

Corporation of the County of

Wellington 2019

Energy Conservation and Demand Management Plan



Table of Contents

1. Introduction	2
2. Plan Requirements and Scope	3
3. Current Energy Consumption at the County.....	4
4. Our Energy Commitment	7
Declaration of Commitment	7
Our Vision.....	7
Our Goals	7
Our Objectives	8
Our Energy Conservation Targets	8
5. Our Successes.....	9
6. Current Municipal Energy Picture.....	15
6.1. Our Municipal Energy Needs	15
6.2. The Energy Management Team.....	15
6.3. Energy Data Management	15
6.4. Staff Training and Communication	16
6.5. Procurement	17
6.6. Plan Update and Review Process.....	17
7. Our Energy Conservation and Demand Management Plan	18

Appendix A: List of all Facilities Included in the Plan

Appendix B: Energy Management Action Plan

1. Introduction

On July 1, 2014, the former Ontario Green Energy Act Regulation 397/11 (now Ontario Regulation 507/18 of the Electricity Act) required Municipalities to report their “goals and objectives” for conserving and otherwise reducing energy consumption and managing its demand for energy. Municipalities also provided “confirmation that the energy conservation and demand management plan has been approved by the public agency’s senior management”.

The County of Wellington published its first 5-year Energy Management plan on July 1st, 2014.

This document, an update of the initial 5-year plan, has been developed to support, focus, communicate and celebrate the County’s energy conservation efforts. It includes the following key elements:

- a clear corporate vision and policy that includes objectives, targets and strategic priorities;
- a summary of past conservation improvements and successes;
- a breakdown of the current energy consumption and green house gas emissions by building type;
- specific and actionable inventory of energy conservation projects planned for the next five (5) years.

The County intends on revisiting and updating this Plan every five years as required under O.Reg. 507/18.

Energy management is the practice of monitoring, controlling and conserving energy in a building or an organization. Successful management of energy depends on the integration of energy efficient programmes and behaviours into the common practice of the organization. Energy use must be measured and tracked, and conservation projects must be measurable to ensure the savings are realized. The delivered conservation projects and programme(s) must also be aligned with the vision and strategic priorities of the County.

The objective of energy management is to minimize energy costs and reduce the associated greenhouse gas emissions. This plan illustrates the County of Wellington’s ongoing commitment to energy management.

Energy conservation at the County is a continuous effort and results are achieved through an engaged organization, implementing programme(s) to improve efficiencies and reduce greenhouse gas emissions. The roadmap to achieving our 5-year reduction target is outlined in the following report.

2. Plan Requirements and Scope

Ontario Regulation 507/18 of the Electricity Act requires that each Municipality make available to the public energy conservation and demand management plans as follows:

Every public agency shall publish on its website and intranet site a summary of:

- its annual energy consumption and greenhouse gas emission for its operations, and
- 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.

The Act specifies that the plan is to cover only the built environment (facilities that are heated), that are currently owned and operated by the County. As such energy consumed at public parks or baseball fields for example are not included. Street lighting, as an exception, has been included in this plan as it is a significant consumer of electricity at the County, and therefore oversight through the conservation plan is deemed appropriate.

The County owns and operates numerous social housing facilities. For this plan, only the larger multi-residential units have been included. Single family and semi-detached units are not included in this report. A full list of the County's facilities included in the plan can be found in Appendix A.

An overview of the types of facilities in the plan are shown below in Table 1.

Table 1: Number of Buildings by Category Included in Plan

General Facility Type	Number of County Facilities
Retirement / Nursing Homes	1
Administrative Offices	12
Libraries	12
Garages	8
Landfills and Transfer Stations	6
Community Housing	29
OPP/Fire Stations	4
Children's Early Years Facilities	4
Street Lighting	N/A
Other ¹	1

Note 1: This facility is the Little Tract Southern Tree Nursery.

3. Current Energy Consumption at the County

2017 is the baseline year from which the conservation plan will measure the success of its efforts. Table 2 below, illustrates the energy consumed by the facilities included in the report (see Section 2.0), summarized by building category and energy type (electricity, natural gas). The table also shows the associated metric tonnes of equivalent greenhouse gas (GHG) emissions (t eCO₂) produced by each of the two fuel sources.

Table 2: 2017 Energy Consumption and Greenhouse Gas Emissions

General Facility Category	2017 Electricity		2017 Natural Gas		2017 Total Energy	
	Consumption (kWh)	GHG Emissions(t eCO ₂)	Consumption (m ³)	GHG Emissions (t eCO ₂)	Consumption (ekWh)	Total GHG (t eCO ₂)
Community Housing ²	8,575,178	148.333	546,160	1,017.495	14,252,511	1,165.83
Administrative Offices	2,118,639	36.648	247,285	460.692	4,689,167	497.34
Retirement / Nursing Homes	1,788,417	30.936	207,315	386.228	3,943,456	417.16
Libraries	888,053	15.362	111,164	207.099	2,043,603	222.46
OPP/Fire Stations	1,120,674	19.385	72,655	135.357	1,875,923	154.74
Garages	483,436	8.362	126,874	236.366	1,802,291	244.73
Children's Early Years Facilities	147,373	2.549	35,630	66.379	517,747	68.93
Street Lighting	508,239	8.792	-	-	508,239	8.79
Landfills and Transfer Stations	200,835	3.474	-	-	200,835	3.47
Other	36,933	0.639	-	-	36,933	0.64
Total	15,867,779	274.481	1,347,084	2,509.617	29,870,705	2,784
Note:						
1. Natural gas m ³ conversion to ekWh = multiply by 10.395 (Enbridge/Union Gas, 2019)						
2. Community housing includes only multi-residential buildings						

Please note that in order to summarize the total energy consumed from electricity and natural gas, natural gas consumed in m³, was converted to equivalent kWh (ekWh) using the factor shown in Note 1 of the table.

