



Energy Conservation and Demand Management Plan

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Executive Summary

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) was retained by the Township of Centre Wellington (Centre Wellington) to complete and Energy and Conservation Demand Management Plan (ECDMP) according to Ontario Regulation 507/18 made under the Electricity Act, 1998 (formerly Ontario Green Energy Act Regulation 397/11). The ECDMP is composed of two (2) parts:

1. A summary of the public agency's annual energy consumption and greenhouse gas (GHG) emissions for its operation, and
2. A description of previous, current and proposed measures for conserving energy, reducing energy consumption and managing energy demand, including a forecast of the expected results of the current and proposed measures.

This report presents the five (5) year (2019-2024) corporate ECDMP for Centre Wellington. Wood (previously Amec) completed Centre Wellington's ECDMP for the previous five (5) year cycle (2014-2019). The Centre Wellington facilities consumed a total of 14,690,511 ekWh of total (natural gas and electricity) energy in 2017. The following figure illustrates the breakdown of energy consumption for all 37 facilities, grouped by facility type.

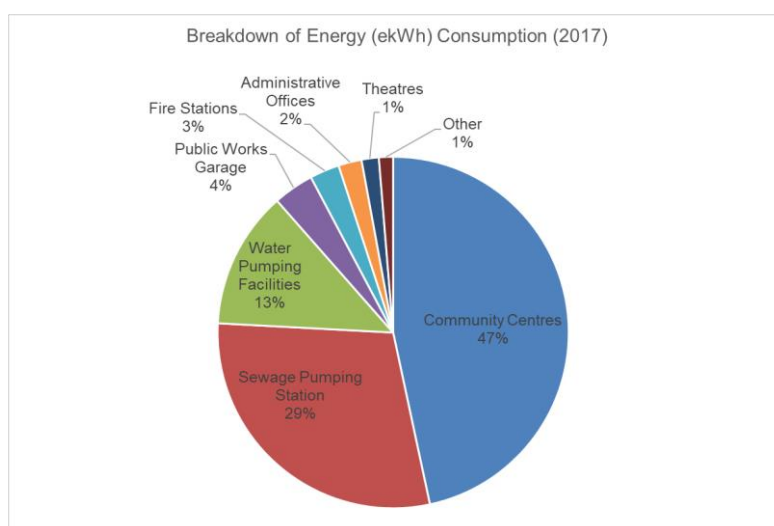


Figure ES-1 2017 Total Energy (ekWh) Consumption Breakdown by Facility Type

High-level energy assessments were conducted at 23 representative facilities including primary operation facilities (ice rinks, indoor swimming pools, administrative offices, community centres and performing arts facilities).

The following energy consuming systems were included in the analysis:

- Heating and cooling equipment and their associated controls;
- Lighting systems and their associated controls;
- Pump and fan energy and their associated controls;
- Plug loads and their associated controls;
- Process loads and their associated controls; and,
- Building enclosure systems.

A series of energy conservation measures (ECMs) were identified and assessed both on the basis of technical and financial feasibility.

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Acronyms and Abbreviations

A/C	air conditioner
AFUE	average fuel utilization efficiency
ASHRAE	American Society of Heating, Refrigeration, and Air-Condition Engineers
BTU	British thermal unit
BTU/hr	BTU per hour
CO ₂ e	greenhouse gas carbon dioxide equivalence
DHW	domestic hot water
ECDMP	energy conservation and demand management plan
ECM	energy conservation measure
ekWh	equivalent kilo-watt hours
EER	energy efficiency ratio
EUI	energy use intensity
°C	degree Celsius
°F	degree Fahrenheit
ft ²	square feet
GHG	green house gas
HVAC	heating, ventilation and air conditioning
IESO	Independent Electricity System Operator
kW	kilowatt
kWh	kilowatt per hour
L	litres
LED	light emitting diode
m ³	cubic meters
MBH	million BTU per hour
MUA	make-up air
NG	natural gas
RT	refrigeration tons
VFD	variable frequency drive
W	Watt
WOOD	Wood Environment & Infrastructure Solutions, Inc

1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood) was retained by the Township of Centre Wellington to assist in the development of its Energy Conservation and Demand Management Plan (ECDMP).

1.1 PURPOSE

This report presents the five (5) year (2019-2024) corporate ECDMP for Centre Wellington. Wood (previously Amec) completed Centre Wellington's ECDMP for the previous five (5) year cycle (2014-2019).

1.1.1 Ontario Regulation 397/11

On July 1, 2014, the former Ontario Green Energy Act Regulation 397/11 (now Ontario Regulation 507/18 of the Electricity Act) requires all public agencies, including municipalities, prepare, publish, and make available to the public, for each building or facility owned or leased by the public agency, the following:

- A record of energy consumption and greenhouse gas (GHG) emissions (to be updated annually); and,
- An energy conservation and demand management plan.

1.1.2 Annual Energy Consumption & Green House Gas (GHG) Emissions Report

Public agencies are required to report annually (due July 1 every year, starting 2014) the energy consumption for each of their facilities/buildings, if:

- They are heated or cooled and the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption; or,
- They are related to the treatment or pumping of water or sewage, whether or not the building or facility is heated or cooled, and the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption.

1.1.3 Energy Conservation and Demand Management Plan

Public agencies are required to prepare an ECDMP every five years. The first ECDMP is due on July 1, 2013, and every fifth year thereafter. The ECDMP is composed of two parts:

1. A summary of the public agency's annual energy consumption and greenhouse gas (GHG) emissions for its operation, and,
2. A description of previous, current and proposed measures for conserving energy, reducing energy consumption and managing energy demand, including a forecast of the expected results of the current and proposed measures.

1.1.4 Commitment to Energy Conservation and Demand Management, Our Goals and Objectives

The Township of Centre Wellington will continue to use existing resources and leverage outside agencies where appropriate to identify energy conservation measures and to act on economically and

technically feasible opportunities in order to conserve energy, reduce operating costs and reduce its environmental footprint.

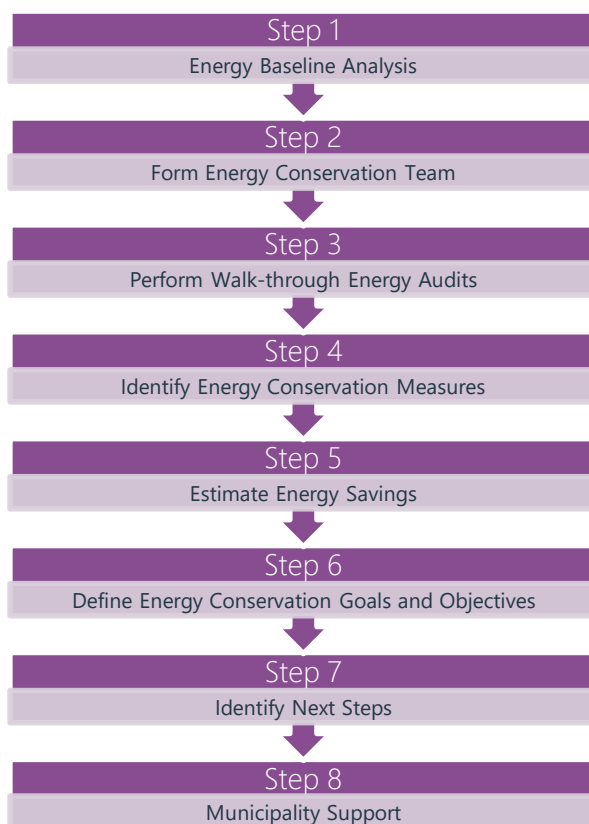
The following goals and objectives have been identified by Centre Wellington in order to help in the execution of its energy conservation and demand management plan.

