



Energy Conservation and Demand Management Plan For Wilmot Township (2015-2020)

"The Township of Wilmot will strive to continually reduce our total energy consumption and associated greenhouse gases (GHGs) through wise and efficient use of energy and resources, while maintaining an efficient and effective level of service for our clients and the general public."

**Prepared by: Director of Facilities & Recreation Services
4/15/2015**

Energy Conservation and Demand Management Plan

Township of Wilmot (2015 to 2020)

Commitment

- **Declaration of Commitment:** The Township of Wilmot will allocate the necessary resources to develop and implement an Energy Conservation and Demand Management Plan as required under Regulation 397/11 of the Green Energy Act. Senior Management supports energy planning to avoid overall cost increases and improve service delivery while protecting human health and the environment. The Energy Conservation and Demand Management Plan will strive to reduce energy consumption and its related environmental impact as outlined in our overall target. Staff will strive to ensure that the objectives presented in this plan are achieved and that progress towards those objectives is monitored and reported on an ongoing basis. The plan will be updated as required under Regulation 397/11 of the Green Energy Act or any subsequent legislation.

- **Vision:** The Township of Wilmot will strive to continually reduce our total energy consumption and associated greenhouse gases (GHGs) through wise and efficient use of energy and resources, while still maintaining an efficient and effective level of service for our clients and the general public. This will involve a collaborative effort to increase the education, awareness, and understanding of energy management within the municipality. Total energy consumption includes electricity, natural gas, and propane. This vision can be achieved through the integration of energy efficient facility infrastructure, operational efficiencies, and by building the foundation for a culture of energy awareness and knowledge within the municipality. While commitment from Senior Management is crucial, everyone has a role in the wise use of energy and to showcase appropriate leadership within the Corporation.

- **Policy:** The Township of Wilmot will endeavor to incorporate energy efficient practices into all areas of our activities, including management procedures, procurement, financial management and investment decisions, as well as facility operations and maintenance. As a major component of the operating costs of municipal facilities and equipment, energy costs will continue to be factored into the lifecycle cost analysis and asset management planning for the municipality.

- **Goals:**

1. To maximize the use of fiscal resources and avoid cost increases through direct and indirect energy savings,
2. To reduce the environmental impact of the municipality's operations,
3. To increase the comfort and safety of staff and patrons within municipal facilities,
4. To create a culture of conservation within the municipality,
5. To improve the reliability of the municipality's equipment and reduce maintenance costs.

- **Overall Target:** The Township of Wilmot will continue to reduce municipal energy consumption from all facilities and streetlights.

- Objectives:

1. Ensure energy efficiency consistency across municipal facilities,
2. Monitor and report on energy consumption annually. Staff will monitor and verify return on investment to enable reinvestment in energy projects and report on energy consumption on an annual basis,
3. Analyze energy costs and savings opportunities, which includes taking advantage of all available resources and funding sources for energy projects,
4. Raise staff and Council awareness around energy efficiency. This will include communicating successes to both internal and external stakeholders,
5. Strengthen partnerships with external stakeholders such as electric and gas utilities,
6. Identify and seize renewable energy generation opportunities where feasible.

Organizational Understanding

- Our Municipal Energy Needs: The Township of Wilmot requires reliable, low-cost, sustainable energy sources to be delivered to the most energy efficient facilities as possible. The Township will incorporate energy efficiency into our energy management and purchasing decisions. We will treat lifecycle cost analyses of products and services procured by the municipality as a high priority wherever possible.

- Stakeholder Needs: Internal stakeholders (Council, CAO, staff) need to be able to clearly communicate the corporate commitment to energy efficiency, and to develop the skills and knowledge required to implement energy management practices and measures. External stakeholders (the Province, community groups, and ratepayers) expect the municipality to be accountable for energy performance and to minimize the energy component of the costs of municipal services.

