



**Interim report  
2017 progress on the  
5-Year Energy Management Plan**

Waypoint Centre for Mental Health Care

June 2018

Submitted by David A. Griffin, Director Hospital Services

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## **Executive Summary**

### Energy Management is important at Waypoint because:

- The Government of Ontario has created the Green Energy Act, which requires all public sector (BPS) organizations to create conservation and demand management plans.
- The hospital is LEED Gold Targeted for its Atrium Building.
- Waypoint and Project Co have established an annual Energy Target for the Atrium Building. This can only be accomplished through good energy management practices and policies.
- Lower energy costs provide more room in the operating budget for patient and facility services.
- As utility prices rise, lowering energy consumption is key to keeping energy costs manageable.
- Waypoint has grown by 125 447 sq. feet since the Atrium building opened and four (4) older buildings were demolished in 2014.
- Original Energy Management Report submitted to government July 1, 2014.

### Key highlights for 2017:

- Waypoint registered as a class A customer this year with the aim to mitigate the Global Adjustment charges on the monthly bill.
- Energy profile for the campus is now stable with the addition of the Atrium building at full occupancy in spring 2014, and now emphasizes electricity consumption which is more expensive.
- Facility Operations and Maintenance invested in LED lights for the parking lots and buildings and rebalanced the hydronic heating and cooling systems in Toanche and Administration buildings, and added occupancy sensors where permitted.

- Facility Planning + Project Delivery completed a patient bedroom lighting project, replacing the overhead lights in patient bedroom with dimmable LED flat panel fixtures that dim to warm colour. We expect that this initiative will result in energy cost savings and that the dim to warm solution will also improve patient circadian cycles and improve their sleep.
- Phase 2 of the Boiler Replacement project will be complete in 2018. Our total steam output will be cut by approximately 40% resulting in reduced gas consumption.
- Year over year energy consumption is down 2% (see Chart 1), however total expenses are up approximately 2% (see Chart 2).

### Building Summary Post Construction:

	Square Ft	Add Atrium December 2013 Square FT	Summer 2014 demolition Square Ft
Administration Building	71,675	71,675	71,675
Atrium Building		341,579	341,579
Toanche Building	148,126	148,126	148,126
House 1	8,598	8,598	8,598
Brebeuf Building	31,535	31,535	
Bayfield Building	31,535	31,535	31,535
Oak Ridge & Visitor Building	155,685	155,685	
Power House	5,905	5,905	5,905
Residence 2	2,770	2,770	2,770
Residence 4 & 5	5,285	5,285	
Residence 8 House	4,252	4,252	4,252
6 Grounds Building	1,485	1,485	1,485
	188	188	
Oakridge Activity Centre	23,439	23,439	
ESB	24,466	24,466	24,466
Hero Centre	6,258	6,258	6,258
Outpatients	6,314	6,314	6,314
<b>Total</b>	<b>527,516</b>	<b>869,095</b>	<b>652,963</b>

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## OUR COMMITMENT

Waypoint is committed to consuming energy in an efficient, cost effective, environmentally responsible manner. It is recognized that utilities and related costs are necessary to operate the facility but do not directly contribute to the quality of services offered at the Hospital. As such, as utility costs rise, it is imperative to reduce energy consumption in order to continue to provide services at or exceeding current standards.

Waypoint's commitment to energy efficiency will employ the following key energy management principles:

**Informed Decision Making** - Energy will be monitored and tracked. Waypoint will develop, understand and communicate the key metrics so that informed decisions leading to efficient energy use can be taken. Energy audits will be undertaken to ensure optimal building operations and to determine successes of energy initiatives, ongoing monitoring and auditing of building systems.

**Retrofit Program** - Advance toward internal operational efficiency through a process of continuous improvement. Energy efficiency will be a key driver for retrofits and will be considered in all renovations and retrofits. Waypoint will annually take steps to reduce its footprint.

**Operator Training** - An ongoing commitment to continuously train and upgrade Building Operators' knowledge and understanding of building systems. Waypoint will adopt a program for re-commissioning and tuning of building systems for optimal operation.

**Comfort Guidelines** – Adopt industry accepted standards for building operations regarding temperature, humidity and CO2 levels to ensure optimal patient and staff comfort.

**Procurement** - Purchase utilities to ensure that lowest cost is achieved. Procurement will support the acquisition of energy efficient devices and technologies for the hospital.

