



TOWNSHIP OF SOUTH STORMONT

Proposed Five Year Energy Conservation & Demand
Management (CDM) Plan

September 8, 2014

September 8, 2014

To whom it may concern:

**Re: South Stormont Energy Conservation and Demand Management
Plan 2014-2018**

This letter serves as confirmation that South Stormont's Conservation and Demand Management (CDM) Plan has been jointly developed and approved by the Township's Senior Management Team; presented to Council on September 8, 2014.

A special thanks to Ty Perry, our 2014 Engineering Student, for the tremendous amount of effort put forth into the preparation of this CDM.

Yours truly,

Betty de Haan
Chief Administration Officer

Declaration of Commitment

As part of the Ontario Green Energy Act (2009), the Township of South Stormont is committed to the responsible use of energy throughout the municipality. Energy consumption, costs and emissions will be considered in all aspects of municipal facilities. Wherever practical, energy conservation practices and measures will be implemented in order to reduce carbon emissions, conserve world resources, minimize pollution all the while reducing the cost of purchasing energy and hence maximizing the funds available needed to enhance the community.

The Township of South Stormont will develop a five year Energy Conservation & Demand Management (CDM) Plan that will be reviewed annually to ensure wiser usage of energy.

Vision

The township will reduce energy consumption, greenhouse gas emissions, and mitigate energy costs through incorporating wiser use of energy, as well as integrating more energy efficient technology in the workplace. This should be done while maintaining the effective level of services to the municipality and public and will involve a concerted, corroborating effort to increase awareness, education, and understanding of energy management within the municipality.

Commitment from Township Council will demonstrate the leadership required to ensure the fulfillment of this energy management plan by all energy consumers. Employees within the township will be held accountable and will also be responsible for incorporating wiser use of energy.

Goals

The energy management plan was created to achieve the following goals:

1. Reduce energy consumption between 5-10% at township facilities over the next five years.
2. Reduce greenhouse gas emissions.
3. Reduce the environmental impact of township operations.
4. Lower energy use and costs.
5. Improve township equipment, increase energy efficiency, thereby reducing maintenance costs.
6. Provide the public, as well as township employees, with the understanding, knowledge, and awareness of energy consumption.

The primary objective of the energy conservation plan is to reduce energy consumption at township facilities by up to 10% which will in turn lower greenhouse gas emissions, costs, and reduce the township's environmental impact. Integrating more energy efficient equipment will also lower maintenance costs and energy consumption. To continue to succeed in energy savings, the township will provide adequate awareness to employees, as well the public, to ensure wiser energy consuming decisions.

Targets

The key to a strong energy management plan is to have measurable and obtainable targets. The plan calls for an energy consumption reduction of between 5-10% over the next five years. This equates to roughly 1-2% in target reduction of township operations and facilities each year.

2013 has been established as the base year against which reduction results will be measured.

The energy reduction target has been established individually with each facility varying in reduction targets based on size, weekly hours of operation, and energy consumption; however, all are within 2.50%-10.00% target reduction equivalent kilowatt hours. All township facilities have percentage-based reduction targets, therefore, facilities consuming larger amounts of energy will have significantly larger energy savings than those of smaller energy consuming facilities.

Objectives

There are a number of objectives the township is implementing to ensure the goals will be met. These strategic objectives are as follows:

1. Energy statistics for all township facilities/operations will be collated and analyzed annually.
2. Awareness, knowledge, and understanding of energy savings will be given to employees, as well as consistent reminders.
3. Department managers and supervisors will be appointed as overseers in implementing the energy plan. All employees will cooperate with energy savings.
4. Sound operating and maintenance practices will be demonstrated to complement the energy efficiencies implemented through the capital asset renewal program.
5. Quarterly discussions on energy management will be provided to be able to explore new ideas and trends when it comes to energy savings.
6. New and improving technology that can be incorporated to ensure greater energy efficiency will be investigated.

Municipal Energy Needs

Electricity, natural gas, and propane are the only sources of energy needed to sustain township operations. Outlined below is Ontario's consumer information about electricity, natural gas, and propane.

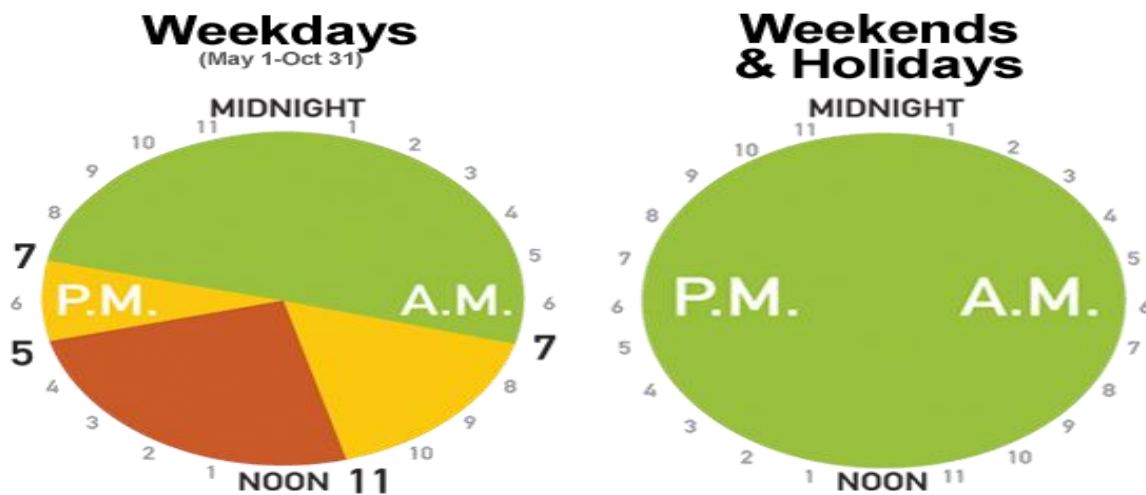
Electricity

Electricity is used by every township operating facility. Developing knowledge and awareness about cost and usage is paramount in order to maintain proper usage and mitigate cost.