- Municipal Energy Situation: Our assessment of organizational capacity for energy management with respect to energy policy; organizational structure; employee awareness, skills and knowledge; energy information management; communications; and investment practices indicates the following issues:

- Energy use and costs continue to increase and are forecast to increase further,
- Energy issues aren't typically considered or at the forefront of decision making by Council, senior management, front-line staff, or members of the public. This leads to a lack of understanding of the costs of energy and the opportunities for energy efficiency,
- Occasional efforts are made to raise general staff awareness about energy use.
- The requirement for this Energy Conservation and Demand Management Plan provides an opportunity to build upon current initiatives found in our, Strategic Plan, Official Plan, Asset Management Plan, Facilities & Recreation Services Master Plan, Fire Master Plan, and Wilmot Trails Master Plan.

- How We Manage Energy Today: The management of our energy is a combination of energy data management, energy supply management, and energy use management.

Energy Data Management: Our municipal energy data is managed through the Treasurer. The data is received via supplier invoices and entered onto the Ministry of Energy template. The form is uploaded to the Ministry on an annual basis.

Energy Supply Management: Our municipal energy is supplied via a number of providers as outlined below: Electricity is supplied by Kitchener Wilmot Hydro, natural gas by Union Gas, fuel oil by FS Partners and propane by Waterloo County Propane on an as needed basis.

- Summary of Current Energy Consumption, Cost and GHGs: Our energy usage is updated into the Ministry template and reported annually to the Ministry of Energy.

- Summary of Current Technical Practices: Our assessment of operations and maintenance practices, facility and equipment condition, and energy performance indicators establishes the following priorities: --

- Development of standard operating procedures that incorporate optimization of energy efficiencies,
- Enhancement of preventative maintenance procedures,
- The municipality has and will continue to apply for funding under the SaveONenergy program to undertake lighting efficiency upgrades within the municipal offices, arenas and community centres.

- Renewable Energy Utilized or Planned: Renewable energy is energy which comes from natural sources such as sunlight, wind, and geothermal heat. Utilizing renewable energy can generate a revenue source through the Provincial Feed-in Tariff (FIT) Program or significantly reduce the energy requirements of a building along with the associated greenhouse gases. The Township of Wilmot aspires to show leadership and vision in the promotion and development of renewable energy systems that are compatible with our asset management and land use planning objectives where feasible. As a result, the Township will endeavor to construct new buildings that use low energy consumption technology and will investigate the potential to develop solar photovoltaic systems on the rooftops of south-facing roof surfaces.

Strategic Planning

- Links with other municipal plans: The Township of Wilmot will strive to develop and implement energy policies, organize for energy management, develop the required skills and knowledge, manage energy information, communicate with our stakeholders, and invest in energy management measures. As an integral component of the management structure, the Energy Conservation and Demand Management Plan is to be coordinated with the municipality's budget planning, strategic plan, purchasing policy, preventative maintenance plans, and policy development process. The Township of Wilmot is currently an "observing" member of Sustainable Waterloo Region's Regional Carbon Initiative (RCI).

Structure Planning

- Staffing requirements and duties: The Township of Wilmot will strive to incorporate energy budget accountability into our corporate responsibilities. We will continue to incorporate energy efficiency priorities into standard operating procedures and into employee training sessions at the operational level.

- Consideration of energy efficiency for all projects: The Township of Wilmot will strive to incorporate life cycle cost analysis into the design phase for all capital projects. Typically, equipment to be considered for this process includes:

- HVAC equipment (e.g. boilers, chillers, pumps, motors etc.)
- Lighting and controls
- Building envelope (e.g. roof, insulation, windows, skylights and doors etc.)
- Water use (e.g. pools, toilets, water reclaim hot water heaters etc.)
- BAS (building automation system) controls,
- Process improvements
- Back-up generators
- Appliances and electronics
- Any other energy consuming device

These types of projects generally follow 5 steps:

1. Project Identification & Feasibility
2. Energy Audits, Feasibility Analysis or through detailed Condition Assessments
3. Planning & Budgeting - Project Financing, Incentives, Business Case & Approvals
4. Implementation: Tendering, Project Execution, Project Management, Commissioning
5. Monitoring & Verification: The intent is to make life cycle cost analysis part of the municipality's normal course of business for all facility and operational retrofits, including capital renewal and life cycle replacements projects. Success means incorporating energy efficient options at the initial stages of a project design. This ensures that options for improving energy efficiency are considered, evaluated and quantified in terms of life cycle costing analysis, including cost, maintenance and emission reductions.

