



Engineering Department

Public Works Division

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1.0 Current State of Corporate Energy Management

1.1 Energy Data Management

The Town of Cobourg has managed its energy consumption in the past, however the Ontario governments Green Energy Act requires an increase in municipal energy management. This results in the need to enhance current practices and develop new approaches. To meet this need the Town of Cobourg will ensure that all staff is informed about energy consumption and conservation.

1.2 Energy Supply Management

The Town of Cobourg joined LAS (Local Authority Service) in 2003. The town's energy procurement goal will continue to be the pursuit of optimal rates while achieving appropriate level of cost certainty.

1.3 Energy Use in Facilities

The Town of Cobourg's facility staff has retained a great deal of knowledge with regard to their facilities energy use. For instance in May 2014, the Town of Cobourg participated in having an energy assessment report performed by Cornerstone Hydro Electric Concepts (CHEC). Please see a copy of this report attached in Appendix A.

Water Pollution Control Plants also completed energy audits on February 4th, 2013, please see a copy of this attached in Appendix B. Between 2006 and 2012, the sewage treatment plants energy consumption has been decreased by 43.6%.

1.4 Equipment Efficiency

The Town of Cobourg has taken numerous measures to improve energy efficiency of equipment. Some of these measures include interior and exterior lighting upgrades, and pump changes at the town's sewage treatment plants. Numerous managers in the Town of Cobourg work on their infrastructure yearly in order to improve efficiency.

1.5 Organization Integration

Each manager is responsible for the day to day management of energy uses in their own facilities. Staff across all departments will be given the necessary tools to address corporate energy concerns such as budgeting, procurement and conservation.

2.0 Current Energy Concerns

Environmental, societal and fiscal pressures emphasize the need for energy reduction within the Town of Cobourg.

2.1 Environmental

Concerns surrounding energy consumption with regards to climate change and air pollution have been well researched and documented. There were three targets outlined by the Ontario government in their 2007 Climate Change Action Plan in order to reduce greenhouse gas emissions. The government's targets are:

- 6 percent below 1990 greenhouse gas emission levels by 2014
- 15 percent below 1990 levels by 2020
- 80 percent below 1990 levels by 2050

The government of Ontario estimates that 75% of Ontario's greenhouse gas emissions are associated with the consumption of fossil fuels for energy purposes. The consumption of energy is also related to an increase in smog and air pollution. Ontario's electricity generation is the Province's second largest source of sulfur dioxide and the third largest source of nitrogen oxides. These pollutants are of concern to the government as they can cause serious harm to human health.

2.2 Societal

There has been a heightened sense of societal concern regarding the stability and security of our energy supply since the 2003 blackout. Energy has been imbedded into most societal practices. The frequency of energy interruptions and the associated societal disruptions will increase if energy consumption is not managed appropriately.

2.3 Fiscal

The fossil fuels traditionally used for the generation of energy are becoming no longer financially or environmentally acceptable. Energy costs are also anticipated to increase as Ontario's existing energy infrastructure is taken off-line or refurbished. Coming off of the lows of the 2009 recession, national electricity and natural gas prices are 27% and 21% greater, respectively, than they were at the start of the decade. It is not anticipated that this upward trend will be altered in the short to medium future. The Province of Ontario has recently project

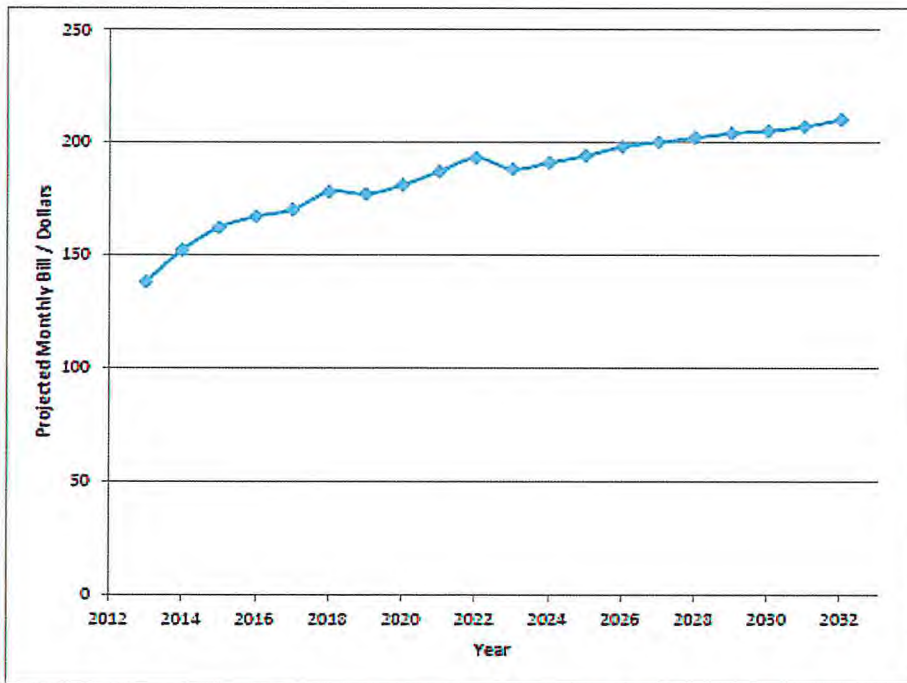
ted an annual 3.5% to 7.9% increase in electricity costs over the next 20 years. Natural gas is also projected to trend upward.

