

2024-2028 | Plan Update

County of Huron

Conservation and Demand Management Plan



Prepared by the Corporation of the County of Huron
www.HuronCounty.ca



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Units & Abbreviations

BPS	Broader public sector
CDM	Conservation and demand management
ekWh	Equivalent kilowatt hour
GHG	Greenhouse gas
kg	Kilogram
kWh	Kilowatt hour
L	Litres
sqft	Square foot
m ²	Metres squared
m ³	Metres cubed

Glossary

Energy benchmarks: A unit of measurement that divides the energy use of a building by its floor area to normalize the data for comparison. A higher benchmark indicates a building that consumes more energy per square foot of floor area.

Equivalent kilowatt hour: A measurement that converts sources of energy (ie. natural gas and propane) into an equivalent kilowatt hour for summation and comparison.

Greenhouse gas: Any gas emit from a source (natural and/or anthropogenic) that absorbs thermal radiation in the atmosphere.

1 | Overview

1.1 Introduction

Ontario Regulation 25/23 (formerly 507/18) requires all broader public sector (BPS) organizations (including municipalities, schools, and hospitals) to annually report their energy use and greenhouse gas (GHG) emissions. As part of this regulation, these agencies are also required to develop and implement Conservation and Demand Management (CDM) plans, which are updated every 5 years. The purpose of these plans is to assist public organizations in devising strategies to improve energy management and conservation at the corporate level.

1.2 Purpose

In 2019, the County of Huron undertook the first update to their CDM plan, which proposed several measures to reduce energy consumption within County-owned buildings. The purpose of this update is to report on the energy reduction progress achieved in the last 5 years, as well as build upon the County's initial plan to propose new conservation measures for the next 5 years (2024-2028). The next update to this plan will occur in 2029.

This report will begin with a revision of the commitments made under the 2019 CDM plan, followed by an analysis of the County's annual energy consumption, and finally an overview of the new measures proposed to be implemented by 2028.

This plan was approved by County Council on June 26, 2024, and is available online or in hard copy at the Courthouse located at 1 Courthouse Square in Goderich, Ontario.

2 | Commitments

Many of the goals and objectives guiding this update are consistent with those outlined in the 2019 CDM plan. Revising these commitments ensures that the County has a clear vision and plan to further their energy conservation efforts over the next 5 years. The current goals and objectives are summarized below, along with the County's updated reduction target.

2.1 Commitment

The Corporation of the County of Huron will continue to implement measures through the CDM plan that will reduce energy consumption and its related environmental impact, whenever it is cost effective to do so.

2.2 Vision

The County will strive to further reduce energy consumption and mitigate costs through the wise use of energy. This will involve a collaborative effort amongst all County Departments to increase the education, awareness, and understanding of energy management within the County.

2.3 Goals & Objectives

- To continuously improve the energy efficiency of the County's buildings through effective energy management processes in order to reduce operational costs, energy consumption, and GHG emissions
- To utilize the 2023 energy audits to guide energy conservation efforts on all municipal buildings
- To raise awareness and provide leadership to encourage a culture of conservation and sustainability in Huron County
- To continue identifying and considering the adoption of best practices for energy conservation, including renewable energy and electrification when feasible
- To work alongside other BPS organizations to collectively support Ontario's long-term energy planning

2.4 Reduction Target

Under the 2019 CDM plan, the County of Huron strived to reduce energy consumption in corporate facilities by 0.5% per year, representing a total reduction of 2.5% between 2019 and 2023 (based on 2017 levels). Through the implemented measures, the County was successful in meeting this target and exceeded this goal to achieve a 14.5% reduction over 5 years. This reduction includes the removal of the Registry Office and the Health & Library Complex from the County of Huron's portfolio. All other facilities saw an overall reduction of 7.9% over the past five years which exceeded our goal.

Moving forward, the County intends to continue implementing conservation measures to further reduce energy consumption in County-owned buildings. Given the success of the 2019 CDM plan, the County proposes to continue reducing energy use by an average of 0.5% per year between 2024 and 2028. This will represent a 2.5% decrease over the next 5 years, based on the County's 2023 energy consumption data. For clarification, 2023 is used as the baseline year for developing the 2024 CDM plan due to a 1-year reporting delay that results in public agencies submitting their energy data for 2023 in 2024.