Table 1-1 ECDMP Goals and Objections

	Goals	Objectives
Education	Use education as a tool to help conserve energy and reduce environmental impact	Incorporate energy efficiency topics into monthly staff safety meetings
Decision-Making	Make energy efficiency a key priority for operations and maintenance decisions and practices	Ensure energy efficiency and conservation is one of the key metrics for all operations and maintenance activities
Economics	Maximize funding opportunities to minimize costs	At the onset of each retrofit or new construction project, consider available incentives and grants
Maintenance	Make decisions that will help reduce maintenance costs	Make reliability one of the key metrics for decision making

2.0 METHODOLOGY

For the development of the ECDMP, the Township of Centre Wellington employed the following approach:



2.1 ENERGY BASELINE ANALYSIS

For each required facility, the Township of Centre Wellington completed the form entitled "Energy Consumption and GHG Emissions Template" listing electricity and gas consumption data for the year 2017, as well as greenhouse gas data (see Appendix B). This energy consumption information was used to establish an energy baseline. An analysis of this data has been conducted and can be seen in Section 3.0.

2.2 ENERGY CONSERVATION TEAM

For the ECDMP, Centre Wellington formed an Energy Conservation Team consisting of representatives from different departments throughout the municipality. This was to ensure collaboration across the Township's departments. Members of the team include:

- Kasey Beirnes, Facility Operations Supervisor;
- Bruce Parking, Manager of Aquatics, Recreation Programming, and Customer Service; and,
- Michael Mullen, Special Projects and Customer Service Supervisor.

2.3 FACILITY ENERGY ASSESSMENTS

The Township of Centre Wellington reporting portfolio includes 37 facilities. High-level energy assessments were conducted at 23 representative facilities including primary operation facilities (ice rinks, indoor swimming pools, administrative offices, community centres and performing arts facilities). These 23 facilities represent 80% of the Townships electricity consumption (kWh), 85% of the natural gas consumption (m³), and 82% of the total energy consumption (ekWh). For each facility, the following information was gathered for analysis purposes:

- Approximate age and condition of building and its energy consuming systems;
- Equipment schedules, capacities and efficiencies;
- Equipment controls;
- Recent (within the past 5 years) conservation measures; and,
- Determination of current and proposed energy conservation measures.

In order to report on previous, current and proposed energy and demand conservation measures, the following energy consuming systems were included in the analysis:

- Heating and cooling equipment and their associated controls;
- Lighting systems and their associated controls;
- Pump and fan energy and their associated controls;
- Plug loads and their associated controls;
- Process loads and their associated controls; and,
- Building enclosure systems.

2.4 ENERGY CONSERVATION AND DEMAND MANAGEMENT MEASURES ANALYSIS

For each required facility, Wood performed an engineering assessment to determine potential conservation measures based on energy opportunities identified during the site walk-through audits. For each opportunity, an analysis was made to estimate the potential demand and energy savings as well as capital cost, allowing a payback period to be established. These analyses were conducted using the best available information.

3.0 BASELINE ENERGY CONSUMPTION ANALYSIS

In 2017, the energy consumption and greenhouse gas (GHG) emissions data for the Township of Centre Wellington was gathered. In total, 37 facilities reported electricity or natural gas consumption (or both). The total indoor floor area for either electricity or natural gas consuming facilities was reported as 320,355 ft². This section illustrates the breakdown of the 2017 electricity and natural gas consumption and its associated GHG emissions. This section also shows the breakdown of energy consumption by facility type.

3.1 ELECTRICITY AND NATURAL GAS CONSUMPTION

Table 3-1 2017 Annual Energy Consumption and GHG Breakdown

Energy Source	Energy Consumption				GHG Emissions	
	Units	Annual Quantity	Equivalent kWh (ekWh) ¹	Percentage of Total	Kg of CO ₂ e/yr ²	Percentage of Total
Electricity	kWh	7,823,610	7,823,610	53.3%	312,944	20.4%
Natural Gas	m ³	645,385	6,866,901	46.7%	1,220,183	79.6%
Total			14,690,511	100%	1,533,127	100%

As illustrated in **Table 3-1**, electricity represents 53.3% of the township’s energy consumption but only 20.4% of it’s GHG emissions. Conversely, natural gas represents 46.7% of the energy consumption but 79.6% of the GHG emissions. The breakdown of electricity and gas can be further seen in **Figure 3-1**.

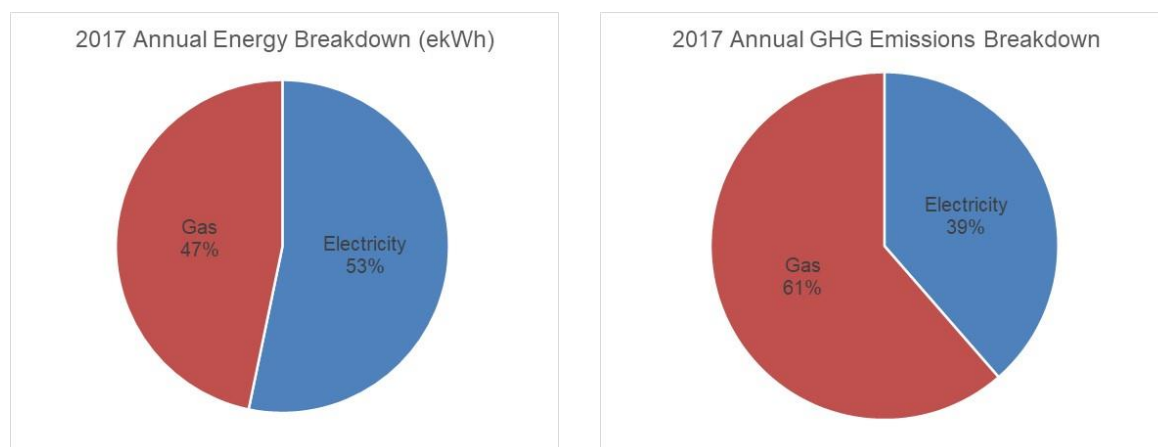


Figure 3-1 Annual Energy and GHG Emission Breakdown

3.2 ELECTRICITY CONSUMPTION BY FACILITY TYPE

The Centre Wellington facilities consumed a total of 7,823,610 kWh of electricity in 2017, corresponding to an energy intensity of 24.4 kWh/ft²/year. Since all facilities consumed electricity, the total indoor floor area of 320,355 ft² for all reported facilities was included in this calculation. The following figure illustrates the breakdown of electricity consumption for the 37 facilities reporting electricity consumption, grouped by facility type. The facility types are: Administrative Offices, Community Centre’s (excluding arena’s), Sewage Pumping Facilities, Water Pumping Facilities, Fire Stations (and associated

¹ Equivalent kWh, ekWh (Electricity: 1.0 ekWh/kWh; Natural Gas: 10.63 ekWh/m³)

² Conversion for GHG emission calculated from data provided in the “Energy Consumption and greenhouse gas emissions data for 2017” data sheet included in Appendix B (Electricity: 0.04 kgCO₂e/kWh; Natural Gas: 1.89 kgCO₂e/m³)

offices), Sports Arena's, Theatres, and Public Works Facilities. As can be seen, Sports Arena's, Sewage Treatment Facilities and Water Pumping Facilities account for 91.6% of the Townships electricity usage.