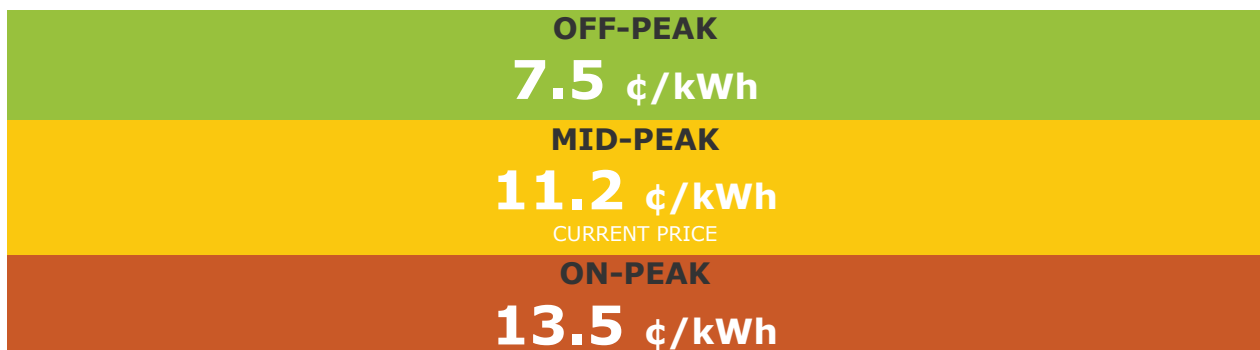
The vast majority of Ontario electricity users pay time-of-use prices. There are three time-of-use price periods:

- **Off-peak**, when demand for electricity is lowest. Ontario households use the majority of their electricity – nearly two thirds of it – during off-peak hours.
- **Mid-peak**, when demand for electricity is moderate. These periods are during the daytime, but not the busiest times of day.
- **On-peak**, when demand is highest. The busiest times of day are generally when people are cooking, firing up their computers and running heaters or air conditioners.

The diagram below shows how much the consumer pays at different periods throughout the day effective May 1st in Ontario.



May 1, 2014

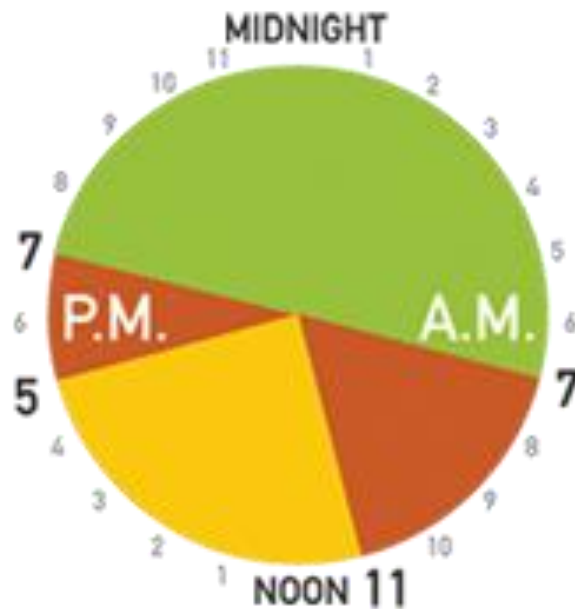


Time-of-use electricity prices are like many cell phone rates which are cheapest when demand is lowest – evenings, weekends and on holidays.

Likewise, electricity rates in Ontario are cheapest when demand is low because the province is using a steady stream of its cheapest electricity. This power comes from low-cost sources like nuclear generators and large hydroelectric stations.

As the day begins, more lights are being used as well as appliances and various other devices. At some point, the province will exhaust its supply of cheap power and will then turn to more expensive sources like natural gas-powered plants and renewables such as wind turbines (Ontario Energy Board, 2014).

There are two peak seasons: summer (as illustrated above) and winter (illustrated below). In winter, less daylight means electricity use peaks twice: once in the morning when people wake up and turn on their lights and appliances, then again when people get home from work, as illustrated in the diagram below. There are two sets of on-peak hours to reflect this.



Natural Gas

Natural gas is used by most township operating facilities. Gaining knowledge about costs and usage is important in order to maintain proper natural gas management.

Natural gas utilities apply for a quarterly rate adjustment (QRAM) to reflect the difference between the forecasted price for natural gas in the next 12 months and how much it actually costs. In Ontario, utilities pass the cost to purchase the gas on to consumers, with no markup.

These quarterly rate adjustments reduce the risk of large, one-time payments or rebates.

Supply disruptions caused by unforeseen events, such as severe or abnormal weather, can impact the market price of natural gas.

Rate adjustments are implemented January 1, April 1, July 1 and October 1, after the Ontario Energy Board reviews the utility's application (Ontario Energy Board, 2014).

Natural Gas Rates at a Glance

April 1, 2014 Natural Gas Rates

| | |
|---------------------------------------|--------------------------|
| Union Gas Limited | 22.3894 ¢/m ³ |
| Enbridge Gas Distribution Inc. | 20.8959 ¢/m ³ |
| Natural Resource Gas Limited | 32.5156 ¢/m ³ |

Propane

Propane is used at three operating facilities within the township – Newington Fire Station, and both the east and west Public Works garages; however, to mitigate usage and costs wherever possible, it is important to gain an understanding of propane.

Propane prices vary from region to region. The distance between consumers and the sources of supply is a major determinant of propane prices due to transportation costs. Since most Canadian propane is produced in Alberta, but residential demand is mainly in Ontario, prices in Alberta are generally lower than in Ontario (National Energy Board, 2013).

As the township continues to grow and expand, proper energy management must be pursued to address growing costs and energy usage.

Municipal Energy Situation

Energy Data Management

The Ontario government has required a commitment in municipal energy management which has resulted in the need to improve current practices and develop new approaches. To meet this need, the township is designing an Energy Conservation and Demand Management (CDM) Plan to reduce energy costs and usage over the next five years. Also, an energy review has been conducted for the past three years to track, collect and analyze energy usage and costs on a month-to-month basis.

This effort will produce an energy cost and consumption database to be used for monitoring excessive variations, targeting facility follow-up evaluations, and highlighting areas that could be possibilities for improved conservation. These monitoring enhancements will improve the township's understanding of the bottom line impact of energy management.

Energy Supply Management

The township has worked with public agencies to improve its energy management strategy and has pursued the help of Local Authority Services' (LAS) Energy Management tool. An energy management strategy has also been adopted with department managers overseeing its

implementation. As the township continues to grow and the difficulties of energy consumption increase, a focused effort on monitoring the corporate energy load will be required. The energy procurement goal will continue to be the pursuit of optimal rates while achieving an appropriate level of cost certainty.