The total energy consumed by these facilities in 2017 was 29,870 MWh and the related GHG emissions were 2,784 t eCO₂.

This data is illustrated in Figure 1 below, which shows electricity consumption and the related GHG emissions by building type. Social housing, administrative offices and Wellington Terrace (the only retirement home) are the largest consumers of electricity in the County by category. In 2017, approximately 148 t eCO₂ was emitted by the buildings, included in the social housing category, from electricity consumption.

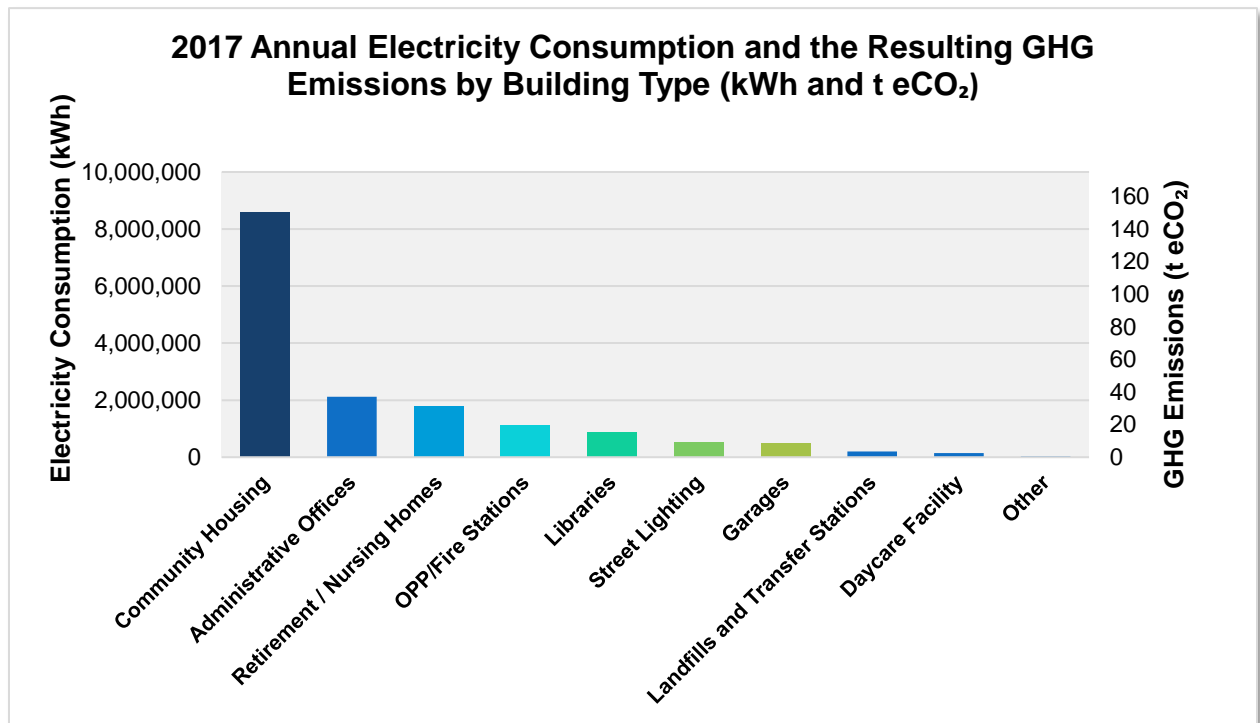


Figure 1: 2017 Electrical Consumption and the related GHG Emissions by Facility Type

Figures 2 below illustrates natural gas consumption and related GHG emissions by building type. Social housing, administrative offices and Wellington Terrace (the only retirement home) are again the largest consumers of natural gas in the County by category. In 2017, 1,917 t eCO₂ were emitted by the largest category, community housing, due to natural gas consumption (mainly used for heating). This is a large contrast to the much smaller emissions noted (148 t eCO₂) for the same facilities for electricity consumption in 2017.