**Partnerships** - Partner with industry and the public to improve energy conservation explore and develop economically viable alternative fuel sources.

**Awareness & Education** - Foster awareness to reduce the environmental impact of hospital activities and support realization of the hospital's Energy goals. Effectively communicate the progress and success of energy initiatives.

## Results –operating 2016/17 vs. 2017/18

**Chart 1 - Normalized Comparison**

Baseline Period (normalized to 2017/18)	Area (ft2)	Electricity (kWh/ft2)				Natural Gas (ekWh/ft2)			Total Energy (ekWh/ft2)
		Total	Base	Heating	Cooling	Total	Base	Heating	
Apr/16 to Mar/17	652,963	14.5	14.1	0.0	0.4	13.6	4.0	9.6	28.2
Apr/17 to Mar/18	652,963	15.1	14.3	0.2	0.6	12.5	3.7	8.8	27.7
Total change:	0%	4%	2%	-	33%	-8%	-7%	-9%	-2%

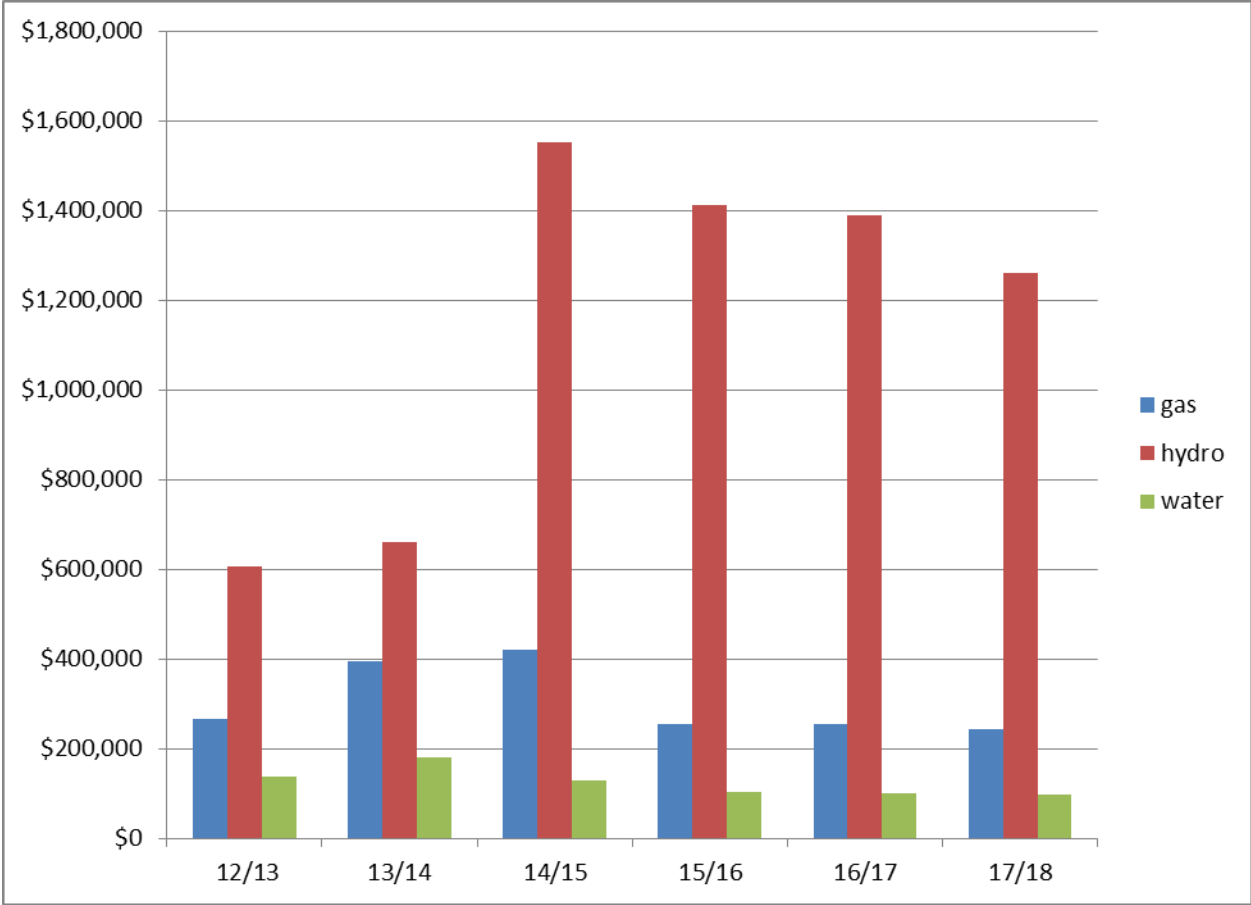
**Chart 2 – Actual  
Cost Comparison**

Actual Cost Change:		Electricity		Gas		Total Energy
