



Burman Energy Consultants Group

Township of Wellington North  
Energy Conservation and Demand  
Management Plan

O. Reg. 397/11 – July 1, 2014

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*Disclaimer: The information in this document has been prepared in good faith and represents the Township of Wellington North's intentions and opinions at the time of issue. The Township of Wellington North however, operates in a dynamic environment affected by the changing requirements. The plans are constantly evolving to reflect the most current information and circumstances. The Township of Wellington North, its directors, officers, shareholders or representatives do not accept any liability whatsoever by reason of, or in connection with, any information in this document or any actual or purported reliance on it by any person. The Township of Wellington North may change any information in this document at any time.*

## EXECUTIVE SUMMARY

The Township of Wellington North retained Burman Energy to develop a comprehensive five-year energy Conservation and Demand Management Plan for the municipality in compliance with requirements of Ontario Regulation (O. Reg.) 397/11.

The purpose of the Conservation and Demand Management Plan is to provide a structured guidance framework for energy conservation activities in the municipality. The Township of Wellington North's goal is to meet the requirements of the Green Energy Act O. Reg. 397/11, due July 1<sup>st</sup>, 2014, while simultaneously optimizing their energy operations and investments.

This document represents the five-year Conservation and Demand Management Plan for the Township of Wellington North for the period of 2014-2019. The Greenhouse Gas Emissions and Energy Consumption baseline reflects data gathered and submitted to the Ontario Ministry of Energy on July 1, 2013, as required by O. Reg. 397/11. In order to determine the present state of energy management in the Township of Wellington North, we have summarized the Greenhouse Gas report for 2011. Additionally, this plan has incorporated the results of the energy audits conducted throughout the key facilities owned by the municipality, historical data of energy use, and actions and steps already taken with the intention of realizing energy savings. Monetary incentives from the Ontario Power Authority, accessible through Wellington North Power as delivery agent, support the financial planning selection and decisions to move forward with the implementation of these initiatives.

The Conservation and Demand Management Plan also defines objectives and goals, and offers strategic recommendations to optimize energy use within the municipality's lean business operations.

The Conservation Demand Management Plan identifies the feasible Energy Conservation Measures and opportunities to implement in the key facilities, and identifies improvements, geared toward reducing the energy consumption, Greenhouse Gas emissions and associated costs. Working toward the targets for Greenhouse Gas emissions reduction and energy savings, the Township of Wellington North will be moving toward its holistic future, or preferred state, in its quest to continually improve energy consumption performance and further reduce Greenhouse Gas emissions.

## INTRODUCTION - BACKGROUND

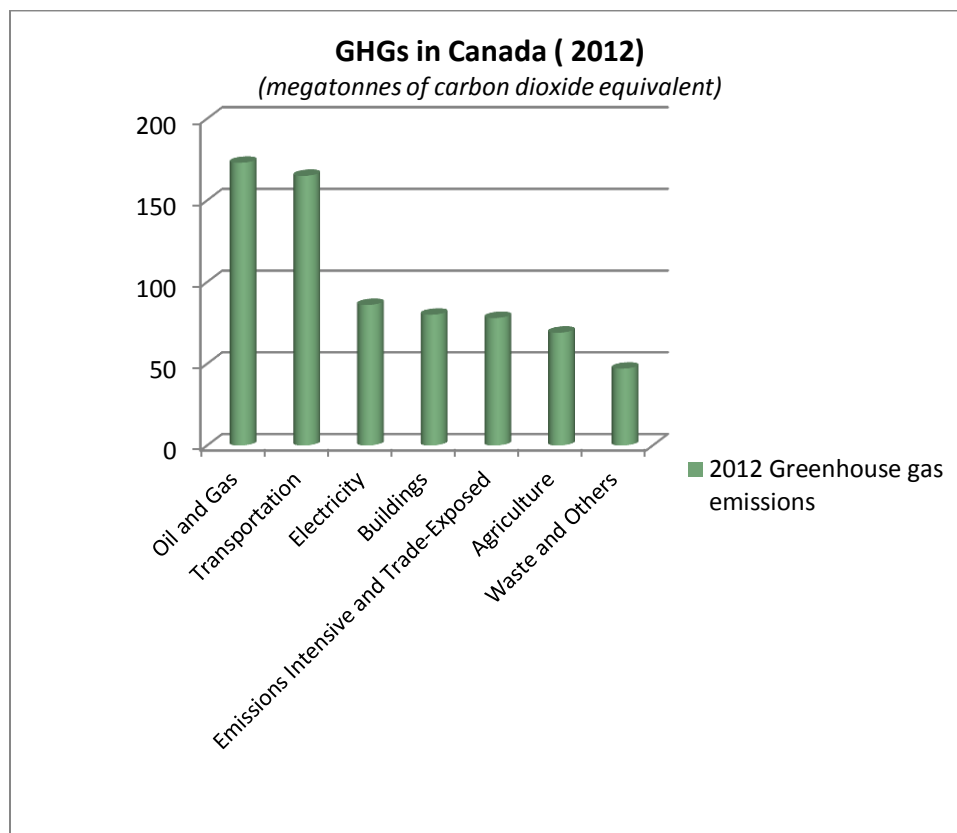
### CLIMATE CHANGE ACTION PLAN

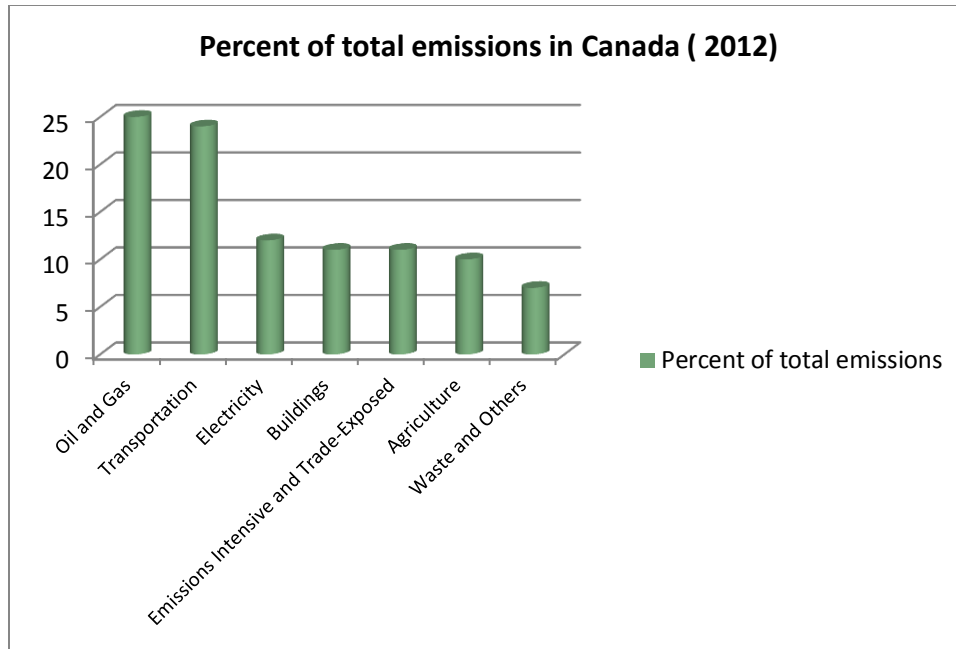
The Ontario Government actively supports an aggressive approach to natural resources preservation and environmental pollution reduction. The "Climate Change Action Plan" is one of the efforts geared to protecting the environment and developing programs that will facilitate healthy communities. Climate change can be caused by both natural processes and human activities; the recent warming has been largely attributed to human activity, primarily through the release of carbon dioxide and other Greenhouse Gases (GHGs) to the atmosphere.

National GHGs can be attributed to seven key areas of the economy:

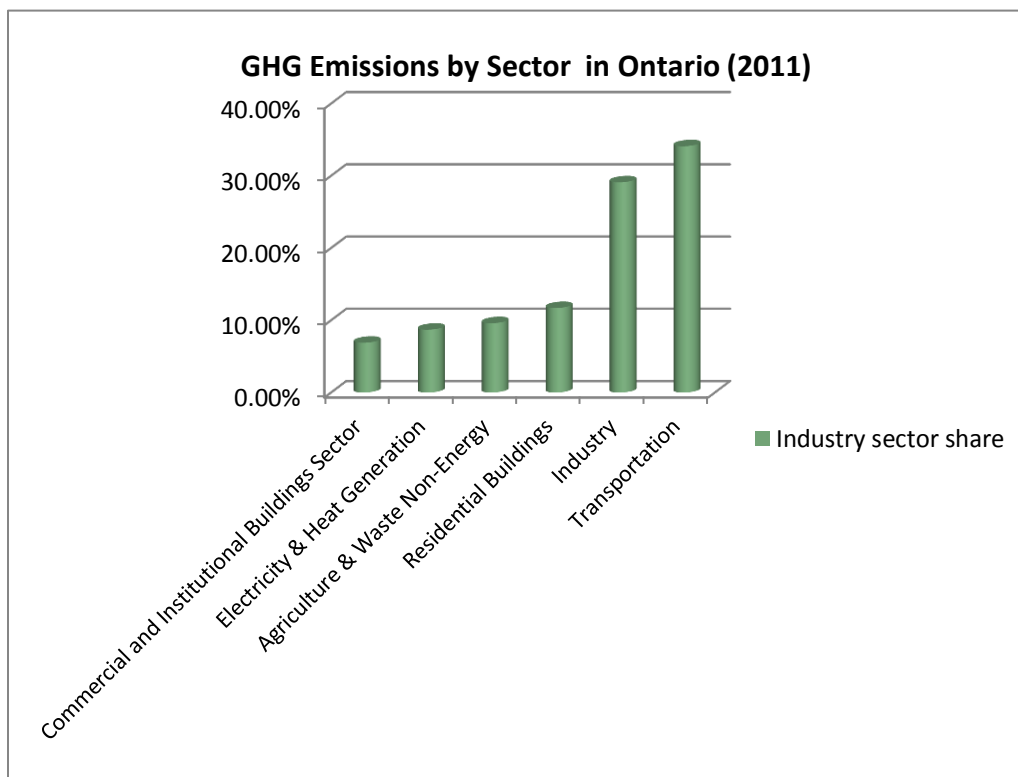
- ✓ Oil and gas (25% of total emissions)
- ✓ Transportation (24%)
- ✓ Electricity (12%)
- ✓ Buildings (11%)
- ✓ Emissions-intensive and trade-exposed industries (11%)
- ✓ Agriculture (10%)
- ✓ Waste and others (7%).