Resources Planning

- Energy Leader: The Director of Facilities will function as our energy leader with overall responsibility for monitoring and promoting the Energy Conservation and Demand Management Plan.

- Internal Resources: The Township of Wilmot will develop criteria for determining whether internal resources can be utilized for the implementation of energy projects.

- **External Consultants and Suppliers:** The Township of Wilmot will continue to consider energy goals and objectives for the selection of external consultants and energy suppliers. The Township uses “Wattsworth” to analyze our electricity consumption and we assigned accounts to Time of Use (TOU) or to spot market depending on the usage of the account. As well, we have recently signed up with LAS for the Natural Gas contract.

- **Energy Awareness:** The Township of Wilmot will provide energy information to all staff and resource conservation will be promoted on an ongoing basis. The Township will seek both internal and external expertise to provide wise energy decisions.

Procurement Planning

- **Energy Purchasing:** In addition to the conservation of energy, the procurement of energy is equally as important. Proper energy procurement includes: rate optimization, utility account management, supplier choice and evaluation, supply reliability and quality, demand/supply optimization and risk management. The Township of Wilmot will continue to negotiate and enter into energy purchase contracts that appropriately address the Township’s cost considerations, available energy services, energy quality and reliability, as well as other performance factors.

- **Consideration of energy efficiency of acquired equipment:** Our purchasing procedures will continue to incorporate energy efficiency into the criteria for selection of materials and equipment. Municipal vehicle tenders will consider energy efficiency/conservation during the preparation of specifications for engine type/size, fuel type, fuel efficiency, transmission type, towing capacity, etc. This will ensure the vehicle is not “over specified” and is suitable for the required purpose.

Implementation Planning

- **Building Standards:** Township of Wilmot staff will consider the principles embedded in performance standards such as LEED (Leadership in Energy and Environmental Design) and the Model National Energy Code for Buildings. Considering LEED for new construction and major renovations could have a substantial impact on the overall energy efficiency of our facilities.

- **Communication Programs:** Township of Wilmot will promote the communication strategies developed by the Region of Waterloo and Kitchener Wilmot Hydro that create and sustain awareness of energy efficiencies. Activities could include circulating reminders to turn lights off, putting up energy conservation displays, promoting home energy audits and promoting Earth Day.

Investment Planning

- **Creative Approaches:** The Township of Wilmot will continue to investigate, communicate and utilize funding sources for energy projects, including government and utility grants and incentives.

Projects Execution

- **Municipal Level:** The administration and implementation of this Energy Conservation and Demand Management Plan will be the responsibility of the Director of Facilities. Since we all use energy in our daily activities, it will also be the responsibility of all municipal staff to be aware of their energy use and work towards a culture of conservation.

- **Asset Level:** In order to sustain a corporate culture of conservation, staff must be engaged in an effective awareness program. Although facilities staff has the lead responsibility in ensuring facilities operate efficiently, all municipal staff should be familiar with and utilize energy efficient measures where possible. The first step in implementing an energy management program is the completion of energy audits for corporate facilities. Audits involve a technical review of a facility and its operations, the development and analysis of a baseline energy profile for the facility and identification of energy management opportunities and savings. Audits have been conducted on some municipal facilities as part of the energy data collection exercise. The use of renewable energy measures can also help reduce overall corporate greenhouse gas emissions by lessening our demand for fossil fuel generated energy. The investment for these types of measures can be significantly greater than conservation initiatives and therefore, should be considered on a case-by-case basis through a cost and environmental benefits analysis. However, it is acknowledged that the use of technologies such as wind, solar and geothermal can show community leadership and help raise awareness of the benefits of utilizing renewable energy.