Energy Use in Facilities

A great deal of knowledge has been retained with regard to energy use at all township facilities with an enhanced series of comprehensive audits being completed at the larger recreational facilities. Through the deployment of energy management software, staff will be equipped with the information necessary to make effective energy management decisions. This will make it possible to implement an effective energy procurement process, pursue appropriate capital projects, and implement successful conservation and demand management programs.

Equipment Efficiency

Many measures to improve the energy efficiency of municipal equipment have been pursued. Some of these measures include interior lighting upgrades, conversion to LED (liquid emitting diode) and CFL (compact fluorescent light) exterior lighting which can lead to 75% energy savings and last up to 10 times longer than normal incandescent light bulbs (Efficiency NB, 2013). The township has already implemented LED lighting for all its exterior streetlights. As the understanding of corporate energy consumption improves, staff will be equipped with the knowledge necessary to make informed decisions. This improved understanding will also reveal how simple actions like commissioning and maintenance procedures can improve existing equipment efficiencies.

Organizational Integration

Day-to-day management of energy will be primarily enforced by supervisors and department managers. Staff within all departments will be provided with the necessary tools to assist in addressing corporate energy concerns such as budgeting, procurement, conservation and generation. Staff will also be encouraged to come forward with new ideas on energy consumption and efficiency. Employees will receive training on energy requirements and procedures to ensure improving efficiency.

Summary of Current Energy Consumption, Cost, and GHGs

For the year of 2013, the township has used:

- 3,615,613 Kwh of electricity.
- 178,165 m³ of natural gas.

- 46,525 L of propane.
- Emitted 3,898,855 L of CO₂.

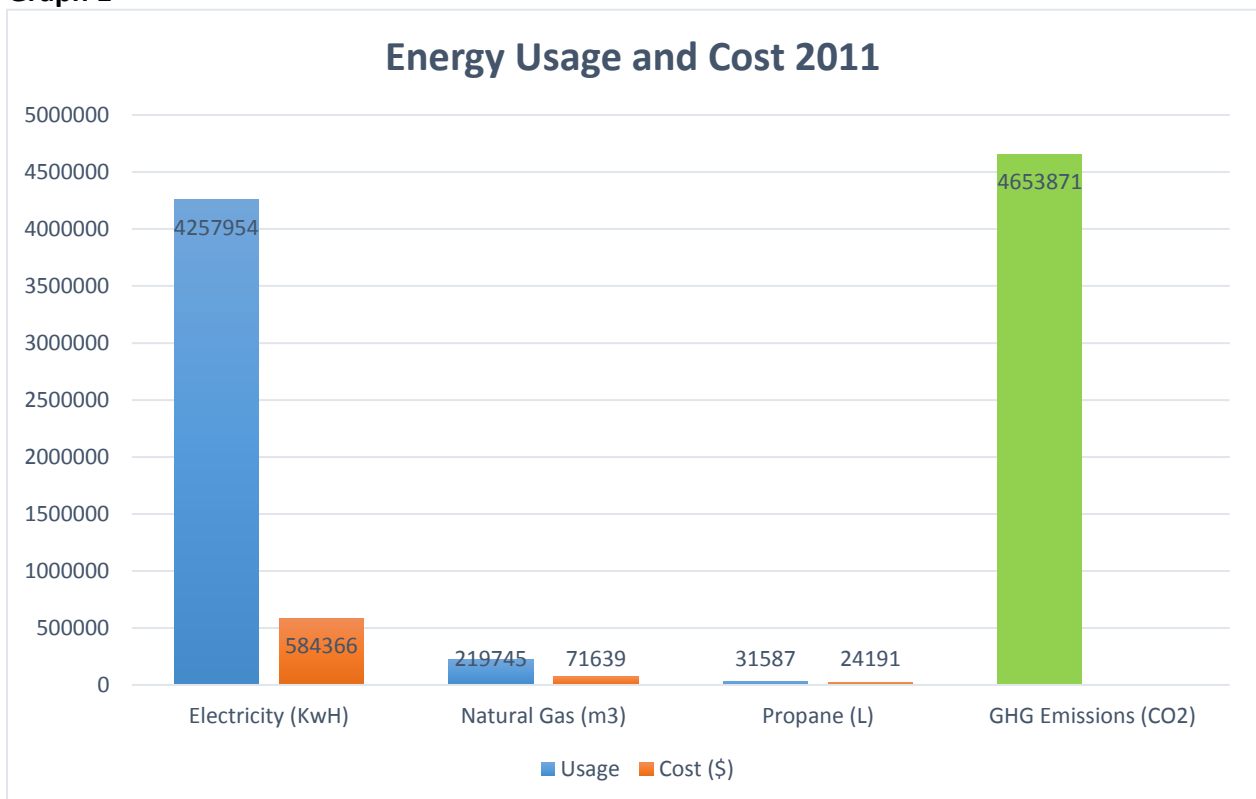
The township has also spent:

- \$662,742 on electricity.
- \$61,706 on natural gas.
- \$27,047 on propane.