3 | Annual Energy Use

The County of Huron has 17 buildings that are reported under O. Reg. 25/23. These buildings are categorized by facility type and include County offices, museums, emergency medical services, fire services, public works yards, and storage facilities. The County also voluntarily reports consumption data for long-term care facilities, as these buildings are energy intensive and therefore an important area to consider when developing conservation strategies.

The following summary provides an overview of the County's energy consumption for 2023. This information will be used as a baseline to propose new energy conservation measures to be implemented over the next 5 years.

Table 1. Summary of 2023 energy consumption in County buildings.

Facility	Electricity (kWh)	Natural Gas (m ³)	Propane (L)	GHG Emissions (kg)	Energy Intensity (ekWh/sqft)
Offices					
Courthouse	303,979	55,468		114,129	21.2
Assessment Office	83,759	10,482		23,121	12.7
Jacob Memorial Building	198,426	50,595		103,436	29.2
Total	586,164	116,545		240,686	
Museums					
Museum	351,798	48,441		102,559	25.4
Historic Gaol	18,358	9,623		19,203	10.1
Total	370,156	58,064		121,762	
Emergency Medical Services					
Goderich EMS	22,68	5,322		10,833	27.0
Exeter EMS	18,156	5,656		11,418	26.9
Tuckersmith EMS	25,627	6,066		8,304	29.8
Wingham EMS	15,910	4,582		9,329	18.8
Total	81,861	21,626		39,884	
Fire Services					
Fire Pump House	21,287			611	27.9
Total	21,287			611	27.9
Long-Term Care					
Huronview Home for the Aged	1,138,766	257,038		527,190	47.9
Huronlea Home for the Aged	748,681	162,409		335,059	44.5
Total	1,887,447	419,447		862,249	
Public Works Yards					
Auburn	122,093		27,964	47,385	22.2
Wingham	17,195	9,073		7,777	12.6
Wroxeter	60,408		16,035	26,240	11.2
Zurich	47,330	12,525		25,237	13.6
Total	247,026	21,598	43,999	106,639	
Storage Facilities					
Airport	3,631			66	0.5
Total	3,631			66	
Grand Total	3,197,572	637,280	43,999	1,371,897	

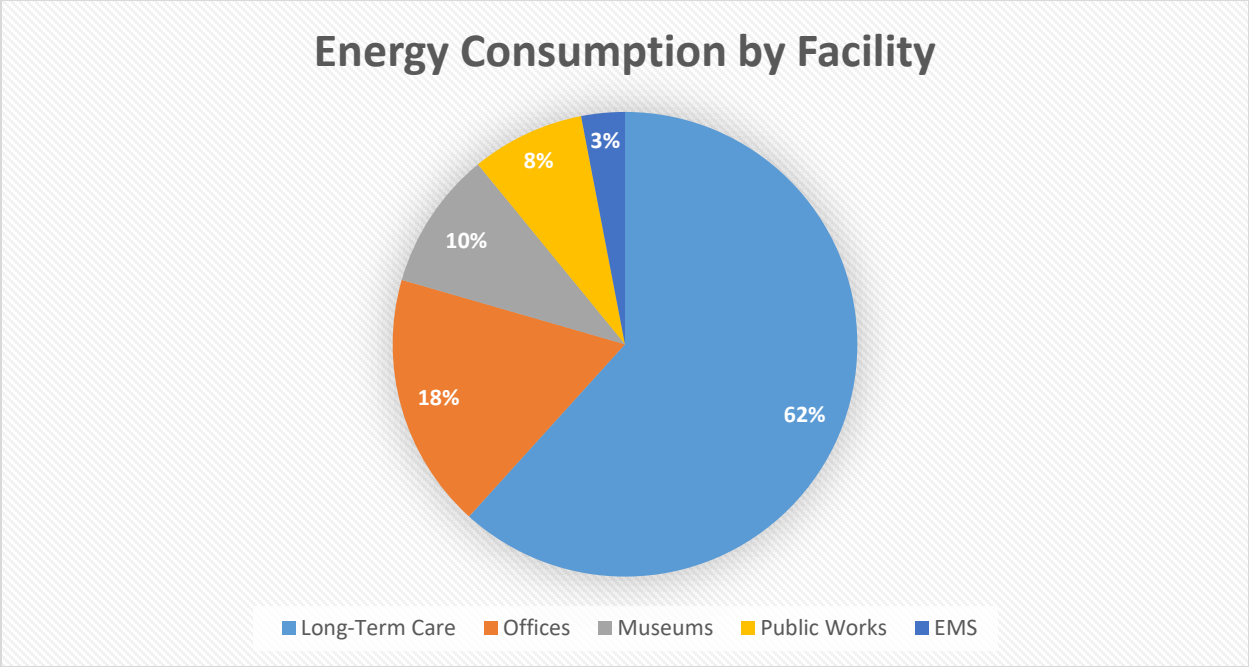


Figure 1. 2023 energy consumption represented as percentages by facility type. *Note: fire services (0.21%) and storage facilities (0.04%) are not represented as they account for small percentages of overall energy use.*