3.0 Electricity Pricing Trends Through 2030

3.1 Residential Electricity Price Projections for 2010 Through 2030

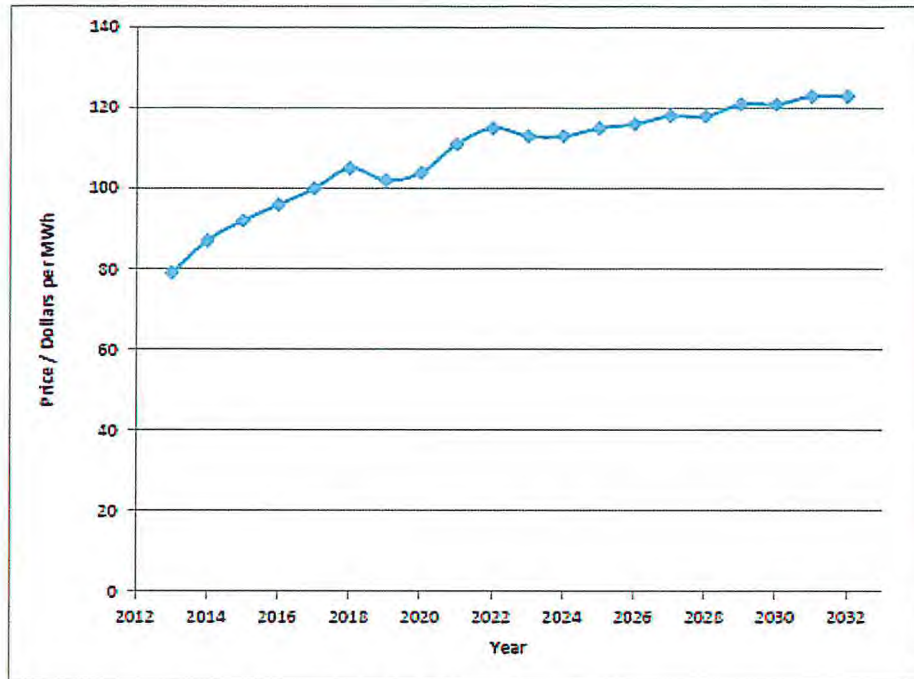
According to the Ontario Ministry of Energy’s Long Term Energy Plan, electricity prices will continue to rise for the foreseeable future for residential, commercial and industrial customers.

3.1.1 Residential Electricity Price Projections for 2010 through 2030 Based on Average Monthly Bill at 800 kWh Consumed



Source: Ontario’s Long Term Energy Plan, Ontario Ministry of Energy, December 2015.

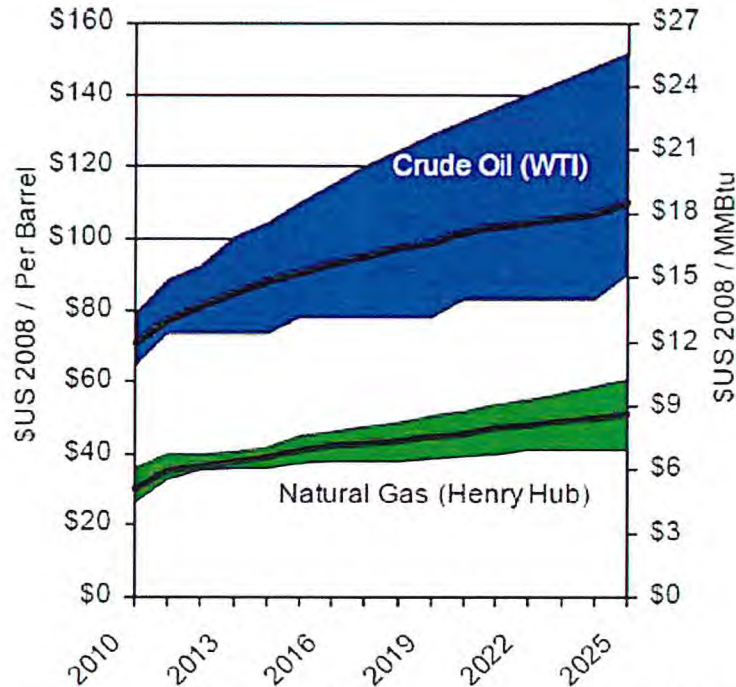
3.1.2 Industrial Electricity Price Projections for 2010 Through 2030



Source: Ontario's Long Term Energy Plan, Ontario Ministry of Energy, December 2013.