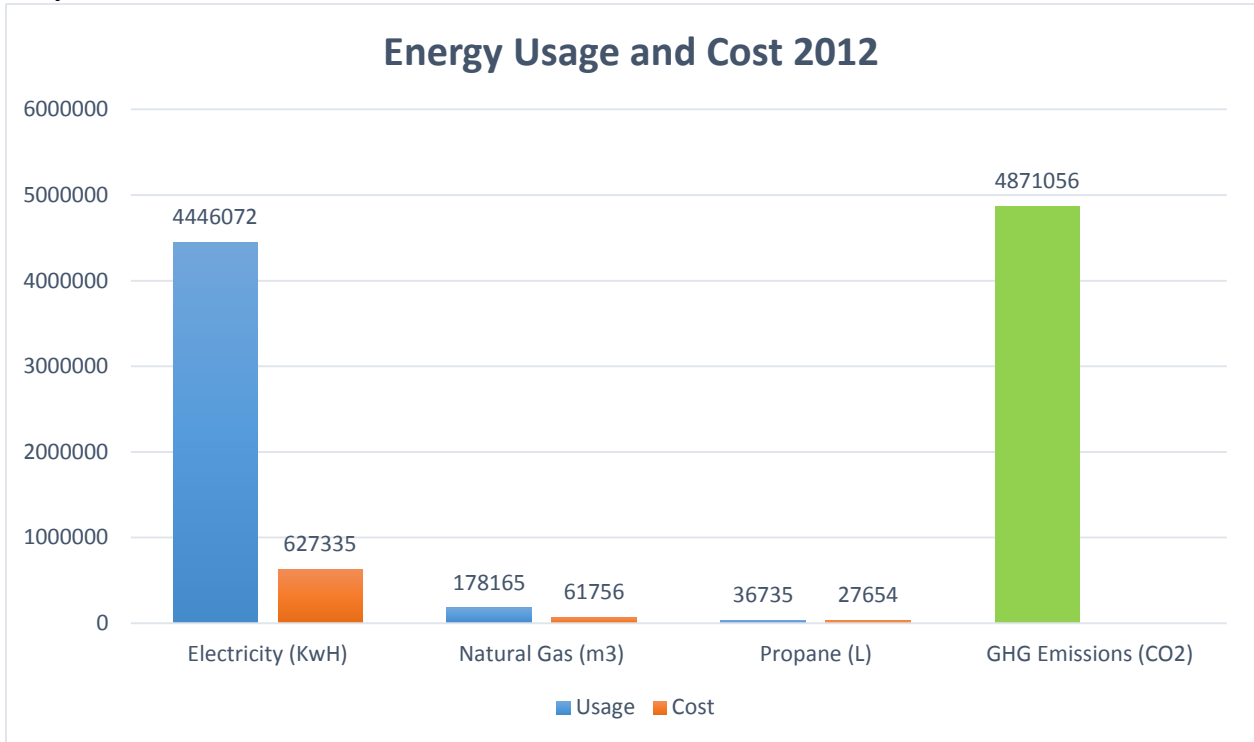
Trends in Energy Consumption

As outlined in the graphs below, electricity, natural gas and propane usage and costs have remained relatively similar over the last three years, with electricity having the greatest reduction from 2011 to 2013. However, the cost of electricity has increased over this period of time. These trends in energy usage and costs will be valuable reference material when evaluating the year-to-year energy management plan. With electricity usage being reduced, propane usage has increased from 2011 to 2013.