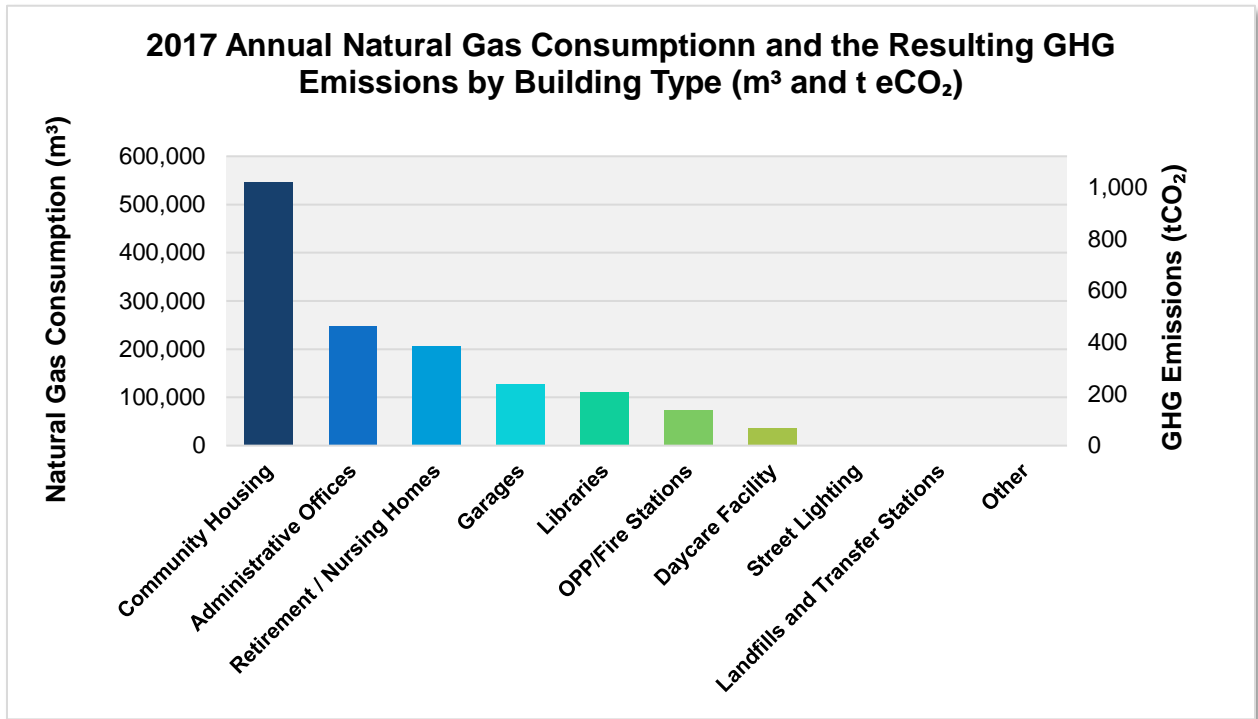


Figure 2: 2017 Natural Gas Consumption and the Related GHG Emissions by Facility Type

Figure 3 below illustrates the source of GHG emissions at the county by fuel type. Although electricity is the most expensive fuel source and is approximately 50% of the energy supplied to the County, it is responsible for less than 10% of the GHG emissions.

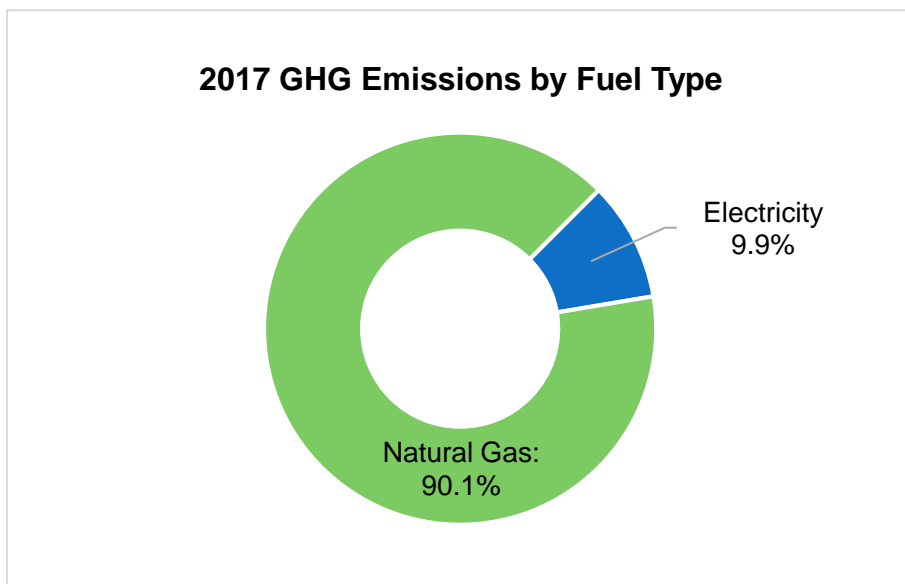


Figure 3: 2017 GHG Breakdown by Electricity and Natural Gas Consumption

4. Our Energy Commitment

Declaration of Commitment

The County of Wellington is committed to reducing the carbon footprint associated with corporate energy use and be accountable for energy performance in order to minimize the cost of municipal services and be an environmentally-minded community leader.

The County of Wellington will provide the appropriate internal resources, and outside agencies where appropriate, to deliver the strategic energy management plan, reducing our energy consumption and the related environmental impact.

Our Vision

Demonstrate commitment to a safe, vibrant, future-ready community by continually reducing our energy consumption and related greenhouse gas emissions.

Leverage our outstanding team, comprehensive conservation programme(s), and innovative technologies to conserve energy while delivering outstanding public service to the community.

Our Goals

- ✓ Implement a comprehensive corporate energy management programme to reduce energy consumption, achieve cost savings and reduce greenhouse gas emission.
- ✓ Improve the energy efficiency of our facilities
- ✓ Create a culture of conservation.
- ✓ Increase the comfort and safety of staff and patrons of the County of Wellington facilities.