**Distribution of GHG emissions by economic sector, Canada, 2012**





In Ontario, 6.9% of these emissions stem from combustion activities within the commercial and institutional sector; the largest sources of GHG emission generations are industrial operations and transportation. The chart below provides information about the GHG emissions generation by sector in Ontario:



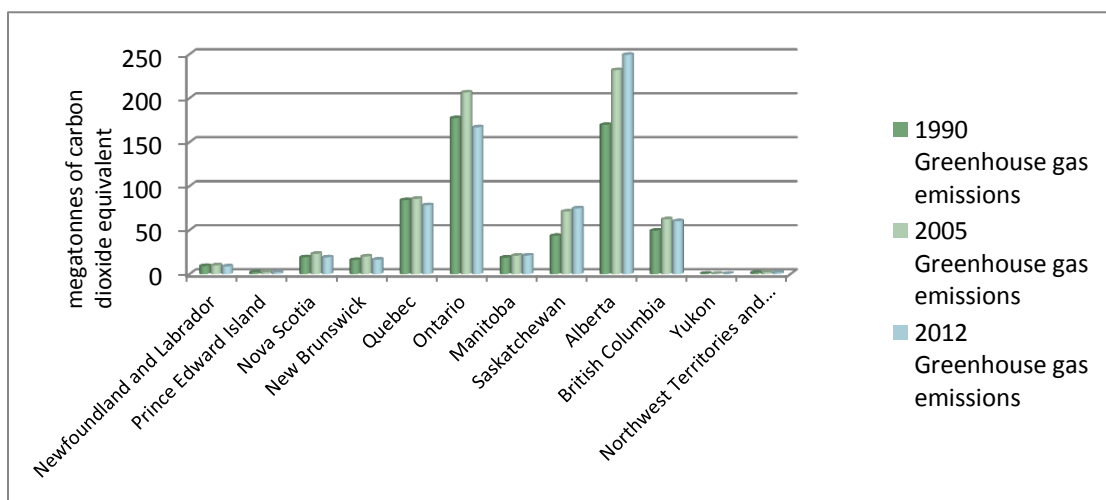
General principles will guide GHG reduction and energy conservation activities in a way that balances environmental protection and economic growth, while incenting investment in cleaner technologies. These include:

- ✓ simplicity, consistency, transparency and administrative efficiency
- ✓ achieving absolute reduction in Greenhouse Gas emissions and energy consumption in a cost-effective way that considers business competitiveness and supports achieving sustainable living
- ✓ using assessments to support activities and policy development
- ✓ promoting development and deployment of clean technologies
- ✓ considering a broad alignment with other strategic activities of similar rigour that provide opportunities for linking in the future
- ✓ considering integration with other municipal policies and day-to-day municipal operations

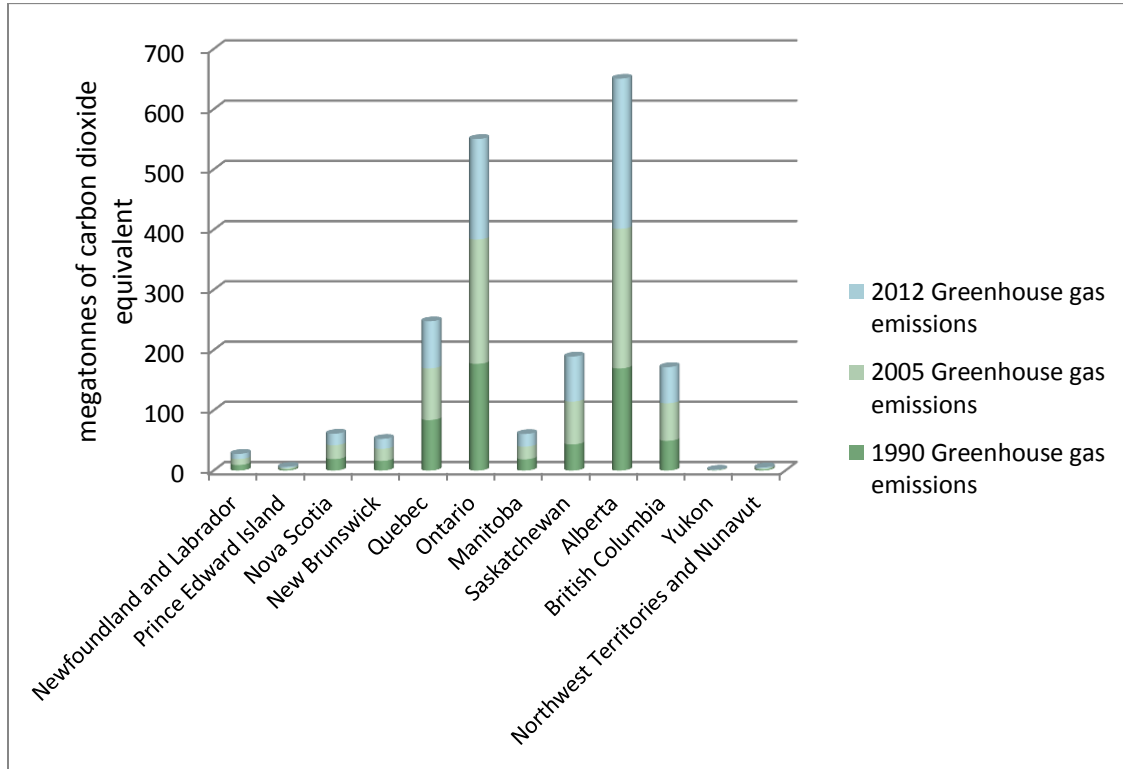
In 2007, the Climate Change Action Plan established a target of a 6% reduction of Greenhouse Gas emissions from 1990 levels by 2014, a 15% reduction by 2020, and an 80% reduction by 2050. While some progress was initially noted, levels have started to rise again, and clearly, the challenge remains to continue economic growth, while reducing emissions. The Ontario Ministry of the Environment (MOE) estimates that Ontario is on pace to meet only 60% of the 2020 reduction targets.

The chart below illustrates results from an Environment Canada comparative study that shows GHG emissions by province and territory for 1990, 2005 and 2012. Ontario's GHG emissions are relatively higher than those of other provinces, due to its large manufacturing industry. Ontario's emissions were reduced in the latter years; however, the combined emissions from Ontario and Alberta still represented about 60% of the national total.

*GHG emissions by province and territory, Canada, 1990, 2005 and 2012*







Increased economic activity in Ontario results in rising GHG emissions, and presents a challenge to fulfilling the provincial environmental objectives expressed in the government action, set in the Green Energy Act. This also set the primary government directives for public agencies to become a part of the solution for this challenging situation.

Optimizing energy consumption will be essential if we are to meet future energy needs, and witness a global transition to sustainable energy sources. Without major changes in the way we both use energy to meet our needs (energy conservation), and use the most efficient equipment and measures (energy efficiency), there is little hope of reducing the impact of energy production and use to reasonable levels.

This is even more important for the Province of Ontario, where energy consumption is relatively high. Managing municipal energy consumption efficiently means providing the same services with less energy. Energy conservation measures are often the lowest cost options for providing many other environmental, economic and social benefits. This also results in cost savings, lower environmental load associated with energy production and consumption, local economic development opportunities and associated new jobs, enhanced reliability of energy systems, reduced price volatility, and improved energy supply security.

## GREEN ENERGY ACT - O. REG. 397/11: REQUIREMENTS FOR MUNICIPALITIES

In 2009, the Province of Ontario enacted the Green Energy Act, and subsequently O. Reg. 397/11 – Energy Conservation and Demand Management Plan – mandating all public agencies (including municipalities) to provide their energy consumption information to the public and to develop energy management plans, which includes detailing the energy consumption data for the Township’s facility portfolio. O. Reg. 397/11 is also mandating the Township’s obligations in meeting its responsibilities under the Green Energy Act.

To facilitate the regulatory compliance process, the MOE provided tools for baseline detailed reporting, including reporting the Greenhouse Gas emissions and energy consumption in all facilities owned by the Township of Wellington North. Provided in Appendix A, is the Township’s energy consumption and Greenhouse Gas emission data for the annual operations in 2011, which was provided to the MOE prior to July 1, 2013, in compliance with O. Reg. 397/11.

