



RED ROCK
A Superior Treasure

Township of Red Rock

Energy Conservation & Demand Management Plan 2025-2029

42 Salls Street, Red Rock, ON P0T 2P0

Township of Red Rock Energy Plan

Introduction

To meet the Ontario Regulation 25/23 under the Electricity Act, 1998, S.O. 1998, c. 15, Sched. A requirements, the Township of Red Rock has been inputting its energy consumption into the Broader Public Sector (BPS) ENERGY STAR Portfolio Manager system for use in the development of a document to guide Municipal efforts in improving energy efficiency. Data from 2016 – 2023 has been submitted as of June 26, 2024 and a five year Energy Conservation & Demand Management (ECDM) Plan will be completed by July 1, 2024 as required by legislation. O.Reg. 25/23 Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans requires BPS organizations to develop an Energy Conservation and Demand Management (CDM) plan and update it every five years. Our updated CMD plan covers the period from 2025-2029.

Our updated CDM plan builds on the Township of Red Rock's previous conservation and demand management efforts as outlined in past plans found on our municipal website ([here](#)). This updated plan also continues to build on experience gained in energy conservation and demand management over the last five years. In addition, this update supports our asset management planning process and strategic planning activities to improve facility operations and continually update municipal facilities.

Hard copies of the CDM plan are available the Municipal Office located at 42 Salls St., Red Rock, ON.

Within the CDM Plan will be a summary of the Township's annual energy consumption and greenhouse gas emissions for its operations as required by O.Reg.25/23. 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 operations 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, and proposed energy conservation measures

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 buildings and operations. The Township of Red Rock currently has an application in to the Federation of Canadian Municipalities (FCM) Green Municipal Fund (GMF) Community Buildings Retrofit Initiative for the completion of a Greenhouse Gas Reduction Pathway Feasibility Study. This study will include detailed site assessments, energy audits and energy modeling, design workshops, and measure-level analysis which will result in the development of several GHG reduction pathways for each Municipal facility. A

final detailed pathway will be produced to guide future municipal capital projects based on a 10-year roadmap to achieve a minimum 50% reduction of on-site GHG emissions compared to current, a 20-year roadmap to achieve 80% reduction, and a short-term deep retrofit scenario that would achieve 80% reduction within the first 5 years (with the support of additional funding and financing options). With the guidance from the new Pathway Study, the Township of Red Rock will be in a better position to set achievable goals and determine feasible and sustainable activities for the community going forward. This will also help the municipality in updating its CDM plan with updated, reliable data, and cost savings forecasts for municipal facilities so that administration can reliably plan for the future.

Intent of the Plan

It is the intent of the Municipality that this plan will provide a strategy to focus our efforts towards energy efficiency. It will be a working document that will annually be reviewed during the budgeting process to add new projects or make changes if necessary. The CDM plan will be updated with the results of the GHG Reduction Pathway Study and will be used in cooperation with other plans including the Township of Red Rock 10-Year Community Development Strategic Plan, and Asset Management Plan.

Municipal Infrastructure

Red Rock has a population of 895 as identified by the 2021 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 and infrastructure that was developed for a larger population; however, the Municipality strives to provide as much service for the quality of life of its residents as possible. With the purchase of the former Mill site and plans for its development, the Township of Red Rock must consider the future development and be able to accommodate potential infrastructure and population demand with its facilities and operations.

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
- Waste Water Pollution Control Plant (2022) – 7,718 sq ft
- Marina Building & Interpretive Centre (2013) – 3,600 sq ft

Vision for Red Rock

Red Rock will be known for implementing energy conservation initiatives with the reduction of energy usage and greenhouse gas emissions with the production of renewable energy being high priorities for the Municipality.

Goals and Objectives

The goal of this plan is to position the Township of Red Rock with an energy management strategy that will guide the organization to achieve a 10% reduction in overall energy consumption for the Township, based on 2024 data by 2029. This goal may be high considering the energy efficiencies that were implemented prior to 2024 and overall organizational capacity. Our organization will strive to continuously reduce energy consumption and manage demand to reduce energy costs and contribute to an efficient transition of the energy system. We are committed to working with other BPS organizations to better manage energy use across our community.

Our organizational energy goals include soft start motors in the Water Treatment Plant, improved building envelopes on municipal facilities to help prevent heat loss including the replacement of windows and doors, and installing energy monitoring systems on equipment to identify areas for energy loss and where improvements can be made.

Our energy conservation and demand management objectives include enhancing overall staff understanding of energy and water conservation and implementing building envelope upgrades and energy efficiency retrofits on priority facilities to reduce our overall energy usage and costs.

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

TARGETS

- Reduce overall energy consumption of facilities by 10% over five years (2025-2029) and by 20% by 2035
- Reduce corporate facility emissions by 20% from 2016 levels by 2030.

It is important to note that with the development of the former mill site, there will be an increased demand on municipal infrastructure such as our water and wastewater facilities. Setting targets to reduce energy consumption, with a potential increase in usage may seem counterintuitive. It is essential to keep this in mind when setting targets and reviewing previous targets, as new developments occur in the community with greater demand on existing infrastructure.

