Town of Petrolia

Municipal Energy Management Plan

July 1, 2014

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Preface

The Energy Conservation and Demand Management Plan (hereinafter referred to as the "Energy Management Plan") was the result of internal reviews by municipal staff with the Town of Petrolia representing each operational department. Their analysis was facilitated by Bluewater Power. The resulting Energy Management Plan represents a considered and careful plan to understand and manage the energy needs of the municipal corporation for the period 2014 to 2018. This plan is not a general plan for the community, but a tool for the municipal corporation to manage its energy consumption in order to reduce its carbon footprint and to control its energy costs for heated and cooled facilities.

The Energy Management Plan was presented to the Town of Petrolia Council and approved by Council at its meeting on June 16, 2014.

1.0 Executive Summary

This report outlines the Energy Management Plan for the Town of Petrolia ("Petrolia") located in Southwestern Ontario.

The Energy Management Plan complies with the requirements of Ontario Regulation 397/11 entitled "Energy Conservation and Demand Management Plans" passed under the Green Energy Act ("GEA Regulation"). The first requirement was met on July 1, 2013 with Petrolia's submission of baseline energy consumption for the Reportable Facilities (as that term is hereinafter defined). This exercise involved the tracking and reporting of energy usage for the year 2011.

This report, and the data analysis that took place in compiling this report, represents the second requirement under the GEA Regulation, and is due to be filed by July 1, 2014. This report contains a summary of the 2012 energy consumption data which must be filed with the Ministry of the Environment ("MOE"), as well as a five year Energy Management Plan outlining planned activities for the period 2014 to 2018. In accordance with Subsection 4(2)(2) the plan shall include *"a description of previous, current and proposed measures for conserving and otherwise reducing the amount of energy consumed by the public agency's operations and for managing the public agency's demand for energy, including a forecast of the expected results of current and proposed measures".*

The exercise of developing an Energy Management Plan has spawned an interest in a more structured approach to energy management, tracking both energy consumption and energy spending, utility rates and project results. Although Petrolia has been proactive in the past regarding energy efficiency, this initiative provides more structure and format to the on-going activities.

1.1 Plan Development

As part of the initial task in 2013, Petrolia worked closely with Bluewater Power to understand its baseline energy consumption for both electricity and natural gas. An energy plan blueprint was developed focusing on the largest energy consuming municipally-owned facilities. This provided a starting point which has been expanded upon over the course of the past year. In-depth staff interviews and group meetings were conducted. Input has been provided by all staff, from finance to operators to the management team. As a result, the Energy Management Plan has been brought together as a comprehensive plan that is both practical and achievable.

1.2 The Result

Together with our partners, the Town of Petrolia has been able to identify goals, actions and measures that will ensure the Town maintains the services that are needed, while using energy in the most responsible manner. Our success over the next five years will be measured against a target energy savings of 2.0% per year (10% reduction by 2018). In order to achieve that target, this Energy Management Plan identifies opportunities in the form of potential projects (on page 14) that demonstrate a 2.0% annual reduction is attainable for Petrolia. Each project will be assessed by Council as part of the normal budget processes, so the inclusion of specific projects in specific years in this plan is for illustrative purposes to provide comfort that the target is achievable.

This Energy Management Plan also addresses two models for using reserve funds to finance energy savings. Each financing tool assumes an annual contribution to the reserve to be determined by Council, with financial savings from energy reductions either reinvented entirely in the reserve fund ("fast out" model) or shared between the reserve and current operating costs to deliver immediate tax reductions ("shared savings" model). This plan does not recommend one model over the other, but provides Council with the freedom to choose on a project-by-project basis. What this Energy Management Plan does demonstrate is that utilizing either funding model, the cost of achieving a 2% annual reduction requires new capital in the range of $143,866 to $171,899 in total over five years, where energy savings are used to finance new capital. The cumulative result of energy savings at the end of the five-year period is forecast to be approximately $58,354, which Petrolia can choose to use in the year 2018 to reduce taxes or reinvest in further energy saving projects.

This Energy Management Plan is intended to serve as a guide for staff and Council during its capital planning and budgeting process. The results of Petrolia's efforts will be reflected in the energy data required to be filed with the MOE each July 1st of this plan. The role of monitoring progress will fall upon an Energy Management Committee of staff to be appointed by Council from time-to-time. That committee will ensure that both the capital projects and behavioural changes outlined in this Energy Management Plan are maintained on a continuing basis because managing energy costs is important to both environmental and financial good stewardship.

2.0 Background

Petrolia is located in Southwestern Ontario nearly at the geographical center of Lambton County. Petrolia is a strong rural community with two schools, excellent recreational and medical facilities, and many service clubs and organizations.

Petrolia occupies a land area of 12.68 km2, with a population density of 435.8 / km2, and a median age of 40.3. The total population was 5,528 and the number of private dwellings was 2,223 at the time of the 2011 census. The Town of Petrolia was originally settled in 1866 and is billed as "Canada's Victorian Oil Town", and often credited with starting the oil industry in North America.

An Energy Management Plan under O.Reg 397/11 focuses on buildings or facilities owned or leased by the municipality that are either heated or cooled, or are related to the treatment or pumping of water or sewage (together defined as "Reportable Facilities"). Petrolia has eight municipal buildings, a water treatment center and two pumping facilities whose total energy costs (electricity, gas) in 2012 were just under $500,000, with 83% of the energy being consumed by three locations, namely the Greenwood Arena, the community centre and the water treatment plant.

