



The City of Woodstock's
2015-2019
Conservation and Demand
Management Plan

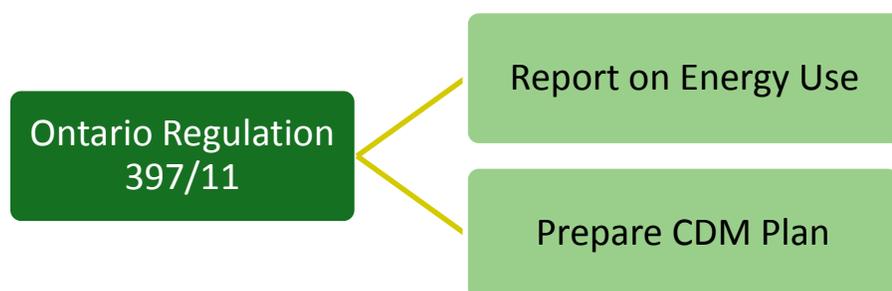


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1.0 Introduction

The City of Woodstock's Conservation and Demand Management (CDM) plan has been developed to help better understand and manage energy consumption. The Ontario Provincial Government has developed Ontario Regulation 397/11 under the *Green Energy Act 2009* which requires public agencies, including municipalities, to report on their energy consumption and greenhouse gas (GHG) emissions annually (beginning in 2013) and to develop and implement energy CDM plans (starting in 2014).



Woodstock's CDM plan aims to provide a basis for the City to move forward on implementing improvements to facilities and operations that reduce energy consumption, greenhouse gas emissions, and their associated costs. This plan establishes goals and objectives for the next five (5) years. Throughout this document links are also made to the City's Community Strategic Plan and Integrated Community Sustainability Plan.

2.0 Energy Consumption

The following chart provides annual energy consumption data for City facilities for 2012 (the last year for which complete information is available for a full year):

Operation Name	Address	Total Square Footage	Avg hrs/ wk	Electricity (kWh)	Natural Gas (Cubic Metre)
RECYCLING FACILITIES	63 Clarke Street S	11,520	45	46,560	17232
WOODSTOCK ART GALLERY	449 Dundas Street	20,395	55	266,381	10759
WOODSTOCK ART GALLERY 3rd & 4th floor	449 Dundas Street	13,596	40	3,329	7173
SMALL BUSINESS ENTERPRISE CENTRE	453 Dundas Street	5,225	45	15,696	1450
WOODSTOCK MUSEUM	466 Dundas Street	13,628	52	321,480	27256
CITY OF WOODSTOCK - CITY HALL	500 Dundas Street	23,996	55	330,033	18690
WOODSTOCK POLICE DEPARTMENT	615 Dundas Street	24,058	168	409,262	34740
SOUTHSIDE AQUATIC CENTRE	315 Finkle Street	16,154	105	440,703	101386
COMMUNITY SERVICES	375 Finkle Street	1,245	45	43,657	14058

Operation Name	Address	Total Square Footage	Avg hrs/wk	Electricity (kWh)	Natural Gas (Cubic Metre)
DEPARTMENT					
COMMUNITY COMPLEX SOUTHWOOD ARENA	381 Finkle Street	133,435	126	2,539,000	218201
COMMUNITY COMPLEX GYM CLUB/DANCE STUDIO	381 Finkle Street	13,559	40	258,001	22276
COMMUNITY COMPLEX GOFF HALL	381 Finkle Street	7,486	30	142,444	12299
WOODSTOCK PUBLIC LIBRARY	445 Hunter Street	24,470	71	273,665	38857
FORMER ART GALLERY	447 Hunter Street	7,728	40	28,117	0.00
ENGINEERING BUILDING OFFICES	944 James Street	8,600	45	65,828	14547
ENGINEERING BUILDING GARAGE	944 James Street	20,018	45	153,227	33861
WORK STORAGE	944 James Street	6,461	45	47,567	11453
BUS STORAGE	65 Clarke Street	11,790	88	43,298	43493
CIVIC CENTRE ARENA	895 Nellis Street	28,529	112	378,320	23635
FIRE DEPARTMENT	1203 Parkinson Road	12,480	168	128,567	17475
FIRE DEPARTMENT	251 Vansittart Avenue	5,868	168	52,143	13070
STORAGE FACILITIES	64 Springbank Ave S	4,900	20	3,727	0.00
PARK'S WORKSHOP	192 Wellington Street S	9,480	40	34,739	14656
LION'S POOL	245 Vansittart Ave	2,567	76	15,680	2093
MARKET CENTRE	22 Reeve Street	25,200	75	106,930	11721

The energy consumption data presented above will provide a baseline for the energy consumed prior to the development and implementation of the City's CDM plan. In accordance with section 5(7) of Ontario Regulation 397/11, the City of Woodstock will publish updated energy consumption information by July 1 of each year on our website.

Benchmarking

The Ministry of Energy has benchmarked the 2011 energy consumption data submitted to provide organizations greater insight into how they use energy in their buildings. The following chart provides a comparison of the energy consumption data from 2011 for the City of Woodstock to the benchmarking data provided by the Ministry of Energy. Each City facility is compared to the benchmark (mean energy footprint) for the facility type. This information

enables the City to compare building performance against that of other similar buildings in the same sector.