2016		\$1,423,998		\$258,113		\$1,682,111
2017		\$1,481,689		\$237,069		\$1,718,758
<b>Total:</b>		<b>\$57,691</b>		<b>-\$21,044</b>		<b>\$36,647</b>
% Change		4%		-8%		2%

Chart 1 above compares year over year energy intensity usage on a per square foot basis for Waypoint. The comparison normalizes data for weather over the 2 years so we are comparing “apples to apples”. Over the 2-year period energy intensity is relatively flat following a previous 2-year reduction of 17%. It appears that the Atrium Building has stabilized in terms of energy performance

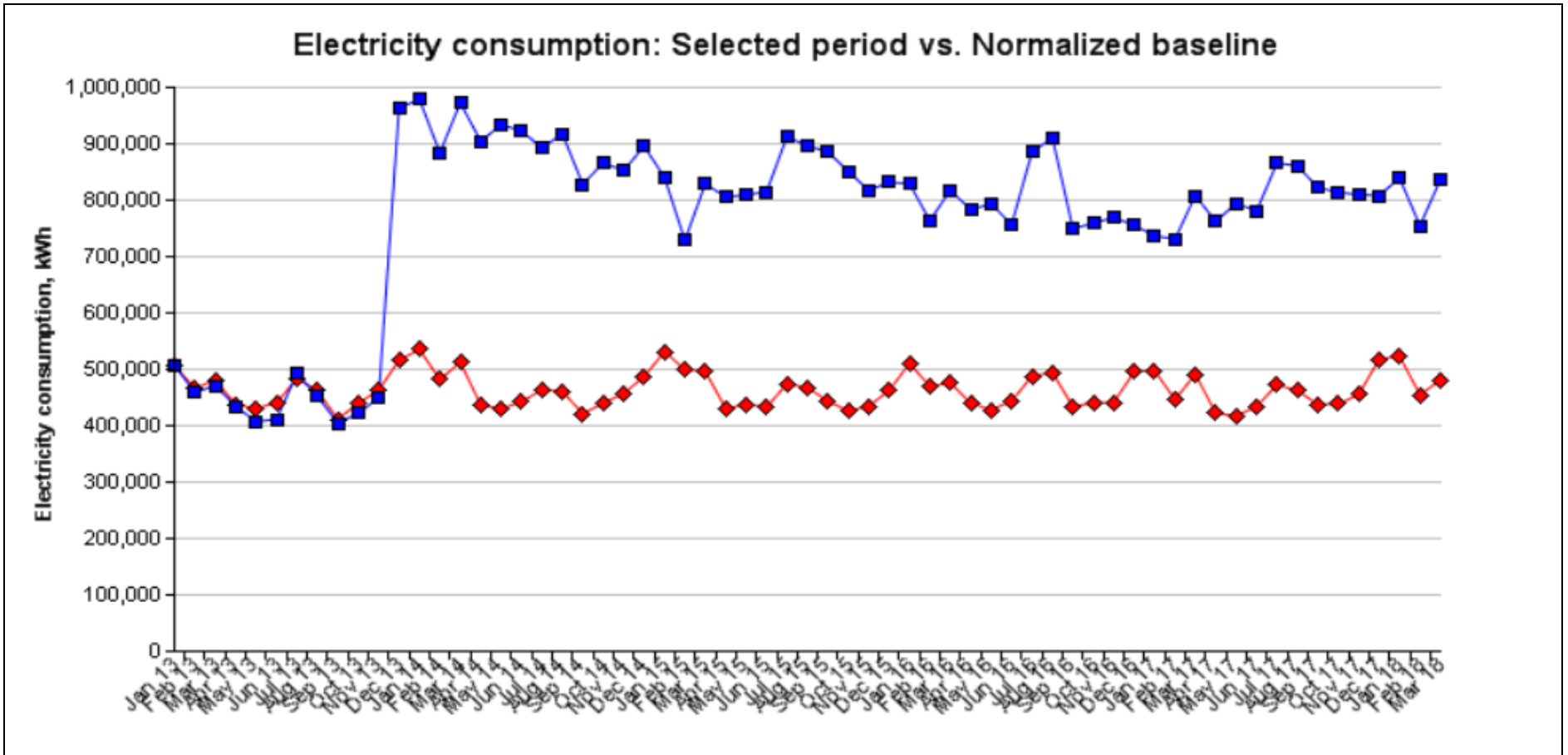
Chart 2 above highlights the total financial change on the organization arising from changes in utility consumption between the two comparator years of 2016/17 and 2017/18. In the same period utility prices rose. Clearly, price adjustments have been buffered somewhat by overall year-over-year consumption reduction.