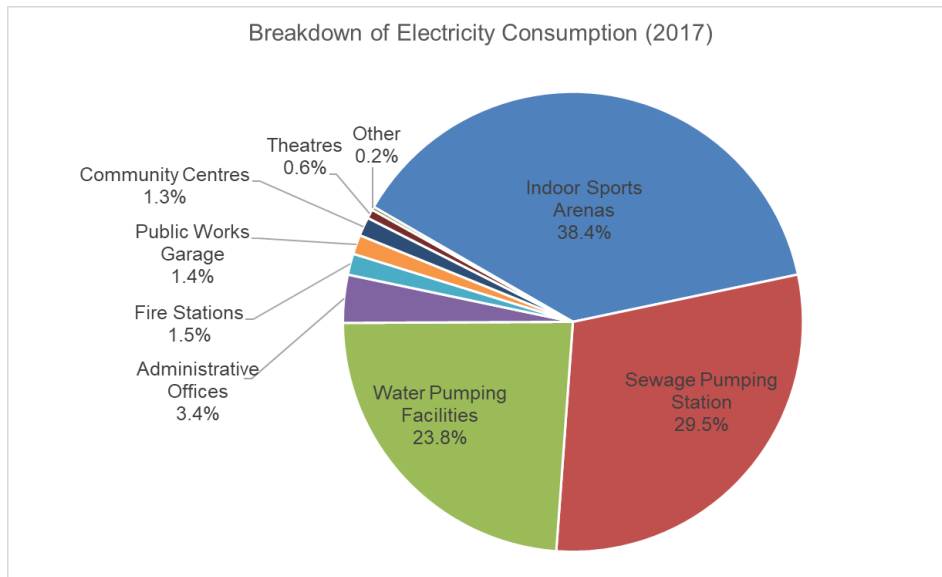


Figure 3-2 2017 Electricity Consumption Breakdown by Facility Type

3.3 NATURAL GAS CONSUMPTION BY FACILITY TYPE

The Centre Wellington facilities consumed a total of 645,385 m³ of natural gas in 2017, corresponding to an energy intensity of 2.3 m³/ft²/year. Since not all facilities consumed natural gas, only those facilities reporting natural gas consumption were included in the analysis. The total indoor floor area for natural gas consuming facilities was reported as 276,676 ft². The following figure illustrates the breakdown of natural gas consumption for the 13 facilities consuming natural gas, grouped by facility type. It will be noted that no Sewage Pumping or Water Pumping Facilities reported any natural gas consumption. As can be seen, Sports Arena's and Sewage Treatment Facilities account for 81.5% of the Townships gas usage, with the Sports Arena's representing close to half (53%) of all gas consumption.

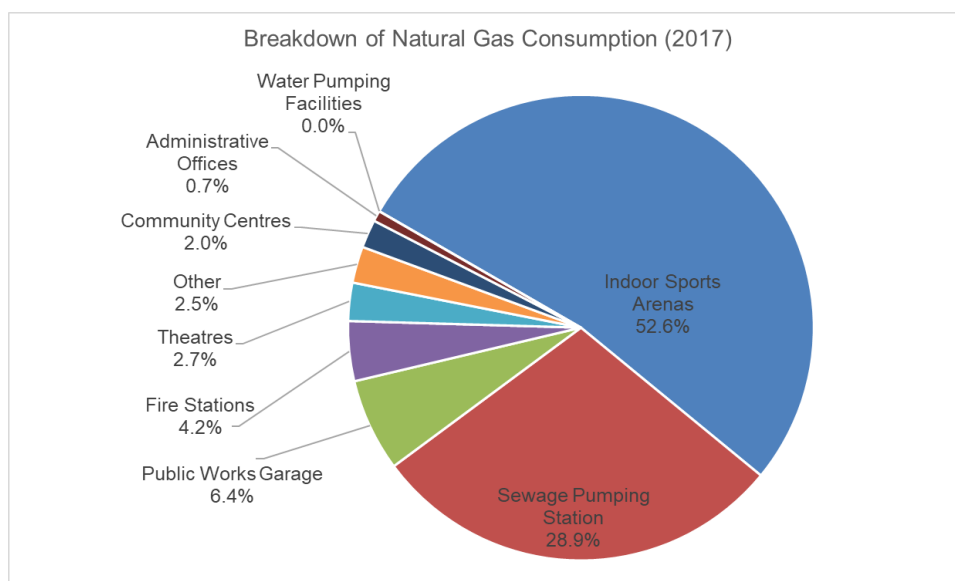


Figure 3-3 2017 Natural Gas Consumption Breakdown by Facility Type

3.4 TOTAL ENERGY CONSUMPTION BY FACILITY TYPE

The Centre Wellington facilities consumed a total of 14,690,511 ekWh of total (natural gas and electricity) energy in 2017, corresponding to an energy intensity of 45.9 ekWh/ft²/year (based on a total reported indoor floor area of 320,355 ft²). The following figure illustrates the breakdown of energy consumption for all 37 facilities, grouped by facility type. As can be seen, Sports Arena's, Sewage Treatment Facilities and Water Pumping Facilities account for 86.9% of the Townships energy usage.

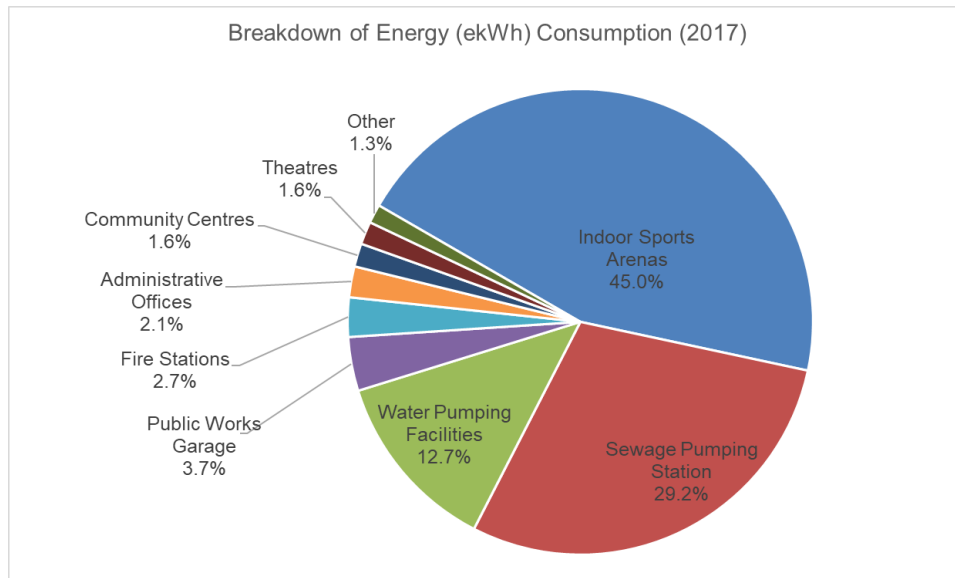


Figure 3-4 2017 Total Energy (ekWh) Consumption Breakdown by Facility Type

3.5 FACILITY-BY-FACILITY ENERGY BREAKDOWN

The Appendix C includes figures that provide a breakdown of the total energy consumption for each of the 37 buildings included in the 2017 reported data. The figures have been grouped based on facility type, of which there are 9 types.

