Municipality of
Dutton Dunwich

Municipality of Dutton Dunwich
Energy Conservation and Demand Management Plan (CDM)
2014-2019

Municipality of
Dutton Dunwich

Contents

Municipality of
Dutton Dunwich

1. Commitment

Declaration of Commitment

The Council for the Municipality of Dutton / Dunwich is committed in allocating necessary resources to develop and implement a five year Energy Conservation and Demand Management Plan as required under Regulation 397/11 of the Green Energy Act. The Energy Conservation and Demand Management Plan will strive to reduce our energy consumption and its related environmental impact as outlined in our overall target. Council and Staff will monitor continuous progress towards the objectives set in this plan and will update as required under Regulation 397/11 of the Green Energy Act or any subsequent legislation.

Vision

The Municipality of Dutton / Dunwich will strive to continually reduce its total energy consumption and associated greenhouse gases through the integration of energy efficient infrastructures and facilities, operational efficiencies, and building the foundation for a culture of energy awareness and knowledge within the municipality.

Policy

The Municipality of Dutton / Dunwich will incorporate energy efficiency into all areas of our activity including our organizational and human resources management procedures, procurement practices, financial management and investment decisions, and facility operations and maintenance. As a major component of the operating cost of municipal facilities and equipment, energy cost will be factored into the lifecycle cost analysis and asset management analyses and policies of the municipality. All departments have clear links to some or all of the goals and objectives of the Energy Conservation and Demand Management Plan.

Goals

The Municipality of Dutton / Dunwich Energy Conservation and Demand Management Plan will help achieve the following goals:

i. Maximize fiscal resources and avoid cost increases through direct and indirect energy savings.

ii. Reduce the environmental impact of the municipality's operations.
iii. Increase the comfort and safety of staff and patrons of the municipal facilities.
iv. To promote a culture of energy conservation within the municipality.

Overall Target

The CDM establishes the following quantitative targets to guide the Municipality's efforts on the energy management from July 2014 to July 2019:

- 2% improvement in energy usage; and
- 2% reduction in greenhouse gas emissions.

Objectives

In order to achieve the success of the strategic direction of the CMD the following objectives are considered:

i. Ensure energy efficiency consistently across municipal facilities.
ii. Monitor and report on energy consumption in quarterly intervals. Staff will monitor and verify simple payback (years) to enable reinvestment in energy projects and report on energy consumption two times per year.
iii. 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.
iv. Raise Council and Staff awareness around energy efficiency. This will include communicating successes to both internal and external stakeholders.
v. Strengthen partnerships with external stakeholders such as utility providers (electricity and natural gas).
vi. Identify and seize renewable energy generation opportunities.

2. Organizational Understanding

Summary of Current Energy Consumption, Cost and GHGs

The current energy usage by building is detailed in Appendix A.

Our Municipal Energy Needs

The Municipality will need reliable, low cost, sustainable energy solutions.

Stakeholder Needs

Internal Stakeholders (Council, CAO, Staff)

i. A clear and relevant energy management plan with clear vision, goals, and targets in order to clearly communicate the corporate commitment to energy efficiency.
ii. Timely reporting (semi-annual) of information to maintain awareness of energy use.
iii. Training and support to develop the skills and knowledge required to implement energy management practices and measures.

Municipal Energy Situation

SWOT Analysis for the Municipality of Dutton / Dunwich current energy management is presented in figure 1 below.

Internal Scan

Strength

- Successfil Implementation of some energy efficiency projects in existing facilities
- Support for energy efficiency expressed by senior staff
- Innovative, creative team eager to increase energy efficiency

Weaknesses

- Limited financial and staff resources for energy efficiency planning and implementation
- Minimal access to energy use data
- No formal energy efficiency project evaluation, measurement and verfication protocols

External Scan

Opportunities

- Energy management plan (EMP) that requires municipal energy and GHG monitoring, planning, target setting and reporting
- New and strengthened partnerships with utilities and community organization
- Energy Audits that have already identified further energy efficiency improvements

Threats

- Increasing budget constraint
- Addition of new energy efficiency projects that stretch limited resources

Figure 1. Municipality of Dutton Dunwich Energy Management SWOT

Renewable Energy Utilized

The Municipality of Dutton / Dunwich 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:

1. We encourage a de-lamping campaign by asking employees to identify opportunities to reduce lighting.
2. We will install occupancy sensor in all rooms.
3. Ensure computer monitor power software is enabled.
4. Train staff on proper HVAC systems and set controls.

