The Corporation of the City of Kenora

Energy Conservation and Demand Management Plan

Objectives

In order to meet the strategic goals of the Energy Conservation and Demand Management Plan, there are a number of goals and objectives that align with its development and implementation:

1. Ensure energy efficiency consistency across municipal facilities

2. Monitor and report on energy consumption in quarterly intervals. Staff will monitor and verify ROI to enable reinvestment in energy projects and report on energy consumption four times per year.

3. Better analyze energy costs and look for savings opportunities. This will include looking at energy commodity procurement options and 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.

Organizational Understanding

- Our Municipal Energy Needs: The Corporation of the City of Kenora requires reliable, low-cost, sustainable energy sources delivering energy to the most efficient facilities and energy-consuming technology feasible. The municipality applies a triple bottom line approach to energy management. Triple bottom line (TBL) accounting expands the traditional reporting framework to take into account social and environmental performance in addition to financial performance. A TBL municipality conceives a reciprocal social structure in which the well-being of corporate, labour and other stakeholder interests are interdependent. A triple bottom line municipality does not produce harmful or destructive products such as weapons, toxic chemicals or batteries containing dangerous heavy metals, for example. A triple bottom line municipality derives economic value after deducting the cost of all inputs, including the cost of the capital tied up. The triple bottom line approach prioritizes a lifecycle cost analysis of products and services procured by the municipality wherever possible.

- Stakeholder Needs: Internal stakeholders (Council, CAO, and 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 citizens and groups) need the municipality to be accountable for energy performance and to minimize the energy component of the costs of municipal services.

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- 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 Asset Management Plan, Official Plan, and the Downtown Revitalization.

- 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 Facilities Supervisor. The data is received via supplier invoices, analyzed, and reports are generated.

Energy Supply Management: Our municipal energy is supplied via a number of providers as outlined below: Electricity is supplied by Hydro One and natural gas by Union Gas on an as needed basis and is priced at the standard rates offered by the provider.

Municipal staffs have investigated a hedging strategy for purchasing electricity and natural gas through Local Authority Services (LAS). Energy Use Management: Day to day management of energy has historically happened in an ad-hoc manner. To aid in our efforts to track and reduce energy use the Municipality of Kenora utilizes the LAS to provide energy purchases.

- Summary of Current Energy Consumption, Cost and GHGs: The current energy usage by building is detailed in Appendix A. Our energy usage is reviewed 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 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. The Municipality of Kenora aspires to show leadership in the promotion and development of renewable energy systems that are compatible with our asset management and land use planning objectives. As a result, we will ensure that any new facilities are constructed from natural sources such as sunlight, and geothermal heat where practicable.

Strategic Planning

- Links with other municipal plans: The Municipality of Kenora will 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, environmental management plan, asset management plan, and the policy development process.

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Structure Planning

- Staffing requirements and duties: The Municipality of Kenora will incorporate energy budget accountability into our corporate responsibilities. We will incorporate energy efficiency into standard operating procedures and the knowledge requirement for operational jobs.

- Consideration of energy efficiency for all projects: The Municipality of Kenora will 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. roofs, insulation, windows and doors etc.)
- Water use (e.g. pools, toilets, water reclaim etc.)
- BAS (building automation system) controls,
- Process improvements
- Back-up generators
- 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: Tender, Project Execution, Project Management, Commissioning

Resources Planning

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

- External Consultants and Suppliers: We will establish criteria in our Procurement Policy based on our energy goals and objectives for the selection of external consultants and energy suppliers. These criteria will employ triple bottom line principles and ultimately include a lifecycle cost analysis of desired products and services whenever possible.

- Energy Training: The Municipality of Kenora will develop and deliver energy training for relevant staff and Council members. This training will not be limited to operators and maintainers with "hands-on" involvement with energy consuming equipment but will also include others since they also make energy consumption decision in their daily work. Training focused on the energy use and conservation opportunities associated with employees' job functions will be utilized whenever possible. Energy management training will be incorporated into employee orientation and future training opportunities. All such energy management training opportunities are integrated into ongoing staff training and designed to allow for the internal capacity building necessary to ensure that staff are making informed decision and reducing the need for costly external assistance. The Municipality of Kenora will utilize both internal and external resources to provide this training as much as resources allow.

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.

- Consideration of energy efficiency of acquired equipment: Our purchasing procedures will be modified as required to incorporate energy efficiency into the criteria for selection of materials and equipment.