O. Reg. 397/11 requires public agencies to:

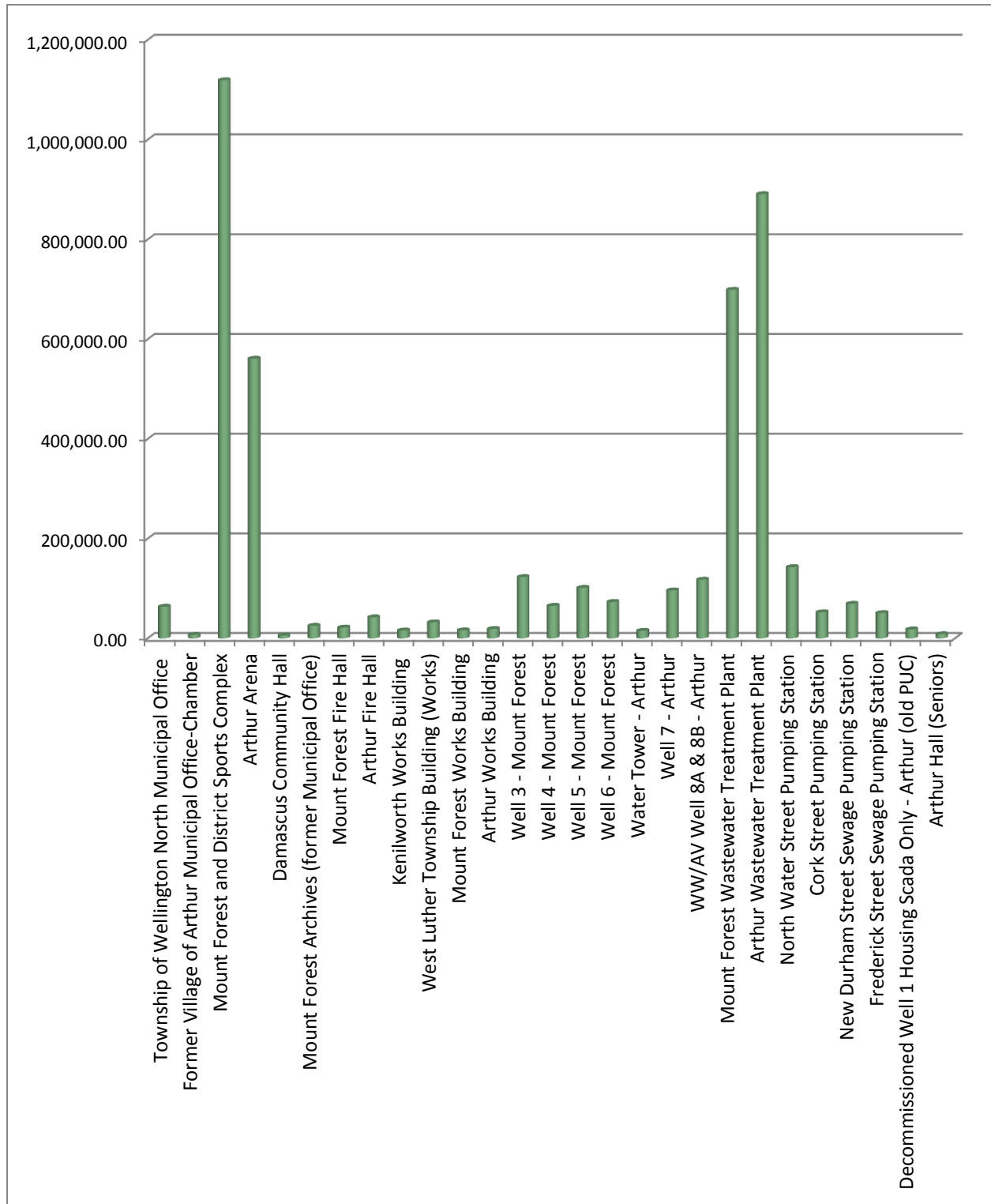
- ✓ **Report annually** on energy use and Greenhouse Gas emissions, beginning July 1, 2013, and post that information online.
- ✓ **Develop five-year energy conservation plans** starting July 1, 2014, and post those plans online.
- ✓ **Post annual reports** on the agency’s website and make printed versions available for the public.

## ENERGY USE: TOWNSHIP OF WELLINGTON NORTH

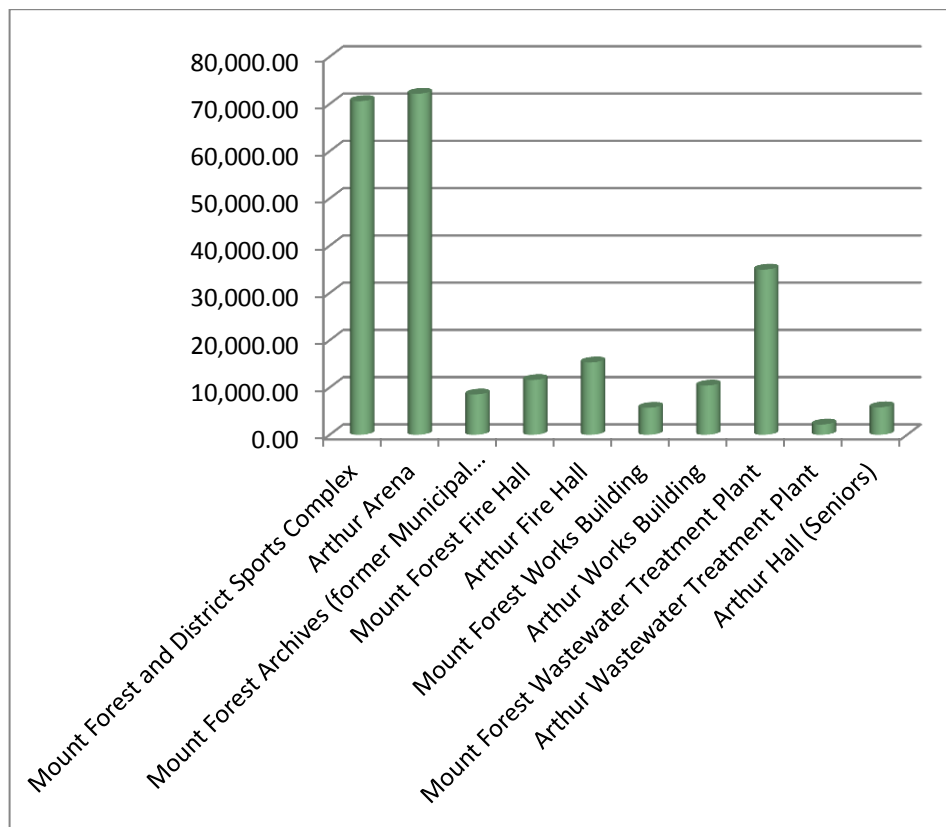
In 2011, the Township of Wellington North’s total intensity of energy use (electricity and natural gas) was 2,838.51 equivalent kilowatt hours per square feet (ekWh/sqft). The 2011 total consisted of 4,452,415.70 kWh of electricity and 237,384.38 cubic meters of natural gas.

To aid in monitoring of energy consumption and development of a Conservation and Demand Management (CDM) Plan, the Township of Wellington North’s energy portfolio has been divided into distinct operations. The charts below indicate the electrical and natural gas usage in the main facilities:

Electricity consumption per facility in kWh (2011)



Natural gas consumption per facility in cubic metres (2011)



## CONSERVATION AND DEMAND MANAGEMENT PLANNING PROCESS

The Ontario Government's Green Energy Act requires increased municipal energy management and engagement. Development of an energy conservation strategy as part of an overall sustainability plan is a complex process. The main driver for a local municipality to change the way energy is used, relates to fiscal benefits and financial incentives. Energy is a manageable input to the business process, much like any other resource cost. The Township of Wellington North is maintaining and developing current and planned services that continue to be affordable to rate payers.

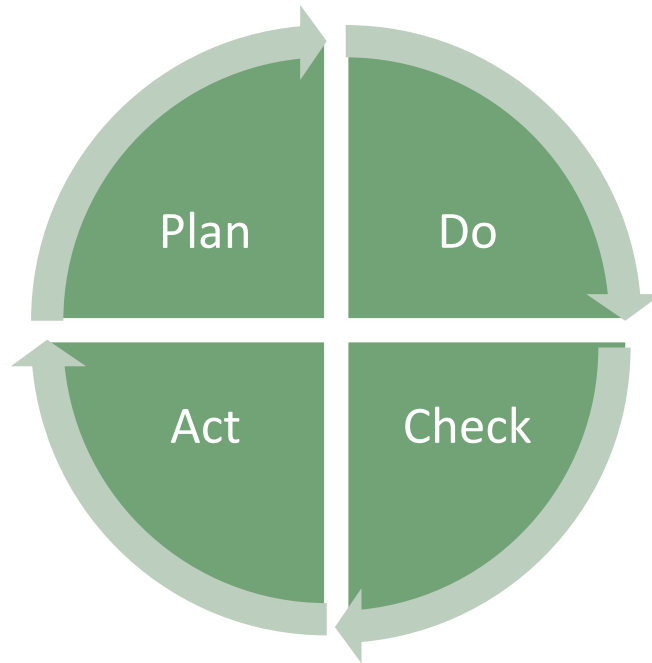
Current practices must be enhanced and new approaches developed. To meet these needs, the Township of Wellington North will consider designing a comprehensive program for collecting and analyzing monthly energy billing information, and ensuring that staff is informed about energy consumption. The resulting energy costs and consumption database will be used to monitor excessive variations, target facility follow-up assessments, and determine areas that could be candidates for

improved conservation. These monitoring enhancements will improve the Township’s understanding of the bottom line impact of energy management. The following table summarizes the major drivers for the Conservation and Demand Management Program:

Municipal Program Planning	Utilization & Performance	Operational Environment
Goals and Objectives	Energy Demand and Emissions	Customer Needs
Strategic Directives	Energy Assessments	Technology Trends
Business Risks	Forecasts	Regulatory Requirements
Financial Impact	Development Trends	Cost Reduction

In order to establish a baseline for managing energy costs, the Township has captured information critical to energy management planning. This formalizes the process involved in understanding the relative magnitude of energy costs, the possible ways to reduce energy use, energy targets that are likely to be achievable, and other associated activities that need to occur. This CDM Plan provides the “big picture” view as an ongoing framework for optimizing overall energy use and achieving success.