4.0 ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN FINDINGS

Through its commitment to energy conservation and demand management, Centre Wellington has met its requirement to report on the energy use of its facilities, current energy conservation measures, and to evaluate the potential for future energy conservation opportunities.

4.1 PREVIOUS AND CURRENT ENERGY CONSERVATION AND DEMAND MANAGEMENT MEASURES

Centre Wellington regularly incorporates energy conservation into its retrofit practices. Centre Wellington's previous and current energy conservation and demand management measures include:

- Upgrading inefficient fluorescent or incandescent lighting fixtures to LED light fixtures;
- Upgrading inefficient high pressure sodium or metal halide exterior lighting to LED;
- Adding additional lighting controls to reduce consumption outside of high-usage periods;
- Upgrading old Heating, Ventilation, and Air Conditioning (HVAC) units with new high efficiency units;
- Installing programmable thermostats and implementing temperature control set back with optimized scheduling to reduce wasted energy on excessive heating and cooling;
- Upgrading inefficient gas hot water heaters to high efficiency condensing units;
- Installing faucets with low flow (0.5 gpm) aerators;
- Installing low flow (1.5 gpm) shower heads in change room facilities;
- Upgrading old appliances to Energy Star rated and/or high efficiency appliances;
- Installing variable frequency drives in all pumping facilities;
- Recovering biogas from the Fergus waste water treatment plant anaerobic digester to displace natural gas consumption;
- Arena roof replacement with low-emissivity reflective roof;
- New dehumidifier for arena ice pad; and,
- Window and door retrofits at the Elora fire hall.

4.2 IDENTIFIED ENERGY CONSERVATION MEASURES

As part of this plan, energy and demand conservation measures have been identified for each facility. The measures have been listed under five main headings, as follows:

- **Lighting** – *Lighting retrofit and lighting control upgrades, inclusive of both building interior and exterior*
- **HVAC and Domestic Hot Water** – *HVAC control, HVAC upgrades, water efficiency, and domestic hot water upgrades*
- **Building Envelope** – *Insulation upgrade and window/door retrofit opportunities*
- **Office Equipment/Appliance** – *Appliance upgrade and appliance control retrofit opportunities*
- **Process** – *Process upgrades are retrofit opportunities that fall outside of the other categories (e.g. pool heater retrofit)*

Eligible electricity incentives estimated for the energy and demand conservation measures would be provided through the Independent Electricity System Operator (IESO's) SaveOnEnergy Program. SaveOnEnergy has a Retrofit program³ for Municipalities which provide prescriptive and custom stream incentives for applicable measures. Incentives associated with natural gas savings were calculated using Enbridge's Commercial Custom Retrofit Program⁴ according to the Custom Engineering path.

Prescriptive incentives were applied to energy conservation measures where applicable. Note that non-prescriptive incentives may require additional engineering calculations and application support, as determined by the Independent Electricity System Operator (IESO) or Enbridge. Costs associated with the additional effort are not accounted for in the incentives or project costs.

The following utility rates listed in **Table 4-1** were used to calculate cost savings. Representative rates for 2021 were obtained from the Ontario Energy Board⁵.

Table 4-1 Utility Rates for Cost Savings

Item	Value	Units
Electricity Rate	0.13	\$/kWh
Natural Gas Rate	0.30	\$/m ³
Propane Rate	0.60	\$/L

Greenhouse gas emission reductions were calculated based on the results from the detailed analysis. **Table 4-2** lists the greenhouse gas emission factors used.

Table 4-2 Greenhouse Gas Emission Factors

Fuel Source	Conversion Factor
Electricity	0.1 Tonnes/MWh
Natural Gas	0.0508 Tonnes/GJ
Propane	0.0607 Tonnes/GJ

The identified energy conservation measures can be seen in Appendix D.

4.3 RENEWABLE ENERGY GENERATION

Centre Wellington does not currently have any renewable energy generation facilities, any ground source energy, or any solar energy being harnessed. There is also currently no plan in place to implement any of the aforementioned technologies.

³ SaveOnEnergy. Accessed 2021-10-15: <https://saveonenergy.ca/For-Business-and-Industry/Programs-and-incentives>

⁴ Enbridge. Accessed 2021-10-15: <https://www.enbridgegas.com/business-industrial/incentives-conservation/programs-and-incentives/retrofits-custom-projects/commercial-custom-retrofit-program>

⁵ Ontario Energy Board. Accessed 2021-10-15: <https://www.oeb.ca/rates-and-your-bill>

5.0 NEXT STEPS

Centre Wellington will continue to incorporate energy conservation into its regular practices and will use the identified energy conservation measures to help make decisions moving forward. For some of the measures, a need for more detailed analysis and investigation has been identified and will be considered based on funding opportunities and economic viability.

As part of the Energy and Demand Management Plan, Centre Wellington will continue its commitment to gather the energy and emission data on an annual basis for each of its facilities.

6.0 ENERGY CONSERVATION AND DEMAND MANAGEMENT PLAN APPROVAL

As part of the regulation, confirmation that the energy conservation and demand management plan has been approved by the public agency's senior management is required. This approval has been included in Appendix E of this report.

Appendix A - Ontario Regulation 397/11

Appendix A Ontario Regulation 507/18 (formerly Ontario Regulation 397/11)

ONTARIO REGULATION 507/18

made under the

ELECTRICITY ACT, 1998

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Filed: December 14, 2018

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Broader public sector: energy reporting and Conservation and Demand Management Plans

Definitions

1. In this Regulation,

"municipal service board" means,

- (a) a municipal service board or joint municipal service board established or continued under the *Municipal Act, 2001*,
- (b) a city board or joint city board established or continued under the *City of Toronto Act, 2006*, or
- (c) a joint board established in accordance with a transfer order made under the *Municipal Water and Sewage Transfer Act, 1997*; ("commission de services municipaux")

"post-secondary educational institution" means a university in Ontario, a college of applied arts and technology in Ontario or another post-secondary educational institution in Ontario, if the university, college or institution receives an annual operating grant; ("établissement d'enseignement postsecondaire")

"public hospital" means,

- (a) a hospital within the meaning of the *Public Hospitals Act*, or
- (b) the University of Ottawa Heart Institute/Institut de cardiologie de l'Université d'Ottawa; ("hôpital public")

"school board" means a board within the meaning of the *Education Act*. ("conseil scolaire")

Application

2. Sections 4, 5 and 6 apply only to public agencies prescribed by section 3.

Public agencies

3. The following are prescribed as public agencies for the purposes of sections 25.35.2 and 25.35.3 of the Act:

1. Every municipality.
2. Every municipal service board.
3. Every post-secondary educational institution.
4. Every public hospital.
5. Every school board.

Energy conservation and demand management plans

4. (1) A public agency shall prepare, publish, make available to the public and implement energy conservation and demand management plans or joint plans in accordance with section 25.35.2 of the Act and with this Regulation.

(2) An energy conservation and demand management plan is composed of two parts as follows:

1. A summary of the public agency's annual energy consumption and greenhouse gas emissions for its operations.
2. 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.