4.0 Natural Gas Pricing Trends Through 2030

4.1 Crude Oil and Natural Gas Price Forecast



Source: Canadian Crude Oil, Natural Gas and Petroleum Products Outlook to 2030, Natural Resources Canada, May 2011.

5.0 The Green Energy Act, 2009

5.1 Background

The Town of Cobourg needs to develop annual Energy Consumption and Greenhouse Gas Emissions Templates, as per the Green Energy Act, 2009.

"On or before July 1 2013, every public agency shall submit to the Minister, publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office the public agency's Energy Consumption and Greenhouse Gas Emission Template for operations conducted in 2011."

"On or before July 1 of each year after 2013, every public agency shall submit to the Minister, publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office the public agency's Energy Consumption and Greenhouse Gas Emission Template for operations conducted in the year following the year to which the last annual Template related."

The Town of Cobourg also needs to develop and implement long term energy conservation and demand management measures.

"On or before July 1, 2014, every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office."

"On or before July 1, 2019 and on or before every fifth anniversary thereafter, every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office all of the information that is required to be published and made available under subsection (1), the Energy Consumption and Greenhouse Gas Emission Template that is required to be submitted and published on or before July 1 of that year and the following information:

- 1. A description of current and proposed measures for conserving and otherwise reducing energy consumption and managing its demand of energy.*
- 2. A revised forecast of the expected results of the current and proposed measures.*
- 3. A report of the actual results achieved.*
- 4. A description of any proposed changes to be made to assist the public agency in reaching any targets it has established or forecasts it has made."*

5.2 Vision

The Town of Cobourg seeks to demonstrate leadership in energy conservation and environmental stewardship. The Town of Cobourg strives to reduce energy and to formalize energy management allowing for optimal energy solutions that will lead to sustainable structure and services, environmental benefits, economic renewal and prosperity.

5.3 Achieving our Vision

Proper energy management will allow the Town of Cobourg to display leadership and enhance overall quality of life within the community. The completion of these actions will assist the Town of Cobourg to meet its energy conservation and to reduce greenhouse gas emissions. Achieving these goals will allow the Town of Cobourg and its taxpayers to benefit financially. Energy management at the Town of Cobourg must become an inclusive process involving all department managers. Recognizing that energy affects everyone differently, the Town of Cobourg managers will capture innovative and relevant actions that will lead to meaningful change. Copy of Town of Cobourg Energy Consumption and Greenhouse gas emissions report for 2012 is attached, please see Appendix C.

5.4 Current Goals and Objectives

- Changed our existing CFL and incandescent bulbs in Foyer and staircases to LED
- Replaced existing incandescent bulbs in track lighting in Citizens Forum to LED
- Tower flood lights (metal halide) were changed out to LED
- Buildings automation system (BAS) updated for better control heating and cooling levels
- New boiler system and heating pumps
- Replace yard lights in parking lots to LEDs
- Replace Aerator motors as needed
- Installed controls on all air units for more accurate heating and cooling set points as well as controls for automating damper positions and occupied and unoccupied set points
- New motors in the attic exhaust fans
- Educating the users of the energy to create an energy conscious work environment
- Reducing energy usage by continually upgrading facilities with energy conservation in mind
- Replacing windows and doors, with products that meet an Energy Star rating
- Replacing older hot water tanks with more efficient newer models
- Replacing old toilets with low flow toilets
- Replacing outdated, energy intensive lighting systems with high efficiency T8 and T5 systems
- Replacing outdated, energy intensive exterior and parking lot lighting systems with high efficiency LED systems
- Installing automated lighting systems where applicable
- Implementing automated building control systems where applicable
- Exchanging rooftop HVAC units with new, high efficiency units
- Upgrading streetlights across the Town of Cobourg to LEDs
- Upgrading exterior lighting on the Town of Cobourg owned facilities to LEDs

5.5 Future Goals and Objectives

The energy reduction plan is always evolving. The Town of Cobourg strives to be a leader in reducing energy consumption in the community. New ideas will always be considered and discussed moving forward. Future energy reductions will be implemented over time and will include:

- Looking at changing the court room lights out from 300w to LED'S 2015

- New flood lights out front 2015 budget, 6 in total
- Ongoing maintenance throughout the building as lights burn out. Four foot fluorescents being changed out to LED
- Continuing to switch out older rooftop HVAC units with newer, more efficient models
- Continuing to replace older windows and doors with high efficiency, Energy Star rated products
- Replacing older hot water tanks with new, high efficiency units
- Implementing building automation systems wherever possible to optimize building performance
- Continually upgrading lighting systems from outdated systems to high efficiency T8 and T5 systems
- Continuing to educate and encourage the energy users and provide incentives to those who are participating in energy conservation efforts
- Upgrading insulation in buildings as determined to be required
- Upgrading older, less efficient fleet vehicles, with newer, more efficient models