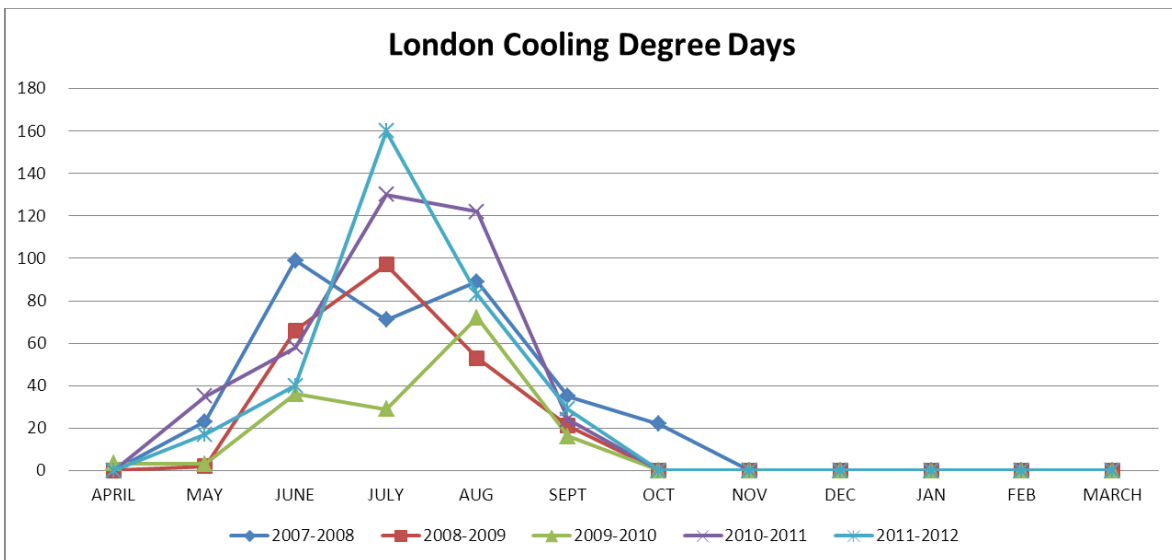
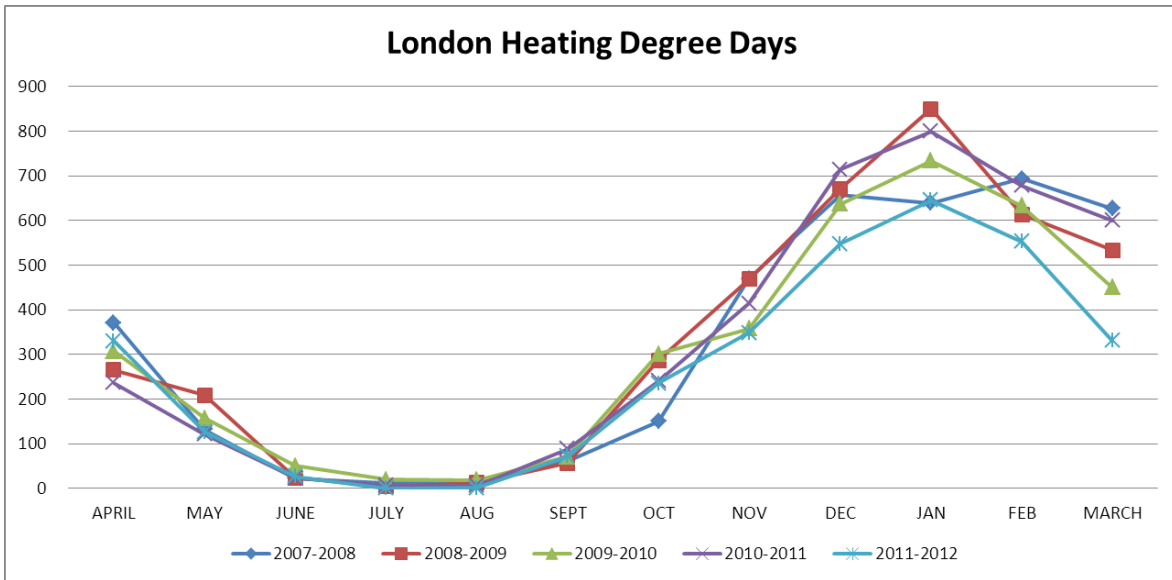
9,600 kWh/year