Summary of annual energy consumption and greenhouse gas emissions

5. (1) Subject to subsections (2) and (4), a summary of the public agency's annual energy consumption and greenhouse gas emissions must include a list of the energy consumption and greenhouse gas emissions for the year with respect to each of the public agency's operations that are set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs and that are conducted in buildings or facilities the public agency owns or leases that,

- (a) are heated or cooled and in respect of which the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption; or
- (b) are related to the treatment of water or sewage, whether or not the building or facility is heated or cooled, and in respect of which the public agency is issued the invoices and is responsible for making the payments for the building or facility's energy consumption.

(2) If only part of a building or facility where an operation is conducted is heated or cooled, the public agency's summary referred to in subsection (1) must only include energy consumption and greenhouse gas emissions for the part of the building or facility where the operation is conducted that is heated or cooled.

(3) The public agency's summary referred to in subsection (1) must be prepared using the form entitled "Energy Consumption and Greenhouse Gas Emissions Reporting" that is available from the Ministry and must include the following information and calculations for each of the public agency's operations:

1. The address at which the operation is conducted.
2. The type of operation.
3. The total floor area of the indoor space in which the operation is conducted and, in cases where subsection (4) applies, the total indoor floor area of the building or facility in which the operation is conducted.
4. A description of the days and hours in the year during which the operation is conducted and, if the operation is conducted on a seasonal basis, the period or periods during the year when it is conducted.
5. The types of energy purchased for the year and consumed in connection with the operation.
6. The total amount of each type of energy purchased for the year and consumed in connection with the operation.
7. The total amount of greenhouse gas emissions for the year with respect to each type of energy purchased and consumed in connection with the operation.
8. The greenhouse gas emissions and energy consumption for the year from conducting the operation, calculating,
 - i. the annual mega watt hours per mega litre of water treated and distributed, if the operation is a water works,
 - ii. the annual mega watt hours per mega litre of sewage treated and distributed, if the operation is a sewage works, or
 - iii. per unit of floor space of the building or facility in which the operation is conducted, in any other case.

(4) If a public agency conducts, in the same building or facility, more than one operation set out in Table 1 for the type of public agency to which the public agency belongs, it shall allocate the total amount of energy purchased and consumed for the year to the operation that occupies the most indoor floor area in the building or facility, and if more than one operation occupies the same amount of indoor floor area, may allocate the total amount of energy to any one of them.

(5) In preparing its annual Energy Consumption and Greenhouse Gas Emissions Reporting form, a public agency may exclude its energy consumption and greenhouse gas emissions relating to its temporary use of an emergency or back-up generator in order to continue operations.

(6) On or before July 1 in each year, every public agency shall submit to the Minister, publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office the public agency's Energy Consumption and Greenhouse Gas Emissions Reporting form for operations conducted in the year following the year to which the last annual form related.

(7) The following information, if applicable, must also be submitted, published and made available to the public with every Energy Consumption and Greenhouse Gas Emissions Reporting form:

1. If the operation is a school operated by a school board,
 - i. the number of classrooms in temporary accommodations at the school during the year, and
 - ii. whether there is an indoor swimming pool in the school.
2. If the public agency is a public hospital, whether a facility operated by the public hospital is a chronic or acute care facility, or both.

Energy conservation and demand management measures

6. (1) Every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office,

- (a) the information referred to in subsection 25.35.2 (3) of the Act with respect to each of the public agency's operations set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs;
- (b) the information referred to in paragraph 2 of subsection 4 (2) of this Regulation with respect to each of the public agency's operations set out in Table 1 of this Regulation for the type of public agency to which the public agency belongs; and
- (c) the following information:
 - (i) information on the public agency's annual energy consumption during the last year for which complete information is available for a full year,
 - (ii) the public agency's goals and objectives for conserving and otherwise reducing energy consumption and managing its demand for energy,
 - (iii) the public agency's proposed measures under its energy conservation and demand management plan,
 - (iv) cost and saving estimates for its proposed measures,
 - (v) a description of any renewable energy generation facility operated by the public agency and the amount of energy produced on an annual basis by the facility,
 - (vi) a description of,
 - (A) the ground source energy harnessed, if any, by ground source heat pump technology operated by the public agency,
 - (B) the solar energy harnessed, if any, by thermal air technology or thermal water technology operated by the public agency, and
 - (C) the proposed plan, if any, to operate heat pump technology, thermal air technology or thermal water technology in the future,
 - (vii) the estimated length of time the public agency's energy conservation and demand management measures will be in place, and
 - (viii) confirmation that the energy conservation and demand management plan has been approved by the public agency's senior management.

(2) In addition to publishing and making available the required information with respect to the operations mentioned in clauses (1) (a) and (b), a public agency may also publish information with respect to any other operation that it conducts.

(3) On or before July 1, 2019 and on or before every fifth anniversary thereafter, every public agency shall publish on its website and intranet site, if it has either or both, and make available to the public in printed form at its head office all of the information that is required to be published and made available under subsection (1), the Energy Consumption and Greenhouse Gas Emissions Reporting form that is required to be submitted and published on or before July 1 of that year and the following information:

1. A description of current and proposed measures for conserving and otherwise reducing energy consumption and managing its demand for energy.
2. A revised forecast of the expected results of the current and proposed measures.
3. A report of the actual results achieved.
4. A description of any proposed changes to be made to assist the public agency in reaching any targets it has established or forecasts it has made.



Commencement

7. This Regulation comes into force on the later of the day section 2 of the *Green Energy Repeal Act, 2018* comes into force and the day this Regulation is filed.

TABLE 1

Column 1 Item	Column 2 Type of public agency	Column 3 Operation
1.	Municipality	<ol style="list-style-type: none"> 1. Administrative offices and related facilities, including municipal council chambers. 2. Public libraries. 3. Cultural facilities, indoor recreational facilities and community centres, including art galleries, performing arts facilities, auditoriums, indoor sports arenas, indoor ice rinks, indoor swimming pools, gyms and indoor courts for playing tennis, basketball or other sports. 4. Ambulance stations and associated offices and facilities. 5. Fire stations and associated offices and facilities. 6. Police stations and associated offices and facilities. 7. Storage facilities where equipment or vehicles are maintained, repaired or stored. 8. Buildings or facilities related to the treatment of water or sewage. 9. Parking garages.
2.	Municipal service board	<ol style="list-style-type: none"> 1. Buildings or facilities related to the treatment of water or sewage.
3.	Post-secondary educational institution	<ol style="list-style-type: none"> 1. Administrative offices and related facilities. 2. Classrooms and related facilities. 3. Laboratories. 4. Student residences that have more than three storeys or a building area of more than 600 square metres. 5. Student recreational facilities and athletic facilities. 6. Libraries. 7. Parking garages.
4.	School board	<ol style="list-style-type: none"> 1. Schools. 2. Administrative offices and related facilities. 3. Parking garages.
5.	Public hospital	<ol style="list-style-type: none"> 1. Facilities used for hospital purposes. 2. Administrative offices and related facilities.