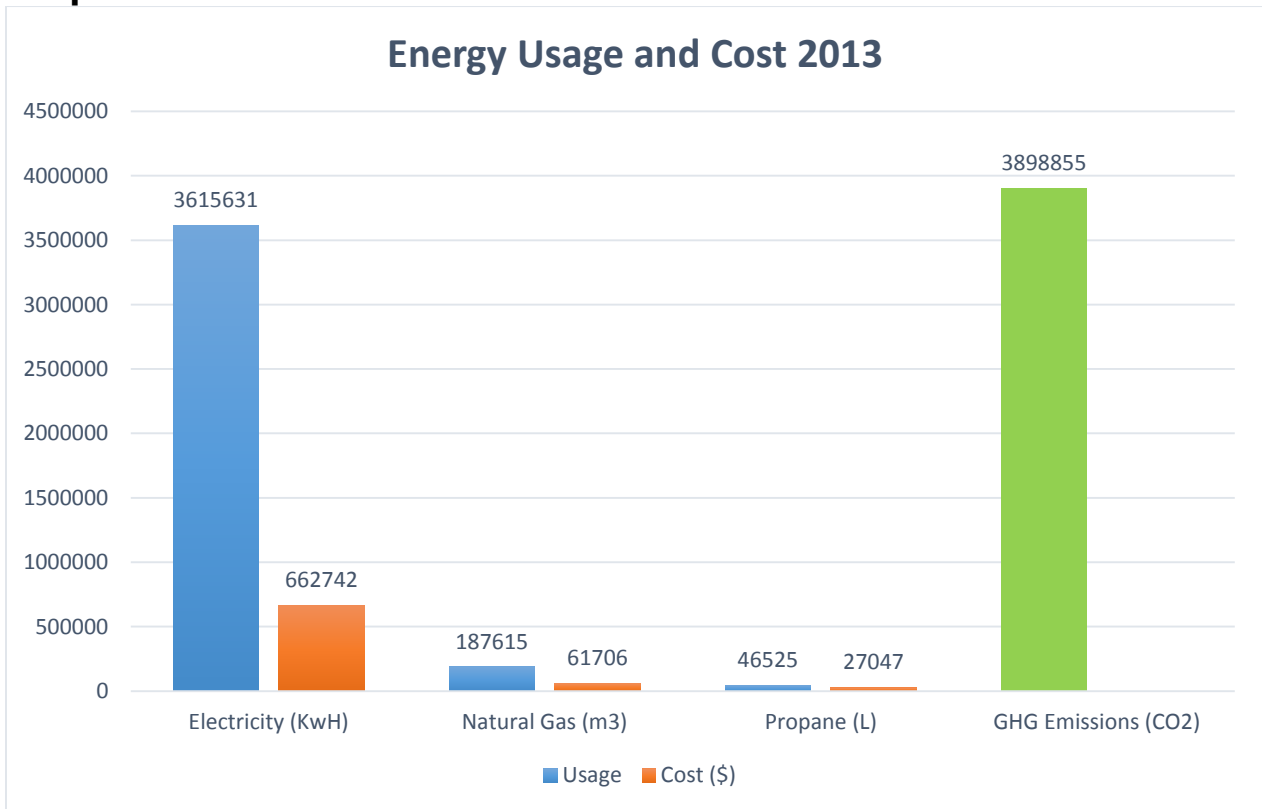
Graph 1

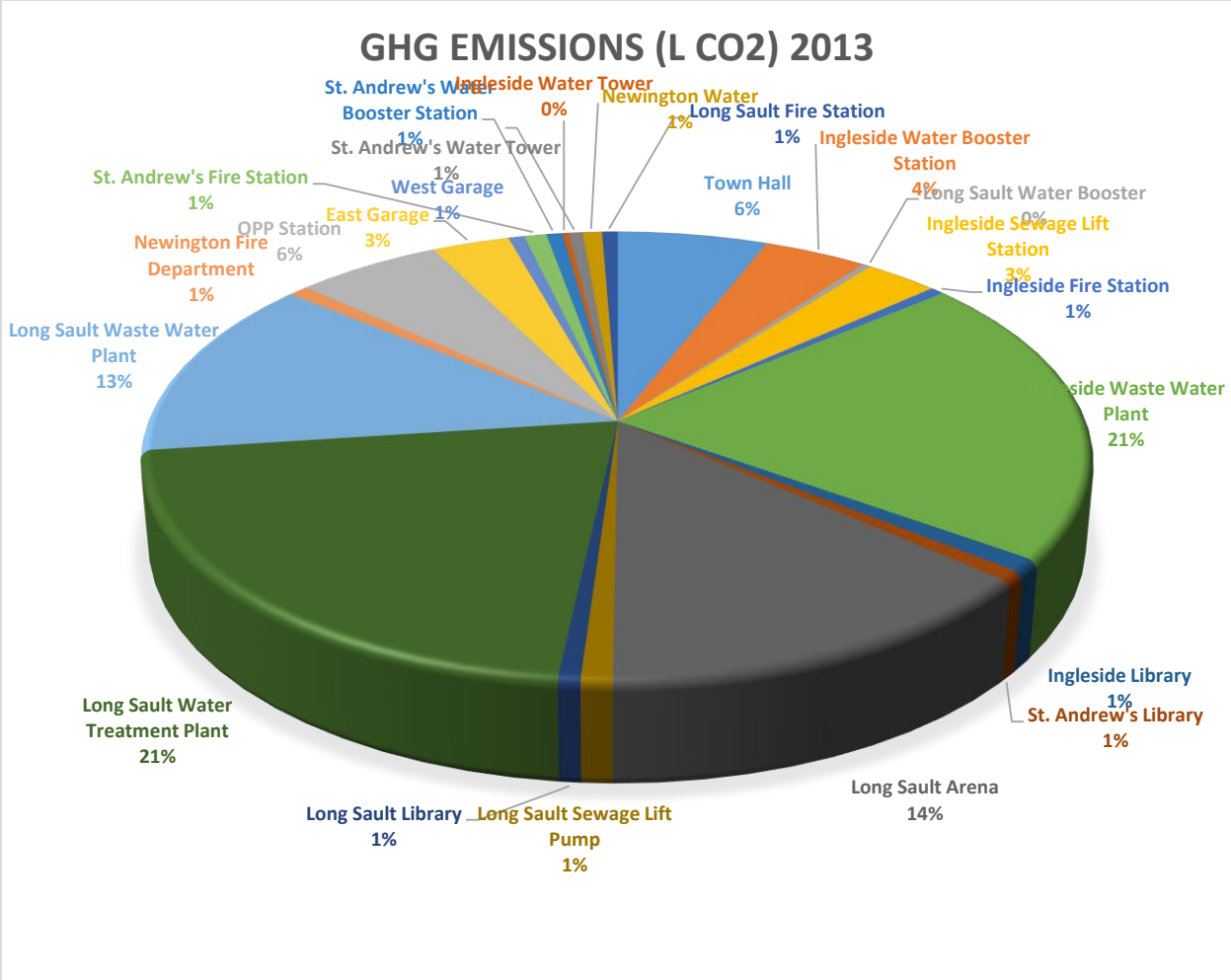


Graph 2



Graph 3





The chart above illustrates the percent of greenhouse gas emissions by each township facility for the year 2013. As seen, the Long Sault Water Treatment Plant and the Ingleside Waste Water Plant contribute the most to greenhouse gas emissions at 21%.

Operating Facilities Audit, Target Reduction, and Estimated Savings

The following tables outline all of the township’s operating facilities’ 2013 energy costs and consumption as well as using 2013 as a reference for target energy reduction percentages and the amount of estimated energy and cost savings per year.

Table 1 illustrates the most recent energy consumption from the various township facilities (2013).

Table 1

| Facility | Building Size (m ²) | 2013 Electricity Usage (kWh) | 2013 Natural Gas Usage (m ³) | 2013 Propane Usage (L) | GHG Emissions (CO ₂) | kWh/m ² | NG Usage /m ² | Propane Usage /m ² |
|--|---------------------------------|------------------------------|--|------------------------|----------------------------------|--------------------|--------------------------|-------------------------------|
| Town Hall | 930 | 219,300 | 11,376 | 0 | 232,123 | 236 | 12 | 0 |
| OPP Station | 1,510 | 206,800 | 14,254 | 0 | 225,560 | 137 | 9 | 0 |
| Long Sault Fire Station | 708 | 25,173 | 0 | 0 | 24,176 | 36 | 0 | 0 |
| Ingleside Fire Station | 245 | 14,745 | 4,022 | 0 | 21,765 | 60 | 16 | 0 |
| Newington Fire Station | 353 | 21,306 | 0 | 6,673 | 30,745 | 60 | 0 | 19 |
| St Andrews West West Fire Station | 345 | 20,629 | 7,649 | 0 | 34,273 | 60 | 22 | 0 |
| East Garage | 925 | 83,278 | 0 | 25,780 | 119,707 | 90 | 0 | 28 |
| West Garage | 404 | 3,420 | 0 | 14,072 | 24,969 | 8 | 0 | 35 |
| Long Sault Water Treatment Plant | 760 | 760,320 | 50,547 | 0 | 825,777 | 1,000 | 67 | 0 |
| Long Sault Water Booster Station | 95 | 7,296 | 3,124 | 0 | 12,913 | 77 | 33 | 0 |
| Ingleside Water Booster Station | 167 | 162,720 | 1,906 | 0 | 159,880 | 974 | 11 | 0 |
| Ingleside Water Tower | 1 | 9,454 | 0 | 0 | 9,079 | 9,454 | 0 | 0 |
| St Andrews West West Water Booster Station | 33 | 26,200 | 0 | 0 | 25,162 | 794 | 0 | 0 |
| St Andrews West West Water Tower | 1 | 22,773 | 0 | 0 | 21,871 | 22,773 | 0 | 0 |
| Newington Water Tower | 31 | 30,866 | 0 | 0 | 29,644 | 996 | 0 | 0 |
| Long Sault Waste Water Plant | 1,068 | 473,153 | 29,918 | 0 | 510,980 | 443 | 28 | 0 |
| Long Sault Sewage Lift Pump | 18 | 37,054 | 378 | 0 | 36,301 | 2,059 | 21 | 0 |
| Ingleside Waste Water Plant | 355 | 830,160 | 11,514 | 0 | 819,054 | 2,338 | 32 | 0 |
| Ingleside Sewage Lift Station | 98 | 118,680 | 0 | 0 | 113,980 | 1,211 | 0 | 0 |
| Long Sault Arena | 2,808 | 486,720 | 34,180 | 0 | 532,068 | 173 | 12 | 0 |
| Ingleside Library | 104 | 35,478 | 1,085 | 0 | 36,124 | 341 | 10 | 0 |
| Long Sault Library | 282 | 13,460 | 6,690 | 0 | 25,575 | 48 | 24 | 0 |
| St Andrews West West Library | 228 | 6,646 | 10,972 | 0 | 27,127 | 29 | 48 | 0 |
| TOTAL | 11,469 | 3,615,631 | 187,615 | 46,525 | 3,898,853 | 315 | 16 | 4 |

Table 2 illustrates the various energy costs for each facility of South Stormont Township.

