Energy Conservation and Demand Management Plan

Township of Wellesley: 2019-2024

"The Township of Wellesley 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."

Developed by Wendy Smith, Administrative Assistant Fire/Recreation

5/13/2019

Energy Conservation and Demand Management Plan
Township of Wellesley: 2019 to 2024

Commitment

- Declaration of Commitment: Council Resolution: The Township of Wellesley will allocate the necessary resources to develop and implement an Energy Conservation and Demand Management Plan as required under Ontario Regulation 507/18 made under the Electricity Act, 1998. Council supports energy planning because it may help avoid cost increases and improve service delivery while protecting human health and the environment. Our Energy Conservation and Demand Management Plan may help reduce our energy consumption and its related environmental impact as outlined in our overall target. Staff and council 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. Staff and council will update the plan as required under Ontario Regulation 507/18 made under the Electricity Act, 1998 or any subsequent legislation.

- Vision: The Township of Wellesley 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 Council and 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 Wellesley will strive to incorporate energy efficient practices into all areas of our activities, including management procedures, procurement, financial management and investment decisions, and 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 plans and policies of the municipality.

- Goals:

1. Maximize the use of fiscal resources and avoid cost increases through direct and indirect energy savings

2. Reduce the environmental impact of the municipality's operations

3. Increase the comfort and safety of staff and patrons of the municipality's facilities

4. To create a culture of conservation within the municipality.

5. To improve the reliability of the municipality's equipment and reduce maintenance.

- Overall Target: The Township of Wellesley will continue to strive to reduce our overall 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. This will include taking advantage of all available resources and funding 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 Wellesley requires reliable, low-cost, sustainable energy sources delivering energy to the most efficient facilities and energy-consuming technology feasible. The Township of Wellesley will incorporate energy efficiency into our energy management and purchasing decisions. The Township of Wellesley's approach prioritizes a lifecycle cost analysis of products and services procured by the municipality 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) need 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 is not visible to municipal decision makers such as Council, senior management, front-line staff, and 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.
- The requirement for this Energy Conservation and Demand Management Plan provides an opportunity to build upon current initiatives such as the, Strategic Plan, Official Plan, Asset Management Plan, Recreation Master Plan and Fire 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 CAO and Treasurer.

Energy Supply Management: Our municipal energy is supplied via a number of providers as outlined below: Electricity is supplied by Waterloo North Hydro, natural gas by Union Gas and propane by McRobert Fuels on an as needed basis.

- Summary of Current Energy Consumption, Cost and GHGs: The current energy usage by building is detailed in Appendix A. The energy usage by building from 2011-current is posted on the Township of Wellesley's website www.wellesley.ca .

- 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 incorporating energy efficiency optimization.
- Enhancement of preventative maintenance procedures.

- 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 Wellesley 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. As a result, the Township of Wellesley will endeavor to construct new buildings to a "solar ready" standard and will investigate the potential to develop solar photovoltaic systems on the rooftops of all feasible existing corporate facilities with sound, south-facing roof surfaces.

Strategic Planning

- Links with other municipal plans: The Township of Wellesley 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 the policy development process.

Structure Planning

- Staffing requirements and duties: The Township of Wellesley will strive to incorporate energy budget accountability into our corporate responsibilities. The Township of Wellesley will continue to incorporate energy efficiency into standard operating procedures and the knowledge requirement for operational jobs.

- Consideration of energy efficiency for all projects: The Township of Wellesley will strive to incorporate life cycle cost analysis into the design procedures 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 Recreation has been designated as our energy leader with overall responsibility for corporate energy management.

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

- External Consultants and Suppliers: The Township of Wellesley will consider energy goals and objectives for the selection of external consultants and energy suppliers. These criteria will employ a life cycle cost analysis of desired products and services whenever possible.

- Energy Awareness: The Township of Wellesley will provide energy information to all staff. Energy conservation will be promoted to all staff on an ongoing basis. The Township of Wellesley will seek both internal and external resources 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 Wellesley will continue to negotiate energy purchase contracts that appropriately address the Township of Wellesley's cost considerations, available energy services, energy quality and reliability, and 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.

Implementation Planning

- Building Standards: Township of Wellesley 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 substantial impact on the energy efficiency of our facilities.

- Communication Programs: Township of Wellesley will promote the communication strategies developed by the Region of Waterloo and Waterloo North 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 Wellesley will investigate and communicate 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 Recreation. 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. 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 most municipal facilities as part of this initial planning 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. As part of the Energy Plan, the implemented process improvements, program implementation and projects will continue to be documented and reviewed. By regularly monitoring and reporting consumption, 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 Ontario Regulation 507/18 made under the Electricity Act, 1998 and/or any subsequent legislation related to energy management.

- Discussion of Progress: Annual energy consumption summary reports will be generated to apprise Council 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 Wellesley will review and evaluate our energy plan as necessary, as based on the Energy Consumption Reports that are submitted to the Ministry of Energy on an annual basis as required under Ontario Regulation 507/18 made under the Electricity Act, 1998.