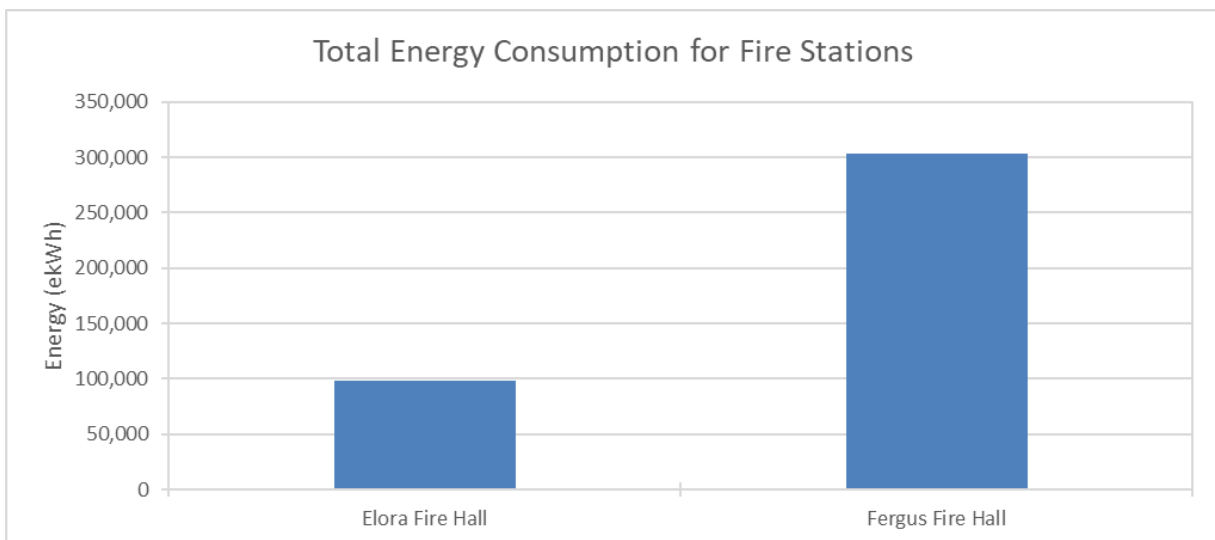
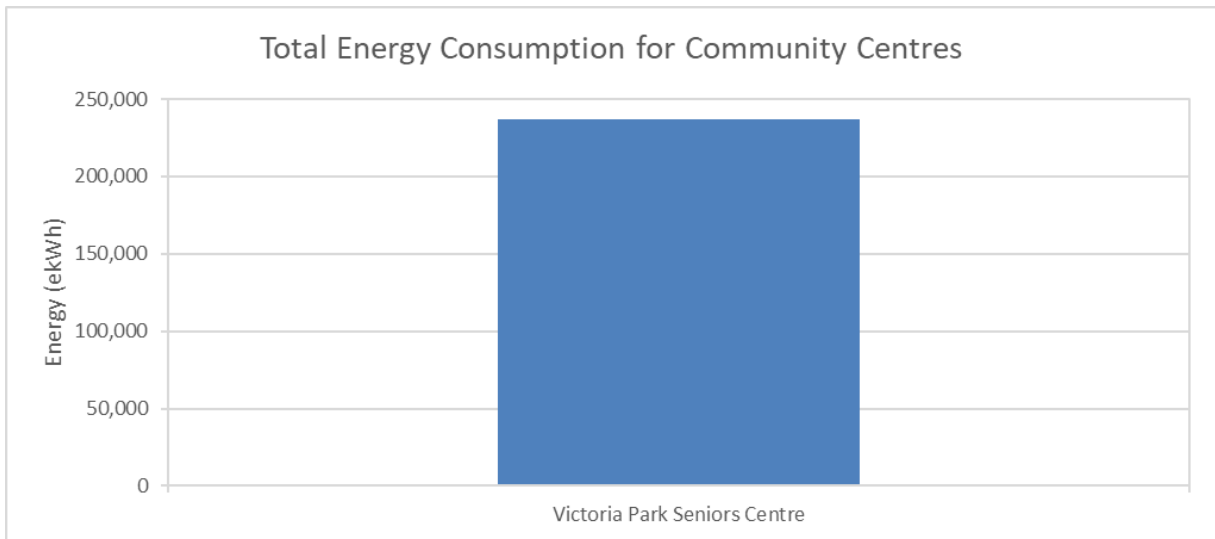
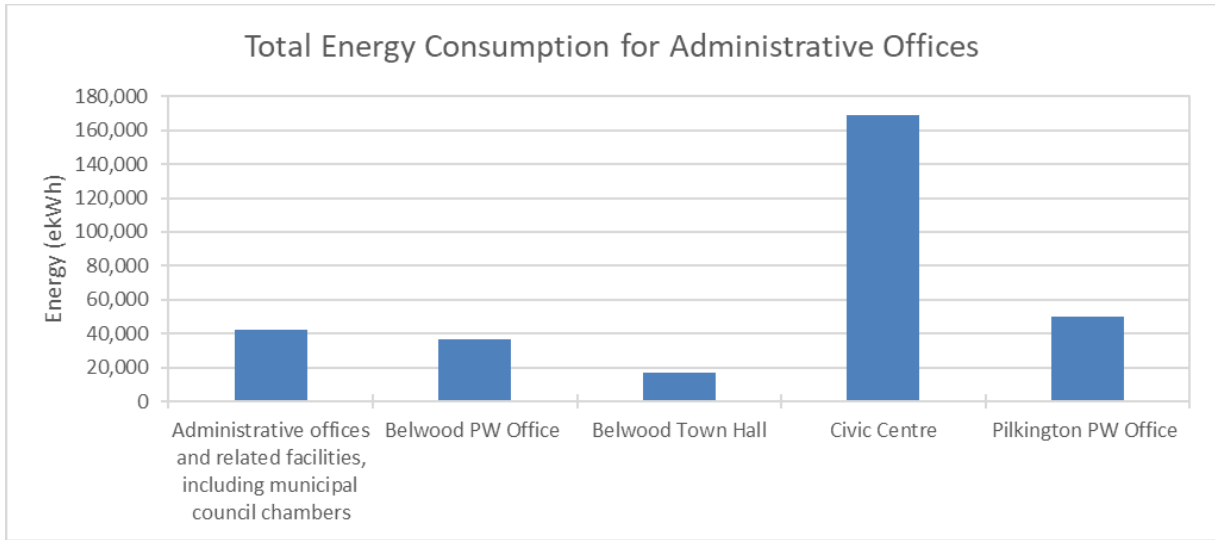


