Township of Red Rock

Energy Conservation & Demand Management Plan 2014-2020

42 Salls St, Red Rock, On POT 2PO

Township of Red Rock Energy Plan

To meet the Provincial Regulation 397/11 under the Green Energy Act, the Township of Red Rock has been inputting its energy consumption for use in the development of a document to guide Municipal efforts in improving energy efficiency. 2011 data was submitted on June 14, 2013 and now 2012 data and a five year Energy Conservation & Demand Management (ECDM) Plan will be completed by July 1, 2014 as required by legislation. The 2013 data was completed in 2015 and the 2014 data was completed in 2016. The 2015 data was collected in 2017. Within the ECDM Plan will be a summary of Township's annual energy consumption and greenhouse gas emissions for its operations as required by O.Reg..397/11. Also required is a description of previous, current and proposed measures for conserving and otherwise reducing the amount of energy consumed by the public agency's operation and for managing the public agency's demand for energy, including a forecast of the expected results of current and proposed measures. As well, the Municipality has produced this plan to identify our goals for conserving and reducing energy, proposed energy conservation measures including estimated costs and savings, a description of renewable energy generation facility and the amount of energy produced, as well as how long each proposed measure will be in place for.

History

Red Rock has been informally working towards becoming an innovator in utilizing renewable energy and energy efficient practices throughout its history. Like many municipalities on the North Shore of Lake Superior, Red Rock was created by the forestry industry with a pulp and paper mill operating under various names until 2006. At one time, a large portion of the Municipality was heated utilizing a centralized district heating system from the large boilers in the Mill that supplied waste heat to the Recreation Centre, as well as other buildings. The Municipality undertook an energy audit in 2010 and implemented numerous measures to become more energy efficient in its building and operations.

Intent of the Plan

It is the intent of the Municipality that this plan will provide a structured and well defined strategy to focus our efforts towards energy efficiency. It has been written to meet the requirements of regulation 397/11 and will be a working document that will annually be reviewed during the budgeting process to add new projects or make changes if necessary. The plan will be used in cooperation with other plans including the Council Strategic Plan - 'Adjusting Our Sails' - and the Asset Management Plan.

Municipal Infrastructure

Red Rock has a population of 892 as identified by the 2016 Census. This is down significantly with the closing of the Norampac Mill in 2006. This population decline has made it difficult to maintain the level of service that was developed for a greatly higher population; however the Municipality strives to provide as much service for the quality of life of its residents as possible.

Municipal Buildings

- Recreation Centre (1957) – 64,000 sq ft
- Water Treatment Plant (2009) – 3,300 sq ft
- Public Works Garage/Fire Hall (1972) – 5,600 sq ft
- Municipal Building/Library (1955) – 5,800 sq ft
- Sewage Treatment Building (1972) – 730 sq ft
- Marina Building & Interpretive Centre (2013) – 3,600 sq ft

Vision for Red Rock

Red Rock will be known as a leader in implementing energy conservation initiatives with the reduction of energy and the production of renewable energy being high priorities for the Municipality.

Goals

The goal of this plan is to achieve a 10% reduction in energy consumption, based on 2011 data, throughout the buildings & lighting of the Township of Red Rock by 2020. This goal may be high considering the energy efficiencies that were implemented prior to 2011. These include T-8 lighting in all municipal buildings, soft start motors in the Water Treatment Plant and new energy efficient boilers in the Recreation Centre as noted in other parts of the report.

Objectives

- Organizational wide understanding of the importance of energy efficiency and a coordinated attack to reduce consumption
- Renovation of buildings to incorporate energy efficiency practices
- Striving for LEED certification in construction of new buildings
- Continuously seeking and evaluating energy efficiency and renewable energy projects for the Municipality

2011 & 2012 Energy Consumption Results are attached below.

Renewable Energy 2013

- 20kW of installed solar power through two 10kW MicroFIT installations at the Recreation Centre and Red Rock Marina Building & Interpretive Centre.