CDM Planning is intended to be a process of “continuous improvement.” The Township of Wellington North has implemented a four-step PDCA (plan–do–check–act or plan–do–check–adjust) management methodology, used in business for the control and continuous improvement of processes. It is also known as the Deming Cycle Wheel. The following diagram shows the circular steps that have been adopted into the planning process:



### ***PLAN***

Establish the energy conservation objectives and processes necessary to deliver results in accordance with the expected outputs: the energy conservation targets or goals. Start on a small scale to test possible effects and financial feasibility. Develop a CDM Plan prioritizing budgets, resources, and timelines.

### ***DO***

Implement the Plan and collect data for analysis in the following "CHECK" and "ACT" steps. Develop projects' design and execution, prepare status reports, and implement the communication strategy.

### ***CHECK***

Study the actual results (measured and collected in "DO" above) and compare against the expected results (targets or goals from the "PLAN") to ascertain any differences. Evaluate any deviations in implementation from the Plan and also evaluate the appropriateness and completeness of the Plan to enable the execution, i.e., "DO."

### ***ACT***

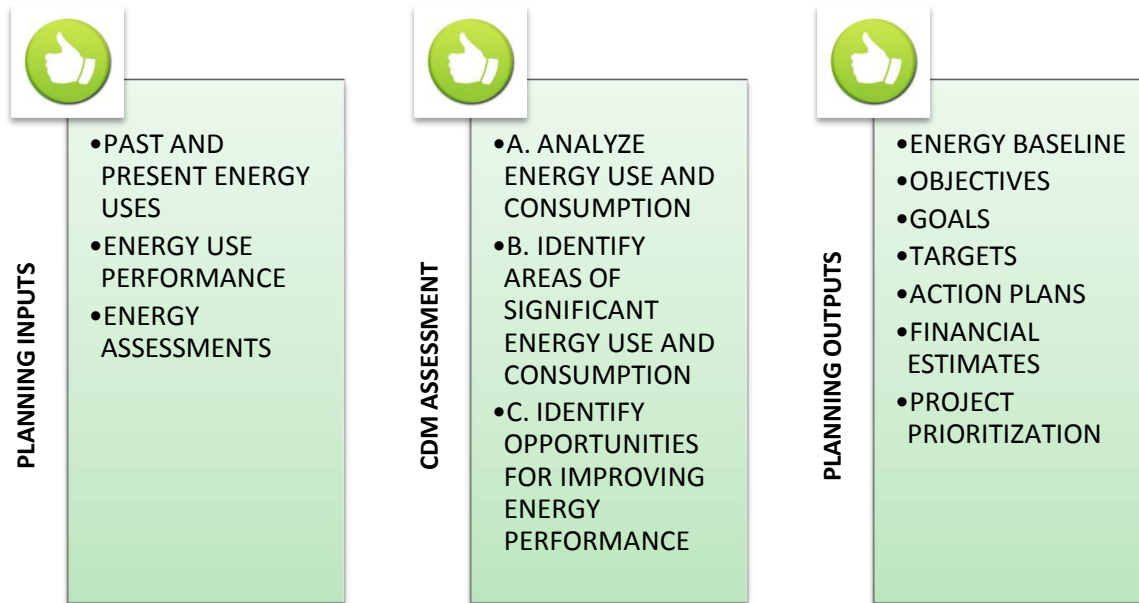
Recommend improvements and adjustments to the initial Plan; determine the course of corrections and modifications to the Plan.

The Township of Wellington North implements tools to maintain and continually improve energy conservation and demand management. Benchmarking is the process that the Township of Wellington

North has implemented for collecting, analyzing and relating energy performance data of comparable activities, with the purpose of evaluating and comparing performance between or within entities.

The CDM Planning Process including inputs and outputs, is visually illustrated below:

CDM Planning Process Inputs and Outputs



## VISION, GOALS AND OBJECTIVES

The Township of Wellington North is committed to a conscious process of community development and planning. The Township's vision for the future is one of sustainable development, land stewardship and development of healthy communities as illustrated in the diagram below.



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## COMMITMENT TO ONTARIO'S FUTURE

This document represents the planned energy conservation activities for the municipality and is consistent with Township obligations under the Green Energy Act 2009. It also explores mechanisms that will improve municipal energy conservation.

As well, the Township of Wellington North's Conservation Demand Management plan has been established in alignment with Wellington County's 20-year Strategic Plan.

The following references to Wellington County's 20-year Strategic Plan represent common interests held by Wellington North Township:

A. A significant importance is placed upon maintaining the following:

- ✓ Clean air
- ✓ Clean water
- ✓ Healthy communities
- ✓ Natural heritage
- ✓ Cultural heritage
- ✓ Public health
- ✓ Public safety

B. Meeting the needs of the present without compromising the ability of future generations to meet their own needs is a value resonant with the Township of Wellington North. This objective is accomplished through balanced decision making, protecting and enhancing the natural



environment, enhancing economic competitiveness through energy conservation practices, and fostering a healthy, clean and safe community.

The Township of Wellington North Plan will incorporate energy management into all Township activities, including organizational and operational procedures, procurement practices, financial management and investment decisions.

The Conservation Demand Management Plan of the Township of Wellington North includes the major goals and objectives within the five-year period. The Plan will evolve and will be subject to adjustments as deemed necessary to best serve rate payer interests and the Township's aim for optimized operations. The Township of Wellington North has also set the overall energy reduction target for the period of 2014-2019 at 6%.

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## MAJOR OBJECTIVES, GOALS AND ACTIONS OF THE CONSERVATION DEMAND MANAGEMENT PLAN

The Conservation and Demand Management Plan was developed as a blueprint for energy conservation activities in the Township of Wellington North. It is consistent with the responsibility of the Township Council to address the need to develop mechanisms to balance energy demand and reduction of energy consumption and GHG emissions for municipal buildings.

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## STRATEGY

The Township of Wellington North is concentrating primarily on measures that have a relatively short payback period and a high return.

The Township of Wellington North promotes its image and commitment to Ontario's future through a proactive and public energy strategy based on continuous improvement. Furthermore, the Township has embedded four major principles into its operations and other activities:

- ✓ Restoring and preserving the environment and natural resources
- ✓ Reducing waste and pollutants
- ✓ Educating the public about energy conservation
- ✓ Collaboration for the development of environmental laws and regulations

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## ENERGY MANAGEMENT POLICY

The Township of Wellington North follows energy management practices to assist in improving the organization's energy and financial performance, while distinguishing the municipal operations as a leader in environmental and natural resource protection in the local community setting.

## OBJECTIVES

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- ✓ Develop economically strong, clean and healthy communities, while preserving the natural heritage through conserving natural resources, effective energy demand management and GHG emissions reduction.
- ✓ Work with the community to provide education regarding energy conservation, and the importance of energy demand management and GHG reduction.
- ✓ Establish goals relating to conservation of natural resources through the aforementioned means.
- ✓ Determine challenges facing energy conservation within the community.
- ✓ Prioritize cost-efficient energy conservation projects for implementation.
- ✓ Determine environmental impacts and economic benefits of energy conservation projects.
- ✓ Support the Energy Conservation Demand Management Committee in achieving successful implementation of projects.
- ✓ Promote further energy surveys, assessments and audits.
- ✓ Commit to development of sustainable energy practices to meet the needs of the present, without compromising the ability of future generations to meet their own needs.

## GOALS

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- ✓ Set an example for staff and the public in energy conservation best practices.
- ✓ Demonstrate fiscal responsibility utilizing funding programs to implement cost effective energy savings projects that will benefit ratepayers.
- ✓ Deliver responsible municipal planning which balances the needs of protecting and enhancing the environment.
- ✓ Achieve 6% reductions in energy consumption.
- ✓ Explore opportunities to balance energy supply and demand with maximum resource efficiency.
- ✓ Create economic net benefits to the municipality and enhance economic competitiveness.
- ✓ Determine avenues to promote local, national and global environmental preservation initiatives.
- ✓ Work collaboratively with the local utility and other agencies to implement beneficial and cost-effective programs that enhance energy efficiency and load management.
- ✓ Prioritize sustainable energy goals and targets.
- ✓ Establish a reputation as a Township that encourages the development of energy efficient building designs and uses energy efficient equipment for upgrades.

## ACTIONS

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- ✓ Encourage community engagement and involvement with Energy Conservation Demand Management Committee to further develop and sustain energy conservation and environmental protection initiatives.
- ✓ Provide consumer information and education on energy conservation through promotion at local fairs, events, and Township office meetings.
- ✓ Promote activities for implementation of energy conservation programs.
- ✓ Explore opportunities with the Upper Grand District School Board and other agencies to provide workshops and education at the elementary level.
- ✓ Encourage regular discussions and operational changes relating to energy efficiency.

- ✓ Investigate initiatives undertaken by other Ontario and Canadian communities, which can be adopted for the Township of Wellington North.
- ✓ Provide ongoing education regarding energy management, and energy savings opportunities and results, to management and operations staff.
- ✓ Communicate energy conservation projects to local energy utilities to leverage community advertising of event.
- ✓ Provide case studies and examples of energy savings potential through publishing information and best practices of municipal buildings energy retrofit projects.
- ✓ Encourage rate payers to provide best practice examples and results for publishing.
- ✓ Create methodology and a scorecard to provide continual monitoring, and track progress of energy related municipal initiatives and projects.
- ✓ Identify sources of financing and support for energy projects and programs.
- ✓ Work with the Council to encourage and improve energy efficient municipal land development practices.
- ✓ Urge municipal developers to produce energy-efficient building designs.
- ✓ Provide education to municipal personnel promoting energy efficient use and GHG reduction.
- ✓ Establish a designated Team Lead to be responsible for lighting optimization and for approaching the contractors to stay abreast of technological advances and opportunities.
- ✓ Reduce transportation fuel costs by increasing fuel efficiency, promoting efficient use of vehicles, reducing demand for travel and using car-pooling options.