Our Objectives

Improve energy efficiency and reduce energy consumption through:

- ✓ **Identification** of new opportunities;
 - Benchmarking 'best-in-class' facilities in Ontario and determining opportunities for conservation at the County
 - Conduct facility energy assessments

- ✓ **Management** and maintenance of existing systems;
 - Re-commission building systems of highest energy consuming buildings
 - Ensuring efficient operating and maintenance best practices to maintain comfort while maximizing energy efficiency and reducing energy waste.
 - Develop an electricity demand management programme
 - Implement a clear and effective energy monitoring and tracking system for each facility

- ✓ **Train** to create a culture of conservation;
 - Increase awareness of the impact of energy consumption on climate change and greenhouse gas emissions
 - Develop and implement employee training and staff awareness programmes

- ✓ **Upgrade**
 - Building envelopes;
 - Equipment and building system controls.

Our Energy Conservation Targets

Reduce energy consumption by **3% (83.52 tonnes eCO₂)** by 2022 (a 5-year period) compared to the base year 2017 (28,870 MWh, 2,784 tonnes eCO₂) for all those facilities reported under Ontario Regulation 507/18 of the Electricity Act.

5. Our Successes

The County has completed a number of energy conservation projects in the last 5 years which have contributed significantly to the control of energy costs and greenhouse gas emissions. Several of the largest projects delivered recently are described below. In addition, Table 3 below lists additional projects completed by the County in the last 5 years.

Street Lighting Upgrade

In March of 2016, the County of Wellington began the conversion of street lights and parking lot lights from conventional high pressure sodium cobra head fixtures, to LED technology. The project has resulted in a reduction of approximately 68,000 kWh per year of electricity (1 t eCO₂ GHG emissions) from the street lighting upgrade alone. Parking lot lighting upgrades have also significantly reduced consumption at each of the facilities.

Below is one of the many new LED street lighting fixtures:



Renewable energy

Renewable energy is generated from natural sources such as sunlight, wind, and geothermal heat. Currently the County uses a substantial number of different renewable resources for energy and water which are listed below,

County Solar Programme

The County currently has 15 Roof top/ground mounted Solar Photovoltaic units. Since 2013 County of Wellington solar panels have generated over 111 MWh of energy. This is equivalent to 82,747 kg of carbon dioxide saved or 1905 trees planted, or 634 vehicles taken off the road. The net revenue from the solar programme funds the Green Energy Reserve to fund future green initiatives. Additional solar arrays are planned to be added to several facilities in the near term.

The buildings that currently have installed solar panels include the following:

- Centre Wellington Library
- Arthur Library
- Drayton Library
- OPP Building
- Aberfoyle Garage
- Arthur Garage
- Brucedale Garage
- Harriston Garage
- Elora Waste Facility
- Several Social Housing Buildings



Daylight Harvesting

Daylight harvesting is an energy management practice that reduces overhead lighting use by utilizing the ambient light present in spaces. Currently, the County has several libraries employing daylight harvesting.



Geothermal Heating

Geothermal heating is an energy conservation practice that directly uses geothermal energy to heat building spaces. Currently, the County's Centre Wellington OPP building employs geothermal heating.



Rainwater Harvesting

Rainwater harvesting is the practice of collecting rainwater from a roof, or other surface, and using it to augment freshwater supplied to non-potable applications like irrigation and toilet flushing. Currently the County has three facilities employing rainwater harvesting; the Central Garage, the OPP Building and the Harriston, Puslinch, and Mount Forest libraries.



Green Roof

A green roof is a roof that is covered with plants to reduce stormwater runoff and reduce building heating and cooling costs by providing a more insulative roof. Currently, the County’s Puslinch Library has a green roof installed.



Electric Vehicle Charging Stations

In addition to the renewable energy installations, the County have installed three (3) contract Electric Vehicles – 3 charging stations



Green Legacy Building Guidelines

Green Legacy Building Guidelines were adopted by County Council in March of 2008. This initiative was developed as a result of the County's experience in trying to meet the costly LEED programmes' criteria. The Green Legacy Building Guidelines recognize two standards (Green and Emerald) under the categories of:

1. Land Use Development
2. Water Efficiency
3. Energy Efficiency
4. Resource Management
5. Air (Quality and Efficiency)

In order to achieve the Green or Emerald Standards Award mandatory criteria must be met within that category. Since the adoption of the Green Legacy Building Guidelines all new corporate construction and building renovation projects have met the Green/Emerald Award Standard. Picture below of the newest County facility the Wellington Place Child Care and Learning Centre.



Table 3 below illustrates a number of projects delivered by the County in the last 5 years that have contributed to energy savings.

Table 3: Completed Projects that have Supported Energy Conservation from 2014-2019

Facility	Measure Type	Project Description
Street Lighting	Lighting	Upgraded streetlight system throughout the County from high pressure sodium (HPS) fixtures to LED cobra heads.
Brucevale Garage	Heating	Upgraded unit heater in shop to high efficiency unit.
Brucevale, Arthur and Harriston	Building Envelope	Replaced outside cladding and added extra insulation to facility.
Waste Management sites	Lighting	Replaced indoor lighting with LED bulbs.
Wellington Terrace	Lighting	Upgraded 26 pole and 13 bollard metal halide light fixtures in the parking lot to LED.
Wellington Terrace	Heating	Replaced domestic heating water boilers with higher efficiency units.
Wellington Terrace	Domestic Hot Water	Replaced domestic hot water boilers with higher efficiency units.
Wellington Terrace	Operational Improvement	Upgraded washers and dryers.
Museum	Heating	Replaced five (5) heating water circulation pumps with high efficiency models.
Museum	Lighting	Exterior lighting upgraded to LED and approximately 40% of the interior has been also upgraded to LED.