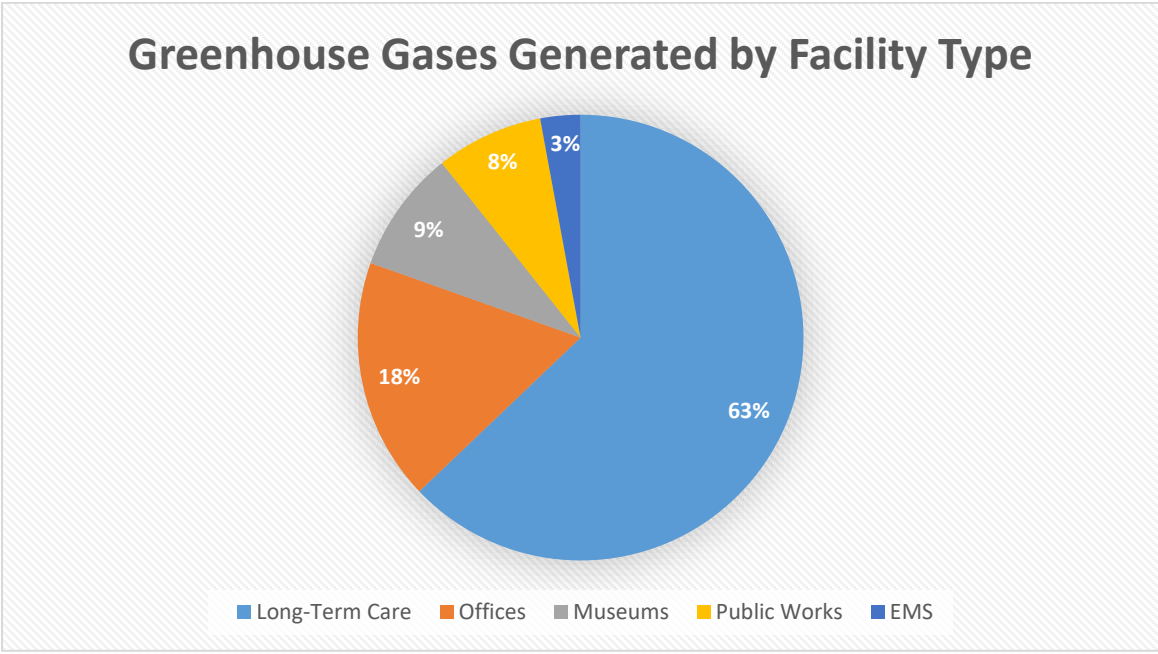


Figure 2. 2023 GHGs generated as a result of energy use represented as percentages by facility type. *Note: fire services (0.04%) and storage facilities (0.01%) are not represented as they contribute negligibly to overall emissions.*

When examining the County's 2023 energy consumption (Table 1 and Figure 1), certain facilities contribute more than others to the overall totals. Of the reported buildings, the County's long-term care facilities are the largest consumer, accounting for over 60% of energy use. As a result of this consumption, these buildings emit just under 2/3 of the County's GHG emissions in 2023 (Figure 2).

Of the buildings that are reportable under O. Reg. 25/23, the County's offices consume the greatest amount of energy, therefore contributing most significantly to GHG emissions (Figure 1 and 2). Second to the County's offices are the museums, followed closely by the public works yards. The museums consume more electricity, however the use of other sources of energy (including natural gas and propane) within the public works yards results in these facilities respectively generating 9% and 8% of the County's overall emissions (Figure 2). Emergency medical services, fire services, and storage facilities all utilize energy, but contribute less significantly to the overall totals for 2023.

Energy benchmarks (or energy intensities) are a metric that allows the usage of various buildings to be compared, as it considers the floor area of each facility. When examining this data (Table 1), the Tuckersmith EMS building and long-term care facilities consume the greatest amount of energy, relative to the size of the buildings. This is useful, as a greater energy intensity indicates a facility that may be a priority area for energy conservation efforts.

