

# MUNICIPALTY OF HURON EAST



## ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

2014 – 2019

**Municipality of Huron East**  
**Energy Consumption and Demand Management Plan**  
**July 2014**

**Background – Green Energy Act and Ontario Regulation 397/11**

In 2009 the Province of Ontario enacted the *Green Energy Act* to expand renewable energy generation, encourage energy consumption and promote the creation of clean energy jobs.

Ontario Regulation 397/11 requires all Ontario public agencies, including municipalities, to report annually an energy use and greenhouse gas emissions (by July, 2013) and by July 2014 prepare an Energy Conservation and Demand Management Plan. The energy use and greenhouse gas emission data for the 2014 reporting year is based on 2012 consumption data.

In general terms, in addition to providing consumption data, Ontario Regulation 397/11 requires the Energy Conservation and Demand Management Plan to provide the following;

- i) the public agency's goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy,
- ii) the public agency's proposed measures under its energy conservation and demand management plan,
- iii) cost and saving estimates for its proposed measures,
- iv) a description of any renewable energy generation facility operated by the public agency and the amount of energy produced on an annual basis by the facility,
- v) a description of,
  - (A) the ground source energy harnessed, if any, by ground source heat pump technology operated by the public agency,
  - (B) the solar energy harnessed, if any, by thermal air solar watts technology or thermal water technology operated by the public agency, and
  - (C) the proposed plan if any, to operate heat pump technology, thermal air technology or thermal water technology in the future,
- (vii) the estimated length of time the public agency's energy conservation and demand management measures will be in place, and
- (viii) confirmation that the energy conservation and demand management plan has been approved by the public agency's senior management.

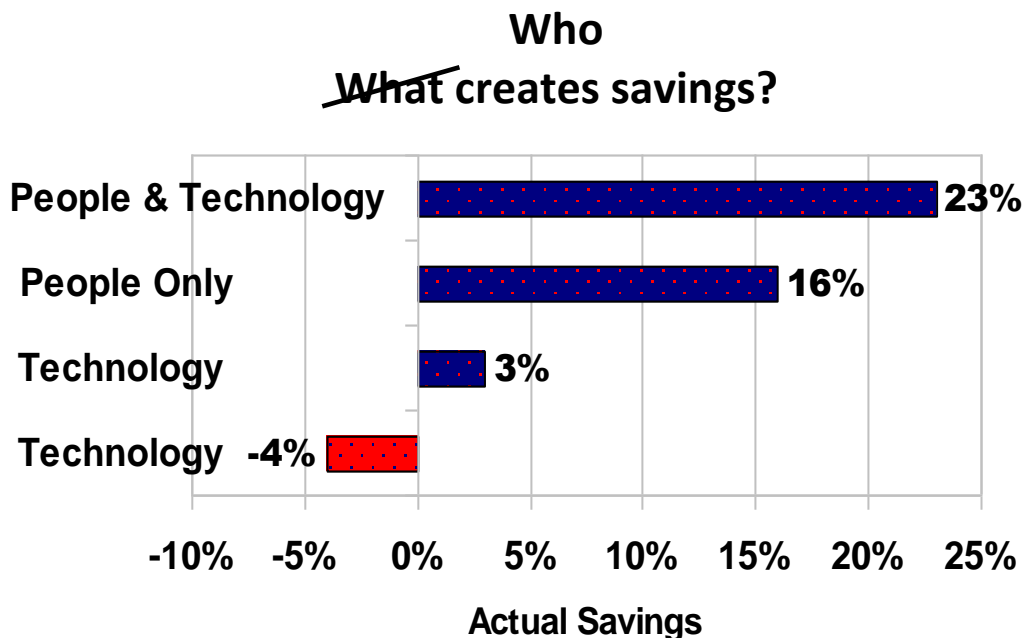
## Huron East Goals and Objectives

Concerns and challenges surrounding energy consumption, especially with regard to climate change and air pollution are well documented. Since 1990, Ontario's greenhouse gas emissions have increased 14%. The Government of Ontario estimates that 75% of Ontario's greenhouse gas emissions are associated with the consumption of fossil fuels for energy purposes. Increased smog and air pollution are also connected to the consumption of energy. Ontario's electricity generation is the Province's second largest source of sulphur dioxide and the third largest source of nitrogen oxides. These pollutants can cause irreparable harm to human health.