Implementation Planning

- Building Standards: Municipality of Kenora staff will develop criteria for the design and/or acquisition of new buildings that include energy performance factors and that use as appropriate the principles embedded in performance standards such as LEED and the Model National Energy Code for Buildings. LEED (Leadership in Energy and Environmental Design) is a green building certification tool administered by CaBGC (Canada Green Building Council), which provides a framework for constructing green/ energy efficient buildings. The LEED rating system addresses the performance of commercial and institutional buildings. Many municipalities have adopted standards such as minimum LEED Silver rating for all new municipally owned new construction projects. Considering LEED for new construction and major renovations makes good business sense, in that a high performance green building vs. conventional inefficient buildings can reduce energy consumption by 25% to 75%, water use reduction by 20% to 50% and reduced environmental greenhouse gas (GHG) emissions by as much as 60%. The Municipality of Nowhere will investigate adopting such a standard for new buildings and will incorporate any such standard into our revised Energy Conservation and Demand Management Plan.

- Communication Programs: Municipality of Kenora staff will develop a communication strategy that creates and sustains awareness of energy efficiency as a corporate priority among all employees, and conveys our commitment and progress to our stakeholders. Activities could include circulating reminder stickers to turn lights off, putting up energy conservation displays, promoting home energy audits, hosting lunch and learns, and conducting Natural Step training.

Investment Planning

- Internal Funding Sources: We will develop and/or clarify as necessary the financial indicators that are applied to investment analysis and prioritization of proposed energy projects, taking due consideration of the priority given to energy efficiency projects versus other investment needs (life cycle versus simple payback). Energy and operating costs savings, physical asset renewal, improved employee comfort and service delivery, and enhanced environmental protection are all quantifiable benefits of energy conservation and demand management and will be factored in accordingly.

- Creative Approaches: Municipality of Kenora staff will investigate, document, and communicate funding sources for energy projects, including government and utility grants and incentives.

Implementation Planning

- Business Procedures: Municipal staff will review processes and modify them as necessary in order to incorporate energy efficiency considerations. The Municipality of Kenora will include depreciation of all assets as part of its Asset Management and Capital Planning and will undertake a Lifecycle Cost Analysis of potential new products and services to ensure operating costs are factored into our plans and analyses. Municipal governments apply Lifecycle Cost Analysis as a basis for policy and regulatory development. Current applications include:

1. Helping to prioritize programs based on life cycle information,
2. Making policies consistent among material suppliers, service contractors, and internal departments,
3. Reducing the impact that government operations have on the environment,
4. Promoting pricing products and services to accurately reflect "true" costs.

Projects Execution

- Municipal Level: The administration and implementation of this Energy Conservation and Demand Management Plan will be the responsibility of the Facilities Supervisor. 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 have the lead responsibility in ensuring facilities operate efficiently, all municipal staff should be familiar with and utilize energy efficient measures where possible. Another important component of an energy management program is the re-commissioning. Over the life cycle of a facility, the mechanical building automation and distribution systems are adjusted from day-to-day to suit user room temperature requirements. Moreover, mechanical distribution or building controls instrumentation is sometime over-looked when renovations take place. Re-commissioning involves examining the original mechanical design and operating specification against any building renovations and recalibrates the settings to suit today's energy efficient standard practices. It also ensures that mechanical operating practices are current and appropriate to maximize building system efficiencies. The use of renewable energy measures can also help reduce overall corporate greenhouse gas emissions by lessening our demand for fossil fuel generated energy (oil, gas or coal). 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 and dollar savings and/or avoidance as the result of implemented initiatives. Municipality of Kenora staff will develop an annual progress report with energy consumption data and initiatives undertaken within the calendar year and will report to Council on progress . As part the Energy Plan, the implemented processes improvements, program implementation and projects will continued to be documented and reviewed annually to update consumption savings. By regularly monitoring and reporting consumption and dollar savings and/or avoidance to Departments, the outcomes of their 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.

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Evaluation Progress

- Energy Consumption: We will review and evaluate our energy plan, revising and updating it as necessary, on an annual basis 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.

- Green House Gas Emission: Governments at all levels are moving to address emissions of greenhouse gases (GHGs), in light of scientific evidence on how human activities are affecting the world's climate. For more information on the science, see http://www.ipcc.ch/. The combustion of fossil fuels in buildings is a major source of GHG emissions that fall under local government influence. Municipalities can lower emissions by improving energy efficiency of buildings and using more renewable energy. The Municipality of Kenora is committed to both objectives through the development and implementation of this Energy Conservation and Demand Management Plan (CDM). We will continue to track and report on GHGs as part of our regular reporting on energy consumption and will evaluate progress in this area against our overall reduction target.

Programs, Process, and Projects

Programs

Description	Facility	Contact	Date	Status
Add energy awareness to New Employee Orientation	All	Managers Supervisors		
Details	As part of Orientation Program: provide new staff with energy management training. Appropriate training vehicles include but are not limited to the following: -- Building systems			
Energy Leader	All	Karen Brown		Active
Details	The CAO has been designated as the Energy Champion within the Municipality of Kenora. The Energy Champion is responsible for: -- instilling a culture of energy conservation within their respective workplaces with each 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			

Processes

Description	Facility	Contact	Start	End	Status	Cost	Save (ekWh/yr)	Save ($)	ROI
Life Cycle Costing	All	Lauren							0
Details	The Municipality of Kenora should update its current 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 will 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.								
Appliance Usage	All	All							
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 totalled across the municipality across a given year the impact can run in the hundreds of dollars for a municipality the size of Kenora. 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 n 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.								

