



COUNTY OF DUFFERIN
ENERGY CONSERVATION & DEMAND
MANAGEMENT PLAN UPDATE
2019-2023
Updated June 2019



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DUFFERIN COUNTY

ENERGY CONSERVATION AND DEMAND MANAGEMENT (CDM)

PLAN UPDATE

JUNE 2019



1.0 INTRODUCTION

In compliance with Ontario Regulation 507/18 Broader Public Sector (BPS): Energy Reporting and Conservation and Demand Management Plans; formerly Regulation 397/11 under the Green Energy Act, Dufferin County has developed the following updated CDM Plan for the period of 2019-2023. The plan is currently under review by the Senior Management Team.

The Plan describes:

- New energy conservation goals and objectives
- Current and proposed energy conservation measures;
- Results from the first CDM plan
- Summary of changes from the previous plan to help achieve the new goals and objectives
- Corporate Energy Conservation Culture and Communications Plan

Our updated CDM Plan builds on the County's first plan developed in 2014. Utilizing previous annual benchmarking and lessons learned from implementing energy conservation techniques and strategies, the County of Dufferin is in a position to expand its efforts on energy management. Over the next 5 years, the County of Dufferin plans on including Social Housing and Fleet assets in our annual energy reporting in an effort to identify additional areas of energy conservation. Previously developed facility management models will be implemented to these operations in an effort to realize cost savings.

While the County achieved cost savings by reducing energy consumption, we recognize additional strategies and planning can be implemented to ensure further savings and that new energy reduction methods are identified and acted upon. In addition to energy conservation, the updated CDM plan supports our Facility Capital plan, Corporate Climate Action Plan, and fleet asset policies.

2.0. GOALS AND OBJECTIVES FOR CONSERVING ENERGY

The County of Dufferin's organizational goal is to be viewed by our public as a leader in energy management and conservation with in the BPS. We are committed to forming new partnerships in which we can collaborate with other organizations to better manage energy use across our community. By creating a corporate culture of conservation, we will be successful in the improvement of energy efficiency.

The County of Dufferin will be using 2016 energy consumption data as a baseline to track our progress of energy consumption, which will be reviewed annually and compared to the provincial benchmark until the next CDM Plan update in 2023. By using 2016 data as a baseline, the CDM Plan will align with the GHG Inventory year being used in the forthcoming Corporate Climate Action Plan.

Our energy conservation objectives include:

- Reduce overall energy consumption in facilities that have a normalized benchmark higher than the provincial median to a level below provincial average within 3 years.
- Reduce overall energy consumption in facilities that have a normalized benchmark lower than the provincial median by 5% over 5 years.
- Integrate the energy conservation plan with the Corporate Climate Action plan.
- Reduce overall energy consumption in Social Housing units by 10% over 5 years.
- Reduce overall energy consumption in Fleet assets by 10% over 5 years.





Our energy conservation engagement objectives include:

- Develop an energy training module to be delivered to all staff responsible for making energy-informed decisions.
- Create an interdepartmental staff engagement and communication strategy around energy conservation and awareness.

3.0 TRACKING ENERGY CONSUMPTION

Under the regulation, annual energy reporting forms the first component of the CDM. This information assists the County in understanding how our energy is used, assists in the identification of potential energy conservation opportunities, and tracks progress in relation to our CDM goals and objectives. The regulation requires us to report on our Administration offices, Ambulance Stations, Cultural Facilities, and Storage Facilities or garages. The County commits to expanding its energy reporting to include all Social Housing complexes and Fleet assets. These operational types will be included in our 2020 annual energy report.

4.0 CHANGES FROM PREVIOUS PLAN TO ACHIEVE OUR GOALS AND OBJECTIVES

One of our key changes from the previous CDM is the creation of a Climate Change Coordinator role within the County of Dufferin. This individual will assist in the success of our updated plan by reviewing our annual results and providing recommendations on potential adjustments. Initiatives may be added as new opportunities arise.

5.0 CURRENT AND PROPOSED ENERGY CONSERVATION MEASURES

5.1 Current Technical Methods:

Administration Offices

- Ongoing retrofit of existing T12 fixtures to T5.
- Halogen floodlights replacement upon failure with LED.
- Occupancy sensors for lighting installed throughout building spaces.
- Boilers on replacement have been upgraded from mid to high efficiency.

Ambulance

- All exterior lighting retrofitted to LED.
- Interior lights retrofitted from T12 to LED or T5.
- High efficiency boilers installed for in floor heating.

Cultural Facilities

- All exterior lights and parking lot lighting upgrades to LED.
- Boilers upgrades to High efficiency.
- Building automation system upgrades
- Waterless urinals installed.

Storage Facilities and Garages

- Existing North garage received new in-floor heating with high efficiency boiler, and exterior envelope upgrades.
- New South garage has high efficiency boiler for in floor heating.