Petrolia and all municipalities in Ontario are faced with increasing cost at many levels. As such, Petrolia must explore all avenues for cost savings, including energy efficiency projects.

3.0 The Process

As part of the preparation of the 2013 submission, Petrolia began a planning exercise based upon an Energy Management Plan blueprint provided by Bluewater Power, with the assistance of an engineering consulting firm. The blueprint and a number of Level 1 energy audits served as a framework for activities over the past year.

Discussion began in the fall of 2013 to work toward setting a target level for energy reduction based on an assessment of potential projects and the availability of finances. The discussion was also required by the GEA Regulation to include discussion of behavioural based approaches to reduced energy consumption, as well as the role for back-up generation and renewable energy.

The Energy Management Plan process represents a structured approach to energy tracking as well as the forecasting of potential project impacts.

Petrolia staff has participated in numerous activities, including:

- Meetings with fellow municipal stakeholders
- Walk-through audits of selected sites
- Surveys of past and future activities
- Interviews with key staff

This process has contributed to the building of a common vision with respect to energy, has enhanced staff understanding of the costs and impact of energy use on Petrolia's finances and has identified practical steps to move forward.

4.0 Measuring Energy Consumption

This report contains a summary of the data filed by Petrolia in compliance with O.Reg 397/11 of the Green Energy Act for Ontario as Appendix "A". The data demonstrates that utility and energy related costs are a significant part of overall operating costs:

- Total Utility Costs in 2012 were approximately $490,000
- Total Utility costs for Reportable Facilities in 2012 were approximately $370,000
- The Municipality's Energy Use Indices (EUI) was 47.0 ekWh/ft^2 (*The Municipal Energy Use Indices (EUI) is a measurement standard enabling a client to benchmark their facilities against similar sites. The natural gas commodity is converted to equivalent kWh so as to develop a common energy measuring unit, which is made more uniform by dividing by the square footage of the building. The lower the ekWh/$ft^{2,}$ the better the facility is performing from an energy perspective)*

In the year 2012, Petrolia spent in excess of $370,000 on natural gas and electricity for its Reportable Facilities. Total Utility costs spent by the municipality are higher, as the amount presented for heated and/or cooled facilities does not include items such as outdoor ballpark lighting or street lights.

It can be difficult to compare energy costs year over year due to the impact of weather on air conditioning and heating load. However, it is typical for municipalities to see an increase in energy costs as they expand existing facilities or add new services.

Overall, the energy intensity of Petrolia and its facilities appears to be in the high range of municipal averages. A key reason for this is the very high energy usage at the community center, which staff has identified and has already input measures into their 10 year capital plan to rectify the high energy use.

5.0 Guiding Principles of Energy Management

5.1 Energy Management Plan Process and Development

The Energy Management Plan is meant to serve as a basis for energy and capital-related decisions in the coming years. The main goal is to outline the strategies for implementing improvements to facilities and operations that reduce energy costs. This will be accomplished by both planning energy-related capital projects, and also viewing all operational and capital decisions with a mind toward energy efficiency. The overall goal is to affect positive environmental change and to identify opportunities for improved financial returns when spending taxpayers' dollars.

5.2 Taking a Strategic Approach

While the municipality actively manages energy costs by implementing opportunities as they are identified, Petrolia can significantly improve its energy-related performance by acting strategically. Internalizing energy management into the organization's every-day decision-making and operating procedures will help to ensure substantial and long-lasting reductions in energy use and improve the financial bottom line by optimizing the money spent on energy.

5.3 Obtaining Solid Economic Returns

Energy management investments will yield solid economic returns. Projects will generally be funded from reserves with operating savings against budget being returned to reserves to be used in future energy management projects. Petrolia will apply consistent financial analysis methods that consider project life-cycle to reduce the total cost of facility ownership and operation.

5.4 Improved Financial Health and Operating Cost Reduction

Strategic energy management presents a highly leveraged opportunity to reduce operating costs and positively impact Petrolia's bottom line, as well as decrease the tax levy paid by taxpayers. Further, investments in energy projects are easier to forecast reliably than savings or revenue increases expected from other investments. The bottom line is that reducing operating costs in Petrolia's facilities directly affects the taxes paid by property owners.

5.5 Strengthened Community Leadership and Environmental Stewardship

Energy management is a visible and public commitment to the community and environment. Through strategic energy management, Petrolia can provide leadership in promoting sustainable communities, efficient business practices, and environmental stewardship.

5.6 Establishing Purchasing Specifications for Energy Efficient Equipment and Services

Energy management should consider purchasing specifications that minimize life-cycle costs for energy efficient equipment and services.

- Establish efficiency specifications for standard equipment routinely replaced (e.g. lights, motors, and HVAC equipment).
- Establish efficiency standards for design and construction, as well as for building operation and maintenance services.
- Use a life cycle approach when evaluating project quotes during the RFP process.

5.7 Improving the Performance of Building Operations

Understanding where and when each facility uses energy is paramount to sound energy management. Throughout this document we discuss possible capital projects and capital funding mechanisms, but it is extremely important to manage the energy use of existing equipment. For example, by operating equipment only when it is required, substantial energy reductions can be accomplished.