The chart below illustrates our annual utility expenditures for the last 6 years. Electricity expense has ballooned due to the energy profile of the new building, utility price increases and the Global Adjustment fees.

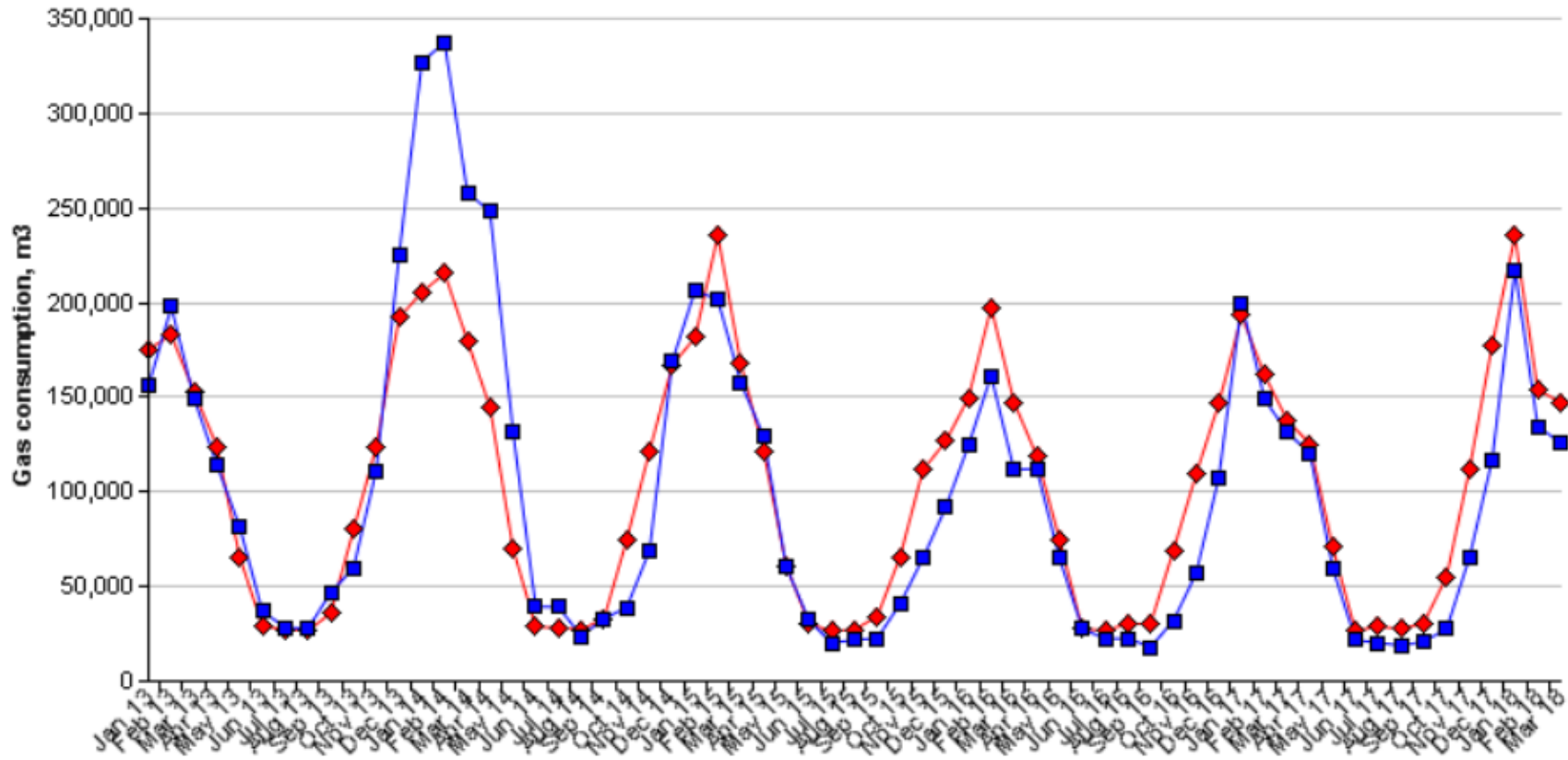


The graphs below provide a visual representation of the changes over time in blue with the red line illustrating the theoretical 2012 baseline.