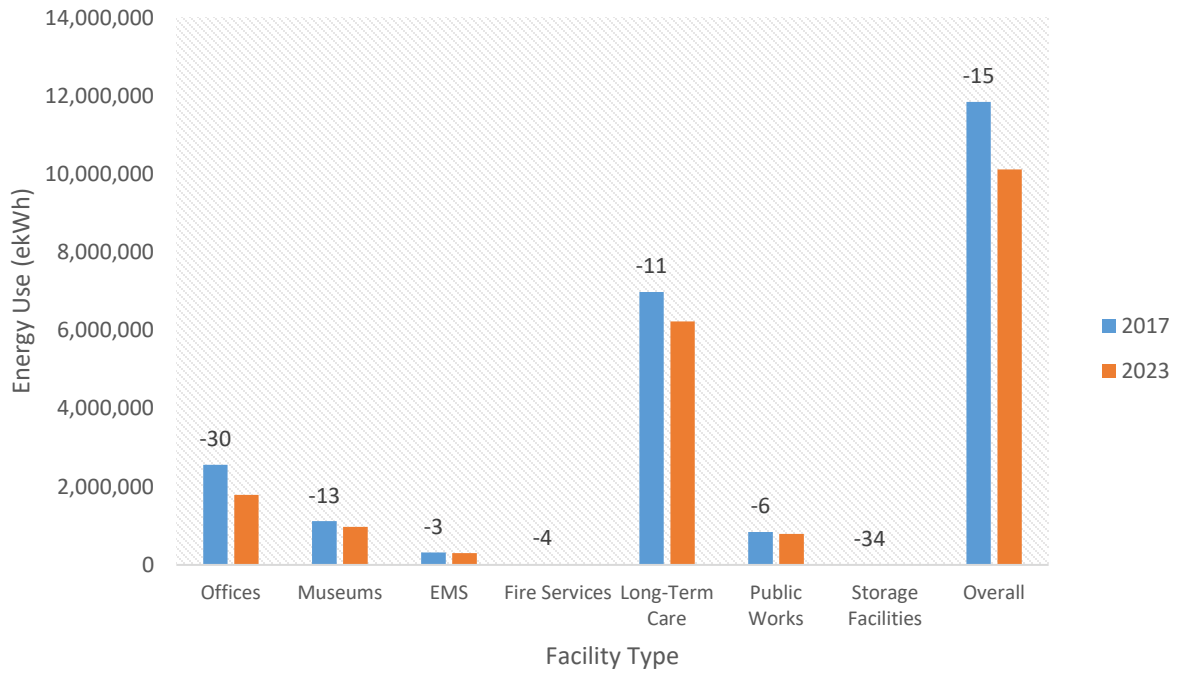
4 | Comparative Analysis

This section of the report will focus on comparing the County's energy use between 2017 and 2023 to analyze trends in consumption patterns, as well as report on the reduction progress achieved to date. The 2017 data displayed in the following figures can be found in the County's [2017 Annual Consumption and Greenhouse Gas Emissions Report](#), posted online.

The figure below (Figure 3A) indicates that the County of Huron successfully reduced energy consumption by almost 15% between 2017 and 2023. When examined by facility type, all 7 groups saw a reduction in energy use over this time period. The most significant reductions were achieved in the County's storage facility and office buildings. In 2021, the County sold two office buildings, the Registry Office and the Health & Library Complex, which contributed to the significant energy reduction in this facility group. When these two facilities are removed from calculations for both years, the remaining office buildings consumed 4% more energy in 2023 compared to 2017. This will be kept in mind when devising new conservation measures for the next 5 years.

When represented by fuel source (Figure 3B), it indicates that overall the County's buildings consumed less electricity, natural gas and propane in 2023 than in 2017.