There are very likely to be numerous other opportunities to implement low or no-cost measures and processes to reduce energy use. By making energy consumption a top-of-mind item for each department, the structured approach outlined in this Energy Management Plan will financially benefit each department and the Town overall.

6.0 Petrolia Energy Management History

6.1 Past Energy Management Activities

Petrolia has historically been active and aware of energy and sustainability initiatives. Since 2011, the fire hall, community center, Victoria Hall/theatre and library have all undergone energy reduction retrofits, including lighting, efficient heating options and temperature control setbacks.

The five-year Energy Management Plan represented in this report provides an excellent opportunity to both reflect upon past successes and develop plans for future initiatives.

The GEA Regulation requires the year 2011 or 2012 to be the baseline upon which a municipality is measured for achieving further targeted energy savings. This creates an artificial starting point and can have the effect of downplaying the significance of prior energy efficiency efforts. It is important to point out, therefore, that the Town of Petrolia has been active in pursuing energy efficiency in 2012 or years prior. A list of completed projects that were specifically implemented to lower energy costs include:

- Energy efficient lighting upgrade at three sites using the Ontario Power Authority Small Business Lighting initiative
- Energy efficient lighting upgrades plus occupancy sensors at the fire hall.
- Replaced inefficient truck bay heaters at the fire hall with a new energy efficient system
- Energy efficient boiler and hot water heating system at the library
- LED lighting upgrades and digital dimmers at Victoria Hall/theatre
- Energy efficient lighting upgrades at library, water tower, and the public works yard
- Temperature control procedures at library
- LED lighting retrofit at the community centre plus new T5 lighting in the gymnasium
- Ice surface lighting upgraded to T5 at the arena, sensors in hallways and change rooms
- Bleacher heaters put on separate switches to allow for section heating

6.2 Behavioural and Cultural Initiatives

Often lost in a more technical analysis of energy needs are the “soft” initiatives that involve behavioural change. As with the “Culture of Conservation” the Province of Ontario is attempting to achieve in this province, the Town of Petrolia has always been cognizant of the need to conserve energy. A list of the types of actions that have led to tangible, but difficult to quantify savings are as follows:

- Staff routinely turn off lights in unused areas
- Efforts are made to consider energy use in all aspects of day to day operations

- Staff includes energy conservation information in the community newsletter that is distributed to all residents
- Municipal Council has played a lead role by clearly demonstrating its interest in innovation, energy efficiency and maximizing the use of energy resources.

6.3 Present Energy Initiatives

The GEA Regulation focuses on Reportable Facilities and, therefore, does not include consideration of measures related to outdoor lighting. Nevertheless, most forward thinking municipalities are tackling the challenge of streetlights. This includes the Town of Petrolia, whose current plans for 2014 include a major investment for the replacement of all high intensity discharge street lights with new LED units. While it is understood this initiative is outside of the scope of the present Energy Management Plan, this initiative alone represents a significant commitment to reducing energy use by the Town of Petrolia.

7.0 Goals for Future Energy Management

Petrolia hereby sets an annual energy reduction target of 2.0% of all energy reduced annually, which would result in a five-year reduction from the baseline in 2011 of 10%. The goal is based on a list of potential projects that have been identified below, but also having regard to the fact that implementation of these projects is dependent upon staff to manage the projects and funding, both of which have a finite limit. That is to say that Petrolia has a significant opportunity to achieve energy efficiency, but the achievement of the target will require a focused effort.

A list of possible energy efficient projects is set out in the table below. The nine projects identified are considered high priority and have, therefore, been proposed for consideration in the first four years of the five year plan. Seven of these projects are already in the 10 year capital plan for the Town of Petrolia, so they represent an ideal opportunity to take advantage of an already scheduled capital upgrade to become an energy efficiency opportunity. There are no projects proposed for the last year of the plan, but Petrolia intends to monitor the progress of technology and continuously evaluate its opportunities as new technologies emerge.

The projects noted below are considered "proposed" and each is subject to Council approval through the normal capital budgeting process of the municipality. The projects, therefore, represent a list of potential projects considered during the development of the Energy Management Plan. The costs, incentives, and energy savings (both ekWhs and financial savings) are estimates based on consideration of the facilities and their current usage, but without the benefit of detailed engineering. Whether a particular project is pursued by Petrolia will be decided by Council as part of its normal budgeting processes. That in mind, the table that follows places a marker in the form of an "X" under the year where each project might be considered.

The list of projects is included to demonstrate that the target of 2% annual reduction is achievable. If each project were implemented as envisioned at a preliminary level, the forecasted energy reduction on the projects listed would represent a 14.5% reduction over five years of total reportable energy use by the Town. These savings and the associated payback are subject to verification, but the table below demonstrates the potential for lucrative energy reduction projects on heated and cooled facilities owned by the Town of Petrolia.