## MUNICIPAL COUNCIL COMMITMENT

The Council of the Township of Wellington North has designated a leadership team, the Energy Conservation Demand Management Committee, from diverse key stakeholders to manage the energy Conservation and Demand Management Plan initiatives. This Committee will implement the five-year Conservation and Demand Management Plan in the local municipality.

The Council also follows through on the commitments expressed in the Conservation and Demand Management Plan, and has fully endorsed this document.

The Council at the Township of Wellington North is fully committed to energy conservation and Greenhouse Gas emission reduction, as evidenced by:

- ✓ Adapting the Conservation and Demand Management Policy
- ✓ Fostering energy conservation awareness and responsibility of employees
- ✓ Setting and approving the Conservation and Demand Management objectives and making sure that targets are being met
- ✓ Communicating the importance of meeting the objectives, goals and targets
- ✓ Identifying the Energy Conservation Demand Management Committee and supporting their decisions
- ✓ Establishing the Conservation and Demand Management Plan guiding principles
- ✓ Conducting ongoing Conservation and Demand Management Plan reviews
- ✓ Ensuring the availability of resources
- ✓ Conducting a review of goals and achievements

## RESPONSIBILITY, AUTHORITY AND COMMUNICATION

The Council of the Township of Wellington North ensures the availability of resources essential to establish, implement, maintain and improve the energy conservation and demand management activities and the execution of this plan. Resources include human resources and specialized skills, organizational infrastructure, technology and financial resources.

The Township of Wellington North's activities, as related to energy conservation and Greenhouse Gas emission reduction advocacy, are to be implemented through the following framework levels:

- The Township of Wellington North Council will:
  - ✓ Approve the Conservation and Demand Management Plan
  - ✓ Determine on-going modifications to the Plan as necessary
  - ✓ Provide advocacy in promoting energy conservation and Greenhouse Gas emission reduction
  - ✓ Provide general oversight of the plan rollout into operational realities
  - ✓ Ensure that the legal requirements are met
- The Energy Conservation Demand Management Committee will:
  - ✓ Develop and recommend objectives, goals and actions
  - ✓ Identify best practices
  - ✓ Develop the Conservation and Demand Management Plan and facilitate various plan execution activities
  - ✓ Manage and monitor performance against Plan and report to council
  - ✓ Calculate portfolio wide improvements vs. targets
  - ✓ Set new goals as appropriate
  - ✓ Implement Every Kilowatt Counts initiatives:
    - Put computers in "sleep" mode
    - Turn machines off when not in use
    - Shut off lights when parting from vacant room
    - Request janitorial contractors to minimize lights
    - Implement Energy Conservation Measures in Appendix B
- Key project stakeholders, subject matter experts and consultants will:
  - ✓ Support the Conservation and Demand Management Plan execution
  - ✓ Provide input in planning and project activities as required

## ENERGY CONSERVATION DEMAND MANAGEMENT COMMITTEE AND RELATIONSHIP MANAGEMENT

### CDM TEAM

The Council of the Township of Wellington North has designated the Energy Conservation Demand Management Committee below to direct the energy conservation activities.

## MEMBERS:

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- ✓ PUBLIC WORKS
- ✓ ROADS/WORKS DEPARTMENT
- ✓ WATER & SEWER DEPARTMENT
- ✓ BUILDING DEPARTMENT
- ✓ RECREATION DEPARTMENT
- ✓ WELLINGTON NORTH POWER

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## ENERGY MANAGEMENT ROLES AND RESPONSIBILITIES

The accountabilities of the leadership roles and relationships with other stakeholders are described below.

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### CDM TEAM CHAMPION

- ✓ Has the overall management responsibility over financial budget allocation for projects and policy development.
- ✓ Has ultimate responsibility for the development, implementation, approval, and continued operation of the Township's Energy Conservation Demand Management Committee activities. The authority and responsibility for day-to-day management of the Conservation Demand Management activities are delegated to the respective Department Managers.
- ✓ Provides leadership to promote a work culture that stresses the importance of energy conservation and pollution prevention.
- ✓ Assures that qualified support staff are assigned to energy conservation projects and activities, and that all staff are properly trained to perform their energy conservation duties.
- ✓ Assures that communication takes place regarding the effectiveness of the energy conservation and pollution prevention projects and activities.
- ✓ Serves as the focal point for all energy conservation and pollution prevention activities within the Township.
- ✓ Gathers the Energy Conservation Matrix with assistance of the Energy Conservation Demand Management Committee and reports to Township Council.
- ✓ Works with Departments in determining the adequacy of energy conservation actions.
- ✓ Ensures that all proper documentation is filed with the Ministry of Energy (or as regulatory requirements mandate) and energy conservation activities are performed. The spot checks shall be documented, and any problems communicated with the Energy Conservation Demand Management Committee.

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### ENERGY CONSERVATION DEMAND MANAGEMENT COMMITTEE

- ✓ Serve as permanent support of energy conservation and pollution prevention functions.
- ✓ Monitor energy conservation and pollution prevention activities with the help of Department Managers and consultants where designated.
- ✓ Ensure that appropriate actions are taken as identified through Energy Conservation Matrix indicators.

- ✓ Ensure that appropriate plan adjustments are made as a result of internal and external energy audits and other assessments.
- ✓ Review and approve all energy conservation projects and updates, and then submit to Council for final approvals.
- ✓ Monitor and coordinate energy conservation projects.
- ✓ Communicate with rate payers to ensure that needs are met, and to solicit feedback on services as they relate to energy conservation.
- ✓ Ensure compliance with all regulatory requirements.

## DEPARTMENTS

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- ✓ Serve as the primary technical contact on issues or questions pertaining to their specific expertise.
- ✓ Provide daily direction of the technical activities within their work unit; ensures that energy conservation projects and actions are in accordance with sound technical practices.
- ✓ Ensure that appropriate actions are taken based on CDM Matrix indicators from the analyses within their work unit.
- ✓ Communicate regularly with Energy Conservation Demand Management Committee on technical issues and problems.

## SUPPORT (CONSULTANTS AND SUBJECT MATTER EXPERTS):

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- ✓ Obtain a general knowledge of policies and procedures related to energy conservation.
- ✓ Apply energy conservation methodologies used within their work areas.
- ✓ Notify their immediate supervisor of any issues/problems with any equipment.
- ✓ Maintain and follow appropriate maintenance and other energy conservation activities for their work areas.
- ✓ Gather energy conservation data as assigned.

## COMPETENCE, AWARENESS AND TRAINING

The Township of Wellington North has recognized the importance of a community-wide natural resources conservation and environmental preservation culture, driven by municipal government and key stakeholders. The Township of Wellington North will provide regular newsletters and other updates on how the energy conservation objectives and targets are met. The Township of Wellington North will also identify the GHG emission reduction issues on a regular basis.

The Township of Wellington North commits to developing technical competencies so that any person performing tasks will have the potential to cause a significant energy conservation impact. A consistent effort will be made to identify training needs, create and modify training plans and create awareness.

Employees will receive training through instruction documents, directives and job aids. Training may be related to specific equipment, processes and monitoring of energy conservation and pollution prevention.

# ENERGY CONSUMPTION

## FACILITY ASSESSMENTS

The Township of Wellington North performed energy audits and/or facility assessments for the following facilities:

February 28, 2013:

- ✓ Arthur Wastewater Plant
- ✓ Mount Forest Wastewater Plant

March 1, 2013:

- ✓ Senior Citizens Hall-Arthur
- ✓ Chamber of Commerce-Arthur
- ✓ 160 Frederick St. Sewage Pumping Station-Arthur
- ✓ 60 Wells St. Sewage Pumping Station-Arthur
- ✓ Arthur Arena

April 25, 2013:

- ✓ Mount Forest Public Works Building
- ✓ 651 Cork St. Sewage Pumping Station-Mount Forest
- ✓ 555 Perth St. Sewage Pumping Station-Mount Forest
- ✓ 191 Durham St. Sewage Pumping Station-Mount Forest
- ✓ North Water Sewage Pumping Station-Mount Forest
- ✓ Arthur Public Works Building
- ✓ Well #7-Arthur
- ✓ Wells #8A-8B-Arthur
- ✓ Well #5 (non-producing well)
- ✓ Well #1 (non-producing well)

May 2, 2013:

- ✓ Mount Forest Pool
- ✓ Fire Hall-Mount Forest
- ✓ Fire Hall-Arthur
- ✓ Mount Forest Arena & Sports Complex
- ✓ Well #3-Mount Forest
- ✓ Well #4-Mount Forest
- ✓ Well #5-Mount Forest
- ✓ Well #6-Mount Forest

The five-year CDM Plan incorporates the results of these facility audits and assessments. This Plan can be adjusted accordingly, with the completion of additional assessments as required. The Township of Wellington North anticipates continuously improving the energy management aspects related to municipal buildings.

The Township of Wellington North is planning, within the next one-year period, to perform energy assessments at:

- ✓ Kenilworth Municipal Office
- ✓ Damascus Hall

## GHG BASELINE

The Township of Wellington North completed its baseline GHG report and filed with the MOE on July 1, 2013. This baseline report gathered data from January 2011 – December 2011, with additional evaluations from energy assessments and updates for 2012 and 2013. The information collected via energy audits and extensive analyses has formed the basis from which targets, activities and measures have been set in the five-year CDM Plan. (See Appendix A and Appendix B)

## FIVE YEAR ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN

The Township of Wellington North analyzed the anticipated economic and social effects of global warming and developed a five-year Plan targeted to reduce Greenhouse Gas emissions and energy consumption. These analyses have identified a variety of cost-effective solutions to reduce Greenhouse Gas emissions and conserve energy.