Procurement	All	Finance							
Details	Poor energy procurement decisions can be expensive. Energy prices fluctuate constantly, which can significantly affect your energy bill and performance against budget. By taking a proactive approach to buying energy, you can better control your costs. With the Corporation of the City of Kenora utilizing the LAS Electricity Program. The LAS Electricity Program provides an easy way for Ontario municipalities to ensure predictable electricity commodity costs through a professionally administered program that leverages both aggregated purchasing and spot market exposure. As a licensed electricity retailer in Ontario, LAS is able to remove municipal accounts, including streetlights, from high-cost RPP and time-of-use rates, and enter them into a hedge/spot market billing scenario under the LAS Electricity Program. For both small and large volume municipal electricity accounts, a hedge purchase offers a way to realize significant budget stability, and commodity cost savings in many instances. 2012 program savings for a typical member: 4% (or 0.3 cents/kWh) savings compared to RPP rates, for accounts enrolled in LAS hedge purchase 15% (1.5 cents/kWh) savings for streetlight accounts enrolled with LAS and similar savings are expected for 2013! 104 municipalities, urban and rural, large and small, participate in LAS current electricity hedge purchase. In addition, other municipalities leverage LAS' role as an electricity retailer to achieve spot market billing for select accounts that would otherwise bill at higher cost time-of-use rates. In addition, 3 municipalities leverage LAS role as an electricity retailer. This hedging program provides a consistent natural gas price throughout the year, and offer budget stability from year to year, through the use of aggregated program tenders and a combination of fixed and indexed pricing contracts. The LAS Program has been in operation for 20 years, and represents an impressive daily purchase volume of 255,000m3 of natural gas, and more than 3,500 enrolled accounts. The LAS Program benefits are simple: Budget Stability: LAS offers a stable annual program rate for all members, which allows you to confidently budget for your commodity costs								

Enhance Procurement Policies	All	Lauren	2014	2016	Pending [0%]	0.00	0	0.00	0
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.								

Projects

Description	Facility	Contact	Start	End	Status	Cost	Save (ekWh/yr)	Save ($)	ROI
Use Setbacks on Programmable Thermostat	City Hall	John Nabb	2014-01-05	2014-01-05	completed				
Details	The furnace is controlled by a programmable thermostat located in the chambers area, which allows for adequate set-points to be maintained depending upon whether the space is occupied or not. . Setting back temperatures by 0.5C results in a 2% savings of the heating utility.								
Replace rooftop HVAC units servicing the Library	Library	John Nabb	2014	2016					
Details	Replacements of the HVAC units servicing the Library are being addressed over a 3 year period.								
Replace T12/LED Lighting in office space/storage	all	John Nabb	2014-	2016	Pending [60%]				
Details	All existing lighting in rooms and office space consists of T 8 & T12 fixtures. These will need to be replaced with, at minimum, LED fluorescent fixtures.								
Install Occupancy Sensor	all	John Nabb	2014-	2016	Pending [30%]				
Details	Install occupancy within viewing area, change rooms and office space. Replacement Cost: approximately $260/sensor (includes $40 incentive) Energy Cost Savings: approximately 30-50%								
Upgrade Museum heating System	Lake of the Woods Museum	John Nabb	2014-06-	2014-09	Pending [10%]				

Details	The Museum consists of a open hall type facility replacement of the HVAC unit and electric VAV which are at end of life;								
HVAC System Upgrade	Administration Bldg. / City Hall	John Nabb	2013-09-	2014-10	Pending [100%]				
Details	Replacement of gas fired Boilers end of life cycle to High efficiency condensating 96% eff								
Replace LED Lighting	Administration Bldg. / Operations	John Nabb	2014-	2016-	Pending [2%]				
Details	Some of the existing fluorescent fixtures have been retrofitted to T8 lamps, however, it would be recommended to further retrofit any existing to LED								
Washroom Lighting	Administration Bldg. / City Hall	John Nabb	2014-	2014-	Pending [0%]				
Details	Both washrooms utilize (6) 60W incandescent fixtures. It would be recommended to replace these with 13W CFL fixtures. Replacement Cost: approximately $90-$105 (no incentive) Energy Cost Savings: approximately $150-$200 annually								
Retrofit Exit Signs	Administration Bldg. / City Hall	John Nabb	2014-	2014-	Pending [0%]				
Details	Currently the exit signs use Incandescent Bulbs. Savings can be realized by retrofitting to LED. Replacement Cost: approximately $12-$15 per sign (includes $8/sign incentive) Energy Cost Savings: approximately $30/sign annually								
Install Occupancy Sensors	Administration Bldg. / City Hall	John Nabb	2014-	2016-	Pending [0%]	0.00	0	0.00	0
Details	All Bathrooms and storage space within the administration building should be equipped with occupancy sensors. Replacement Cost: approximately $260/sensor (includes $40/sensor incentive) Energy Cost Savings: approximately 30-50% annual savings								
Install Programmable Thermostat in It Room	Administration Bldg. / City Hall	John Nabb	2014-	2014-	Pending [0%]	7000.00	0	0.00	8
Details	Install programmable thermostat in training room area in an effort to take advantage of energy savings when the space is unoccupied. Replacement Cost: $75-$100 (no incentive) Energy Cost Savings: approximately 1% annually for every degree of set back								