Project	Cost	Incentives	ekWhs Reduced	Energy Savings	2015	2016	2017	2018
Community Centre-pumps, AC	$40,000	$5,000	50,000	$6,500	$40,000			
Community Centre-Lighting	$25,000	$6,000	120,000	$14,400	$25,000			
Community Centre-AC unit	$10,000	$1,500	15,000	$1,800		$10,000		
Community Centre-AHU retrofit	$75,000	$15,000	150,000	$18,000		x	$75,000	
Community Centre-RTUs	$25,000	$3,000	30,000	$3,600				$25,000
Water Treatment plant-pump VFDs	$150,000	$25,000	250,000	$27,000		$150,000		
Arena-compressor	$30,000	$5,000	50,000	$6,000	$30,000			
Arena-ice-resurfacing	$60,000	$5,000	50,000	$6,000		$60,000		
Arena-compressor 2, water heating	$50,000	$6,000	120,000	$7,200				$50,000
Totals	**$465,000**	**$71,500**	**835,000**	**$90,500**	**$95,000**	**$220,000**	**$75,000**	**$75,000**

8.0 Energy Management Committee

The Town of Petrolia will implement an Energy Management Committee to create and maintain a methodical focus on energy costs. This Committee will provide a vehicle for key staff from critical departments to track energy budgets, update energy related projects and develop accountability for achieving energy reduction targets. The committee will have the lead responsibility and accountability for monitoring and achieving energy reduction targets.

The proposed committee shall be established by Town Council upon finalization of this Energy Management Plan having regard to the following structure:

- One key staff person from major energy consuming departments (Public Works, Community Services, Clerks, and Facilities) shall be required to participate
- One key staff person from Financial Services shall be required to participate
- One key staff person from all other departments shall be required to participate from time-to-time as determined by the Committee

The specific mandate for the proposed committee shall be established by the Committee, in consultation with Town Council upon creation, based generally on the following:

- Track energy spending by department
- Analyze and prioritize projects for consideration by Council on an annual basis
- Identify potential projects to consider in the future
- Developing a corporate strategy for back-up generators
- Creation of an energy awareness strategy for Town staff
- Reporting and tracking all utility incentives

Participation and education will be solicited from utility partners, both electrical and gas suppliers, to ensure up to date information on incentive programs, energy rates and other available assistance. Active participation from these partners will make the Energy Management Committee that much more effective.

9.0 Capital Funding

In this current age of low interest rates and low yields on bonds and investments, a 20% or higher return on investment is an attractive proposition. Reviewing the above table the majority of the proposed projects represent a very attractive simple Return on Investment in the range of approximately 20% annually.

Some municipalities have capital reserve fund accounts that can be utilized to effectively "borrow" capital funds to pay for energy efficiency projects. Petrolia does have an Energy Reserve Fund specifically for energy efficiency projects. Each proposed project is scrutinized by senior staff and Council to ensure it is a viable and will deliver a fair return over the long term.

Bluewater Power, through the OPA's "saveONenergy" conservation programs provides financial incentives for undertaking capital projects that reduce electrical consumption. Similarly, Union Gas has certain programs to manage demand for natural gas. The nine capital projects proposed in the above table could attract in excess of $70,000 in capital incentive rebates from the OPA alone.

It is also important to remember that energy-efficiency upgrades can often be complementary to normal needs driven by assets failing or reaching end of life. In fact, seven of the nine projects already appear in Petrolia's 10-year capital plan. In such cases, only the incremental capital required to upgrade to an efficient model over the base case model needs to be attributed to the energy project payback. Due diligence in the procurement stage is necessary though, to ensure that only proposals for an efficient replacement are considered in awarding the project to a successful bidder.

There are nine potential capital project listed above. Each of the projects has a return on investment within typical municipal payback expectations. These nine potential projects could reduce Petrolia's energy consumption by 10% over five years should they be implemented as proposed.

However, achieving those savings will require careful shepherding by the Energy Management Committee. The projects noted above are considered "proposed" and each is subject to Council approval through the normal capital budgeting process of the municipality.

Municipalities that have reserve fund accounts can utilize capital funds from these accounts to effectively self-finance energy efficiency projects with "capital loans" from reserves. It is important for these "capital loans" to be paid back to the reserve fund utilizing the cost savings or avoided energy costs that result from the energy efficiency upgrades. The question remains whether those funds are to be returned to the reserve entirely so that they can finance future capital investments ("fast out" basis) or shared between the reserve fund and current budget

so that savings partially finance future capital and partially reduce taxes ("shared savings" basis).

9.1 "Fast Out" basis: All savings are paid back into the reserve in order to replenish the reserve for future capital projects and ensure the pay-back period is minimized. The tables below illustrate how the "fast out" option could materialize and achieve the 2.0% annual reduction target using numbers representative of the types of projects that will be considered spread evenly over the five year period.

Fast Out option	2014	2015	2016	2017	2018	5 Year Total
Total Project Spend	$60,000	$60,000	$60,000	$60,000	$60,000	**$300,000**
Incentives	$0	$11,000	$11,000	$11,000	$11,000	**$44,000**
Operating Savings	$0	$10,774	$21,979	$33,632	$45,751	**$112,134**
Net New Capital	$60,000	$38,226	$27,021	$15,368	$3,249	**$143,866**
Incentives	$11,000	$11,000	$11,000	$11,000	$11,000	**$55,000**
Incremental Annual Energy Savings	$10,774	$11,205	$11,653	$12,119	$12,604	**$58,354**
Cumulative Annual Energy Savings	$10,774	$21,979	$33,632	$45,751	$58,354	**$58,354**
Energy Reduction (ekwhs)	115,534	115,534	115,534	115,534	115,534	**577,672**
% Reduction	2.0%	2.0%	2.0%	2.0%	2.0%	**10%**

By transferring the annual utility savings and the capital incentives back into the energy reserve account to use for future capital expenditures, the amount of new capital necessary over five years to achieve $300,000 of capital energy project spending is only $143,866. The result of directing $143,866 in reserve fund capital to energy reduction projects would reduce total energy consumption by approximately 2% per year, resulting in estimated financial savings of $58,354 per year by 2018 that could be used either use to reduce taxes or reinvest in further energy saving projects.