(A) Total Energy Consumption by Facility Type



(B) Energy Use by Source

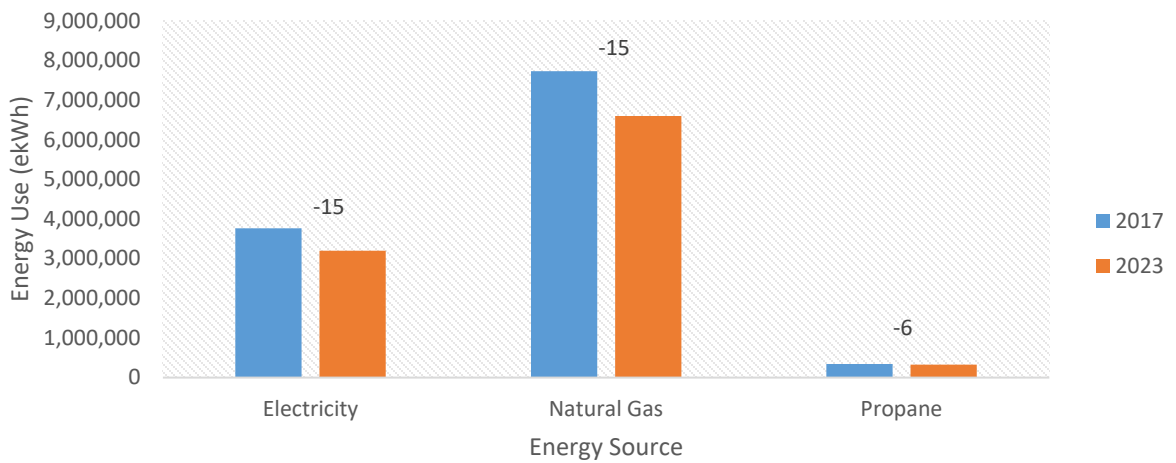


Figure 3. Energy consumption by facility type (A) and fuel source (B) with values representing the percentage change observed between 2017 and 2023.

5 | Implemented Projects

Through the 2019 CDM plan, the County of Huron implemented several energy conservation measures, all of which contributed to the 7.9% reduction achieved. The following provides a summary of the conservation initiatives implemented between 2019 and 2023.

5.1 Technical & Organizational Measures

Table 2. Energy conservation measures installed in accordance with the County’s 2019 CDM Plan.

Facility	Description of Measure	Estimated Energy Savings (kWh/yr)	Date of Completion
Offices			
Courthouse	Upgrade 72 common area lights to LEDs	10,000	2021
	Upgrade boilers to more efficient models	47,333	2023
	Upgrade basement lighting to LEDs	7,300	2023
Assessment Office	Upgrade 15 interior lights to LEDs	2,000	2022
Long-Term Care			
Huronview Home for the Aged	Replace the Domestic Hot Water (DHW) boiler system	9,895	2021
	Window sealing/caulking	1,000	2019
	Replace parking lot light poles with LEDs	11,308	2022
	Replace main hallway lights with LEDs	13,600	2023
Huronlea Home for the Aged	Replace the Domestic Hot Water (DHW) boiler system	9,895	2022
	Replace parking lot light poles with LEDs	9,252	2022
	Replace main hallway lights with LEDs	6,800	2023
EMS			
All four EMS stations	Upgrade bay lighting to LEDs	3,000	2021
Public Works Yards			
Zurich Patrol Yard	Installed tankless water heaters	TBD	2023
Auburn Patrol Yard	Installed 3 occupancy sensors in the office and sand shed	1,260	2021
Wroxeter Patrol Yard	Installed 4 LED lights	800	2023
	Purchased battery powered cordless tools	N/A	2023
Other			
Various Facilities	Conduct energy audits on all County buildings (except Public Works Yards)	N/A	2023
	Continue to install occupancy sensors in washrooms and other infrequently used areas (ie. corridors and meeting rooms)	420/sensor	2023
	Energy reporting to monitor usage	N/A	2019
	Utilize the High Performance Building Standard to guide retrofits and new builds	N/A	2021
Total		133,443	

5.2 Behavioural Measures

In addition to the measures explored above, the County has been continually working to promote energy conservation through behavioural initiatives. This has included:

- Educating and promoting awareness amongst staff (ie. by sharing energy saving tips at staff meetings) to conserve energy by turning off lights and shutting down equipment when not in use
- Completing internal posts on the County's intranet site to raise awareness about the importance of energy management
- Utilizing the Conservation and Climate Change Committee comprised of representatives from each department, to oversee the implementation of energy conservation measures
- Developing and implementing a Climate Lens Tool to ensure that energy efficiency is prioritized in all new County infrastructure and retrofit projects