Energy Leader

The Treasurer has been designated as our energy leader with overall responsibility for corporate energy management.

3. Projects Execution

Municipal Level

The administration and implementation of this Energy Conservation and Demand Management Plan will be the responsibility of the Treasurer. Since we all use energy in our daily activities, it will also be responsibility of all municipal staff to be aware of their energy use and work towards a culture of conservation. Through staff training and web base energy management tools, staff will be able to see the results of their efforts, and benchmark between corporate facilities with industry standards. Detailed Programs and Processes are provided in the appendices B and C.

Asset Level

In order to sustain corporate culture of conservation, staff must be engaged in an effective awareness and education program. Although facilities staff has the lead responsibilities, all staff should be familiar with and utilize energy efficient measures where possible. The first step is the completion of an energy audit.

4. Review

Energy Plan Review

The Municipality of Dutton / Dunwich will develop an annual progress report with energy consumption data and initiatives undertaken with the calendar year and will report to Council annually. As part of the Energy Plan, the implemented processes improvement, program implementation and projects will continue 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 obtained for new ideas. This monitoring and reporting will also align with the requirements of Regulation 397/11 under the Green Energy and/or any subsequent legislation related to energy management.

5. Evaluation Progress

Energy Consumption

The CMD should be reviewed annually. As part of the annual review, the Municipal Energy Leader assigned to oversee the implementation of the CDM should complete or assign someone to complete the following steps:

i. Track the activities that have been implemented, based on a check list of all the actions included in the CMD;

ii. Note any updates to the CMD, based on new audits, organizational or resource changes;

iii. Identify the priority actions for the upcoming year, and secure funding and resources for their implantation;

iv. In 2019, report on implementation of the CMD as required under Regulation 397/11. Include detail on: energy and GHG emissions for 2017; current and proposed energy conservation and demand management measures; a report of results achieved; and a revised forecast of the expected results of the current and proposed measures.

Municipality of
Dutton Dunwich

Appendix A: Current Energy Consumption

Facility Name	Total Area (m2)	Fuel Types	Consumption	Cost ($)	Energy (ekWh/yr)	GHG Emissions (kg CO2e/yr)	GHG Intensity (kg CO2e/m2)	Energy Intensity (ekWh/m2)
MEDICAL CENTRE	899	NG	2888.00 m3	$ 1,443	30,693	5,460	6	34
		Elect.	39471.00 kWh	$ 5,372	39,471	3,791	4	44
UTILITY SHOP	139	NG	2210.00 m3	$ 1,090	23,487	4,178	30	169
		Elect.	14070.00 kWh	$ 2,074	14,070	1,351	10	101
DENTIST BLDG / 1st fl	200	Elect.	3625.00 kWh	$ 774	3,625	348	2	18
DENTIST BLDG / 2nd fl	200	Elect.	2608.00 kWh	$ 630	2,608	250	1	13
LIBRARY	656	NG	6028.00 m3	$ 2,374	64,064	11,397	17	98
		Elect.	56236.00 kWh	$ 7,480	56,236	5,401	8	86
WEDS - Theater	695	Elect.	12188.00 kWh	$ 1,820	12,188	1,171	2	18
FIRE STATION	948	NG	2687.00 m3	$ 1,166	28,557	5,080	5	30
		Elect.	18359.00 kWh	$ 2,503	18,359	1,763	2	19
COMMUNITY CENTRE	948	NG	16084.00 m3	$ 3,886	170,937	30,409	32	180
		Elect.	44397.00 kWh	$ 5,946	44,397	4,264	5	47
SOUTH DUNWICH HALL	400	NG	2068.00 m3	$ 976	21,978	3,910	10	55
		Elect.	11971.00 kWh	$ 2,374	11,971	1,150	3	30
ROADS GARAGE	970	NG	6853.00 m3	$ 2,508	72,832	12,956	13	75
		Elect.	40199.00 kWh	$ 5,610	40,199	3,861	4	41
SENIORS CENTRE / 1st fl	365	NG	782.00 m3	$ 324	8,311	1,478	4	23
		Elect.	19.00 kWh	$ 319	19	2	-	0
SENIORS CENTRE /2nd fl	355	NG	0.00 m3	$ 286	-	-	-	-
		Elect.	4088.00 kWh	$ 811	4,088	393	1	12
Municipal Office	417	NG	8605.00 m3	$ 3,119	91,452	16,269	39	219
		Elect.	40903.00 kWh	$ 5,565	40,903	3,928	9	98
TREATMENT PLANT	283	Elect.	201769.00 kWh	$ 27,066	201,769	19,378	68	1,645
Grand Total				**$ 85,517**	**1,002,215**	**138,188**		