Baseline Energy Consumption and Savings to Date

This plan uses 2016 energy consumption data as a baseline to track progress of our energy consumption patterns, renewable energy generation, and previous and future energy conservation measures.

Since the completion of the previous CDM plan update in 2019, we reduced overall energy consumption across 5 of the 6 organizational buildings reported by 12%. These numbers do not include the water treatment plant, as in 2019 and 2020, there was significant energy reduction of over 6 times the normal energy usage, and then in 2021, every usage increased again to 2017 levels before decreasing significantly over 2021-2023 by 16%, See usage summary in appendices. The greatest reduction in energy consumption compared to 2016 values was seen at the Marina Interpretive Centre with an overall reduction of 41%. The Municipal Building/Library has seen a steady reduction of energy consumption since 2016 with an overall reduction of 25% compared to 2016 values.

The new Wastewater Pollution Control Plant became operational in 2022, so there are only 2 years of operating data for that facility. The new facility appears to be running more efficiently compared the electricity usage of the previous facility, using 89% less energy than 2021 operating energy values, even though the facility is significantly larger.

PREVIOUS MEASURES

Some of the measures completed towards energy efficiency from 2020-2024 include:

- Roof replacement at the Recreation Centre with added insulation on two sections of the building.
- Insulation and steel siding were added to the remaining sections of the building envelope at the Recreation Centre.
- Light sensitive safety lighting on the exterior of the Recreation Centre
- New accessible insulated steel doors at the Recreation Centre with double pane windows to decrease heat loss.
- A new energy efficient HVAC system installed in the Recreation Centre gymnasium, with the removal of the old louver ventilation system.
- New energy efficient furnaces installed in the arena change rooms of the Recreation Centre
- Installation of variable frequency drives motors at the water treatment, pump house, generating plant and Recreation Centre is continuing.
- Completion of a new Wastewater Pollution Control Plant with modern energy efficient heating and cooling systems, building envelope, and equipment.
- Repaired and updated heating and cooling systems in the Interpretive Centre to improve energy efficiency.
- Pumps upgraded on the Recreation Centre boiler system

STUDIES UNDERTAKEN BY THE MUNICIPALITY

- No studies were undertaken or completed by the municipality with regards to energy efficiency during 2020-2024 though there is a current application in with FCM GMF – GHG Reduction Pathway which will include energy audits and building condition assessments on all municipal buildings and facilities, to be completed in 2025. Through the work of this study, the Township will be able to more accurately determine the cost effectiveness of the recommended and anticipated energy efficiency measures for its facilities. This study will take a deep look into previous usage and energy consumption costs and make recommendations suitable for a community of its size and organizational structure.

Benchmark performance of operations

Annual energy reporting is required under the regulation and allows our municipality to understand how energy is used in our buildings, identify potential energy conservation opportunities, and track progress on energy conservation efforts.

Our organization's most recent annual energy reports are included and our annual consumption information from years prior has helped us to report on our achievements and inform the development of new measures.

Table 1: Source Energy Use Intensity (EUI)

| Property Name | 2016 Source EUI (kBtu/ft2) | 2023 Source EUI (kBtu/ft2) | Change |
|-------------------------------------|-----------------------------------|-----------------------------------|-------------------|
| Marina Building | 525.9 | 339.5 | -186.40 (-35.40%) |
| Municipal Building/Library | 113.2 | 98.2 | -15 (-13.30%) |
| Public Works/Fire Hall | 183.0 | 196.9 | + 13.90 (7.60%) |
| Recreation Centre | 50.3 | 44.7 | -5.6 (-11.10%) |
| Waste Water Pollution Control Plant | | 15.6 | |
| Water Treatment Plant | 626 | 623.6 | -2.40 (-0.40%) |

Current and Proposed Conservation and Demand Management Measures

CURRENT MEASURES

The Township of Red Rock currently has solar panels on both the Recreation Centre and Interpretive Centre roofs. There have been previous issues with the system at the Recreation Centre, and the Township is currently working on getting that system up and running again and reporting on energy generation back to the grid. The system at the Interpretive Centre has generated 10.5MWh in 2022 and 11MWh in 2023, with a total lifetime generation of 124.6MWh as of December 2023. At this time we do not have plans for additional solar systems, though through the completion of our GHG Reduction Pathway, recommendations on how the municipality could sustainably implement such enhancements may be presented.

FUTURE MEASURES

Some of the Measures we are evaluating for the future:

- Future installation of an RV Campground at the Red Rock Marina with design elements to have all lighting LED and monitor water usage using water meters.
- Installation of energy monitoring systems on all equipment in municipal facilities
- Installation of additional renewable energy systems to integrate with existing systems

throughout the municipality.

- Energy efficient windows in the Municipal Office and Library and Public Works buildings
- Energy efficient window screening in the Municipal Office and Library.