New energy conservation projects will be allocated into three categories; technical, organizational, or behavioral. Potential energy conservation opportunities are identified by comparing our energy benchmarks (normalized) to the provincial median. These projects will be evaluated using an internal rate of return, along with simple payback.

Implementation of the proposed projects will depend on:

- Funding approved by Council
- Incentives from independent Utility operators

5.2 Proposed Technical Methods:

Council will review the proposed energy conservation measures during annual budget discussions. These proposed measures may change as technology is improved, or the priorities of Council are altered.

Administration Offices

- Building Automation upgrades
- Replacement of parking lot and exterior lights with LED
- Removal of non-essential lamps and fixtures
- Off hour and exterior lighting shall be eliminated with exception to where it is essential for safety and security
- Retrofit existing equipment with Variable speed drives and motors
- Energy management through lease agreements MOU

Ambulance

- Building Automation System upgrades to better utilize energy during peak/off peak periods

Cultural Facilities

- Removal of non-essential lamps and fixtures
- Off hour and exterior lighting shall be eliminated with exception to where it is essential for safety and security.
- Retrofit existing equipment with Variable speed drives and motors.

Storage Facilities and Garages

- Improve building envelop
- Increase north garage roof insulation and existing R value
- Off hour and exterior lighting shall be eliminated with exception to where it is essential for safety and security
- Investigate the installation of rooftop renewable energy systems

6.0 CORPORATE ENERGY CONSERVATION CULTURE AND COMMUNICATIONS PLAN

In order to ensure a supportive system for the implementation of the Conservation Demand Management Plan, an effort must first be made to expand the organizational awareness of energy efficiency and conservation and to establish a strong understanding of the connection between energy conservation and energy cost-effectiveness. Embedding this awareness and understanding within the broader organizational culture will require ongoing communication and staff training. To ensure the success of an employee engagement program that supports the CDM Plan, individuals from a variety of departments, working together as part of an internal Energy Conservation & Demand Management subcommittee.

6.1 Training

Training programs for staff will help them to understand the importance of energy management while providing them with the technical knowledge and skills required to make informed energy decisions. Currently, energy efficiency training is not mandatory for staff. Over the next several years, the County plans to create an energy module for staff which highlights best practices, and will allocate budget for additional external energy training for staff to support them in being energy champions in the workplace. As the training is being implemented, energy performance and management measures and metrics will be included in the performance evaluations for facility operations staff.





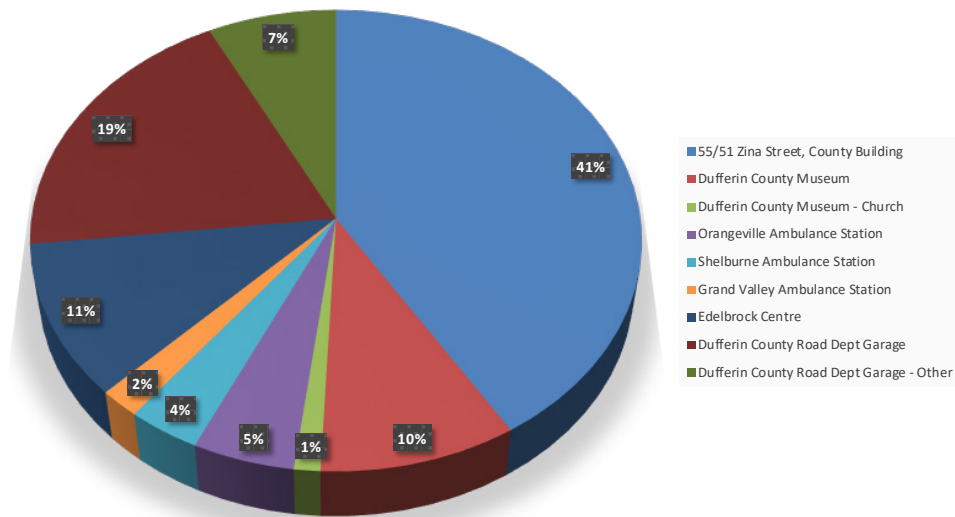
6.2 Employee Awareness and Engagement

The Energy Conservation and Demand Management team will be a subcommittee of the existing Interdepartmental Climate Change Working Group (IDCCWG) and will focus on employee engagement of energy efficiency awareness. One of the key purposes of the group will be to develop a communications plan that will include key messages using knowledge translation strategies to promote energy efficiency efforts and highlight achieved results. It is also expected that this team will create employee engagement campaigns using community-based social marketing strategies to challenge staff to reduce their energy consumption. It is expected that with increased energy awareness, staff behaviors will begin to change, which will work to help the organization reduce overall energy use and energy-related costs over time.

7.0 RESULTS OF INAUGURAL CDM PLAN

When comparing Green House Gas (GHG) emission by facility, energy conservation measures applied to our Courthouse administration and Dufferin County Road Department Garage will have the largest impact to our organizational energy goals. As depicted below, these two facilities accounts for 60% of our GHG emissions from buildings.