While energy conservation is an obvious goal of any public agency, achieving the objective of conservation is a combination of factors.

- to develop an understanding of energy consumption
- to commit resources towards the implementation of energy conservation measures that demonstrate reasonable paybacks
- to combine the understanding (people) and resources (technology) to achieve savings in terms of energy consumption and financial savings

The following table from a Natural Resources Canada presentation presents an analysis of the importance of combining an understanding/appreciation at the staff level with the available technology to achieve identifiable savings.

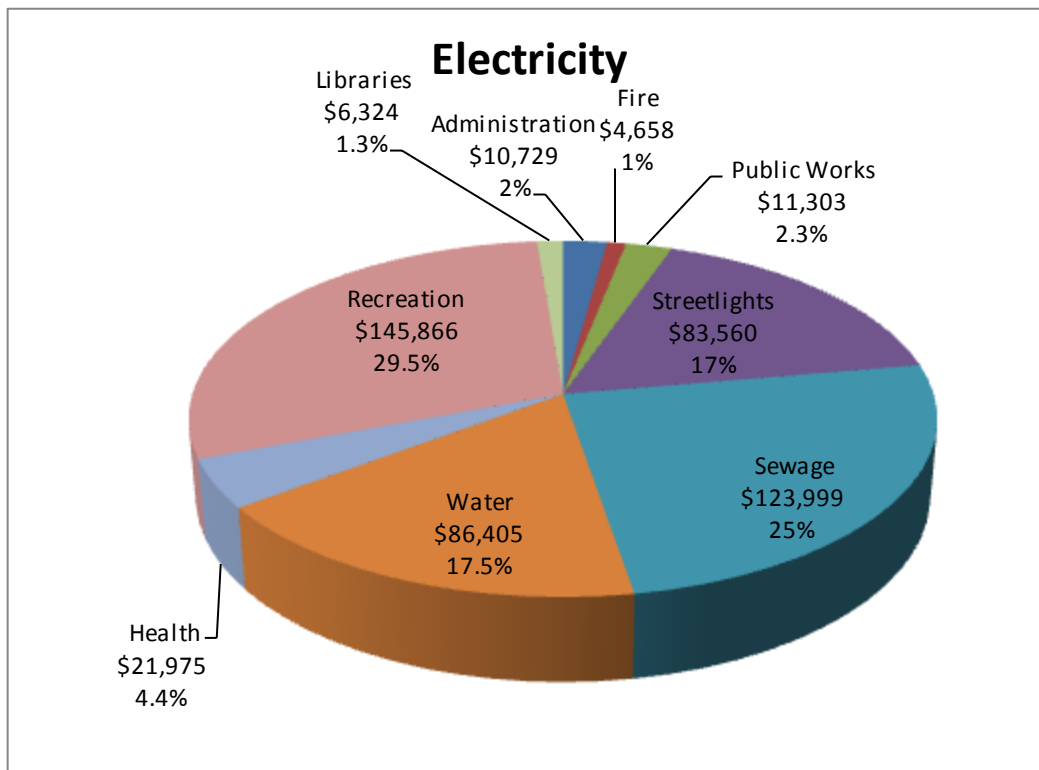


Source: Good Practice Guide 84 Managing and Motivating Staff to Save Energy

The Municipality of Huron East is an amalgamated municipality (2001) and as part of a review of facilities, implemented an aggressive retrofitting of the lighting systems in most facilities. Retrofits for several buildings were done without any financial incentives while other facilities were retrofitted through initiatives such as PowerSaver and Save-On-Energy. Developing an understanding of utility bills was also critical to the installation of KVAL controllers at the Seaforth Sewage Pumping Station (2007), the Seaforth and Brussels arenas in 2008 and the Vanastra Sewage Treatment Plant in 2009. The retrofits and installation of capacitor banks established identified a need which lead to a goal for the Municipality → a method of recording and documenting energy consumption at Huron East facilities was developed for several facilities in 2005 and all facilities were fully recorded in 2007. While one of the goals was an assessment of the impacts of the retrofits, another goal was to create an awareness of energy consumption among staff and Council.

**Huron East’s Proposed Measures**

While Council is aware that just over 6% of the annual Huron East operating budget is committed to energy costs, the tables below (from the 2012 Energy Report to Council) demonstrates the impact of energy costs on specific service. Combined, water, sewage, recreation and streetlighting electricity consumption account for 89% of the 4.1 million kwhs of electricity consumed by the Municipality.