Upgrade Streetlights to LED		Marco	2014-	2016-	Pending [0%]	0.00	178034	0.00	4
Details	The Municipality of Kenora has the potential to reduce the energy consumed by its streetlights by upgrading its network to LEDs. The Municipality of Kenora currently has a proposal to upgrade its streetlights to LED from Kenora Hydro..								
Upgrade Water Treatment Plant Heating system	Water Treatment Plant	John Nabb	2014-	2014-	Pending [0%]	0.00	0	0.00	0
Details	Current facility is heated completely by electric , conversion to natural gas will increase efficiency and reduce cost significantly								

Appendix A

Energy Consumption and Greenhouse Gas Emissions Reporting - for 2012

2012

Operation Name	Annual Flow (Mega Litres)	Electricity		Natural Gas		Total (calculated in webform)		
		Quantity	Unit	Quantity	Unit	GHG Emissions (Kg)	Energy Intensity (ekWh/sqft)	Energy Intensity (ekWh/Mega Litre)
City Hall	0	186388	kWh	20738	Cubic Meter	57108.53	33.60208	0
Kenora Library	0	141406	kWh	11648	Cubic Meter	35602.66	53.68388	0
Pavillion	0	58045	kWh	0	Cubic Meter	5574.642	35.98574	0
Keewatin Library (Seniors)	0	21412	kWh	2297	Cubic Meter	6399.179	10.02275	0
Lake Of the Woods Museum	0	154574	kWh	7478	Cubic Meter	28983.4	16.84287	0
Harbourfront Tent	0	38640	kWh	0	Cubic Meter	3710.986	2.237406	0
Kenora Police Station	0	135258	kWh	26032	Cubic Meter	62206.98	42.47477	0
Kenora Recration adminstrative area	0	314840	kWh	8058	Cubic Meter	45471.91	31.80421	0
Kenora Recreation Wellness Centre	0	657000	kWh	16819	Cubic Meter	94896.74	31.8017	0
Kenora Recreation Thistle Arena	0	812100	kWh	20789	Cubic Meter	117298.3	31.80153	0
Kenora Recreation Swimming Pool	0	361125	kWh	9244	Cubic Meter	52159.4	31.80119	0
Keewatin ice rink	0	525420	kWh	61401	Cubic Meter	166547.7	43.29203	0
Jaffray Mellick Adminstrative wing	0	9372	kWh	4125	Cubic Meter	8698.923	8.062361	0
Jaffray Mellick Arena	0	32802	kWh	14437	Cubic Meter	30445.29	8.062131	0
Transfer station	0	45669	kWh	0	Cubic Meter	4386.051	39	0
Lake of the wood Cemetery office	0	23400	kWh	0	Cubic Meter	2247.336	39	0
Operation Building (Adminstrative)	0	259000	kWh	25555	Cubic Meter	73189.33	14.34035	0
Operation building Storage Garage	0	224000	kWh	22080	Cubic Meter	63258	14.33317	0
Operation Building Maintenance	0	89565	kWh	8828	Cubic Meter	25292.28	14.33271	0
Water Treatment Plant	2386993	1846000	kWh	0	Cubic Meter	177289.8	97.15789	0.773358
Sewage Treatment Plant	2517668	2844000	kWh	2517668	Cubic Meter	5033109	2691.019	11.75739
Jaffray Melick Office Building	0	16437	kWh	0	Cubic Meter	1578.609	8.165425	0
Keewatin Fire Hall	0	62843	kWh	11516	Cubic Meter	27807.9	102.3384	0
Jaffray Melick Garage (Sunset trail riders)	0	9764	kWh	9071	Cubic Meter	18087.61	17.78368	0
Discovery Center	0	10277	kWh	0	Cubic Meter	987.0031	3.425667	0
Parkade	0	70877	kWh	0	Cubic Meter	6807.027	4.169235	0
Museum annex	0	2972	kWh	0	Cubic Meter	285.4309	1.981333	0