Municipality of
Dutton Dunwich

Appendix B: Programs

Program Description	Facility	Key Contact	Date	Objectives
Managers Meeting Review	Municipal Office	Treasurer	Q2 & Q4 2014-2019	Energy reports to be reviewed semi-annually
New Employee Orientation	All	Human Resources	As needed	As part of Orientation Program: provide new staff with energy management training.
Energy Leader	All	Treasurer	Q4 2014	The Treasurer has been designated as the Energy Champion and 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	Treasurer	Q4 2014	Staff will be encouraged to submit ideas for process improvements or projects that will reduce the corporate and personal energy consumption.

Municipality of
Dutton Dunwich

Appendix B: Processes

Process Description	Facility	Key Contact	Date	Objectives
Procurement	All	Treasurer	Q2 & Q4 2014-2019	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. The Municipality should examine options to procure energy commodities more efficiently than the de facto method and investigate offerings such as those managed by LAS.
Start Up and Shut Down Procedures	All	Treasurer	As needed	Implement start -up and shut-down schedules to eliminate energy waste.
Increase Rental Rate	Community Centre	Treasurer	Q4 2014	The municipality currently rents this space to local residents at an average cost of $25/hour, which includes full access to all amenities. It would be recommended that the municipality consider increasing this rate to reflect rising energy costs.
Appliance Usage	All	Treasurer	Q4 2014	Staff will be encouraged to reduce phantom power wherever possible by turning off electrical devises such as coffee makers, microwaves, telephone charges, computers, computer monitors on weekends.

Municipality of
Dutton Dunwich

Appendix C: Projects

Project Description	Facility	Key Contact	Start	End	Status	Cost	Save (ekWh /yr)	Save ($/yr)	Simple Payback (years)
LED Streetlights	All	Mike Hull, Public Works Manager	2015 Q4	2016 Q1	Pending [0%]	$171,633	133331	$24,451	7
Details	Street lighting consumes a large amount of electricity and costs the municipality $24,451 per year. By converting older lighting technologies to light-emitting diodes (LEDs), we will have the opportunity to reduce the cost of outdoor lighting while enhancing the nighttime environment.								
Ceiling Insulation – Treatment Plant	Pump Building	Brad Reive, Ops Manager	2015 Q3	2015 Q4	Pending [0%]	$4,000	29870	$200	>20
	There is almost no insulation in that area and the heaters must maintain 50F at all times as the alum & hydroxide solidify at this temperature. There is potential for more savings up to $350/yr.								
Ceiling Insulation – Treatment Plant	Filter Building	Brad Reive, Ops Manager	2015 Q4	2016 Q1	Pending [0%]	$3,000	19800	$150	>20
Details	There is almost no insulation in that area and the heaters must maintain 50F at all times as the alum & hydroxide solidify at this temperature. There is potential for more savings up to $350/yr.								
Ceiling Insulation – Utility Shop	Utility Shop	Tim Hansen – Water Ops manager	2015 Q4	2016 Q1	Pending [0%]	$7,500	15280	$320	>20
	Spray foam insulation inside the building and add 8” of insulation in the attic to keep heat in. There is a potential for more savings up to $350/yr.								
Insulate Water Tower	Water Tower	Tim Hansen – Water Ops manager	2016 Q4	2017 Q1	Pending [0%]	$4,000	10000	$200	>20
	Spray foam insulation inside of the tower to prevent heat loss.								
Light Upgrade-Community Centre	Community Centre	Dan Lundy-Maintenance	2016 Q2	2016 Q4	Pending [0%]	TBD	TBD	TBD	TBD
Details	To replace 125 light fixtures in the Community Centre. These lights are turned on during events. The plan is to replace the existing fixtures with either 4-tube T5 fixtures or LED's.								