The Municipality of Huron East is currently utilizing the energy consulting services of LAS (Local Authority Services - AMO) to conduct energy audits/reviews in three key service areas that are high energy consumers.

- a) Sewage Treatment Plants → The Municipality of Huron East has three sewage treatment plants, which combined account for 900,000 kwh of electricity consumption or approximately 21% of all Huron East consumption. These facilities operate on a 24-7 basis and the Municipality is currently reviewing new aeration blowers that could significantly reduce electricity consumption in at least two facilities.



- b) Recreational Facilities → The Municipality of Huron East has three major recreational facilities (two arenas and one indoor pool). Combined they account for 1,160,000 kwh of electricity (28% of Huron East consumption) and 122,000 m<sup>3</sup> of natural gas or 66% of total Huron East consumption. Energy audits of all three facilities were completed by LAS in February 2014 and are currently being reviewed by staff with respect to potential retrofits. One application that is being considered that is consistent with all three facilities is the installation of Variable Frequency Drives on specified motors in the facilities.



- c) Streetlighting → The Municipality of Huron East has ten streetlight systems which annually consume 670,000 kwh of electricity or approximately 16% of the total consumption.

## Cost and Savings Estimates

As noted in the proposed measures, three sewage treatment plants and three recreational facilities account for 50% of the total electricity consumption by Huron East facilities. The Huron East Water & Sewer Committee is commencing a review of the aeration systems and the emerging blower technology to determine payback periods and life cycle analysis. From information that is currently available, payback for these improvements is less than five years and the necessary capital investment is being given serious consideration by the Committee.

In all three recreational facilities, variable frequency drives can be installed with paybacks in approximately one year. There are however, other energy savings measures that are specific to each facility that will be considered by each Recreation Committee.

The 10 streetlight systems contain a total of 939 luminaries. As noted, an RFP has been issued for the conversion of all fixtures to LED fixtures. With a preliminary budget of \$550,000 it is expected that the annual kwh savings will be approximately 460,000 kwh (68%) which when combined with lower maintenance costs should result in a payback of approximately 7 years.



Given that the conversion of the streetlighting systems to LED technology will save 460,000 kwh annually, the Municipality will be able to achieve 10% reduction in overall energy consumption. However, the ability to reduce electricity requirements during peak demand periods has a more significant impact than off-peak demand when streetlight systems are operating. Utilizing technology in high demand facilities such as sewage treatment plants and arenas will be a goal of the Municipality of Huron East and a further 2% reduction in overall electricity consumption by December 31<sup>st</sup>, 2018 compared to the 2012 baseline will be the goal of the Municipality.

## **Renewable Energy Generation Facilities Operated by the Municipality**

The Municipality of Huron East has taken advantage of the provincial microFIT program administered through the Ontario Power Authority and had two 10kW solar photovoltaic tracker systems in operation during 2012. Combined, the two units provided just over 40,000 kwh of energy.



10 kW Tracker Solar Systems  
Seaforth Water Plant



10 kW Rooftop Solar System  
Brussels Business & Cultural Centre

The Municipality of Huron East has several additional microFIT contracts, all of which are 10kW solar systems. All additional systems were brought on-line in late 2013 and early 2014 and are located at the following locations:

- Brussels Business & Cultural Centre – 10kW roof mount solar
- Brussels Public Works – 10 kW roof mount solar
- Brussels Sewage Plant – 10 kW solar tracker
- Seaforth Firehall – 10 kW roof mount solar
- Seaforth Water Plant – 10 kW solar tracker (2 systems)
- Vanastra Recreation Centre – 10 kW roof mount solar

The Municipality of Huron East has seven solar photovoltaic systems in operation with a combined capacity of 70kW. It is anticipated that the seven systems will generate in excess of 100,000 kwh of energy in 2014.

### **Heat Pump, Thermal Air and Thermal Water Technologies**

The Municipality of Huron East does not currently utilize heat pump, thermal air or thermal water technologies at any facilities but will take these technologies into consideration with new construction or retrofits.

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

The Plan will be in place for five years and will form the basis of the Plan that will be issued on or before July 1<sup>st</sup>, 2019. The Municipality of Huron East intends to treat this document as a living document.

### **Approval by Council**

This plan was received and approved by the Council of the Municipality of Huron East on July 8<sup>th</sup>, 2014.