Programs, Process, and Projects 2014 to 2019

Programs 2014 - 2019

Description	Facility	Contact	Date	Status
Add energy awareness to management meetings	All	CAO	Ongoing	Ongoing
Details	Energy reports to be distributed to directors and managers on an annual basis.			
New Employee Orientation	All	CAO	Ongoing	Ongoing
Details	As part of Orientation Program: provide new staff with energy management training. Appropriate training vehicles include but are not limited to the following: -- Handout in Employee orientation package outlining energy conservation			
Energy Leader	All	Director of Recreation	Ongoing	Ongoing
Details	The Director of Recreation has been designated as the Energy Champion within the Township of Wellesley. The Energy Champion is responsible for: -- 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			
Employee Engagement	All	CAO	2014-06-30	Ongoing
Details	Although the adoption of energy efficient technology usually forms the basis for energy conservation projects, there is a behavioural 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 behavioural practices that will result in the optimization of facility energy usage. This engagement program will include, but not be limited to, the following items: -- Identification of improvements. Staff will be encouraged to submit ideas for process improvements or projects that will reduce the corporate and personal energy			

Processes 2014 – 2019

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-
Appliance Usage	All	CAO	Long	Ongoing	Low	Low
Details	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 across a given year the impact can run in the hundreds of dollars for a municipality the size of Wellelsey Township. 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 sucks extra energy from the grid when you aren't looking and you don't need 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. All together, 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. 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 it use during working hours and more if they are let on in off hours.					
Enhance Procurement Policies/Life Cycle Costing	All	Treasurer	Long	Ongoing	Low	Med
Details	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 include life cycle costing will be considered.					

Projects 2014 - 2019

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	Linwood Fire Station	Fire Chief	Short	Complete	Low	Low
Details	Replace outside wall packs with LED technology					
Block Heating Controls	Fire Stations	Fire Chief	Short	Complete	Low	Low
Details	Given the low occupancy of both facilities, energy conservation is best achieved through those measures not affected by human interaction. This would include such items as heating/cooling, exterior lighting, and systems that may be running despite occupancy. It was noted that the vehicles were plugged in and drawing minimal load at all times when parked in the garages. While this is necessary to maintain them for service, one draw which could be eliminated is that of the block heaters. Since the garages are heated, the block heaters on the vehicles are redundant. Therefore, it is recommended to investigate the fleet vehicles parked in all fire station garages and disconnect any block heaters that may not be necessary.					
Lighting Retrofit	Wellesley Arena	Director of Recreation	Mid	Complete	Med	Med
Details	Upgrade exterior lighting from HID to LED technology					
Envelope Update	Wellesley Arena	Director of Recreation	Mid	Complete	Low	Low
Details	Weather strip around exterior doors (general)					
Water	Wellesley Arena	Director of Recreation	Mid	Complete	Low	Low
Details	Insulate hot water pipes at hot water heaters					
Lighting Retrofit	St Clements Arena	Director of Recreation	Mid	Complete	Med	Med
Details	Upgrade exterior lighting from HID to LED technology					
Envelope Update	St Clements Arena	Director of Recreation	Mid	Complete	Low	Low
Details	Weather strip around 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-
Water	St Clements Arena	Director of Recreation	Mid	Complete	Low	Low
Details	Insulate hot water pipes at hot water heaters					
Interior Roof	Township Arenas	Director of Recreation	Low	Complete	High	High
Details	Install new low-E ceilings					
Upgrade Streetlights to LED	Streetlights	Director of Public Works	Long	Complete	High	High
Details	The Township of Wellesley has the potential to reduce the energy consumed by its streetlights by upgrading its network to LEDs. This represents a reduction in energy useage and it by far the most significant ECM currently available to the municipality.					
Lighting Retrofit	Public Works Garage	Director of Public Works	Short	Complete	Med	Low
Details	Replace T8 lighting fixtures with T5 lighting fixtures					
Lighting Retrofit	Public Works Garage/ Administration Office	Director of Public Works	Mid	Complete	Med	Low
Details	Replace outside light wall packs with LED technology					
Envelope Update	Public Works Garage	Director of Public Works	Mid	Complete	Low	Low
Details	Replace weather stripping on all man doors					
Programmable Thermostats	Public Works Garage	Director of Public Works	Mid	Complete	Low	Low
Details	Replace the standard thermostats with programmable thermostats					

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-
Air Conditioning Unit	Council Chamber	Public Works Garage	Director of Public Works	Complete	Mid	Low
Details	Replace the air conditioning unit with an energy efficient air conditioning unit					

Programs, Process and Projects 2019 to 2024

Programs 2019 - 2024

Description	Facility	Contact	Date	Status
Add energy awareness to management meetings	**All**	**CAO**	**Ongoing**	**Ongoing**
Details	Energy reports to be distributed to directors and managers on an annual basis.			
New Employee Orientation	All	CAO	Ongoing	Ongoing
Details	As part of Orientation Program: provide new staff with energy management training. Appropriate training vehicles include but are not limited to the following: -- Handout in Employee orientation package outlining energy conservation			
Energy Leader	All	Director of Recreation	Ongoing	Ongoing
Details	The Director of Recreation has been designated as the Energy Champion within the Township of Wellesley. The Energy Champion is responsible for: -- 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			
Employee Engagement	All	CAO	2014-06-30	Ongoing
Details	Although the adoption of energy efficient technology usually forms the basis for energy conservation projects, there is a behavioural 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 behavioural practices that will result in the optimization of facility energy usage. This engagement program will include, but not be limited to, the following items: -- Identification of improvements. Staff will be encouraged to submit ideas for process improvements or projects that will reduce the corporate and personal energy consumption.			

Processes 2019 - 2024

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-
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Details	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 across a given year the impact can run in the hundreds of dollars for a municipality the size of Wellelsey Township. 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 sucks extra energy from the grid when you aren't looking and you don't need 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. All together, 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. 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 it use during working hours and more if they are let on in off hours.					
Enhance Procurement Policies/Life Cycle Costing	All	Treasurer	Long	Ongoing	Low	Med
Details	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 include life cycle costing will be considered.					
Set Point Policy	All	Director of Recreation	Long	Ongoing	Low	Low
Details	Create a set point policy in order to keep the thermostats at a consistent temperature within all of our facilities. Include direction and training of staff on monthly procedures for checking and reprograming to ensure the system is set to the set point policy.					

Appendix A - Energy Consumption and Greenhouse Gas Emissions Report for 2017