These projects illustrate the County's leadership and commitment to actively managing energy consumption.

6. Current Municipal Energy Picture

6.1. Our Municipal Energy Needs

The County of Wellington understands its internal stakeholders (Council, committee of Council, CAO, staff) need:

- An up-to-date and relevant energy management plan with clear vision and goals in order to clearly communicate the corporate commitment to energy efficiency; and
- Timely, regular reports and information to maintain awareness of energy use; and
- Training and support to develop the skills and knowledge required to implement energy management practices and measures.

The County of Wellington understands that its' external stakeholders (residents, community organizations, businesses, Province) need:

- The municipality to be accountable for energy performance and to minimize the energy component of the costs of municipal services, and
- The municipality to reduce the greenhouse gas emissions associated with its corporate energy use.

6.2. The Energy Management Team

In order to support continuous improvement while maintaining existing conservation gains, the County must provide the correct level of resources. A comprehensive energy management program will not be successful if roles and responsibilities are not clearly defined. The current roles filled by the County's energy management team are listed below:

Resources:

- Energy Sponsor – The Manager of Purchasing and Risk Management Services has been designated as our energy sponsor with overall responsibility of corporate energy management funding and results.
- Energy Team – Includes staff members and personnel from our internal and external service providers who carry significant responsibility for energy performance or who can contribute to energy management processes and help deliver conservation projects.

6.3. Energy Data Management

The County of Wellington entered into an Energy Management Agreement on January 1, 2013 with the Association of Municipalities of Ontario – Local Authority Services (AMO/LAS). The County also has access to an Energy Management Tool (EMT) through AMO/LAS.

The County of Wellington has specific objectives to improve the energy data management program including:

- **Data acquisition:** develop a process for acquiring and consolidating energy consumption data
- **Data storage:** develop a system for storing and protecting facility energy consumption and costs for all energy types, water and/or Greenhouse gases (GHG)
- **Quality control/assurance/validation:** Develop data quality control, assurance and validation process
- **Tracking and monitoring:** measure and verify savings from delivered energy conservation projects; benchmark facility performance to best-in-class to identify opportunities for improvements and savings; monitor, in real time, key facilities using interval meters.
- **Reporting and communications:** generate reports with visual supports (graphs, illustrations) for use at all levels in the organization to manage the energy resource; communicate current energy performance as well as track greenhouse gas (GHG) reductions.

6.4. Staff Training and Communication

To help create a culture of conservation, organizations must provide access to effective and timely energy training and awareness programme(s). In addition, criteria will be developed to measure progress towards a culture of conservation including tracking staff participation in programme(s) and training events.

The following programme(s) will be implemented by the County to support this effort:

- **Energy Awareness Training** – the County will provide training focused on the energy consumption and conservation. Customize training such that it is focused on employee’s job function wherever possible.
- **Energy Skills Training** – the County will provide skills training for operators, maintainers and other employees that have “hands-on” involvement with energy consuming systems in order to improve the team’s ability to achieve and maintain energy efficiency targets.
- **Train-the-Trainer** – the organization will build energy training skills within the County team organization to support the energy awareness effort and to increase organizational capacity.
- **New Hire Orientation** – the County will build energy training and awareness into the current new hire orientation.

6.5. Procurement

The procurement team is a key partner in delivering both short and long-term energy conservation strategies. The most cost-effective method of reducing energy is planning for efficiency in newly constructed facilities, or through purchased efficient equipment (from smaller items such as office printers to larger items such as facility boilers and HVAC units). The following list details the primary focus areas for the procurement department:

- **Energy purchasing** – Continue to participate in purchasing programmes (LAS) to procure diesel, unleaded gas, electricity and natural gas. Jointly procure, when possible, other energy commodities based on analysis of cost considerations, available energy services, energy quality and reliability and other performance factors.
- **Consideration of energy efficiency of acquired equipment** – modify procurement policy as required incorporating energy efficiencies into the criteria for selection and evaluation of equipment and supplies.
- **Standards for new buildings** – Continue to adhere to the Green Legacy Building guidelines and performance standards such as LEED.
- **Support circular procurement processes or Cradle-to-Cradle (C2C)** – Sustainable public procurement involves taking the environmental impact created by products or activities from the beginning of the life cycle through every stage of the procurement process. Continue to integrate this purchasing philosophy where-ever possible.

6.6. Plan Update and Review Process

The results of the energy management plan will be evaluated by regularly tracking energy use against targets and by monitoring the progress of conservation projects in the action framework. The progress will be reported to the various stakeholders annually to ensure improvements are maintained and continuous progress on projects and measures is on track.

The energy management plan will be reviewed and updated as necessary to ensure the County meets its targets and continuously improves its energy performance.