9.2 "Shared Savings" basis: Financial energy savings are shared between the current year to reduce O&M with the effect of reducing the current tax levy, with the remainder being returned to the reserve for future capital projects. The percentage of savings can vary based on the desire to balance current taxes and future capital needs. The tables below illustrate how the "shared savings" option could work using a 75/25 sharing between reserve/ratepayer and numbers representative of the types of projects that will be considered spread evenly over the five year period.

Shared Savings option	2014	2015	2016	2017	2018	5 Year Total
Total Project Spend	$60,000	$60,000	$60,000	$60,000	$60,000	**$300,000**
Incentives to Reserve	0	$11,000	$11,000	$11,000	$11,000	**$44,000**
Operating Savings from Reserve	0	$8,080	$16,484	$25,224	$34,313	**$84,101**
Net New Capital	$60,000	$40,920	$32,516	$23,776	$14,687	**$171,899**
Incentives	$11,000	$11,000	$11,000	$11,000	$11,000	**$55,000**
Incremental Annual Energy Savings	$10,774	$11,205	$11,653	$12,119	$12,604	**$58,354**
Cumulative Savings to Reserve	$8,080	$16,484	$25,224	$34,313	$43,766	**$43,766**
Cumulative Savings Shared with Ratepayers	$2,693	$5,495	$8,408	$11,438	$14,589	**$14,589**
Energy Reduction (ekwhs)	115,534	115,534	115,534	115,534	115,534	**577,672**
% Reduction	2.0%	2.0%	2.0%	2.0%	2.0%	**10%**

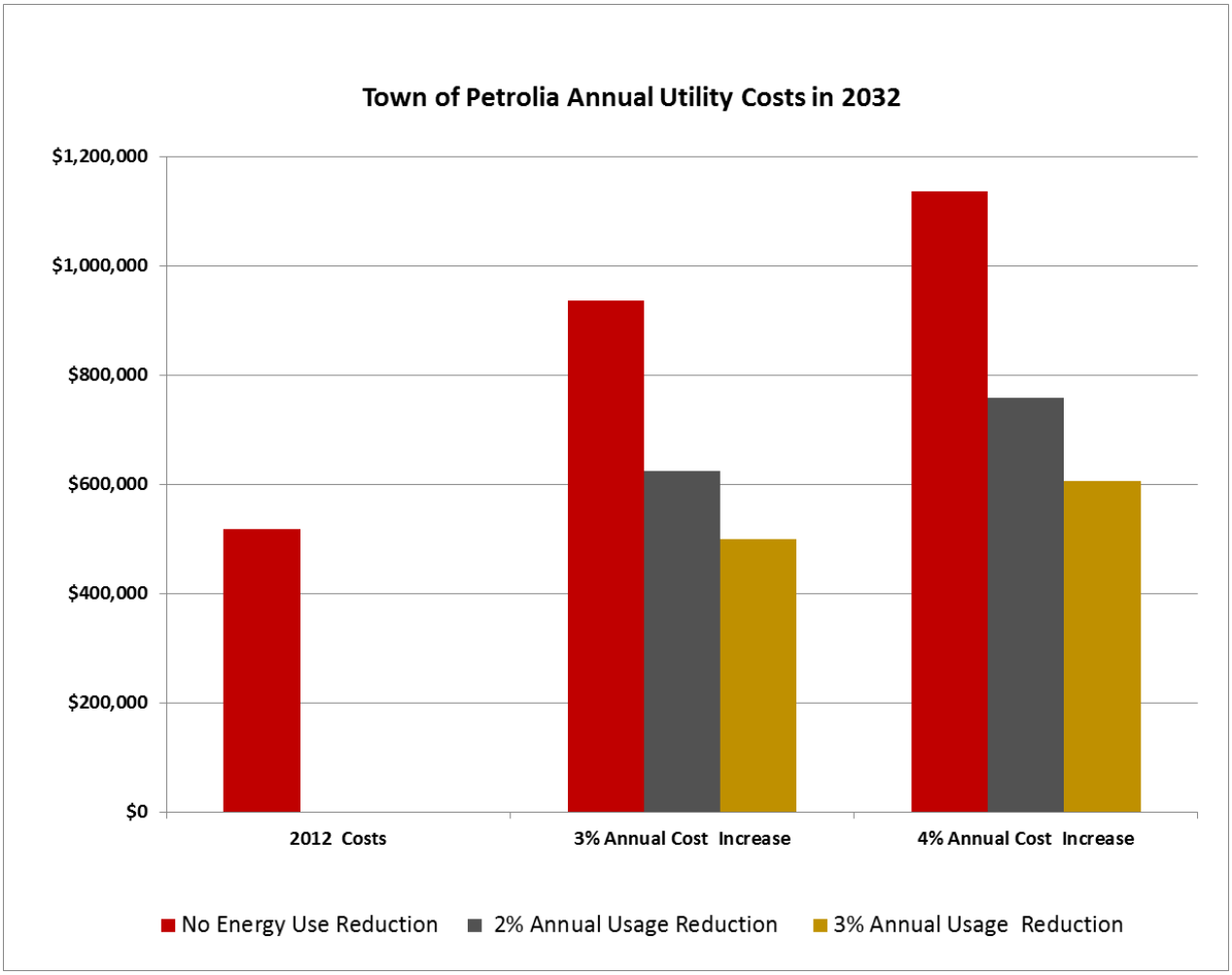
Under this scenario, the amount required from capital reserve funds increases from $143,866 to $171,899 over five years; however the 2% annual energy reduction also delivers approximately $14,589 of cumulative savings back to Petrolia ratepayers over the five years of the plan.