Operation Name	Address	2011 Actual (eWh/HDD /ft ²)	Mean (eWh/HDD /ft ²)
RECYCLING FACILITIES	63 Clarke Street S	5.7876	8.19
WOODSTOCK ART GALLERY	449 Dundas Street	3.934	7.18
SMALL BUSINESS ENTERPRISE CENTRE	453 Dundas Street	3.021	8.39
WOODSTOCK MUSEUM	466 Dundas Street	9.7332	7.18
CITY OF WOODSTOCK - CITY HALL	500 Dundas Street	6.2967	8.39
WOODSTOCK POLICE DEPARTMENT	615 Dundas Street	8.42	9.67
SOUTHSIDE AQUATIC CENTRE	315 Finkle Street	2.59	19.87
COMMUNITY SERVICES DEPARTMENT	375 Finkle Street	5.26	6.78
COMMUNITY COMPLEX	381 Finkle Street	8.9213	8.39
WOODSTOCK PUBLIC LIBRARY	445 Hunter Street	7.32	7.11
ENGINEERING BUILDING	944 James Street	7.0178	8.39
WORK STORAGE	944 James Street	8.735	8.19
BUS STORAGE	65 Clarke Street	12.759	8.19
CIVIC CENTRE ARENA	895 Nellis Street	6.0575	8.39
FIRE DEPARTMENT	1203 Parkinson Road	8.9328	6.97
FIRE DEPARTMENT	251 Vansittart Avenue	11.173	6.97
PARK'S WORKSHOP	192 Wellington Street S	2.294	8.19

Over time the City of Woodstock can use the benchmark information to compare a building's current performance against previous performance, against other buildings in the same portfolio, or other similar buildings in the sector.

This data will be used to prioritize energy reduction goals and uncover ways to achieve operational savings. The top outliers include:

- Bus storage facility
- Woodstock Museum
- Fire halls

The Woodstock Museum will not be prioritized as the age of the building makes it difficult to realize significant energy savings and resources can be better focused on other facilities.

3.0 Goals and Objectives

The City of Woodstock has developed the following goals and objectives for conserving and reducing energy consumption and managing demand for energy as part of the CDM plan.

- 1** • Become a leader in energy conservation and demand management in the municipality and pursue energy conservation in all City facilities.
- 2** • Reduce energy consumption by 10% in the top 3 facilities identified in the benchmark comparison and conduct energy audits on each facility to help identify areas for conservation and reduction. The facilities to be audited are the *Bus Storage and both Fire Halls*.
- 3** • Use the information obtained by the comprehensive energy audit conducted at the Woodstock District Community Complex in 2013 to reduce the energy consumption of the facility by 5%.



One of the four community goals identified in the City of Woodstock's Strategic Plan includes *Protecting and Enhancing our Natural Environment*. Objective 15.1, 15.2 and 15.3 indicate that the City plans to:

- Explore opportunities to reduce energy consumption
- Assess the level of greenhouse gas from municipal buildings
- Develop an Energy Conservation Plan

4.0 The Plan

This section outlines the City of Woodstock's previous, current and proposed measures for conserving and reducing energy consumption.

4.1 What have we already done? (Prior to 2014)

The following lists indicate steps the City of Woodstock has taken in the past four (4) years to reduce and conserve energy.

2013 Energy Conservation Measures

- A comprehensive energy audit of the Woodstock Community Complex was performed to identify conservation opportunities

- 5 ground mounted 10kW dual axis tracking solar systems were installed
- 3 roof mounted 10kW solar systems were installed
- Cooling tower replacement at City Hall c/w VFD motor
- Southside Pool energy efficient lighting replacement
- Parks Department interior office renovations including new HVAC unit and improved wall insulation
- Community Services office roof replacement to improve roof insulation
- Day Nursery RTU replacements

2012 Energy Conservation Measures

- Southside Pool exterior door replacements to improve insulation values
- Museum, Market Centre and further Southside Pool energy efficient lighting replacements
- Day Nursery exterior window replacement
- Engineering and Public Works building envelope leakage report

2011 Energy Conservation Measures

- City Hall window replacement
- Parkinson Road fire hall roof replacement to improve roof insulation
- Southside Pool RTU replacement
- Market Centre RTU replacement
- Museum boiler replaced with more efficient equipment
- Library exterior ductwork re-insulation
- Day Nursery roof replacement to improve roof insulation

2010 Energy Conservation Measures

- Library and Museum installation of HVAC building automation system
- City wide toilet replacements to more water efficient fixtures
- City Hall energy efficient lighting replacement
- City Hall boiler replacement to more efficient equipment



Many environmental goals which have already been completed are outlined in the Strategic Plan, including items for reducing energy consumption:

- Ongoing conversion of lighting in municipal buildings to energy efficient fixtures
- Pilot project for the replacement of street light fixtures with LED technology

4.2 What are we currently doing? (2014)

The following list shows actions the City of Woodstock is taking this year to reduce and conserve energy.