Options range from comprehensive market-based actions to comply with regulations, to reduced emissions and improved energy efficiency of power equipment through retrofits and other upgrades. These analyses are based on detailed energy studies in municipal operations, of technologies to reduce emissions.

### COMMON-SENSE APPROACHES THROUGH ENERGY CONSERVATION AND CLEAN AIR

The Township of Wellington North is committed to energy conservation and pollution prevention by integrating energy management in the organizational structure, so that energy measures can be easily implemented.

### ORGANIZATIONAL INTEGRATION

Responsibilities and interactions of the decision makers, for the implementation of the energy conservation measures, are brought into conformity within each departments' operations. The delegation of functions and competencies extend from Council to Township employees. Furthermore, a comprehensive coordination ensures the fulfillment of energy conservation actions and tasks.



The Township of Wellington North has established an Energy Conservation Demand Management Committee dedicated to energy conservation and pollution prevention management. Energy management is also considered as a subtask of department managers. Energy-related issues and questions are also directed to external professional services and consultants. These external services contribute new knowledge, and optimize processes based on their specialization.

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## ENERGY MANAGEMENT IN OPERATIONAL FUNCTIONS

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### FACILITY MANAGEMENT

Facility management is an important part of energy consumption optimization, because a significant proportion of complete operating costs relate to energy costs. Facility management encompasses multiple aspects to ensure functionality of the built environment by integrating people, place, processes and technology.

The central goal of facility management is to reduce costs for the provision of energy in buildings and facilities without compromising work processes. It is important to keep the excellent level of quality and availability of municipal services, while service life of the equipment and the ease of use should remain consistent, or improve. The Township of Wellington North is consistently optimizing facility management practices to achieve economic, ecological, risk-based and quality-based targets. The Township plans to minimize the total cost of the energy-related processes by implementing energy efficient techniques and technologies.

The most important key figure in the context of Facilities Management is kilowatt-hours per square metre per year (kWh/m<sup>2</sup>a). Based on this key figure, properties can be classified according to their energy consumption. The Township of Wellington North will establish the key performance matrix to monitor the annual performance of energy management in the facilities.

In addition, the Township will manage competencies, roles and responsibilities as they relate to facilities management to ensure that all actions and tasks are clearly described and distributed.

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## LOGISTICS

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Core logistics task (transportation) can save costs and protect from environmental pollution. The relevant factors are the choice of means of transportation, duration and length of transportation, and cooperation with logistics service providers.

The impact of logistics cannot be ignored; it is directly responsible for more than 14% percent of GHG emissions worldwide. For this reason, the Township of Wellington North is investigating Green Logistics opportunities and partners.

Possible courses of action to consider in terms of green logistics include:

- ✓ Shift to eco-friendly transport carriers

- ✓ Route and load optimization
- ✓ Optimizing physical logistics processes by providing sophisticated IT support
- ✓ Encouraging car pooling
- ✓ Designating preferential parking for green vehicles

Transportation is an important part of the operations within municipalities, and minimizing transportation is an important consideration in determining energy savings. It is important to consider how transportation can be reduced, while not impeding the effectiveness of the operation/municipal service. Telephone calls or video conferencing are options, in lieu of physical presence for some meetings or dialogue, to reduce transportation. Home Office is another possibility by which the Township can protect the environment indirectly.

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## ENERGY PROCUREMENT AND RENEWABLE GENERATION

Procurement is the acquisition of goods or services. Energy prices fluctuate constantly, which can significantly affect the energy bill of the Township of Wellington North. Therefore, energy procurement decisions, where possible, will be based on the balance of the most economical and environmentally clean options available. The Township of Wellington North will continue to evaluate opportunities to invest in eco-friendly alternatives such as solar power.

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## OPERATIONS PLANNING AND CONTROL

Impending changes in the structure of energy in operations require an increasing demand for storage capacity. Operations planning and control must deal with the problem of limited storability of energy. In principle, there is the possibility to store energy electrically, mechanically or chemically. Another trend-setting technology is lithium-based electrochemical storage, which can be used in electric vehicles. The Township of Wellington North has realized the significance of this topic and aims to both promote technological breakthroughs, and support the rapid introduction of new energy storage. Also, throughout the operations planning process, peak demand hours potentially could be avoided for the benefit of a unified load profile, as feasible.

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## MAINTENANCE

Detailed maintenance is essential to support good energy management practices. Maintenance is the combination of all technical and administrative actions, including supervision actions, intended to retain an item in, or restore it to, a state in which it can perform a required function. Power losses and cost increases can be avoided.

It is possible to save energy and costs with the help of maintenance; examples include:

- ✓ Defrosting fridges
- ✓ Insulating hot water systems
- ✓ Improving leaks in building envelopes
- ✓ Lubricating parts to increase equipment efficiency

- ✓ Implementing sustainable operations and maintenance practices

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## INFORMATION TECHNOLOGY

The Township of Wellington North is harnessing Green IT principles and practices. Servers, and associated subsystems, such as monitors, printers, storage devices, and networking and communications systems, are gradually replaced with energy efficient models. Throughout the replacement, the Township is using environmentally safe disposal methods or partnerships that will result in minimal or no impact to the environment. With the help of IT, work processes can be eliminated or improved significantly.

Approaches and practices utilized:

- ✓ *Purchasing of devices:* Ensure purchase of Energy Star equipment, manufactured to resource-conservation standards, consuming less power than comparable devices. Where no Energy Star equipment is available, the Township will perform its own energy comparative studies before purchasing.
- ✓ *IT support:* Many programs support and complement organizations' energy conservation initiatives, like screen savers, low energy consumption computer profiles, etc.

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## UNDERSTANDING THE BENEFITS

Taking actions to reduce Greenhouse Gas emissions yields important economic benefits. These benefits include the reduced risk to human health and welfare that results from lower emissions of Greenhouse Gases, and reduced contribution to global warming and climate change. Appendix B and Appendix C illustrate the direct financial benefits from the implementation of Energy Conservation Measures. However, there are indirect social benefits of much greater importance to the community.

The Township of Wellington North is committed to delivering sustainable and reliable cost effective services to the community and meeting regulatory requirements and obligations. The Township of Wellington North seeks to enhance CDM to facilitate future implementation of renewable generation, green gas and energy reduction projects. This CDM Plan also identifies opportunities for continued energy conservation measures and sustainability initiatives.

The Township of Wellington North anticipates a variety of benefits in having an energy Conservation and Demand Management Plan. Reducing energy consumption can result in freeing up limited funding for other community projects. With a focus on being 'green,' this commitment resonates with general public opinion.

This Plan outlines the long-term strategy for managing Conservation Demand Management. The current Energy Conservation and Demand Management Plan covers the planned conservation projects for the next five years (Appendix B and Appendix C). However, planning is not a static process. As circumstances change (e.g. technologies, standards, knowledge, etc.), this Plan may be revised accordingly. Interim reviews and specific Plan adjustments may be required to better serve the dynamics of the community

environment. Additional research and planning will be necessary to establish consumption targets and develop initiatives for consideration during the budget process and coordination with capital forecasts and effective asset management.

## ANALYSIS: MEASURES

### ENERGY CONSERVATION MEASURES (ECM)

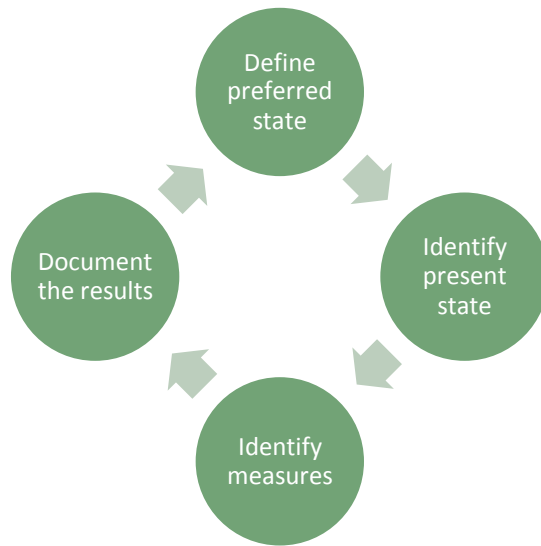
The Energy Conservation Measures considered in development of this Plan include:

- ✓ Technical Measures
- ✓ Organizational Measures
- ✓ Behavioural Measures

### IDENTIFICATION OF CDM MEASURES

Energy audits and assessments were conducted in the major facilities owned by the Township of Wellington North. Further discussions and consultations with staff and managers did reveal additional operational and behavioural opportunities. In addition, future assessments are planned in two facilities. Through the energy audits, opportunities were identified as an additional stimulus, where possible, through accessing the OPA incentive programs. Given the status of these programs, and their slated end date of December 31, 2014, those projects identified as eligible for the OPA program incentives, which provide immediate cost savings and energy conservation target achievement potential, are to be considered as a high priority. Opportunities and Energy Conservation Measures have been identified for low-cost operational and maintenance improvements in existing buildings and equipment. This primary intention is optimizing and integrating the existing systems with necessary energy efficiency upgrades, rather than relying on major equipment replacement.