7. Our Energy Conservation Plan

A critical part of any plan is the detailed list of specific actions needed to achieve an organizations objectives, goals and targets. The County of Wellington has developed a key project list which will provide the roadmap for energy conservation over the next 5 years.

The projects fall under the following four broad categories:

- ✓ **Identification** of new opportunities
- ✓ **Management**, maintenance and monitoring of existing systems
- ✓ **Training**, capacity development and Awareness
- ✓ **Upgrading** building systems and envelopes

Projects in the action plan include the following:

- Addition of energy efficiency criteria to new construction projects guidelines through the Green Legacy Building guidelines
- Improvement of energy consumption reporting and tracking systems
- Utilization of the Green Energy Reserve fund to incorporate energy projects into the Capital planning process
- Identification of energy conservation opportunities through the execution of energy audits and/or walkthrough assessments for several facilities;
- Refreshment of the procurement policies and procedures to include energy efficiency to the selection criteria for goods and services;
- Delivery of energy conservation and efficiency training for staff and employees;
- Upgrade of space heating and cooling controls;
- Replacement of remaining older lighting systems with LED;

The detailed list of projects and programme(s) included in the plan, which covers a period from July 2019 to June 2024, can be found in Appendix B.

Appendix A

List of All Facilities Included in Plan

County of Wellington Energy Management Plan

Operation Name	Operation Type	Address	City	2017 Electricity Consumption (kWh)	2017 Natural Gas Consumption (m ³)
116 & 122 Woolwich Street-Gym	Administrative offices and related facilities	122 Woolwich Street North	Guelph	41,856	-
127 Wyndham B1 & B3 Training	Administrative offices and related facilities	127 Wyndham Street North	Guelph	13,088	4,121
15 Douglas Street	Administrative offices and related facilities	15 Douglas Street	Guelph	16,849	4,290
21 Douglas Street	Administrative offices and related facilities	21 Douglas Street	Guelph	70,926	-
Aberfoyle Garage	Administrative offices and related facilities	7396 Wellington Road 34	Guelph	24,598	15,561
Aberfoyle Transfer Station	Administrative offices and related facilities	6922 Concession 4 P	Puslinch	17,938	-
Aboyne Library	Public libraries	522 Wellington Road 18	Fergus	-	10,435
Administration Centre & Old Gaol & Governor's Residence	Administrative offices and related facilities	74 Woolwich Street	Guelph	155,624	54,934
Arthur Garage	Facilities where equipment or vehicles are maintained	399 Eliza Street	Arthur	34,398	12,200
Arthur Library & Medical Centre	Public libraries	110 Charles Street East	Arthur	138,302	9,223
Belwood Transfer Station	Administrative offices and related facilities	8585 Wellington Road 19	Belwood	11,400	-
Brucedale Garage	Facilities where equipment or vehicles are maintained	8436 Wellington Road 124	Brucedale	49,339	12,728
Central Garage	Facilities where equipment or vehicles are maintained	7468 Wellington Road 51	Guelph	168,557	55,314

County of Wellington Energy Management Plan

Operation Name	Operation Type	Address	City	2017 Electricity Consumption (kWh)	2017 Natural Gas Consumption (m ³)
Centre Wellington OPP	Police stations and associated offices and facilities	470 Wellington Road 18	Fergus	434,933	27,233
Clifford Library and Medical Centre	Public libraries	7 Brown Street North	Clifford	47,850	5,337
Court House & 21 Douglas	Administrative offices and related facilities	74 Woolwich Street	Guelph	333,409	77,220
Dominion Old Post Office	Administrative offices and related facilities	138 Wyndham Street North	Guelph	478,198	16,874
Drayton Garage	Facilities where equipment or vehicles are maintained	30 John Street	Drayton	75,000	12,231
Drayton Library	Public libraries	106 Wellington Road South	Drayton	125,495	15,902
Elora Garage	Facilities where equipment or vehicles are maintained	7454 Wellington Road 21	Elora	49,283	6,812
Elora Library	Public libraries	144 Geddes Street	Elora	74,368	3,407
Elora Transfer Stations	Administrative offices and related facilities	6549 Gerrie Road	Elora	13,320	-
Erin Garage	Facilities where equipment or vehicles are maintained	9506 Wellington Road 124	Erin	30,080	-
Fergus Library	Administrative offices and related facilities	190 St. Andrew Street West	Fergus	148,431	26,402
Fergus Ontario Works	Administrative offices and related facilities	321 St. Andrew Street West	Fergus	62,289	17,046
Harriston Garage	Facilities where equipment or vehicles are maintained	9160 Wellington Road 5	Harriston	52,183	12,028
Harriston Transfer Station	Administrative offices and related facilities	5668 HWY 23	Harriston	14,066	-
Harriston Library	Public libraries	88 Mill Street	Harriston	102,121	13,433