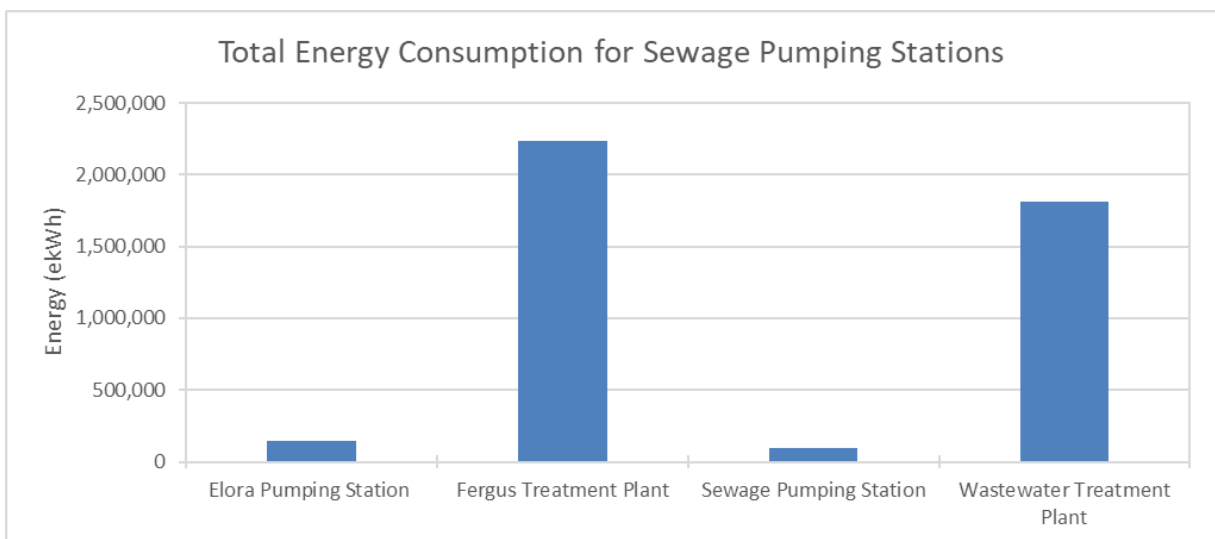
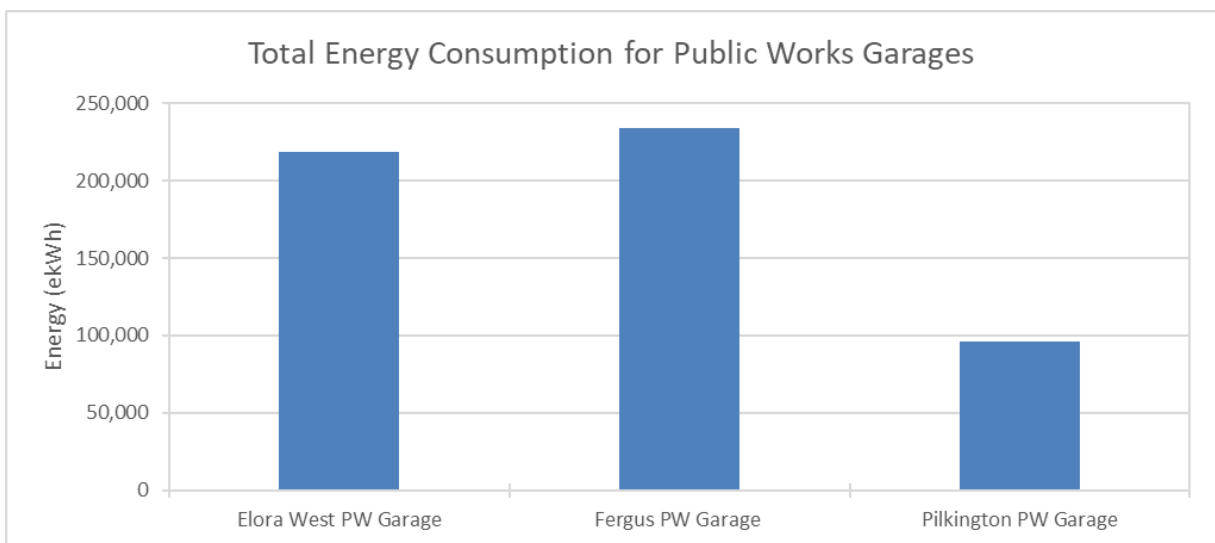
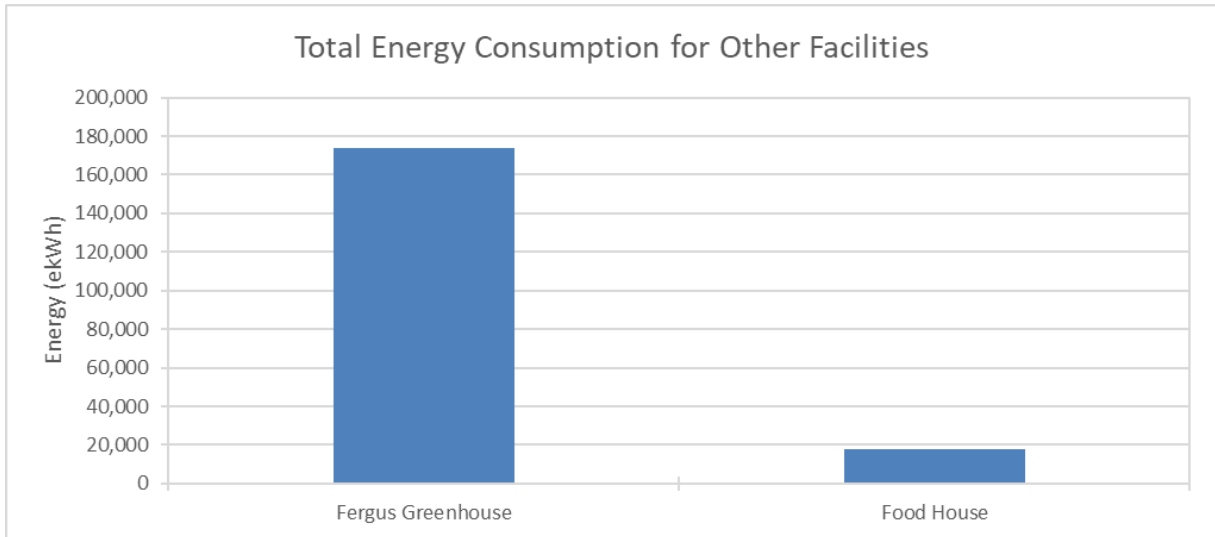
Appendix B – Energy Consumption and Greenhouse Gas Emissions Data for 2017