### Electricity Consumption – Jan 2013 to March 2018



Gas consumption: Selected period vs. Normalized baseline





## OUR ACTIONS

Potential Projects								
Project Name	Description	Potential Electrical Savings (GJ)	Potential Natural Gas Savings (GJ)	Potential Cost Savings (Energy + Operational)	Projected Total Cost	Potential Incentive	Projected Simple Payback	Next Steps
VAV installation	Administration zone plan				\$150,000			Review with Facility Planning Committee- 3-5 years horizon
Completed Projects								
Project Name	Description	Actual Electrical Savings KWH	Actual Natural Gas Savings (GJ)	Actual Cost Savings (Energy + Operational)	Actual Total Cost	Confirmed Incentive	Simple Payback	Next Steps
LED replacement for fluorescent lighting 1200 tubes	Replace fluorescent 25 watt T8 bulbs with 15 watt LED tubes	140000 KWH		14000.00	18000.00	5000.00	1.0 Years	Complete Fall 2017
patient bedroom lighting project, replacing the overhead lights in patient bedroom with dimmable LED flat panel fixtures that dim to warm colour	Replaced old fluorescent fixtures with 2x2 panels							Complete Fall 2017
Building automation tuning	Adjusting set points, reprogramming, adopting schedules							Ongoing

## Completed Projects

Project Name	Description	Actual Electrical Savings KWH	Actual Natural Gas Savings (GJ)	Actual Cost Savings (Energy + Operational)	Actual Total Cost	Confirmed Incentive	Simple Payback	Next Steps
Return Air systems	Administration and Toanche							Complete Summer 2015
Air side/ waterside VFD's	Bayfield air handle VFD's and Admin waterside pump VFDs	\$ 68140	NA	\$ 6814	\$ 25159	\$ 7972.00	2.5	Complete Summer 2014
Insulation	Pineview, Admin attic spaces		Cannot calculate		\$91000			Complete Summer 2014
ECM motor installation	Main Kitchen fridges – 19 motors	17000KWH	NA		4950	1746	2	Complete Summer 2015
Parking lot Lighting Retrofit	400 watt to 120 watt LED including wall packs, parking lot lighting	\$ 64328	NA		\$60000	\$24000	2	Complete Fall 2015
Automation installation	Admin – add 13 control valves Bayfield control valves	NA	Cannot calculate		\$ 25000			Complete Summer 2014
Windows Phase 1 and 2	Administration Building	Cannot calculate	Cannot calculate		\$ 680000	0	0	Complete Summer 2015 and 2016
BAS reprogramming	Toanche chiller sequence of operation	Cannot calculate	Cannot calculate		\$ 3000.00			Complete Summer 2016
Hot water storage tanks	Heat Pump style water tanks				\$10000.00			Complete Fall 2016

### Completed Projects

Project Name	Description	Actual Electrical Savings KWH	Actual Natural Gas Savings (GJ)	Actual Cost Savings (Energy + Operational)	Actual Total Cost	Confirmed Incentive	Simple Payback	Next Steps
Reheat coil operation	Replace heat exchanger and add BAS - Toanche				\$ 10000			Completed

### Projects in Progress

Project Name	Description	Electrical Savings KWH	Natural Gas Savings (GJ)	Cost Savings (Energy + Operational)	Total Cost	Incentive	Simple Payback	Status
Boiler replacement Toanche	Phase 2 - HW and steam boilers				\$250000			Complete Summer2018

### Behavioural/Education Programs

Communication	Measure and monitor energy use. Develop, understand and communicate key metrics for decision-making							Awareness, behaviour changes – Facility Planning Committee leads  Confirm comfort guidelines including revisions
Building Operator Training	Commitment to continuously train and upgrade Building Operators knowledge and understanding							Develop skilled work force Ongoing commitment

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# NOTES