County of Wellington Energy Management Plan

Operation Name	Operation Type	Address	City	2017 Electricity Consumption (kWh)	2017 Natural Gas Consumption (m ³)
Hillsburgh Library NEW	Public libraries	9 Station Street	Hillsburgh	2,336	-
Little Tract Southern Tree Nursery	Administrative offices and related facilities	6714 Wellington Road 34	Puslinch	36,933	-
Marden Library	Public libraries	7368 Wellington Road 30	Guelph	-	4,648
Mount Forest Library	Public libraries	118 Main Street	Mount Forest	92,302	3,159
Mount Forest - Early years Unit 101	Administrative offices and related facilities	311 Foster Street	Mount Forest	53,937	2,080
Mount Forest -Health Unit 104	Administrative offices and related facilities	311 Foster Street	Mount Forest	4,736	5,413
Mount Forest -Unit 103	Administrative offices and related facilities	311 Foster Street	Mount Forest	48,810	14,529
Museum and Archives	Administrative offices and related facilities	536 Wellington Road 18	Fergus	787,985	51,510
Ontario Works	Administrative offices and related facilities	129 Wyndham Street North	Guelph	138,104	18,520
Palmerston Library	Public libraries	265 Bell Street	Palmerston	76,436	7,597
Puslinch Library	Public libraries	29 Brock Road South	Puslinch	80,412	11,621
Rivertown Landfill	Administrative offices and related facilities	7254 Sideroad 5 West	Mount Forest	131,056	-
Rockwood OPP	Police stations and associated offices and facilities	5145 Wellington Road 27	Rockwood	336,380	10,030
Rothsay Transfer Station	Administrative offices and related facilities	8495 Wellington Road 7	Rothsay	13,056	-
Street Lighting – All Accounts	Street lighting	74 Woolwich Street	Guelph	508,239	-
Tech Services - 27 Douglas	Administrative offices and related facilities	25-27 Douglas Street	Guelph	20,312	2,769
Wellington Housing	Social housing	235 Egremont Street	Mount Forest	43,399	10,716

County of Wellington Energy Management Plan

Operation Name	Operation Type	Address	City	2017 Electricity Consumption (kWh)	2017 Natural Gas Consumption (m ³)
Wellington Housing	Social housing – 54 Units	33 Marlborough Avenue/232 Delhi Street	Guelph	855,438	30,832
Wellington Housing	Social housing – 74 Units	229 Dublin Street North	Guelph	536,393	41,848
Wellington Housing	Social housing – 31 Units	450 Albert Street	Mount Forest	468,912	8,961
Wellington Housing	Social housing – 12 Units	360 Derby Street	Palmerston	157,839	2,896
Wellington Housing	Social housing – 28 Units	500 Ferrier Court	Fergus	294,309	16,344
Wellington Housing	Social housing – 10 Units	182 George Street	Arthur	61,227	19,071
Wellington Housing	Social housing – 85 Units	15 Willow Road & 39 Dawson Road	Guelph	135,082	126,291
Wellington Housing	Social housing – 11 Units	22 Church Street	Erin	43,447	8,557
Wellington Housing	Social housing – 16 Units	14 Centre Street	Erin	179,185	5,591
Wellington Housing	Social housing – 62 Units	263 Speedvale Avenue East	Guelph	550,921	16,275
Wellington Housing	Social housing – 32 Units	212 Whites Road	Palmerston	239,509	15,027
Wellington Housing	Social housing – 4 Units	320-350 Derby Street	Palmerston	188,895	-
Wellington Housing	Social housing – 20 Units	221 Mary Street	Elora	179,810	7,685
Wellington Housing	Social housing – 89 Units	32 Hadati Road	Guelph	723,516	29,420
Wellington Housing	Social housing – 14 Units	110 Edward Street	Arthur	175,185	4,097
Wellington Housing	Social housing – 47 Units	Applewood/Willow/Sunset	Guelph	14,614	56,835
Wellington Housing	Social housing – 15 Units	56 Mill Street	Harriston	190,160	2,309
Wellington Housing	Social housing – 41 Units	411 Waterloo Avenue	Guelph	367,718	13,072
Wellington Housing	Social housing – 4 Units	127 Wyndham Street North	Guelph	33,734	-
Wellington Housing	Social housing – 18 Units	301, 302 & 303 Edinburgh Road	Fergus	3,193	21,082
Wellington Housing	Social housing – 72 Units	130 Grange Street	Guelph	606,161	21,804
Wellington Housing	Social housing – 12 Units	38 Elizabeth Street	Harriston	106,022	11,201

County of Wellington Energy Management Plan

Operation Name	Operation Type	Address	City	2017 Electricity Consumption (kWh)	2017 Natural Gas Consumption (m ³)
Wellington Housing	Social housing – 72 Units	387 Waterloo Avenue	Guelph	583,178	23,611
Wellington Housing	Social housing – 41 Units	450 Ferrier Court	Fergus	468,082	18,753
Wellington Housing	Social housing – 55 Units	165 Gordon Street North	Fergus	430,671	48,492
Wellington Housing	Social housing – 10 Units	133 Frederick Street	Arthur	102,468	1,921
Wellington Housing	Social housing – 16 Units	51 John Street	Harriston	191,225	4,708
Wellington Housing	Social housing – 100 Units	576 Woolwich Street	Guelph	779,965	30,774
Wellington North OPP	Police stations and associated offices and facilities	6725 Wellington Road 109	Palmerston	349,361	35,392
Wellington Terrace	Long-term care	474 Wellington Road 18	Fergus	1,788,417	207,315
Willowdale Daycare	Administrative offices and related facilities	95 Willow Road	Guelph	39,889	13,608
Wellington Housing	Social Housing	169 Gordon Street	Fergus	144,478	17,502