This Energy Management Plan does not seek to choose one financing model over another. Whether savings are used exclusively to finance future capital under the "fast out" model or shared with ratepayers under the "shared-savings" model will be decided on a project-by-project basis. The availability of either tool, however, is important to the achievement of the goals of this Energy Management Plan in a sustainable manner.

9.3 Why Set Energy Reduction Targets?

This report sets a reduction target of 2% annually for the first five years. If that targeted reduction can be maintained for 20 years, the graph below demonstrates the potential financial reward of forward-thinking energy reduction. The graph shows the differences in the total annual cost of energy in 20 years' time, assuming annual energy rate increase of 3% and 4%, respectively. The graph compares those projected costs with and without achieving the energy reduction target set out in this report. Assuming a 4% increase in the cost of energy, the difference in total cost of energy in 20 years between zero conservation and 2% annual

conservation is approximately $350,000 annually. That represents a significant opportunity, given that the total energy costs in 2012 were $490,000.



10.0 Other Energy Matters

The *"Guide to Preparing Conservation and Demand Management Plans"* recommends a municipality to turn its mind beyond energy reduction targets and to address other matters related to energy. In the case of the Petrolia, two matters are worth addressing related to backup generation and renewable energy generation.

10.1 Backup Generation

Currently Petrolia has backup generation at its Fire Hall for emergency purposes. Other municipal facilities do not have backup generation.

There may be an opportunity to utilize this asset to participate in the Demand Response ("DR3") initiative with the Ontario Power Authority. Although this initiative is currently in transition, there may be opportunities if responsibilities are transferred to the Independent Electrical System Operator ("IESO") within the next year. Some capital investment and time from municipal staff would be required to change the Certificate of Approval - Air ("CofA"), as would slight modifications to the equipment itself. At such time that there is greater certainty, the payback should be evaluated and this could represent an opportunity for further consideration in later years of the five year plan activity.

Should there be an opportunity to work with Bluewater Power and other neighbouring municipalities, Petrolia would likely need to consider being part of an aggregated pool of generators that could be bid into a program such as the present Demand Response "3" initiative.

10.2 Renewable Generation

The GEA Regulation states specifically that "*Within the five year plan, the municipality will provide*

- *A description of any renewable generation facility operated by the public agency and the amount of energy produced on an annual basis by the facility.*
- *A description of the ground source energy harvested, if any, by ground source heat pump technology operated by the public agency.*
- *The solar energy harnessed, if any, by thermal air technology or thermal water technology operated by the public agency.*
- *The PROPOSED PLAN, if any, to operate heat pump technology, thermal air technology or thermal water technology in the future."*

Petrolia currently has no proposed renewable energy projects. There are no projects using renewable power as a partial supply of power nor any renewable energy generation projects as that term is defined.

Solar options exist to lease rooftop space and remove the performance risk from Petrolia and put it onto the solar developer. This option provides guaranteed payments for 20 years and requires absolutely no investment from Petrolia. Larger rooftops such as the community centre could be investigated as an option.

Petrolia may decide to investigate options for the implementation of other renewable technology projects at its facilities. The initiatives may take a variety of forms from ground source heat pump to solar thermal systems retrofitted into existing sites. Technology such as solar thermal may be viable for the larger water consuming facilities. The Town will be mindful of such opportunities when considering capital projects for existing sites that are in need of a replacement for its heating/cooling system.

11.0 Conclusion

The Town of Petrolia is a corporate entity with significant assets and an overall energy budget of approximately $500,000 annually. Petrolia recognizes that energy prices, both natural gas and electricity, will increase over the next five to ten years and create pressure on the Town's finances. The most efficient way for municipalities to tackle these price increases, without lowering municipal service levels, is to decrease the amount of energy used.

Through this Energy Management Plan, the Town of Petrolia declares that it will proactively manage its energy costs by setting a target of reducing energy by 10 % over the next five years. A number of preliminary energy studies have already been undertaken and a list of potential projects has been developed. They demonstrate that the energy reduction target of 2% annually is achievable. The key to reaching these targets will be the availability of capital to complete projects in a planned manner and through a financing tool that permits savings to be returned, in full or in part, to the reserve fund from which the capital was funded. In this manner, Petrolia will build upon its energy efficiency successes over the next five years of this plan.

Monitoring progress toward the energy reduction target will be the responsibility of the Energy Management Committee to be established under this Energy Management Plan. The Committee will ensure accountability within each department for energy budgets, prioritize energy efficiency projects for capital spending, as well as monitor and report progress on the achievement of the 2% annual energy reduction target.