Table 2

| Facility | Electricity Cost (\$) | Natural Gas Cost (\$) | Propane Cost (\$) | Total Cost (\$) | Average Cost/kWh | Average Cost/m3 NG | Average Cost/L Propane |
|--|-----------------------|-----------------------|-------------------|-----------------|------------------|--------------------|------------------------|
| Town Hall | 22,089 | 3,483 | 0.00 | 25,572 | 0.10 | 0.31 | 0 |
| OPP Station | 36,532 | 5,152 | 0.00 | 41,684 | 0.18 | 0.36 | 0 |
| Long Sault Fire Station | 4,131 | 0.00 | 0.00 | 4,131 | 0.16 | 0 | 0 |
| Ingleside Fire Station | 2,872 | 1,676 | 0.00 | 4,548 | 0.19 | 0.35 | 0 |
| Newington Fire Station | 3,915 | 0.00 | 3,800 | 7,715 | 0.18 | 0 | 0.57 |
| St Andrews West West Fire Station | 4,174 | 2,948 | 0.00 | 7,122 | 0.20 | 0.39 | 0 |
| East Garage | 10,200 | 0.00 | 15,002 | 25,202 | 0.12 | 0 | 0.58 |
| West Garage | 1,596 | 0.00 | 8,246 | 9,842 | 0.47 | 0 | 0.59 |
| Long Sault Water Treatment Plant | 163,333 | 15,406 | 0.00 | 178,739 | 0.21 | 0.31 | 0 |
| Long Sault Water Booster | 1,319 | 1,378 | 0.00 | 2,697 | 0.18 | 0.44 | 0 |
| Ingleside Water Booster Station | 36,235 | 902 | 0.00 | 37,137 | 0.22 | 0.47 | 0 |
| Ingleside Water Tower | 1,883 | 0.00 | 0.00 | 1,883 | 0.20 | 0 | 0 |
| St Andrews West West Water Booster Station | 4,763 | 0.00 | 0.00 | 4,763 | 0.18 | 0 | 0 |
| St Andrews West West Water Tower | 4,592 | 0.00 | 0.00 | 4,592 | 0.20 | 0 | 0 |
| Newington Water | 5,524 | 0.00 | 0.00 | 5,524 | 0.18 | 0 | 0 |
| Long Sault Waste Water Plant | 68,565 | 10,495 | 0.00 | 79,060 | 0.14 | 0.30 | 0 |
| Long Sault Sewage Lift Pump | 6,512 | 421 | 0.00 | 6,933 | 0.18 | 0.35 | 0 |
| Ingleside Waste Water Plant | 158,375 | 1,083 | 0.00 | 159,458 | 0.19 | 0.42 | 0 |
| Ingleside Sewage Lift Station | 25,342 | 0.00 | 0.00 | 25,342 | 0.21 | 0 | 0 |
| Long Sault Arena | 90,790 | 11,975 | 0.00 | 102,765 | 0.19 | 0.37 | 0 |
| Ingleside Library | 6,235 | 664 | 0.00 | 6,899 | 0.18 | 0.09 | 0 |
| Long Sault Library | 2,214 | 2,051 | 0.00 | 4,265 | 0.16 | 1.11 | 0 |
| St Andrews West West Library | 1,549 | 4,075 | 0.00 | 5,624 | 0.23 | 0.61 | 0 |
| TOTAL | 662,740 | 61,709 | 27,048 | 751,497 | 0.18 | 0.33 | 0.58 |

Table 3 below illustrates the target reduction for each facility of the Township, as well as estimated energy savings and cost savings per year.