The Energy Conservation and Demand Management Plan is developed based on the Ministry of Energy (MOE) guidelines and recommended approach. During the development of the five-year Energy Conservation and Demand Management Plan for the Township of Wellington North, Burman Energy applied strategic planning tools and methodologies. CDM planning process evolved through the following stages:



- **DEFINE THE PREFERRED STATE** - The preferred state sets the long-term direction and vision for energy management for the Township of Wellington North. This is where the Township wishes to be with respect to energy and energy conservation. This, in essence, forms the basis used to identify goals and objectives.
- **IDENTIFY THE PRESENT STATE** - The present state identifies the current energy use within the Township of Wellington North, and indicates the variance between current energy usage and preferred energy usage.
- **IDENTIFY MEASURES** - At this stage, specific measures and steps are identified to move from the present to the preferred state of energy management. Priorities are assigned to aid with effective implementation of the Plan.
- **DOCUMENT RESULTS** - The results of the strategic planning sessions should be documented in the Conservation and Demand Management Plan along with the other planning requirements discussed in this guide.

A summary of recommended measures for the Township of Wellington North follows:

### Summary of Energy Conservation Measures

PREFERRED STATE	PRESENT STATE	MEASURES	PRIORITY	TIMELINE
<b>ORGANIZATIONAL AND BEHAVIORAL MEASURES</b>				
<b>Established Energy Conservation Organizational System</b>	Energy Conservation Demand Management Committee is designated but lacks a	Implement sustainable CDM Program	Medium	3 years

	structured evaluation driven program			
<b>Sustained employee awareness and engagement in energy conservation activities</b>	Staff is building awareness about energy conservation and is getting engaged in various activities	Provide training and sustain energy conservation ideas and initiatives	Low	4 years
<b>Consumer information and education provided</b>	Limited information about energy conservation best practices	Explore experiences in other communities and work with Wellington North Power to promote energy conservation best practices	Low	4 years
<b>TECHNICAL MEASURES</b>				
<b>Optimized energy efficient lighting</b>	Lighting energy consumption in the buildings is high. Energy inefficient T-12,HO lamps require replacement	Install LED lighting , T-8 lamps and ballast , de-lamp and remove unnecessary light bulbs	Medium	3 years
<b>Optimized energy consumption of buildings</b>	Energy consumption for building maintenance is high	Monitor energy consumption scheduling and install timers and energy-smart products	Low	4 years
<b>Optimized functional parameters of the Pumping stations with energy efficient design</b>	Energy inefficient pumps	Install VFDs to optimize the functional parameters and energy consumption of the remaining pumps	High	1-2 years
<b>Sustainable low cost renewable generation for local consumption</b>	No existing solar generation projects	Install solar generators where possible and work with stakeholders to enable renewable generation projects	Low	4 years
<b>Demand Response</b>	No existing DR3 reduction of energy use during periods of peak demand	Participate in Demand Response Program	Medium	3 years

## COSTS, SAVINGS AND LIFESPAN OF MEASURES

Appendix B illustrates the direct cost and savings estimates for the proposed high priority measures, the estimated time that measures will be in place, and post-project performance monitoring guidelines.

## RENEWABLE ENERGY

The Township of Wellington North is currently investigating opportunities for renewable energy projects. Any renewable energy projects will be included in the Energy Conservation and Demand Management Plan upon finalization.

## PLAN IMPLEMENTATION

The Conservation and Demand Management Plan considers overall five-year targets for GHG reduction, and includes recommendations as to which measures can be most readily implemented to achieve targets. Informed decisions have been determined based on the established priorities.

The Township of Wellington North recognizes that it is of critical importance to improve energy efficiency and reduce operating costs. It is equally important to demonstrate commitment to the environment through the reduction of Greenhouse Gases, while continually improving air quality. Aligned in importance is the recognition that these actions are to be carried out without adversely affecting the Township's operations. All Township of Wellington North staff will play an essential role in the success of this five-year energy Conservation Demand Management Plan. It will be the responsibility of the newly formed Energy Conservation Demand Management Committee to ensure that energy management measures are properly communicated, and effectively implemented.

## PRIORITIZING OF MEASURES

The conservation measures are prioritized in several areas: implementation costs and savings, simple payback and net present value (NPV) analysis. Other less obvious measures are included based on factors such as ease of implementation and importance, and the propensity to participate as determined by the Township of Wellington North and/or the Energy Conservation Demand Management Committee.

## TIMELINES FOR MEASURES IMPLEMENTATION

Timelines are assigned based on measures/ facility prioritization. These timelines allow for flexibility during implementation, and will be dependent upon the costs/incentives and business decisions driven by the Township of Wellington North.

## RESPONSIBILITY FOR MEASURES

The Energy Conservation Demand Management Committee and senior staff are responsible for implementation of the conservation measures. Additionally, the Township of Wellington North will establish guidelines, and/or use discretion to determine accountability for implementation.

## INTEGRATION OF CORPORATE ACTIVITIES WITH CDM PLAN

The Township of Wellington North will make available any information relating to municipal initiatives geared toward energy conservation so that results and targets are met. The Township of Wellington North will work with other stakeholders, agencies and organizations to collaboratively achieve targets. Promotion of the Conservation Demand Management Plan goals and objectives will encourage successful implementation of the Plan.

## MONITORING & EVALUATION

### POST- CONSERVATION AND DEMAND MANAGEMENT PLAN (DUE JULY 1, 2019)

O. Reg. 397/11 requires that the Township of Wellington North report on the results of the Plan at the end of the five-year planning period. At that time, the Township of Wellington North will provide an update to include any revisions to the Plan. The Township of Wellington North submitted and published its 2011 Energy and Greenhouse Gas Emissions Report on July 1, 2013, and will continue to do so annually until July 1, 2019. At that time, the revised Plan will provide:

- ✓ A description of current and proposed measures for conserving and otherwise reducing energy consumption and managing its demand for energy
- ✓ A revised forecast of the expected results of the current and proposed measures
- ✓ A report of the actual results achieved
- ✓ 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
- ✓ Any additional Council initiatives geared at achieving or establishing new targets

## ADMINISTRATION

As per the requirements of O. Reg. 397/11, the Conservation and Demand Management Plan is available for public access through:

- ✓ Publishing the Conservation and Demand Management Plan on the Township of Wellington North website at [www.wellington-north.com](http://www.wellington-north.com)
- ✓ Printed form, available for the public at the Township of Wellington North municipal office

An Energy Mandate is included in Appendix D, to be presented for Council endorsement. This Energy Mandate affirms commitment by the Township of Wellington North to implement the five-year Conservation and Demand Management Plan.



## CONCLUSIONS AND RECOMMENDATIONS

### CONCLUSIONS

- ✓ The Township of Wellington North is on its way to the implementation of a robust conservation culture
- ✓ The Township of Wellington North has completed the majority of the energy audits supporting technology investment decisions, to reduce electricity expenditures
- ✓ Reasonable targets have been set, and appear to be achievable according to the analysis conducted through the facility assessments
- ✓ A structured implementation approach has been outlined to secure the success of the CDM initiative

### RECOMMENDATIONS

- ✓ Council adoption of Energy Mandate
- ✓ Develop a Conservation and Demand Management Program that will allow for the implementation of the Conservation Demand Management Plan
- ✓ Complete the additional energy audits and assessments at the Township office in Kenilworth and Damascus Hall
- ✓ Revise Plan as required based on analysis, energy assessments and energy consumption trends
- ✓ Revisit the energy assessments toward the end of the four-year period to facilitate both the reporting and planning process in the next stages

## APPENDIX

### **Appendix A\***

GHG Report – 2011 (as submitted July /2013, and forming the baseline “present state” from which the ECDM Plan is derived)

GHG Report – 2012 (required submission - July 1, 2014)

*\*Appendix A is located at [www.wellington-north.com](http://www.wellington-north.com)*

### **Appendix B**

Energy Conservation and Demand Management Plan Details (2013 Baseline Data)

Appendix B-1 – Financial Summary Tables

Appendix B-2 – Energy Conservation Measures: Waste Water Facilities

Appendix B-3 – Energy Conservation Measures: Recreational Facilities and Township Buildings

### **Appendix C**

Energy Conservation and Demand Management Plan Details (2013 Baseline Data)

Appendix C-1 – Energy Savings Summary Tables

Appendix C-2 – Energy Conservation Measures: Waste Water Facilities and Township Buildings

Appendix C-3 – Energy Conservation Measures: Recreational Facilities

Appendix C-4 – Project Timelines

## APPENDIX A – GREENHOUSE GAS REPORTS

*GHG reports are available on the Township of Wellington North website at [www.wellington-north.com](http://www.wellington-north.com)*

## APPENDIX B – SUMMARY OF MEASURES

Operation	Type	MEASURES				
		Lighting Retrofit	Non-lighting Retrofits and Optimization			
			Building controls	Replace pumps	Replace motors	VFD Other
Well #3	Water Facility					X
Well #4	Water Facility	X				X
Well #5	Water Facility	X				X
Well #6	Water Facility					
Well #7	Water Facility	X				X
Mount Forest WWTP	Water Facility		X			
North Water Sewage	Water Facility	X		X		138 KW sewage pump operation with generator
Arthur WWTP	Water Facility	X				X Replace piping
Frederick Street Sewage	Water Facility	X				
Mount Forest Arena	Rec. Facility			XXX		X
Mount Forest Pool	Rec. Facility	X				X
Arthur Arena	Rec. Facility	X				
Arthur Fire Hall	Rec. Facility	X				