Light Upgrade – Fire Hall	Fire Hall	Dan Lundy-Maintenance	2017 Q2	2017 Q4	Pending [0%]	TBD	TBD	TBD	TBD
Details	To replace 40 light fixtures in the Community Centre. These lights are turned on during events. The plan is to replace the existing fixtures with either 4-tube T5 fixtures or LED's. .								
Upgrade Radiant Heaters – PW Garage	Roads Garage	Mike Hull, Public Works Manager	2015 Q1	2015 Q3	Pending [0%]	$6,000	12612	$400	15
Details	To replace 4 heaters in the Roads garage. Estimated Energy Savings – 10%								
Library Furnace	Library	Dan Lundy-Maintenance	2014 Q2	2014 Q4	Pending [0%]	$8,000	13722	$440	18
Details	Replacement of two furnaces in the Library. We are targeting a 20% reduction in energy consumption. Note this is a scheduled replacement for this equipment and we will source the most efficient equipment available at the time of replacement. This item is included in our 2014 capital budget.								
Use Setbacks on Programmable Thermostat	Community Centre	Dan Lundy-Maintenance	2015 Q1	2015 Q1	Pending [0%]	$100	3128	$90	1
Details	To install a programmable thermostat in the Community Centre, 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.								
Use Setbacks on Programmable Thermostat	Municipal Office	Treasurer	2015 Q2	2015 Q2	Pending [0%]	$100	2442	$75	1.5
Details	To install a programmable thermostat in the Municipal Office, 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.								
Install Occupancy Sensor	Community Centre	Dan Lundy-Maintenance	2015 Q2	2015 Q4	Pending [0%]	$520	TBD	TBD	TBD
Details	Install occupancy sensors within two washrooms. Replacement Cost: approximately $260/sensor (includes $40 incentive) Energy Cost Savings: approximately 30-50%.								
Install Occupancy Sensor	Pool	Dan Lundy-Maintenance	2015 Q2	2015 Q4	Pending [0%]	$520	TBD	TBD	TBD
Details	Install occupancy sensors within two washrooms. Replacement Cost: approximately $260/sensor (includes $40 incentive) Energy Cost Savings: approximately 30-50%.								

Install Combi Boiler – Utility Shop	Water Utility Shop	Tim Hansen Water Ops Manager	2018 Q2	2018 Q4	Pending [0%]	$17,000	26946	$1,600	11
Details	Replacement of the gas furnace, three electric heaters and electric water heater with a Combi Boiler. 93% Efficiency. We are targeting a 50% reduction in energy consumption.								
Install Side Door – Utility Shop	Utility Shop	Tim Hansen Water Ops Manager	2016 Q2	2016 Q4	Pending [0%]	$5,000	10800	$670	7.5
Details	Install a side door which can be used by staff instead of the big bay door to enter and exit the building. The door can be used as an emergency exit also. We are targeting a 20% reduction in energy consumption.								
Energy Efficient Windows-Theater	Theater	Dan Lundy-Maintenance	2015 Q3	2015 Q4	Pending [0%]	$5,000	11805	$570	8.8
Details	Install new dual pane glass, E coating and Argon gas windows to replace old wood windows in the Theater. We are targeting a 20% reduction in energy consumption.								
Energy Efficient Utility Shop	Utility Shop – Washrooms	Dan Lundy-Maintenance	2016 Q3	2016 Q4	Pending [0%]	$3,000	3519	$170	17
Details	Install two new dual pane glass, E coating and Argon gas windows in both washrooms at the Utility shop. We are targeting a 20% reduction in energy consumption.								