APPENDIX A

Press TAB to move to input areas. Press	Energy Consumption and Greenhouse Gas Emissions Reporting - for 2012
Confirm consecutive 12-mth period (mth-yr to mth-yr)	January 2012 to December 2012
Sector	
Agency Sub-sector	
Organization Name	Town of Petrolia

Please fill in the mandatory fields indicated in red, in addition to submitting data on your energy usage.

Operation Name	Operation Type	Address	City	Postal Code	Total Floor Area	Unit	Avg hrs/wk	Annual Flow (Mega Litres)	Energy Type and Amount Purchased and Consumed in Natural Ur: Electricity Quantity	Electricity Unit	Natural Gas Quantity	Natural Gas Unit
Stephenson Building	*Administrative offices and related facilities, including municipal council chambers*	*2160 Yonge Street*	*Toronto*	*M7A 2G5*	*135,034.00*	*Square meters*	*70*	*23516.00224*	*2,181,065.00000*	*kWh*	*125,300.00000*	*Cubic meter*
Victoria hall	Administrative offices and related facilities, including municipal council chambers	411 Greenfield Stre	Petrolia	N0N 1R0	20,000	Square feet	40		304,320	kWh	29,400	Cubic Meter
Community Center	Indoor swimming pools	360 Tank Street	Petrolia	N0N 1R0	26,000	Square feet	116		943,320	kWh	153,878	Cubic Meter
Greenwood Arena	Indoor ice rinks	1065 Dufferin Avenu	Petrolia	N0N 1R0	29,000	Square feet	40		584,774	kWh	58,293	Cubic Meter
Public Works yard	Storage facilities where equipment or vehicles are maintained, repaired or stored	345 Centre Street	Petrolia	N0N 1R0	10,000	Square feet	40		31,493	kWh	8,478	Cubic Meter
Library	Public libraries	4200 Petrolia Line	Petrolia	N0N 1R0	3,400	Square feet	30		72,291	kWh	6,415	Cubic Meter
Victoria Rehearsal Hall	Performing arts facilities	115 Greenfield Stree	Petrolia	N0N 1R0	3,000	Square feet	40		12,109	kWh	4,792	Cubic Meter
Storage Building	Storage facilities where equipment or vehicles are maintained, repaired or stored	4190 Robert Street	Petrolia	N0N 1R0	1,000	Square feet	1		2,612	kWh		
Water Tower	Facilities related to the pumping of water	343 Centre Street	Petrolia	N0N 1R0			40	77.92432	16,478	kWh		
Water Treatment Plant	Facilities related to the treatment of water	2701 Lakeshore Roac	Petrolia	N0N 1R0			84	5095.90270	913,102	kWh		
Pump Station	Facilities related to the pumping of water	75 Countryview Driv	Petrolia	N0N 1R0			24	6.91351	1,281	kWh		
Fire Hall	Fire stations and associated offices and facilities	370 Centre Street	Petrolia	N0N 1R0	10,000	Square feet	40		56,398	kWh	6,617	Cubic Meter

APPENDIX B

ONTARIO REGULATION 397/11

made under the

GREEN ENERGY ACT, 2009

Made: August 17, 2011
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ENERGY CONSERVATION AND DEMAND MANAGEMENT PLANS

Definitions

1. In this Regulation,

"municipal service board" means,

(a) a municipal service board or joint municipal service board established or continued under the *Municipal Act, 2001*,

(b) a city board or joint city board established or continued under the *City of Toronto Act, 2006*, or

(c) a joint board established in accordance with a transfer order made under the *Municipal Water and Sewage Transfer Act, 1997*; ("commission de services municipaux")

"post-secondary educational institution" means a university in Ontario, a college of applied arts and technology in Ontario or another post-secondary educational institution in Ontario, if the university, college or institution receives an annual operating grant; ("établissement d'enseignement postsecondaire")

"public hospital" means,

(a) a hospital within the meaning of the *Public Hospitals Act*, or

(b) the University of Ottawa Heart Institute/Institut de cardiologie de l'Université d'Ottawa; ("hôpital public")

"school board" means a board within the meaning of the *Education Act*. ("conseil scolaire")

Application

2. Sections 4, 5 and 6 apply only to public agencies prescribed by section 3.

Public agencies

3. The following are prescribed as public agencies for the purposes of the Act:

1. Every municipality.

2. Every municipal service board.

3. Every post-secondary educational institution.

4. Every public hospital.

5. Every school board.

Energy conservation and demand management plans

4. (1) A public agency shall prepare, publish, make available to the public and implement energy conservation and demand management plans or joint plans in accordance with sections 6 and 7 of the Act and with this Regulation.

(2) An energy conservation and demand management plan is composed of two parts as follows:

1. A summary of the public agency's annual energy consumption and greenhouse gas emissions for its operations.

2. A description of previous, current and proposed measures for conserving and otherwise reducing the amount of energy consumed by the public agency's operations and for managing the public agency's demand for energy, including a forecast of the expected results of current and proposed measures.

Summary of annual energy consumption and greenhouse gas emissions

5. (1) Subject to subsection (2), a summary of the public agency's annual energy consumption and greenhouse gas emissions must include a list of the energy consumption and greenhouse gas emissions for the year with respect to each of the public agency's operations that are set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs and that are conducted in buildings or facilities the public agency owns or leases that,

(a) are heated or cooled and in respect of which the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption; or

(b) are related to the treatment or pumping of water or sewage, whether or not the building or facility is heated or cooled, and in respect of which the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption.