Review

- **Energy Plan Review:** As part of any energy management strategy, continuous monitoring, verification, and reporting is an essential tool to track consumption. The Township of Wilmot will develop an annual progress report with energy consumption data. As part of the Energy Plan, the implemented process improvements will continue to be documented and reviewed annually. By regularly monitoring and reporting consumption to senior management, the outcomes of their department's participation in energy management initiatives can be demonstrated, and feedback can be obtained for any new ideas. This monitoring and reporting will also align with the requirements of Regulation 397/11 under the Green Energy Act and/or any subsequent legislation related to energy management.

- **Discussion of Progress:** Annual energy performance summary reports will be generated to apprise senior staff of the progress made towards our corporate energy goals and objectives. The general public will be apprised of energy performance of municipal facilities and the impact of implemented energy management measures where appropriate.

Evaluation Progress

- **Energy Consumption:** The Township of Wilmot will review and evaluate our energy plan annually as necessary, as based on the Energy Consumption Reports that are submitted to the Ministry of Energy on an annual basis as required under Regulation 397/11.

Programs, Process, and Projects

Programs

Description	Facility	Contact	Date	Status
Add energy awareness to management meetings	All	CAO	2015 and annually thereafter	Pending
Details	Energy reports to be distributed to directors and managers on an annual basis.			
New Employee Orientation	All	Human Resources Dept. Managers	2015	Pending
Details	As part of Orientation Program: provide new staff with energy management training. Appropriate training vehicles include but are not limited to the following: <ul style="list-style-type: none"> - Handout in Employee handbook outlining energy conservation 			
Visual Displays	All	Director of Facilities	2015	Pending
Details	Make use of visual displays to demonstrate to staff the implications of current behaviors. Displays may include: <ul style="list-style-type: none"> - simple poster and/or screen saver that reminds staff of the municipal energy conservation goal - reminders around light switches and thermostats to turn off/down appliances when not in use. 			
Energy Leader	All	Director of Facilities	2015	Pending
Details	The Director of Facilities will act as Energy Champion for the Township of Wilmot. Responsibilities include: <ul style="list-style-type: none"> - instilling a culture of energy conservation within their respective workplaces with each occupant and piece of equipment - developing conservation strategies with facility staff for implementation within each given facility - share best practices, lessons learned, and innovative energy practices with other team members - monitor progress towards energy conservation goal and ensure that there is no backsliding 			

Description	Facility	Contact	Date	Status
Employee Engagement	All	CAO	2015	Pending
Details	<p>Although the adoption of energy efficient technology usually forms the basis for energy conservation projects, there is a behavioral aspect to the energy conservation equation that is often overlooked. The objective of this program is to empower staff and provide them with the education required to adopt behavioral practices that will result in the optimization of facility energy usage. This engagement program will include, but not be limited to, the following items:</p> <ul style="list-style-type: none"> - Identification of improvements. Staff will be encouraged to submit ideas for process improvements or projects that will reduce corporate and personal energy consumption. 			

Processes

Description	Facility	Contact	Timeline	Status	Cost	Savings
			Short 1-12 months Mid 1-3 years Long 3-5 years		Low \$0 - \$500 Med \$500 - \$5000 High \$5000 -	Low \$0 - \$500 Med \$500 - \$5000 High \$5000-
Life Cycle Costing	All	Treasurer	Long	Pending	Med	High
Details	<p>Incorporate life-cycle costing into procurement policy and related processes. Life-cycle cost analysis (LCCA) is a method for assessing the total cost of facility and/or equipment ownership. It takes into account all costs of acquiring, owning, and disposing of a building or building system. LCCA is especially useful when project alternatives that fulfill the same performance requirements, but differ with respect to initial costs and operating costs, have to be compared in order to select the one that maximizes net savings. The Township of Wilmot has updated its purchasing by-law to include sections on green procurement. Green procurement shall be viewed in the context of achieving value for money based on the total life-cycle costs. It requires the inclusion of environmental impact considerations into the procurement process, including planning, acquisition, and disposal. All suppliers and vendors may be required to provide the life-cycle analysis of their products and/or provide those details for the municipal procurement team to complete this analysis.</p>					