Gas Consumption for average London home

2,600 m³

Heating and Cooling Degree Days

Degree Days are a good reference for explaining major changes in energy consumption, especially in a stable environment. Below are the heating and cooling degree days for the last four years. Notice that cooling degree days were significantly higher in July/August of 2010. This would have contributed to an increase in electricity consumption for this time period.



Future Proposed Measures

St. Joseph's Hospital Proposed Measures – Future State

- By investing approximately \$25,000 to install variable frequency drives on the cooling towers at SJH, we will reduce the electricity consumption by 35,000 kWh per year and reduce our electricity bills by \$4,500 per year, starting 2014. This project is a 5+ year payback and will reduce greenhouse gas emissions by approximately 2,000 kg per year.
- SJH is reviewing how exterior and interior lighting is controlled; as part of the review we will identify how lighting is currently controlled, identify energy efficient ways to control existing lighting and then we will use localized metering to identify kw/h usage on current controls and then after upgrades use localized metering to identify amount of kw/h savings.
- SJH will install a high efficiency domestic cold water booster pumping system by 2015
- SJH will open a new LEED silver building ('A' Block) in 2015
- SJH underwent/invested in an ESCO(Energy Savings Company) pre project audit in 2013 to determine the potential for a full ESCO project
- OPA, London Hydro and Union Gas incentive programs are regularly reviewed for submission with projects

Parkwood Hospital Proposed Measures – Future State

- Parkwood will review the potential for steam & water upgraded/additional metering
- Parkwood will upgrade exterior lighting where appropriate using LED
- Parkwood will improve cooling tower operation at WCW using VFD's by 2016
- Parkwood will improve its hydro metering capabilities by 2019
- OPA, London Hydro and Union Gas incentive programs are regularly reviewed for submission with projects

Mount Hope Centre for Long Term Care Proposed Measures – Future State

- MHCLTC will improve cooling tower operation using VFD's by 2019
- OPA, London Hydro and Union Gas incentive programs are regularly reviewed for submission with projects

RMHC London Proposed Measures – Future State

- Build and move to a new LEED Gold facility beside Parkwood Hospital in late 2014

Southwest Centre – Future State

- Maintain our new LEED Gold facility in St. Thomas

St. Joseph's Health Care London Goals & Objectives

St. Joseph's Health Care London is committed to being financially and environmentally responsible with respect to its energy use and will continue to explore all viable opportunities to maximize energy efficiency in new construction, retrofitting of existing buildings, and employee engagement.

As we work toward making our existing facilities more energy efficient St. Joseph's Health Care London will also be focusing on new construction through LEED (Leadership in Energy and Environmental Design) certification of our new buildings.

In existing buildings, St. Joseph's Health Care London utilizes regular facilities management practices, equipment replacement projects and building re-commissioning to reduce energy consumption by implementing energy efficiency best practices as work is completed.

St. Joseph's Health Care London will continue to engage employees in helping to reduce energy use at work and will remain a model facility and host site for the Chester Network, creating employee driven energy savings in other Canadian hospitals.

Note: although at present, we do not have the means to make an accurate quantitative goal for energy reduction, as the proposed measures above develop further, this plan will be updated to include an expected percent reduction in energy consumption and greenhouse gas emissions in correlation to those measures.

Approval for Conservation Demand Management Plan

Terry Maslen - Director, Facilities Management

Karen Stone - Vice President, Human Resources and Facilities