Previous Measures

Some of the measures completed towards energy efficiency from 2010-2014 include:

- Replacement of lights in all municipal buildings with T8 fluorescent technology through an Infrastructure Canada grant in 2011.
- The Township installed water meters in every household and business in 2011 which had the effect of reducing water consumption and hence water production.
- Roof replacement at the Recreation Centre with added insulation.
- Light motion detectors in washrooms at the recreation centre.
- New energy efficient boilers at the recreation centre installed in 2011.
- 2 x 10kW solar panel installations on Recreation Centre and Marina Building
- The Marina Building & Interpretive Centre, completed in 2013, is an energy efficient straw bale/timber frame construction with R65 walls, T5 lighting, solar hot water, 10kW solar panels, high efficiency windows and gray water reuse.
- Red Rock has been a long time member of the LAS Electricity & Gas Procurement Programs.
- Installation of variable frequency drives motors at the water treatment, pump house, generating plant and recreation centre.
- New siding on the Recreation Centre arena and curling club wings to reduce wind penetration.
- Energy efficient windows in the Municipal Office and Library.
- Replacement of the gas heat in the water tower with a bubbler system.
- Outdoor lighting on all municipal buildings are now on timers or photocells.

Studies Undertaken by the Municipality

- Energy audit by Hydro One for all municipal buildings.
- Energy efficient design of Red Rock Marina Building and Interpretive Centre by FORM Architecture

Future Measures

Some of the Measures we are evaluating for the future:

Private Sector Cooperation

- 1400kW solar panel installation on Highway 628 (Red Rock Road) has been completed and is in operation in 2015..
- Applications for three private 500kW solar panel installations on Highway 11/17 in the Township of Red Rock currently going through the required environmental approval system.

Municipal Operations

- Energy efficiency training and awareness for all Municipal staff and signage to promote energy efficiency throughout Municipal Buildings
- Install variable drive motors where they have not already been replaced as they come to the end of their life cycle or funding opportunities present themselves.
- The design of the new Waste Water Treatment Plant which is scheduled for construction in 2016/18 will be an energy efficient building.
- Street lighting change to LED technology was completed in 2016.

Community Capacity Building

- Work with our business community to provide education on identifying energy savings for the business sector
- Education for our users groups of Municipal buildings on importance of energy efficiency
- Advertise energy efficiency ideas to the public through use of the Municipal Facebook page and website

Scheduling & Priority of Improvements

2014

- Energy efficiency training and awareness for all Municipal staff and user groups to promote energy efficiency throughout Municipal Buildings
- Improved signage throughout Municipal buildings about importance of turning things off when not in use – Save Energy, Save $$$ to be the message
- Continuing to work on the new building ventilation system at the Recreation Centre.
- Launch a no unnecessary idling awareness campaign for our residents
- Awareness estimates versus actuals in billing
- Develop an idea system for staff and community groups to bring forward suggestions for improving energy efficiency in Municipal operations.

2015

- Evaluate and implement upgrades at the new Waste Water Treatment Plant.
- Ensure payback period analysis on energy efficiency projects is integrated into the annual budgeting process

- Evaluate the installation of electronic, real-time monitoring systems at Municipal buildings to better understand the use of electricity in zones and times
- Annually conduct energy efficiency training and awareness for all Municipal staff and user groups to promote energy efficiency throughout Municipal Buildings
- Investigate and plan for LED replacement of streetlights

2016 - 2020

- Council approved and completed the installation of LED Streetlights in 2016. The annual savings in lower electricity & maintenance costs will pay for the installation in 10 years.
- Construction of Waste Water Treatment Plant using energy efficiencies outlined in the building design completed in 2016. The Contract Engineers – Hatch Construction – is currently going to tender for the new Waste Water Treatment Plant.
- Council approved the conversion of overhead lighting in the arena and gymnasium at the recreation centre in 2017.

Conclusion

The Township of Red Rock is placing a high importance on energy efficiency and utilizing renewable energy. By utilizing the ideas of our staff for evaluation by experts in various fields, the Township will work towards reducing its carbon footprint and decreasing what we pay to consume energy.

Township of Red Rock
Energy Consumption & GHG Emissions
January 1, 2012 to December 31, 2012

Facility name	Address	Total Floor Area	Ave Hrs/ Week	Electricity kWh	Gas cu/m	GHG Emissions kg	Energy Intensity ekWh/sqft	Energy Intensity ekWh/Mega litre
Municipal Building /Library	42 Salls Street	5800	35	77323	3434	13918.51404	19.62392866	0
Water Treatment Plant	5 Baker Road	3300	35	259751	9378	42676.78605	0	71883.65854
Waste Water Treatment Plant	3 Baker Road	730	35	74404	17529	40286.56084	0	52139.66061
Public Works/Fire Hall	10 Fire Hall Road	5600	35	61288	18184	40265.26089	45.45419589	0
Recreation Centre	39 Brompton Road	64000	60	242304	51650	120921.7607	12.36294816	0
Marina Building & Interpretive Centre	7 Park Road	3600	40	20453	0	1964.30612	5.681388889	0