Description	Facility	Contact	Timeline		Status	Cost		Savings	
			Short 1-12 months	Mid 1-3 years		Low \$0 - \$500	Med \$500 - \$5000	Low \$0 - \$500	Med \$500 - \$5000
Appliance Usage	All	CAO	Long		Pending		Med		Mid
Details	<p>Since there is no equipment required to turn appliances off, there are no environmental impacts from product manufacture, shipping or disposal. Appliances are often left on in municipal offices because staff feels their individual impact is insignificant, however, when totaled across the municipality for any given year, the impact can run in the hundreds of dollars for a municipality the size of Wilmot.</p> <p>Turn off all electronic devices such as coffee makers, printers, calculators, phone chargers, etc. at night and on weekends. Reduce phantom power wherever possible. Phantom energy draws extra energy from the grid when you aren't requiring it. Many gadgets, electronic devices and appliances draw power even when they're switched off or not in use, just by being plugged in, and though it may seem trivial, it can add up over time. Chargers for cell phones, digital cameras, power tools and other gadgets draw energy even when they're not in use. Appliances like televisions, computer monitors, and DVD players can also draw power whenever they're plugged into an outlet.</p> <p>Altogether, phantom energy can account for about 10 percent of an individual home's electricity use. Staff will identify unnecessary plug loads and eliminate phantom power.</p> <p>Reduce the usage of portable electric heaters. While this will need to occur concurrently with recommended energy projects to tackle employee comfort issues, this should be a priority issue given the large number of these appliances in use in every municipal facility. For example, a single 1500 watt heater would cost \$300-500 per year to operate if used during working hours and more if they are left on in "off hours".</p>								
Enhance Procurement Policies	All	Treasurer	Long		Pending		Low		Med
Details	<p>Municipalities purchase a large number of products--all of which require energy and resources to produce, package, transport, use, and dispose. Choosing products with minimal life-cycle impacts can save energy, reduce operating costs, reduce emissions, and increase the market for high performance products. The Municipal Procurement By-Law and related policies are currently being followed, and opportunities including life cycle costing will be considered.</p>								

Projects

Description	Facility	Contact	Timeline Short 1-12 months Mid 1-3 years Long 3-5 years	Status	Cost Low \$0 - \$500 Med \$500 - \$5000 High \$5000 -	Savings Low \$0 - \$500 Med \$500 - \$5000 High \$5000-
Lighting Retrofit	Baden Fire Station	Fire Chief	Short	Pending 2015	Med	Low
Details	Replace existing lighting with LED lighting during the renovation planned in 2015.					
Occupancy Sensors	Baden Fire Station	Fire Chief	Short	Pending 2015	Low	Low
Details	Given the relatively low occupancy of rural fire facilities, energy conservation is best achieved through those measures not affected by human interaction. Occupancy sensors should be placed in all washrooms, change rooms, kitchen, office and training areas as part of the planned facility renovation in 2015.					
Lighting Retrofit	New Hamburg Fire Station	Fire Chief		Complete	Med	Low
Details	Truck bays were retrofitted with T-5 lighting in 2012.					
Arena Lighting Retrofit	Wilmot Recreation Complex	Director of Facilities	Mid	Pending	High	Med
Details	Upgrade HID fixtures in arenas to LED technology. The complex has already been outfitted with automated HVAC control systems, room occupancy sensors, and motion activated plumbing fixtures. A VFD has been installed on the condenser for the refrigeration system, a waste heat exchanger from the refrigeration loop is used for the snow melting pit, and de-ox ice making technology has been added to eliminate the need for hot water ice resurfacing (eliminated a boiler). The Aquatic Centre has T-5 lighting throughout.					
Pool Pump Controller	Wilmot Recreation Complex	Director of Facilities	Short	Pending 2015	High	High
Details	Install pool pump controllers to reduce the number of cycles per hour that the pumps operate to recirculate total water volumes.					
Envelope Update	Wilmot Recreation Complex	Director of Facilities	Mid	Pending	Low	Low
Details	Replace/repair weather stripping around all roll-up, sliding and exterior doors (general).					