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.
- Further building improvements to the Recreation Centre.
- Regular equipment and facility maintenance and monitoring to ensure equipment operates efficiently.
- Post the updated CDM plan once developed with information gathered from the GHG Reduction Pathway Study.
- Align Asset Management Planning activities and Energy Conservation and Demand Management Plans when addressing energy efficiency across municipal operations.

COMMUNITY CAPACITY BUILDING

- Work with our business community to provide education on identifying energy saving opportunities and funding supports for the business sector
- Continue educating our user groups of Municipal buildings on the importance of energy efficiency
- Advertise energy efficiency ideas to the public through use of the Municipal Facebook page and website

SCHEDULING & PRIORITY OF IMPROVEMENTS

2025

- Energy efficiency training and awareness for all Municipal staff and user groups to promote energy efficiency throughout Municipal Buildings
- Continue 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 boiler system at the Recreation Centre.
- Develop an ideal system for staff and community groups to bring forward suggestions for improving energy efficiency in Municipal operations.
- Completion of the GHG Reduction Pathway Study providing a clear direction forward on how the municipality can improve energy efficiency throughout Municipal facilities.
- Incorporate recommendations included in the GHG Reduction Pathway
- Update this CDM plan with the new CDM plan coming out of the FCM Green Municipal Fund project with data from our building assessments and energy audits.
- Replace ageing appliances in municipal facilities such as staff room fridges.
- Replace exterior lighting on the Public Works Shop to photocell LEDs.
- Repair the monitoring connection on the Recreation Centre Solar Panel to ensure readings of energy generation can be received for reporting purposes.

2026

- Continued implementation of the recommendations identified in the GHG Reduction

Pathway Study

- Implement facility upgrades at the Water Treatment Plant
- Ensure payback period analysis on energy efficiency projects is integrated into the annual budgeting process
- Continue to 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

2025-2029

- Implement recommendations identified in the GHG Reduction Pathway Study while monitoring energy usage throughout municipal facilities
- Integration of additional renewable energy systems into existing systems throughout the municipality
- Update windows, and building envelope at the Public Works building to reduce heat loss and improve overall energy efficiency of the facility

CONCLUSION

The Township of Red Rock is placing a high importance on energy efficiency and utilizing renewable energy to help is the overall operational efficiency of its facilities. The completion of a The GHG Reduction Pathway Study will allow for a new CDM with updated and thorough assessments of municipal facilities that will allow the Township of Red Rock to identify and chose the best path forward to improving energy efficiency throughout the community. The municipality will be able to more accurately forecast the expected results of current and recommended measures with an action plan that will identify the length of time activities and measures will be in place. As this preliminary version of our CDM is anticipated to be updated by the end of the 2024-2025 fiscal year, the updated version will be posted to be implemented as soon as it received approval by senior administration. By utilizing the ideas of our staff for evaluation by experts in various fields through the completion of our new GHG Reduction Pathway, the Township of Red Rock continue to work towards reducing its carbon footprint and decreasing what it spends to consume energy.

Township of Red Rock
 Energy Consumption & GHG Emissions
 January 1, 2023 to December 31, 2023

| Property Name | Address 1 | Property GFA - Self-Reported (m ²) | Average Weekly Hours | Natural Gas Use (therms) | Natural Gas Use (GJ) | Site Energy Use (GJ) | Source Energy Use (GJ) | Site EUI (GJ/m ²) | Source EUI (GJ/m ²) | Total (Location-Based) GHG Emissions (Metric Tons CO ₂ e) | Total (Location-Based) GHG Emissions Intensity (kgCO ₂ e/m ²) | Electricity Use - Grid Purchase (kWh) | Electricity Use - Grid Purchase (GJ) |
|---------------------------------------|-------------------|------------------------------------------------|----------------------|--------------------------|----------------------|----------------------|------------------------|-------------------------------|---------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------|
| Marina Building & Interpretive Centre | 7 Park Road | 334.5 | 40 | 3355.8 | 354.1 | 853.6 | 1289.4 | 2.55 | 3.86 | 21.7 | 64.8 | 138763 | 499.5 |
| Water Treatment Plant | 5 Baker Road | 0 | 35.0 | 9469 | 999 | 1606.9 | 2171.3 | 5.24 | 7.08 | 55 | 179.3 | 168852 | 607.8 |
| Municipal Building /Library | 42 Salls Street | 538.8 | 35 | 1697.8 | 179.1 | 403.8 | 601 | 0.75 | 1.12 | 10.8 | 20 | 62401 | 224.6 |
| Public Works/Fire Hall | 10 Fire Hall Road | 520.3 | 35 | 7170.3 | 756.5 | 953.9 | 1163.2 | 1.83 | 2.24 | 39.6 | 76.1 | 54845 | 197.4 |
| Recreation Centre | 39 Brompton Road | 5945.8 | 60.0 | 14940.8 | 1576.3 | 2314.1 | 3021 | 0.39 | 0.51 | 85 | 14.3 | 204938.6 | 737.7 |
| Wastewater Pollution Control Plant | 3 Baker Road | 717 | 40 | Not Available | Not Available | 69.3 | 126.8 | 0.1 | 0.18 | 0.5 | 0.8 | 19241 | 69.3 |