Appendix B

Energy Management Action Plan

County of Wellington Energy Management Plan

No.	Facility	Project Type	Measure	Description
1 Create a Culture of Conservation				
1.1	Across Organization	Training	Organizational Capacity	Energy Training for office and technical staff - Spot the energy savings (up to 75% incentive available).
1.2	Across Organization	training	Organizational Capacity	Employee challenge (e.g. Efficiency Treasure Hunt)
2 Managing and Monitoring Existing Systems				
2.1	Purchasing	Procurement	Policy	Add life cycle costing as a criteria for all capital projects. Include ongoing energy costs to RFP requests. Update policies to include energy efficiency and Low carbon materials (e.g. green concrete, recycled products, low carbon vehicle fleet, green energy) in procedures.
2.2	Across Organization	Energy Data	Monitoring and Targeting	Review historical energy data and record keeping to verify and correct as necessary
2.3	Across Organization	Energy Data	Monitoring and Targeting	Create a monitoring and targeting process to provide timely energy data to building managers to aid in trouble shooting in tracking improvements.
2.4	Across Organization	Energy Data	Measurement and Verification	Select key facilities and projects and complete detailed energy analysis (regression analysis with CUSUMs using RETscreen) to determine energy trends and size of energy savings.
2.5	Across Organization	Energy Data	Policy	Develop building controls (e.g. automation) policy/procedures

County of Wellington Energy Management Plan

3 Identification of New Opportunities				
3.1	Across Organization	Project Identification	Energy Audits and Walkthrough Assessments	Complete energy audits on 5 of the highest energy users at the County and Walkthrough Assessments of 10 others to identify savings opportunities.
3.2	Across Organization	Energy Data	Sub-metering Critical Loads	
3.3	Across Organization	Building Recommissioning	Building recommissioning	Complete recommissioning on 5 administration buildings
3.4	Across Organization	New builds	policy	Low GHG emissions heating and cooling systems
3.5	Across Organization	New builds	policy	Update green design guidelines
3.6	Across Organization	Project Identification		Investigate feasibility of connecting to City of Guelph District Energy at City of Guelph admin buildings
3.7	Across Organization	Project Identification		Investigate feasibility of solar air pre-heating (e.g. Solar Wall) on Admin buildings, Wellington Terrace, garages and multi-residential buildings
3.8	Across Organization	Project Identification	Heat reclaim	Investigate opportunities for heat reclaim in Admin offices, multi residential buildings, terrace, and garages.
4 Upgrading Building Systems and Envelope				
4.1	Museum	Lighting	Upgrade	Upgrade remaining interior lighting fixtures with LED (approximately 60% remain to be upgraded)
4.2	Rockwood OPP	Lighting	Lighting	Upgrade interior lighting to LED
4.3	Admin Office (74 Woolwich	Lighting	Upgrade	Upgrade T8 Lighting to LED
4.4	Admin Office (21 Douglas St.)	Lighting	Upgrade	Upgrade exterior lighting to LED - Currently have 5 HPS Wall Packs

County of Wellington Energy Management Plan

4.5	Courthouse	HVAC	Controls	Install variable speed fans on the HVAC system.
4.6	Courthouse	HVAC	Controls	Replace pneumatic controls with electronic
4.7	Courthouse	HVAC	Controls	Review feasibility of demand controlled ventilation for courtrooms.
4.8	Erin Shop	HVAC	Controls	Shop to be replaced in 2024
4.9	Harriston Shop	HVAC	Controls	Replace older thermostats with digital programmable models. Program temperature setbacks for space heating during unoccupied periods.
4.10	Wellington Terrace	Lighting	Upgrade	Replacing approximately 190 wall mounted fluorescent fixtures in residence, common and bathrooms with LED
4.11	Wellington Terrace	Lighting	Upgrade	Finish internal lighting upgrades including dining room lights from CFL to LED
4.12	Wellington Terrace	Lighting	Controls	Install occupancy sensors in all RHA (12 Washrooms and 6 Med Rooms)
4.13	Wellington Terrace	Brine Reclaim	Water Softener	Save approx. 110 gallons of water per day. Save approx. 30% of water softener salt per regeneration. (7.5 to 5 bags of salt per regeneration)
4.14	Wellington Terrace	Laundry Facilities	Laundry machine replacements	Replace 13 year old machine with higher efficiency models
4.15	Wellington Terrace	HVAC	A/C replacement	Lifecycle replacement
4.16	Social Housing	HVAC	Controls	Upgrade older thermostats with programmable digital models
4.17	Social Housing	Building Envelope	Window Upgrade	Replacing aluminum single pane windows with argon filled vinyl double pane on several buildings
4.18	Social Housing	Lighting	Upgrade	Replace interior corridor lighting with LED in several buildings

County of Wellington Energy Management Plan

4.19	Social Housing	Lighting	Upgrade	Replace exterior lighting with LED in several locations
4.20	Museum	HVAC	upgrade	Install new high efficiency AC unit
4.21	129 Wyndham St	HVAC	upgrade	Investigate need for right-sizing air conditioner unit for server
4.22	131 Wyndham	Lighting	Upgrade	Replace interior corridor lighting with LED
4.23	Rockwood OPP	Lighting	Upgrade	Replace exterior parking lighting with LED
4.24	Centre Wellington OPP	Lighting	Upgrade	Replace exterior parking lighting with LED