Description	Facility	Contact	Timeline Short 1-12 months Mid 1-3 years Long 3-5 years	Status	Cost Low \$0 - \$500 Med \$500 - \$5000 High \$5000 -	Savings Low \$0 - \$500 Med \$500 - \$5000 High \$5000-
Lighting Retrofit & Occupancy Sensors	New Hamburg Arena	Director of Facilities		Complete	High	Med
Details	In 2014 as part of a major arena lobby renovation, all interior and exterior lighting was upgraded from CFL to LED technology. Occupancy sensors were installed in washrooms, change rooms and meeting rooms.					
Lighting Retrofit	New Hamburg Arena	Director of Facilities		Complete	High	High
Details	In 2012, the arena floor lighting was upgraded from mercury vapour fixtures to T-5 lighting.					
Envelope Update	New Hamburg Arena	Director of Facilities		Complete	High	Med
Details	The exterior walls of the north and west building exposures were upgraded to a Kingspan insulated panel cladding as part of a major facility renovation in 2014.					
Building Envelope & Refrigeration Plant	New Hamburg Arena	Director of Facilities	Long	Pending	High	High
Details	Insulate exterior walls, install energy efficient dehumidification system, reclaim waste heat from the condenser loop to supplement flood water heating and install in-floor heating system in new dressing rooms.					
Description	Facility	Contact	Timeline Short 1-12 months Mid 1-3 years Long 3-5 years	Status	Cost Low \$0 - \$500 Med \$500 - \$5000 High \$5000 -	Savings Low \$0 - \$500 Med \$500 - \$5000 High \$5000-
Upgrade Streetlights to LED	Streetlights	Director of Public Works	Long	Pending	High	High
Details	The Township of Wilmot has the potential to reduce the energy consumed by its streetlights by upgrading its network to LED's. The Township will continue to work with the local hydro authority to move toward the replacement of HPS streetlight fixtures with LED technology.					
Lighting Retrofit	Public Works Garage	Director of Public Works	Mid	Pending	Low	Low
Details	Replace T12 lighting fixtures in the north garage with LED lighting fixtures.					

Lighting Retrofit & Occupancy Sensors	Administration Office/Council Chambers	Director of Facilities	Mid	Pending	Med	Low
Details	Replace outside light wall packs with LED technology. Replace ancillary and security CFL lighting in lobbies and atrium with same. Add occupancy sensors to the main floor washrooms, vault and IT room.					
HVAC	Administration Office/Council Chambers	Director of Facilities	Mid	On-going	Low	Low
Details	Continue the replacement program for all wall mounted and in-duct thermostats with programmable electronic thermostats to control the heat pump heating/cooling system.					
Lighting Retrofit	New Dundee Community Centre	Director of Facilities	Short	Pending 2015	Med	Med
Details	Replace T-12 lighting with T-5 and LED lighting fixtures. Install exterior LED wall packs.					
HVAC	New Dundee Community Centre	Director of Facilities	Mid	Pending 2016	High	Med
Details	Replace the old, oversized HVAC unit with a smaller, energy efficient HVAC system with economizer to minimize energy consumption.					
Lighting Retrofit	St. Agatha Community Centre	Director of Facilities		Complete	High	Med
Details	HID lighting in banquet hall was replaced with T-5 lighting in 2012.					