## FINANCIAL SUMMARY TABLES

### ENERGY CONSERVATION MEASURES

#### WATERWORKS FACILITIES

ECM #	Description	Estimated Costs (\$)	Estimated Incentives (\$)	Projected Annual Savings (\$)	Simple Payback Period (years)
ECM#1	<b>Well #3</b>  Install a 40 HP VFD on submersible pump	\$8,000	\$2,145	\$8,160	0.72 years
ECM#2	<b>Well #4</b>  Install a 30 HP VFD on submersible pump	\$6,000	\$1,610	\$3,536	1.24 years
ECM#3	<b>Well #4</b>  Replace & re-ballast T12 lamps with T8s	\$60	\$24	\$12	3 years
ECM#4	<b>Well #5</b>  Install an 80 HP VFD on submersible pump	\$12,000	\$3,980	\$6,816	1.17 years
ECM#5	<b>Well #5</b>  Replace & re-ballast T12 lamps with T8s	\$60	\$24	\$12	3 years
ECM#6	<b>Well #6</b>  Install a 75 HP VFD on submersible	\$11,250	3,980	6,120	1.19 years

pump

<b>ECM#7</b>	<b>Well #7</b>	<b>\$8,000</b>	<b>\$2,145</b>	<b>\$5,984</b>	<b>0.98 years</b>
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Install a 40 HP  
VFD on  
submersible  
pump

<b>ECM#8</b>	<b>Well #7</b>	<b>\$120</b>	<b>\$48</b>	<b>\$25</b>	<b>2.9 years</b>
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Replace & re-  
ballast T12  
lamps with T8s

## ENERGY CONSERVATION MEASURES

## WASTEWATER FACILITIES

ECM #	Description	Estimated Costs (\$)	Estimated Incentives (\$)	Projected Annual Savings (\$)	Simple Payback Period (years)
ECM#9	<b>Mount Forest WWTP</b>  Lighting control	\$3,000	\$500	\$3,910	0.64 years
ECM#10	<b>North Water Sewage</b>  138 KW sewage pump operation with generator	\$480 (fuel)	\$0	\$2,400	0.2 years
ECM#11	<b>North Water Sewage</b>  Replace & re-ballast T12 lamps with T8s	\$240	\$108	\$50	2.64 years
ECM#12	<b>Arthur WWTP</b>  - Install two 60 HP VFDs on the aeration blowers  - Replace piping	\$18,000	\$6,440	\$19,000	0.61 years
ECM#13	<b>Arthur WWTP</b>  Replace metal halide lamps with 4-lamp T8s	\$2,240	\$1,260	\$574	1.7 years
ECM#14	<b>Frederick Street Sewage</b> Replace & re-ballast T12 lamps with T8s	\$120	\$48	\$25	2.9 years

## ENERGY CONSERVATION MEASURES

## RECREATIONAL FACILITIES &amp; TOWNSHIP BUILDINGS

ECM #	Description	Estimated Costs (\$)	Estimated Incentives (\$)	Projected Annual Savings (\$)	Simple Payback Period (years)
ECM#15	<b>Mount Forest Arena</b> Install VFDs on: - 15 HP tower pump - (2) 30 HP cooling glycol pumps - 30 HP cooling tower fan	\$15,750	\$5,635	\$5,120	1.97 years
ECM#16	<b>Mount Forest Pool</b> Install VFD on 15 HP filter pump	\$3,000	\$805	\$1,224	1.8 years
ECM#17	<b>Mount Forest Fire Hall</b> Replace & re-ballast T12 lamps with T8s	\$2,100	\$504	\$140	11.4 years
ECM#18	<b>Arthur Arena</b> Install VFDs on 25 HP brine pump	\$5,000	\$1,340	\$2,792	1.31 years
ECM#19	<b>Arthur Arena</b> Replace & re-ballast T12 lamps with T8s	\$1,800	\$470	\$230	5.78 years
ECM#20	<b>Arthur Fire Hall</b> Replace & re-ballast F96 T12s with T8s	\$250	\$60	\$50	3.8 years



## APPENDIX C

### APPENDIX C-1

#### ENERGY SAVINGS SUMMARY TABLES

##### ENERGY CONSERVATION MEASURES

###### WATERWORKS FACILITIES

ECM #	Annual Energy and Demand Reduction			
	Description	Demand (kW)	Electric Consumption (kWh)	Priority Low/Medium/High
ECM#1	<b>Well #3</b>  Install a 40 HP VFD on submersible pump	<b>20 KW</b>	<b>60,000 KWh</b>	High*
ECM#2	<b>Well #4</b>  Install a 30 HP VFD on submersible pump	<b>11 KW</b>	<b>26,000 KWh</b>	High*
ECM#3	<b>Well #4</b>  Replace & re-ballast T12 lamps with T8s	<b>0.05 KW</b>	<b>110 KWh</b>	Low
ECM#4	<b>Well #5</b>  Install an 80 HP VFD on submersible pump	<b>28 KW</b>	<b>43,200 KWh</b>	High**
ECM#5	<b>Well #5</b>  Replace & re-ballast T12 lamps with T8s	<b>0.05 KW</b>	<b>110 KWh</b>	Low

<b>ECM#6</b>	<b>Well #6</b>  Install a 75 HP VFD on submersible pump	<b>25 KW</b>	<b>45,000 KWh</b>	High*
<b>ECM#7</b>	<b>Well #7</b>  Install a 40 HP VFD on submersible pump	<b>19 KW</b>	<b>44,000 KWh</b>	High*
<b>ECM#8</b>	<b>Well #7</b>  Replace & re- ballast T12 lamps with T8s	<b>0.1 KW</b>	<b>200 KWh</b>	Medium

## ENERGY CONSERVATION MEASURES

### WASTEWATER FACILITIES & TOWNSHIP BUILDINGS

ECM #	Annual Energy and Demand Reduction			
	Description	Demand (kW)	Electric Consumption (kWh)	Priority Low/Medium/High
ECM#9	<b>Mount Forest WWTP</b>	--	28,000 KWh	High
	Lighting control			
ECM#10	<b>North Water Sewage</b>	60 KW	--	
	138 KW sewage pump operation with generator			
ECM#11	<b>North Water Sewage</b>	0.2 KW	350 KWh	Medium
	Replace & re-ballast T12 lamps with T8s			
ECM#12	<b>Arthur WWTP</b>	25 KW	200,000 KWh	High
	- Install two 60 HP VFDs on the aeration blowers			
	- Replace piping			
ECM#13	<b>Arthur WWTP</b>	0.79 KW	6,000 KWh	Medium
	Replace metal halide lamps with 4-lamp T8s			

## ENERGY CONSERVATION MEASURES

### RECREATIONAL FACILITIES

ECM #	Annual Energy and Demand Reduction			
	Description	Demand (kW)	Electric Consumption (kWh)	Priority Low/Medium/ High
ECM#15	<b>Mount Forest Arena</b>  Install VFDs on:  - 15 HP tower pump  - (2) 30 HP cooling glycol pumps  - 30 HP cooling tower fan	16 KW	50,000 KWh	High*
ECM#16	<b>Mount Forest Pool</b>  Install VFD on 15 HP filter pump	5 KW	9,000 KWh	High*
ECM#17	<b>Mount Forest Fire Hall</b>  Replace & re-ballast T12 lamps with T8s	0.7 KW	1,000 KWh	Medium
ECM#18	<b>Arthur Arena</b>  Install VFDs on 25 HP brine pump	5.6 KW	30,000 KWh	High*

<b>ECM#19</b>	<b>Arthur Arena</b>	<b>0.93 KW</b>	<b>1,500 KWh</b>	Medium
	Replace & re-ballast T12 lamps with T8s			

*\*VFD implementation timeline will depend on the results from the Pilot Project at Well #5*

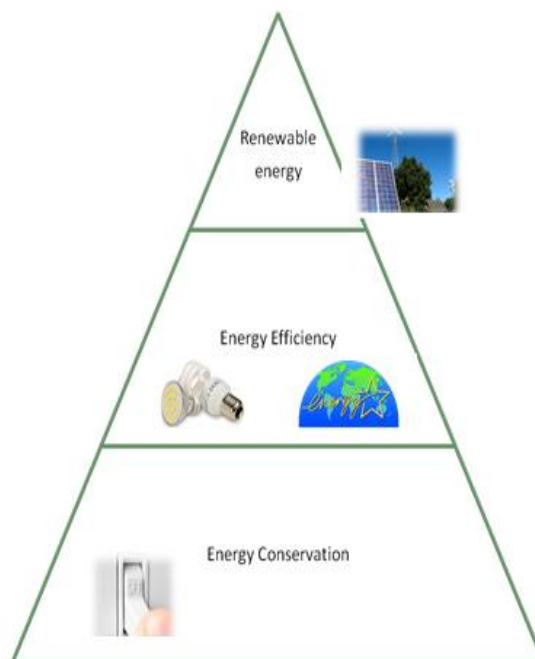
*\*\*VFD Evaluation Pilot Project at Well #5*

## APPENDIX C-4

### PROJECT TIMELINES

Project Timelines	
Project Priority Rating	Completion Timeline
High	2016
Medium	2017
Low	2018

### ENERGY PYRAMID



### ENERGY MANDATE FOR COUNCIL CONSIDERATION

WHEREAS the Township of Wellington North prides itself in being responsible stewards of all resources, and WHEREAS it recognizes that energy is a resource that must be efficiently and properly managed.

AND WHEREAS, in recognition of the importance of energy management, Council and staff are committed to encouraging and embedding a culture of conservation and sustainability into daily operations and decision-making processes.

AND WHEREAS the consumption of energy is a behaviour shared by all, thus responsible energy management must be pursued by all.

AND WHEREAS the Township of Wellington North acknowledges that energy is an operating expense which can be controlled, where the anticipated fiscal savings will benefit the local community.

AND WHEREAS Council will ensure that the necessary resources are budgeted and allocated to ensure that the actions within the five-year CDM Plan are implemented and acted upon.

AND WHEREAS it is also recognized that this initial Plan will evolve as knowledge and experience allows for additional improvements and efficiencies.

THEREFORE, be it resolved that the Energy Conservation Demand Management Committee, with assistance of individual contributors be directed to carry out the actions listed within the five-year CDM Plan.