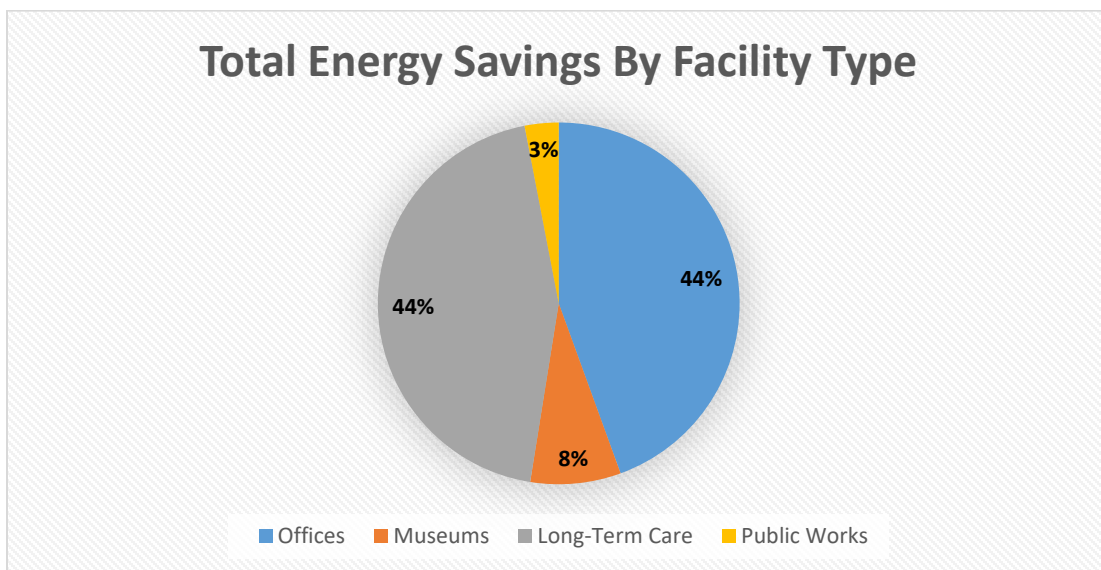


Figure 4. Energy savings represented as percentages by facility type. Note: fire services (0.4%), EMS (0.5%) and storage facilities (0.4%) are not represented as they account for small percentages of overall energy savings.

The County of Huron achieved a total energy savings of 1,723,033 kWhE between 2017 and 2023. The total energy savings cannot be attributed to conservation measures as 844,986 kWh of energy savings is due to the sale of two facilities. Through technical, organizational, and behavioural measures as well as external circumstances, the County of Huron achieved an energy savings of 878,047 kWhE between 2017 and 2023. When organized by facility type, the majority of energy savings were achieved by the County's long-term care facilities. Additional savings were seen in the County's museums and public works yards.

It should be noted that the estimated energy savings represented in Table 2 does not equal the total energy savings that were seen between 2017 and 2023 that are represented in Figure 4. Staff presume this is due to low estimated energy savings from completed projects, additional behaviour changes that have impacted the use of facilities such as the new Work from Home policy, as well as weather patterns that reduce the use of heating/cooling systems within our facilities.

6 | Proposed Energy Conservation Measures

The following provides an overview of the proposed energy conservation measures to be implemented over the next 5 years. These measures were selected based on results from energy audits completed in 2023 and on best practices in energy conservation, as well as input from representatives within the County’s departments to align with asset management planning. This list includes a combination of measures, some of which were proposed under the previous CDM plan and are still under consideration.

Table 3. Proposed technical (A), organizational (B), and behavioural (C) energy conservation measures.

	(A) TECHNICAL MEASURES				
Facility	Description of Measure	Estimated Cost (\$)	Estimated Annual Cost Savings (\$)	Estimated Energy Savings (kWh)	Expected Date of Implementation
Courthouse	Upgrade lighting in Courtroom #1 to LEDs	60,000	995	6,298	2024
	Replace remaining T8 Fluorescent Tubes with LEDs	50,000	2,170	13,751	2025
Jacob Memorial Building	Upgrade the boiler	194,000	3,210	80,615	2025
	Upgrade corridor lighting to LEDs	30,000	1,472	7,871	2026
	Upgrade rooftop air replacement unit	135,000	TBD	2,000	2027
Assessment Office	Upgrade rooftop condenser	40,000	TBD	TBD	2027
Museum	Replacement of Air Handling Unit #6	45,000	N/A	N/A	2028
Huronview Home for the Aged	Air handler upgrade	580,000	16,955	95,239	2025
	Heating High Efficiency boiler upgrade	360,000	11,000	310,011	2027
	Chiller upgrade	185,000	TBD	TBD	2026
	LED upgrades to lighting	50,000	10,605	59,548	2027
Huronlea Home for the Aged	Heating High Efficiency boiler upgrade	240,000	6,450	189,446	2027
	Air Handler Upgrade	450,000	12,769	73,384	2025
	Chiller upgrade	185,000	TBD	TBD	2026
	LED upgrades to lighting	40,000	6,555	37,671	2028
	Window sealing/caulking	50,000	TBD	TBD	2025
EMS	Upgrade lighting at bases to LEDs	30,000	870	7,500	2026
	Replace condensing appliances and air	45,000	N/A	N/A	2028