Table 3

| Facility | Target Reduction Electricity | Budget eKwH Electricity | eKwH Saved/ Year | Target Reduction NG | Budget eKwH NG | eKwH/ Year Saved NG | Target Reduction Propane | Budget eKwH Propane | eKwH/ Year Saved Propane | Total eKwH Saved / Year | Estimated Energy Savings Cost / Year (\$) |
|---------------------------------------|------------------------------|-------------------------|------------------|---------------------|------------------|---------------------|--------------------------|---------------------|--------------------------|-------------------------|---|
| Town Hall | 5.00%/5 Years | 219,300 | 2,193 | 5.00%/5 Years | 120,902 | 1,210 | 0 | 0 | 0 | 3,403 | 343 |
| OPP Station | 5.00%/5 Years | 206,800 | 2,068 | 5.00%/5 Years | 151,488 | 1,515 | 0 | 0 | 0 | 3,583 | 633 |
| Long Sault Fire Station | 5.00%/ 5 Years | 25,173 | 252 | 0 | 0 | 0 | 0 | 0 | 0 | 252 | 41 |
| Ingleside Fire Station | 10.00%/5 Years | 14,745 | 295 | 5.00%/5 Years | 42,745 | 427 | 0 | 0 | 0 | 722 | 141 |
| Newington Fire Station | 5.00%/5 Years | 21,306 | 213 | 0 | 0 | 0 | 5.00%/ 5 Years | 46,915 | 469 | 682 | 125 |
| St Andrews West Fire Station | 5.00%/5 Years | 20,629 | 206 | 5.00%/5 Years | 81,292 | 813 | 0 | 0 | 0 | 1,019 | 206 |
| East Garage | 5.00%/ 5 Years | 83,278 | 833 | 0 | 0 | 0 | 5.00%/5 Years | 181,248 | 1,812 | 2,645 | 324 |
| West Garage | 2.50%/5 Years | 3,420 | 17 | 0 | 0 | 0 | 7.50%/5 Years | 98,934 | 1,484 | 1,501 | 701 |
| Long Sault Water Treatment Plant | 2.50%/5 Years | 760,320 | 3,802 | 5.00%/5 Years | 537,202 | 5,372 | 0 | 0 | 0 | 9,174 | 1,971 |
| Long Sault Water Booster | 5.00%/5 Years | 7,296 | 73 | 5.00%/5 Years | 33,202 | 332 | 0 | 0 | 0 | 405 | 73 |
| Ingleside Water Booster Station | 5.00%/5 Years | 162,700 | 1,627 | 5.00%/5 Years | 10,179 | 102 | 0 | 0 | 0 | 1,729 | 385 |
| Ingleside Water Tower | 5.00%/5 Years | 9,454 | 95 | 0 | 0 | 0 | 0 | 0 | 0 | 95 | 19 |
| St Andrews West Water Booster Station | 5.00%/ 5 Years | 26,200 | 262 | 0 | 0 | 0 | 0 | 0 | 0 | 262 | 48 |
| St Andrews West Water Tower | 5.00%/5 Years | 22,773 | 228 | 0 | 0 | 0 | 0 | 0 | 0 | 228 | 46 |
| Newington Water | 5.00%/5 Years | 30,866 | 309 | 0 | 0 | 0 | 0 | 0 | 0 | 309 | 55 |
| Long Sault Waste Water Plant | 5.00%/5 Years | 473,153 | 4,731 | 5.00%/5 Years | 317,962 | 3,180 | 0 | 0 | 0 | 7,911 | 1,146 |
| Long Sault Sewage Lift Pump | 2.50%/ 5 Years | 37,054 | 185 | 5.00%/5 Years | 4,017 | 40 | 0 | 0 | 0 | 225 | 40 |
| Ingleside Waste Water Plant | 5.00%/5 Years | 830,160 | 8,306 | 5.00%/5 Years | 122,369 | 1,224 | 0 | 0 | 0 | 9,525 | 1,817 |
| Ingleside Sewage Lift Station | 5.00%/5 Years | 118,680 | 1,187 | 0 | 0 | 0 | 0 | 0 | 0 | 1,187 | 253 |
| Long Sault Arena | 5.00%/5 Years | 486,720 | 4,867 | 5.00%/ 5 Years | 363,257 | 3,633 | 0 | 0 | 0 | 8,500 | 1,586 |
| Ingleside Library | 7.50%/5 Years | 35,748 | 536 | 5.00%/ 5 Years | 11,531 | 115 | 0 | 0 | 0 | 652 | 115 |
| Long Sault Library | 5.00%/5 Years | 13,460 | 135 | 5.00%/5 Years | 71,100 | 711 | 0 | 0 | 0 | 846 | 139 |
| St Andrews West Library | 2.5%/ 5 Years | 6,646 | 33 | 10.00%/5 Years | 116,608 | 2,332 | 0 | 0 | 0 | 2,365 | 552 |
| TOTAL | | 3,615,881 | 32,453 | | 1,983,854 | 21,006 | | 327,097 | 3,765 | 57,220 | 11,759 |

As shown by Table 3, 57,220 equivalent kilowatt hours and subsequently \$11,759 will be saved each year if the target percentage in reduction is met.

Energy Management Team

Managers of the energy management plan, with the assistance of the CAO, include the Public Works Manager, Treasurer, Fire Chief, Chief Building Official, Director of Corporate Services along with the Public Works Supervisor and Parks and Recreation Supervisor.

Measures

Behavioural measures that can lead to reduction in energy consumption will be provided to staff so that a conscious effort to assist in energy reduction is made by everyone. Some of these measures include:

- Turning off lights when not needed. For example, turning off fluorescent lights saves energy, extends overall lamp life and reduces replacement costs. Myth: turning lights on and off uses more electricity than leaving the lights on.
- Taking advantage of natural daylight: turning off or dimming lighting when adequate sunlight is available to illuminate interior spaces.
- Ensuring outdoor lighting is off during the day.
- Starting computers during off peak hours.
- Shutting down computers at the end of each day.
- Closing curtains and using fans rather than air conditioning during warm days (Energy Saving Tips for Businesses, 2013).

These measures may seem small, but with employees working together, a large improvement can and will be noticeable.

The table below illustrates the measures the township's operating facilities are taking to ensure their target percentage energy reduction is met, along with estimated costs and estimated time frames. All values and costs are based on the Ontario Power Authority's measures and assumptions list estimated values (2014).

Along with these technical measures, behavioral measures such as training staff on energy consumption to enhance energy consumption is also being integrated. A rule of thumb is that behavioral awareness alone can reduce energy consumption by up to 5% (A Guide to Preparing Conservation and Demand Management Plans, 2014).

Table 4

| FACILITY | MEASURE | TARGET ENERGY (KWH) PER YEAR | ESTIMATED ENERGY SAVINGS / YEAR | INCREMENTAL LIFE CYCLE COST (\$) | ESTIMATED TIME FRAME | LIFE SPAN | SAVE ON ENERGY INCENTIVE |
|---------------------------------------|---|------------------------------|---------------------------------|----------------------------------|----------------------|-----------|--------------------------|
| TOWN HALL | 1) Replace exterior lighting to LED | 3,402.62 | 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 3 years | 12 Years | Yes |
| OPP STATION | 1) Replace exterior lighting to LED | 3,582.88 | 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 3 years | 12 Years | Yes |
| LONG SAULT FIRE STATION | 1) Replace lightbulbs with LED lights | 251.73 | \$ 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 1 year | 12 Years | Yes |
| INGLESIDE FIRE STATION | 1) Replace lightbulbs with LED lights | 722.35 | \$ 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 1 year | 12 Years | Yes |
| NEWINGTON FIRE STATION | 1) Replace lightbulbs with LED lights | 682.21 | \$ 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 1 year | 12 Years | Yes |
| ST ANDREWS WEST FIRE STATION | 1) Replace lightbulbs with LED lights | 1,019.21 | \$ 88.20 - 129.70 / lightbulb | - 27 to - 45 / lightbulb | within 1 year | 12 Years | Yes |
| EAST GARAGE | 1) Replace exterior / interior lightbulbs with CFLS | 2,645.26 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 year | 3 Years | Yes |
| WEST GARAGE | 1) Replace exterior/interior lightbulbs with CFLS | 1,501.11 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 year | 3 Years | Yes |
| LONG SAULT WATER TREATMENT PLANT | 1) Replace exterior/interior lightbulbs with CFLS | 9,173.62 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 year | 3 Years | Yes |
| LONG SAULT WATER BOOSTER | 1) Replace exterior lighting with CFLS | 404.97 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 year | 3 Years | Yes |
| INGLESIDE WATER BOOSTER STATION | 1) Replace exterior lighting with CFLS | 3,355.79 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 year | 3 Years | Yes |
| INGLESIDE WATER TOWER | No Measures | 94.54 | n/a | n/a | n/a | n/a | n/a |
| ST ANDREWS WEST WATER BOOSTER STATION | No Measures | 262.00 | n/a | n/a | n/a | n/a | n/a |
| ST ANDREWS WEST WATER TOWER | No Measures | 227.73 | n/a | n/a | n/a | n/a | n/a |
| NEWINGTON WATER | No Measures | 308.66 | n/a | n/a | n/a | n/a | n/a |
| LONG SAULT WASTE WATER PLANT | 1) Replace exterior / interior lightbulbs with CFLS | 7,910.62 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 year | 3 Years | Yes |