4.2.1 2014 Items Currently Being Implemented

Action Item	Forecast of the expected results	Savings estimate	Estimated time
Community Complex Red and Green pad energy efficient lighting replacement	180,500 kWh reduction per year 48 kW in electrical savings Estimated savings of 40% per year	\$18,000 per year	25 years
Southside Pool boiler replacement	TBD	TBD	20 years
447 Hunter increase of ceiling insulation	Negligible results	Negligible results	40 years
Southgate Center RTU replacement	2,200 kWh reduction per year 900 m ³ reduction per year	\$450 per year	20 years
Community Services office/Daycare RTU replacement (2 units)	3,100 kWh reduction per year <i>per unit</i> 1,200 m ³ reduction per year <i>per unit</i>	\$1,390 per year (\$300 per unit for electrical savings and \$395 per unit for natural gas savings)	20 years
447 Hunter energy efficient lighting replacements	79,267 kWh reduction per year	\$8,719 per year	25 years

4.2.2 Renewable Energy

The City of Woodstock supports the expansion of renewable energy and is leading by example. The City currently has a total of eight (8) photovoltaic installations across the City. Energy was only produced from January to April 2014 for the ground mounted photovoltaic installations and for March and April 2014 for the roof top photovoltaic installations. A total of 27,198 kWh was generated by April 2014. These installations support the Provincial Long Term Energy Plan. The City continues to explore opportunities to leverage municipal property and roof-space that may be suitable for solar energy applications.

Renewable energy connection and application activity is relatively steady across the City of Woodstock. As of April 2014, 45 renewable energy connections provided a peak capacity of 1,780.43 KW of renewable power. It is anticipated the City will see an incremental generating capacity of 3,750 KW by early 2015. This represents roughly 0.5% of the peak electricity demand requirements for Woodstock.

4.3 What are we planning to do? (2015-2019)

The City plans to continue RTU replacements and installation of building automation systems (BAS). RTU replacements help to conserve energy by using high efficiency electric motors and

VFD (variable frequency drive), adding ventilation control which cuts down the intake of fresh air when it is not needed, including programmable thermostats for set-back times, and improving efficiency for the natural gas burners. BAS computer control systems of all HVAC equipment in a building ensures maximum system efficiency and performance levels are obtained.

The following outlines the measures and actions the City of Woodstock will put in place at various facilities over the next five (5) years to conserve and reduce energy consumption and work towards meeting the goals and objectives outlined previously.

4.3.1 Bus Storage Facility and Fire Halls

A comprehensive energy audit will be performed at each facility. The audits will help to gain a better understanding of energy consumption and identify opportunities for savings and efficiency improvements to work towards the goal of a 10% reduction in consumption in each facility.

4.3.2 Community Complex

Action Item	Forecast of the expected results	Savings estimate	Estimated time
RTU #5 and RTU #7 replacement (estimated cost of \$4,375)	2,364 kWh reduction per year <i>per unit</i> 811 m ³ reduction per year <i>per unit</i>	\$2,094 per year (\$236 per unit for electrical savings and \$811 per unit for natural gas savings)	20 years
RTU #9 replacement (estimated cost of \$8,750)	4,893 kWh reduction per year 1,281 m ³ reduction per year	\$909 per year (\$489 per unit for electrical savings and \$420 per unit for natural gas savings)	20 years
RTU #10 and RTU #11 replacement (estimated cost of \$33,500)	16,975 kWh reduction per year <i>per unit</i> 4,877 m ³ reduction per year <i>per unit</i>	\$6,592 per year (\$1,697 per unit for electrical savings and \$1,599 per unit for natural gas savings)	20 years
Building Automation System (estimated cost of \$43,000)	37,785 kWh reduction per year 19,548 m ³ reduction per year	\$10,229 per year (\$3,778 for electrical savings and \$6,451 for natural gas savings)	25 years

4.3.3 Police Station

Action Item	Forecast of the expected results	Savings estimate	Estimated time
Energy efficient lighting replacement	93,900 kWh reduction per year	\$9,390 per year	25 years

4.3.4 Southgate Centre

Action Item	Forecast of the expected results	Savings estimate	Estimated time
Southgate Center RTU replacement – every year until 2018	2,200 kWh reduction per year <i>per unit</i> 900 m ³ reduction per year <i>per unit</i>	\$450 per year <i>per unit</i>	20 years



Objective 13.2 and 15.1 indicate that the City plans to:

- Evaluate the energy efficiency of municipal buildings through the use of alternative energy options
- Explore opportunities to reduce energy consumption i.e. energy efficient appliances, low water use systems, window and door systems, renewable energy initiatives

5.0 Senior Management Approval

This CDM plan has been approved by David Creery, Chief Administrative Officer for the City of Woodstock, and presented to Woodstock City Council.

6.0 Conclusion

The City of Woodstock's Conservation and Demand Management plan has been developed so that the City can better understand, manage, conserve and reduce energy consumption. This plan provides a basis for the City to move forward on implementing improvements to facilities and operations that reduce energy consumption and greenhouse gas emissions and their associated costs. The City is committed to the CDM Plan and, over time, the annual energy consumption data submitted to the Ministry of Energy will be used to track our progress.