(2) If only part of a building or facility where an operation is conducted is heated or cooled, the public agency's summary referred to in subsection (1) must only include energy consumption and greenhouse gas emissions for the part of the building or facility where the operation is conducted that is heated or cooled.

(3) The public agency's summary referred to in subsection (1) must be prepared using the form entitled "Energy Consumption and Greenhouse Gas Emissions Template" that is available from the Ministry and must include the following information and calculations for each of the public agency's operations:

1. The address at which the operation is conducted.

2. The type of operation.

3. The total floor area of the indoor space in which the operation is conducted.

4. A description of the days and hours in the year during which the operation is conducted and, if the operation is conducted on a seasonal basis, the period or periods during the year when it is conducted.

5. The types of energy purchased for the year and consumed in connection with the operation.

6. The total amount of each type of energy purchased for the year and consumed in connection with the operation.

7. The total amount of greenhouse gas emissions for the year with respect to each type of energy purchased and consumed in connection with the operation.

8. The greenhouse gas emissions and energy consumption for the year from conducting the operation, calculating,

   i. the annual megawatt hours per mega litre of water treated and distributed, if the operation is a water works,

   ii. the annual megawatt hours per mega litre of sewage treated and distributed, if the operation is a sewage works, or

   iii. per unit of floor space of the building or facility in which the operation is conducted, in any other case.

(4) If a public agency conducts, in the same building or facility, more than one operation set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs, it shall make a reasonable allocation of the amount of energy purchased and consumed for the year among each of those operations.

(5) In preparing its annual Energy Consumption and Greenhouse Gas Emission Template, a public agency may exclude its energy consumption and greenhouse gas emissions relating to its temporary use of an emergency or back-up generator in order to continue operations.

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

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

(8) The following information, if applicable, must also be submitted, published and made available to the public with every Energy Consumption and Greenhouse Gas Emission Template:

1. If the operation is a school operated by a school board,

   i. the number of classrooms in temporary accommodations at the school during the year, and

   ii. whether there is an indoor swimming pool in the school.

2. If the public agency is a public hospital, whether a facility operated by the public hospital is a chronic or acute care facility, or both.

Energy conservation and demand management measures

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

(a) the information referred to in subsection 6 (5) of the Act with respect to each of the public agency's operations set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs;

(b) the information referred to in paragraph 2 of subsection 4 (2) of this Regulation with respect to each of the public agency's operations set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs; and

(c) the following information:

(i) information on the public agency's annual energy consumption during the last year for which complete information is available for a full year,

(ii) the public agency's goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy,

(iii) the public agency's proposed measures under its energy conservation and demand management plan,

(iv) cost and saving estimates for its proposed measures,

(v) a description of any renewable energy generation facility operated by the public agency and the amount of energy produced on an annual basis by the facility,

(vi) a description of,

(A) the ground source energy harnessed, if any, by ground source heat pump technology operated by the public agency,

(B) the solar energy harnessed, if any, by thermal air technology or thermal water technology operated by the public agency, and

(C) the proposed plan, if any, to operate heat pump technology, thermal air technology or thermal water technology in the future,

(vii) the estimated length of time the public agency's energy conservation and demand management measures will be in place, and

(viii) confirmation that the energy conservation and demand management plan has been approved by the public agency's senior management.

(2) In addition to publishing and making available the required information with respect to the operations mentioned in clauses (1) (a) and (b), a public agency may also publish information with respect to any other operation that it conducts.

(3) On or before July 1, 2019 and on or before every fifth anniversary thereafter, every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office all of the information that is required to

be published and made available under subsection (1), the Energy Consumption and Greenhouse Gas Emission Template that is required to be submitted and published on or before July 1 of that year and the following information:

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

(4) If a public agency initiated energy conservation measures or energy demand management measures before July 1, 2014, the public agency may also include in its first plan information on the results of those measures.

TABLE 1

Column 1	Column 2	Column 3
Item	Type of public agency	Operation
1.	Municipality	1. Administrative offices and related facilities, including municipal council chambers.
		2. Public libraries.
		3. Cultural facilities, indoor recreational facilities and community centres, including art galleries, performing arts facilities, auditoriums, indoor sports arenas, indoor ice rinks, indoor swimming pools, gyms and indoor courts for playing tennis, basketball or other sports.
		4. Ambulance stations and associated offices and facilities.
		5. Fire stations and associated offices and facilities.
		6. Police stations and associated offices and facilities.
		7. Storage facilities where equipment or vehicles are maintained, repaired or stored.
		8. Buildings or facilities related to the treatment or pumping of water or sewage.
		9. Parking garages.
2.	Municipal service board	1. Buildings or facilities related to the treatment or pumping of water or sewage.
3.	Post-secondary educational	1. Administrative offices and related facilities.

	institution	
		2. Classrooms and related facilities.
		3. Laboratories.
		4. Student residences that have more than three storeys or a building area of more than 600 square metres.
		5. Student recreational facilities and athletic facilities.
		6. Libraries.
		7. Parking garages.
4.	School board	1. Schools.
		2. Administrative offices and related facilities.
		3. Parking garages.
5.	Public hospital	1. Facilities used for hospital purposes.
		2. Administrative offices and related facilities.

Commencement

7. This Regulation comes into force on the later of January 1, 2012 and the day it is filed.