	handling units at 3 EMS bases				
Public Works Yards	Replace light fixtures with LEDs	30,000	870	7,500	2026
	Install motion sense light switches	10,500	TBD	2,100	2026
All Facilities	Continue to install occupancy sensors in washrooms and other infrequently used areas (ie. corridors and meeting rooms)	TBD	TBD	420/sensor	2020
	Continue to evaluate the feasibility of electric vehicles for the County's fleet	N/A	TBD	TBD	2025
	Investigate renewable energy options for County buildings	N/A	N/A	TBD	2025/2026
	Explore opportunities for water efficient products (ie. low flow bathroom fixtures)	TBD	TBD	N/A	2024
	Advocate for water meters on County-owned buildings in Goderich	N/A	TBD	N/A	2025

(B) ORGANIZATIONAL MEASURES

Description of Measure	Estimated Cost (\$)	Estimated Energy Savings (kWh)	Expected Date of Implementation
Utilize the High-Performance Building Standard to improve energy efficiency in buildings	N/A	TBD	Ongoing
Continue to regularly monitor water and energy consumption to determine areas for improvement	N/A	TBD	Ongoing
Evaluate the possibility of establishing a procurement policy that incorporates sustainability or lifecycle costing	N/A	TBD	2025
Explore the possibility of implementing a nighttime temperature set point for County buildings	N/A	2%/building	2025
Collaborate with lower-tier municipalities and other BPS organizations to share knowledge and advance initiatives	N/A	N/A	2026

(C) BEHAVIOURAL MEASURES

Description of Measure	Estimated Cost (\$)	Estimated Energy Savings (kWh)	Expected Date of Implementation
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Climate Change and Energy Specialist attends department meetings to discuss ideas for energy conservation	N/A	N/A	2025
Conservation Committee meets three times a year to ensure conservation measures are being implemented in respective departments	N/A	N/A	2024
Continue to raise awareness regarding energy conservation through posts on County Intranet	N/A	1-2% of total energy use	2024/2025
Continue organizing initiatives and providing incentives to encourage conservation amongst staff	200	1-2% of total energy use	2025/2026

It should be noted that many of the proposed conservation measures are still in the process of being considered as options for the County of Huron. This is because some of these items are timely endeavors that require research, planning, and financial support. As the feasibility of these measures are examined, financial support may be acquired through external funding opportunities, such as grants, or through capital budget forecasting for the County. Although the direct energy savings for all initiatives cannot yet be quantified, it is expected that if accomplished within the next 5 years, energy savings will be achieved.

7 | Approach to Energy Management

It is important within this update to provide an overview of the County’s approach to energy management to highlight any changes that may have occurred since the 2019 CDM plan. As stated in the previous plan, each County department has representatives on a Conservation and Climate Change Committee to oversee energy use across all departments, and work to reduce this through the implementation of conservation measures. The County’s Climate Change and Energy Specialist is responsible for working with the Conservation and Climate Change Committee to integrate the measures proposed in this plan.

The most notable change to the County’s approach to energy management has occurred using EnergyCAP monitoring software to allow the Climate Change and Energy Specialist to regularly monitor the County’s energy use and monitor utility bills for inconsistencies in real time. Ultimately, this will assist the County in furthering their energy reduction efforts over the next 5 years.

8 | Moving Forward

Through the 2019 CDM plan and the sale of two facilities, the County of Huron successfully reduced corporate energy consumption by 14.5%. The new conservation measures proposed in this plan will help guide the County in further reducing energy use over the next five years. It is intended that many of these initiatives will be implemented by 2028, but this could change as new opportunities arise and as financial support is acquired. The 2024 CDM plan will ultimately assist the County in reducing energy consumption and GHG emissions, thereby generating cost savings and a reduced impact on the natural environment.