| FACILITY | Measure | Target Energy (eKwH) Per Year | Estimated Energy Savings / Year | Incremental Life Cycle Cost (\$) | Estimated Time Frame | Life Span | Save on Energy Incentive |
|-------------------------------|---|-------------------------------|---------------------------------|----------------------------------|---------------------------------------|----------------|--------------------------|
| LONG SAULT SEWAGE LIFT PUMP | 1) Replace exterior/interior lightbulbs with CFLS | 225.44 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 years | 3 Years | Yes |
| INGLESIDE WASTE WATER PLANT | 1) Replace exterior/interior lightbulbs with CFLS | 9,525.28 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 years | 3 Years | Yes |
| INGLESIDE SEWAGE LIFT STATION | 1) Replace exterior/interior lightbulbs with CFLS | 1,186.8 | \$ 145.30 - 199.70 | - 27 to - 45 / lightbulb | within 3 years | 3 Years | Yes |
| LONG SAULT ARENA | 1)CIMCO seasonal controller with wells and sensors 2)Replace exterior lighting with CFLS | 8,499 | 99,938 \$ 145.30 - 199.70 | N/A - 27 to - 45 / lightbulb | Already retrofitted within 3 years | N/A 3 Years | Yes Yes |
| INGLESIDE LIBRARY | 1) Replace lightbulbs with LED lights | 651.53 | \$ 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 1 year | 12 Years | Yes |
| LONG SAULT LIBRARY | 1) Replace lightbulbs with LED lights | 845.6 | \$ 88.20 - 129.70 / lightbulb | - 24 / lightbulb | within 1 year | 12 Years | Yes |
| ST ANDREWS WEST LIBRARY | 1) Replace lightbulbs with LED lights | 2,365.39 | \$ 88.20 - 129.70 / lightbulb | - 24/ lightbulb | within 1 y ear | 12 Years | Yes |

These measures outlined in the table above, along with the 5% rule of thumb of behavioural measures, drastically reduce the township's energy consumption and cost and, as a matter of fact, should exceed the targeted percent.

The main goal is to incorporate LED and CFL lighting into the main buildings. Over their lifespan of 12 years (LED) and 3 years (CFL), they represent an energy savings of 88.2-129.7 (LED) and 145.3-199.7 (CFL) kWh per light bulb depending on the wattages installed, with a cost that actually saves \$24.00 to \$45.00 over that lifespan.

Some buildings, such as Town Hall and the OPP Station have recently been built and are very state-of-the-art with energy efficient products; however, some are not being implemented as of yet. One example is the programmable thermostat which could save approximately 2151 kWh per year.

The large facilities that use the most electricity, such as the waste water plants, are already retrofitted with high energy efficiency products including variable frequency motors that, in the long run, drastically reduce energy consumption and costs. The measures taken to achieve energy savings are, again, upgrading exterior and interior lighting to the latest LED or CFL lights. Upon touring the water facilities, it was found that the photocell timers for exterior lighting already in place are not timed properly in some of the booster stations and can be changed to achieve even higher energy savings.

The Long Sault Arena was recently retrofitted with a CIMCO seasonal controller. Wells and sensors were also added in addition to the commissioning and testing of floating head pressure controls. The value of these retrofits was determined to be \$25,907.00, however, there was a save on energy custom grant of \$10,473.00 as well as an estimated annual savings of \$9,938.00 which will pay for the project in only one and one half years. The numbers listed in the table above were determined from the CIMCO quote (Save on Energy Retrofit Program, 2014) at an estimated rate of \$0.10 /kWh and actual energy savings is expected to be higher due to the average kWh at the facility costing \$0.19. Also, the arena recently retrofitted with automatic sliding main entrance doors and all of its interior light bulbs from metal halides to compact fluorescent lighting.

The locations listed without any measures attached with them were deemed too small to incorporate any substantial reduction in energy consumption.

The estimated cost savings is dependent mainly on the quality of light bulbs that will be replaced, however, after reviewing the table above, it is safe to conclude that replacing only 10 light bulbs in most of the facilities will reach the target reduction level required. Therefore, it can be concluded that vast electricity cost savings will be reached.

Most of the measures outlined in the table above have available energy saving incentives from local gas and electric distribution companies that come along with integrating them into the facilities. Through www.saveonenergy.ca/Business.aspx, up to 50% of the retrofitting costs can be subsidized, also up to 50% of the costs of an energy audit can be subsidized. (A Guide to Preparing Conservation and Demand Management Plans, 2014).

Renewable Energy Planned

In the past, South Stormont considered options for renewable solar energy at township facilities however, it was not deemed feasible to implement. The Township is willing to review any future renewable energy when and if it may be feasible.

Consideration of Energy Efficiency of Acquired Equipment

Energy Star qualified products meet strict technical specifications and are tested and certified for energy performance; the township will consider Energy Star qualified products when installing new technology.



Energy Star products save energy without compromising performance in any way. Typically, an Energy Star qualified product is in the top 15 to 30 percent of its class for energy performance. Saving energy saves money and reduces the impact on the environment (Energy Star, 2014).

Energy Star is a trusted and simple source that could be used to identify products that are among the most energy-efficient on the market. Only manufacturers and retailers whose products meet the Energy Star criteria can label their products with this symbol.

Why Energy Star?

- Reduces energy costs.
- Reduces electricity demand.
- Reduces impact on the environment.
- Incentives may be available for some equipment.
- Very easy to use.

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