Township of RedRock
Energy Consumption & GHG Emissions
January 1, 2011 to December 31, 2011

Facility Name	Address	Sq/Ft	Ave hrs/wk	Electricity kWh	Gas cu/m	GHG Emissions kg	Energy Intensity ekWh/sqft	Energy Intensity ekWh/Megalitre
Municipal Building /Library	42 Salls Street	5,800.00	35	80,833.00000	13,143.00000	31,315.15066	38.01963	
Water Treatment Plant	5 Baker Road	3,300.00	35	255,489.00000	38,490.00000	93,209.35323	201.37944	132,910.42735
Waste Water Treatment Plant	3 Baker Road	730.00	35	62,987.00000	64,602.00000	127,177.24545	1,026.79815	149,912.52995
Public Works/Fire Hall	10 Fire Hall Road	5,600.00	35	76,141.28000	128,930.00000	249,849.84151	258.28224	
Recreation Centre	39 brompton Road	64,000.00	60	231,468.00000	163,888.00000	328,368.51778	30.83177	

Township of Red Rock
Energy Consumption & GHG Emissions
January 1, 2013 to December 31, 2013

Facility name	Address	Total Floor Area	Ave Hrs/ Week	Electricity kWh	Gas cu/m	GHG Emissions kg	Energy Intensity ekWh/sqft	Energy Intensity ekWh/Mega litre
Municipal Building /Library	42 Salls Street	5800	35	73505	3022	5587,26206	1267328	0
Water Treatment Plant	5 Baker Road	3300	35	255420	6210	31155.77871	0	2380.87774
Waste Water Treatment Plant	3 Baker Road	730	35	63991	19196	41156.55978	0	2270.52829
Public Works/Fire Hall	10 Fire Hall Road	5600	35	57892	23497	48831.39040	54.94694	0
Recreation Centre	39 Brompton Road	64000	60	228950	63555	137561.74639	14.13122	0
Marina Building & Interpretive Centre	7 Park Road	3600	40	93978	4079	14855.32327	38.14685	0

Township of Red Rock
Energy Consumption & GHG Emissions
January 1, 2014 to December 31, 2014

Facility name	Address	Total Floor Area	Ave Hrs/ Week	Electricity kWh	Gas cu/m	GHG Emissions kg	Energy Intensity ekWh/sqft	Energy Intensity ekWh/Mega litre
Municipal Building /Library	42 Salls Street	5800	35	96399	2936	9407.90126	22.00937	0
Water Treatment Plant	5 Baker Road	3300	35	298719	11954	34557.60107	106.44086	2077.30846
Waste Water Treatment Plant	3 Baker Road	730	35	78013	18825	38712.43142	92.69363	1090.51334
Public Works/Fire Hall	10 Fire Hall Road	5600	35	75864	28003	55978.62739	66.69172	0
Recreation Centre	39 Brompton Road	64000	60	206259	60723	123057.17227	13.30640	0
Marina Building & Interpretive Centre	7 Park Road	3600	40	110160	15483	33680.18960	76.30430	0

Township of Red Rock

Energy Consumption & GHG Emissions

January 1, 2015 to December 31, 2015

Facility Name	Address	Total Floor Area sq/ft	Ave/hrs Week	Electricity kWh	Gas cu/m	GHG Emissions kg	Energy Intensity ekWh/sq/ft	Energy Intensity ekWh/Megalitre
Marina Building/Interpretive Centre	5 Baker Road	3,600.00	40	116,274.00000	11,916.00000	27,180.95035	67.47628	0.00000
Municipal Building/Library	42 Salls Street	5,800.00	35	81,564.00000	3,848.00000	10,538.58990	21.11374	0.00000
Public Works/Fire Hall	10 Fire hall Road	5,600.00	35	68,022.00000	22,407.00000	45,084.90743	54.67118	0.00000
Recreation centre	39 Brompton Road	64,000.00	60	216,704.00000	54,735.00000	112,154.01259	12.47524	0.00000
Waste Water Treatment plant	3 Baker Road	730.00	35	106,663.00000	18,304.00000	38,931.00793	0.00000	301,193.83021
Water Treatment Plant	5 Baker Road	3,300.00	35	251,481.00000	15,133.00000	38,807.90998	0.00000	412,311.14934