GHG Emissions by Facility



7.1 Normalized benchmark in comparison to Provincial medians

Utilized as an indicator for areas of energy conservation improvements, normalized benchmarks calculated by the Ministry of Energy, Northern Development and Mines provide the Broader Public Sector with an ability to compare energy consumption for facilities of similar operation throughout the province. Provincial medians established by the Ministry were used by the County for the purposes of assessing and modifying our energy management strategies. It is important to note that during the CDM update the County became aware of a reporting issue with our 55/51 Zina street facility address – County Courthouse. Incorrect building floor areas negatively impacted our normalized benchmark calculation and did not provide a true representation of the CDM plan efforts. Subsequently, the County has applied the correct floor areas and recalculated the benchmarks. It is these corrected benchmark values the will be used for CDM updating purposes.

In addition to the benchmarks, the County has included trends on our energy consumption in this updated plan. Stabilized energy consumption and downward trends can be observed from the year 2014 and on.





7.2 Benchmark Performance vs Provincial Average Summary

Operational Type	2016 Baseline (eWh/HDD/sqft)	2016 Provincial Median (eWh/HDD/sqft)
Administration offices		6.2
Courthouse	7.9	
Edelbrock Centre	5.4	
Ambulance		8.1
Orangeville Station	6.4	
Shelburne Station	9.8	
Grand Valley	11.1	
Cultural Facilities		5.1
Museum	3.7	
Museum Church	8.9	
Storage Facilities		5.8
Road Department - Garage	9.7	
Road Department - Other	8.6	





7.3 Normalized Benchmark Performance by Operation

Administration Operations

The County intends to reduce our 2016 Benchmark for the Courthouse facility by transitioning from direct drive constant speed motors for HVAC equipment to variable frequency drives (VFD). In addition, aged and antiquated building automation systems will be upgraded to modern controls. During our 2011 addition geothermal energy technologies were implemented, LED lighting specifications were applied and insulated concrete forming techniques adopted. Recently a lighting audit was performed with in the entire Courthouse complex, these results will be analyzed and adjustments to our conservation plan will be made.

COUNTY COURTHOUSE		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	6.48	6.9
2012	6.24	N/A
2013	5.69	N/A
2014	5.11	N/A
2015	6.93	N/A
2016	7.93	6.2

EDELROCK CENTRE		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	N/A	6.9
2012	N/A	N/A
2013	5.31	N/A
2014	4.79	N/A
2015	5.25	N/A
2016	5.45	6.2





Ambulance Operations

The County intends to focus energy consumption at our Shelburne and Grand Valley stations by focusing on high efficiency heating replacement. Working with energy audit services, assessments will be made on existing HVAC equipment to develop schedule and cost savings for incorporation into future budgets.

ORANGEVILLE STATION		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	6.75	8.7
2012	6.76	N/A
2013	5.31	N/A
2014	4.79	N/A
2015	5.25	N/A
2016	5.45	8.1

SHELBURNE STATION		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	9.92	8.7
2012	9.63	N/A
2013	10.18	N/A
2014	11.00	N/A
2015	10.23	N/A
2016	9.87	8.1

GRAND VALLEY STATION		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	11.54	8.7
2012	10.51	N/A
2013	10.58	N/A
2014	11.09	N/A
2015	11.14	N/A
2016	11.09	8.1





Cultural Facilities

Currently, the County Museum Church has been purposed as a rental Facility to our community members. Its use is inconsistent and dependent on various factors. Efforts have been made to standardize majority of equipment. Based on the benchmark results, assessments will be made in the next 1-3 years to determine additional strategies for energy conservation.

DUFFERIN COUNTY MUSEUM		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	4.06	6.2
2012	3.73	N/A
2013	3.95	N/A
2014	3.24	N/A
2015	3.83	N/A
2016	3.7	5.1

DUFFERIN COUNTY MUSEUM - CHURCH		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	6.75	6.2
2012	5.29	N/A
2013	7.62	N/A
2014	4.13	N/A
2015	7.68	N/A
2016	8.92	5.1





Storage facilities and Garages

Recently a roof assessment was conducted for the north storage garage and from the report it has been determined roof replacement in conjunction with building envelop improvements will add to the existing R-value of the structure. The County will plan and budget for a roof rehabilitation project with in the next 2-5 years that will address the roof inadequacies and at the same time improve energy conservation. During this time, we will also investigate the installation of a renewable energy system.

ROAD DEPARTMENT - GARAGE		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	11.60	6.7
2012	10.51	
2013	10.80	
2014	11.21	
2015	10.93	
2016	9.73	5.8

ROAD DEPARTMENT - OTHER		
Year	Normalized Benchmark Result (eWh/HDD/sqft)	Provincial Median (eWh/HDD/sqft)
2011	8.80	6.7
2012	8.06	
2013	9.33	
2014	7.19	
2015	7.81	
2016	8.63	5.8