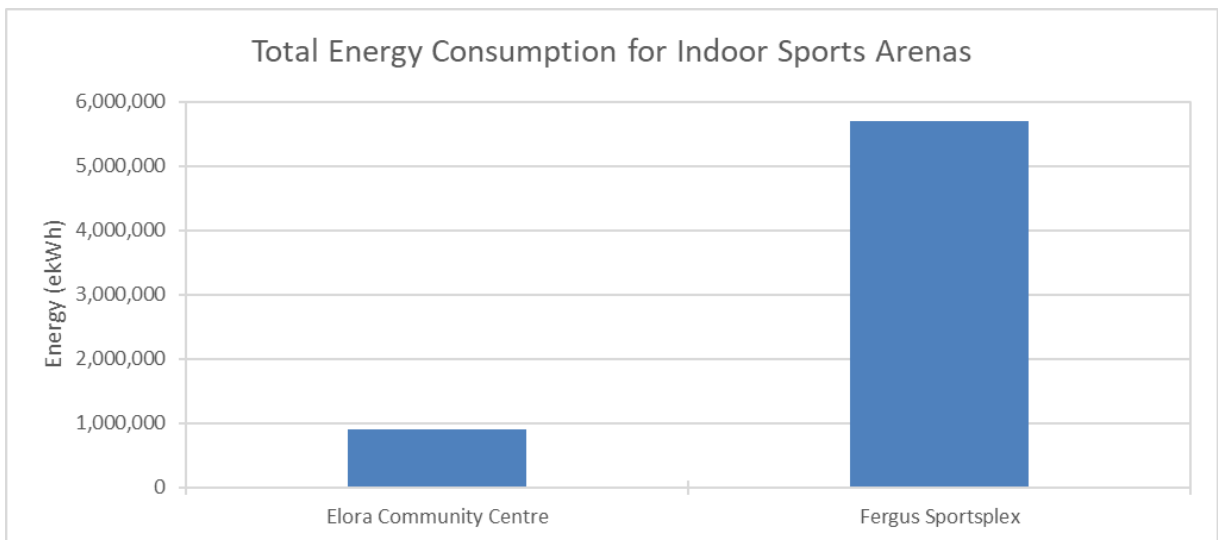
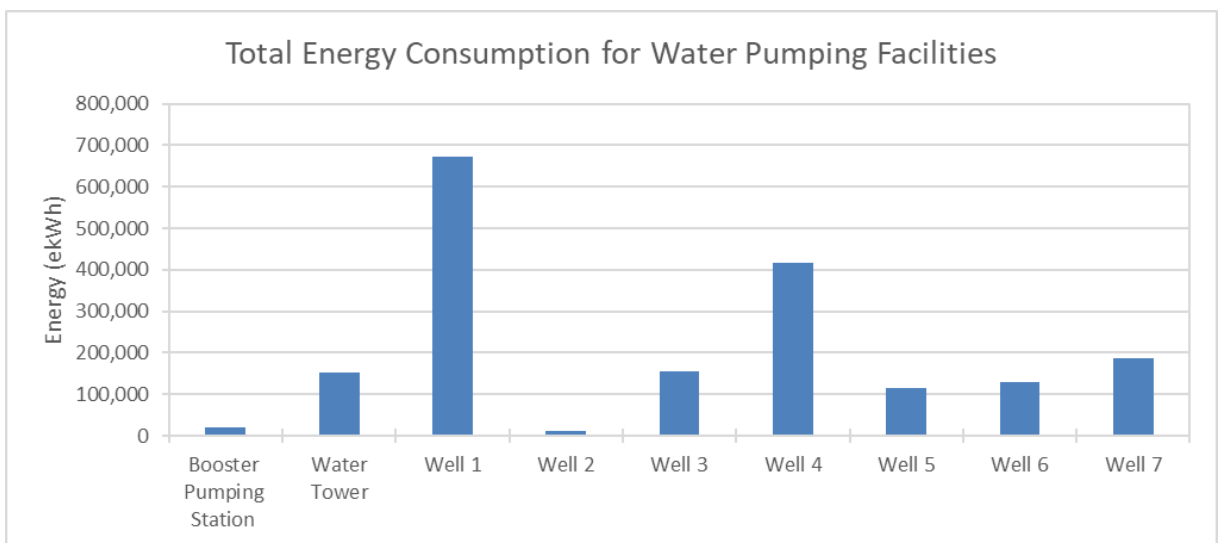
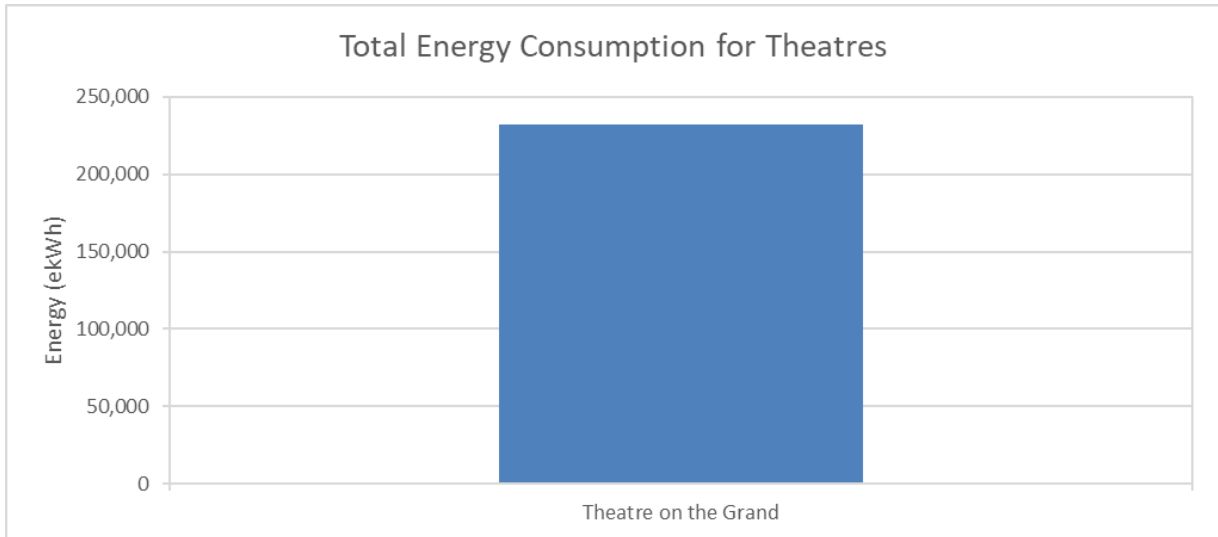
Appendix B Energy Consumption and Greenhouse Gas Emissions Data For 2017

Appendix C – 2017 Facility-By-Facility Energy Breakdown

Appendix C 2017 Facility-By-Facility Energy Breakdown







Appendix D – Identified Energy Conservation Measures

Appendix D Identified Energy Conservation Measures



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Pilkington Public Works Office
Address: 7444 Wellington Rd 21

Building Area: 3,032 sq ft

Primary Use: Office

Heating System: Gas-fired furnace & electric baseboards
Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Replace all incandescent lighting with LED equivalents	1,176	0.56	12.0	-	\$100	\$100	\$0	\$200	0.1	\$125	0.63	-	0.6
HVAC & Domestic Hot Water															
H01	HVAC Upgrade	Upgrade outdoor condensing unit with new high efficiency condensing unit (serving ground floor)	1,344	1.95	6	-	\$134	\$100	\$0	\$234	0.1	\$3,500	14.96	\$160	14.3
H02	DHW Upgrade	Replace existing hot water heaters with new high efficiency condensing unit	-	-	-	456	\$0	\$0	\$140	\$140	0.9	\$1,500	10.71	\$100	10.0
TOTAL			2,520	3		456	\$234	\$200	\$140	\$574	1.1	\$5,125	8.93	\$260	8.5

Previous Energy Conservation Retrofits

- Lighting retrofit (T8)
- New split AC unit (serving upstairs office)
- New furnace (serving ground floor office)
- New windows
- New refrigerator

Recent Energy Conservation Retrofits

- Add low flow (0.5 gpm) aerators to all washroom faucets
- Use programmable thermostats for electric baseboards and program a temperatures reset for unoccupied hours

Incentives

- H01 SaveOnEnergy - Prescriptive Stream - HVAC - Split System & Single Package
H02 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Pilkington Public Works Garage
Address: 7444 Wellington Rd 21

Building Area: 5,502 sq ft

Primary Use: Public Works Garage

Heating System: Gas-fired furnace & electric baseboards
Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
HVAC & Domestic Hot Water															
H01	DHW Upgrade	Replace existing hot water heaters with new high efficiency condensing unit	-	-	-	150	\$0	\$0	\$50	\$50	0.3	\$1,500	30.0	\$30	29.4
TOTAL			0	0		150	\$0	\$0	\$50	\$50	0.3	\$1,500	30.0	\$30	29.4

Previous Energy Conservation Retrofits

- Lighting retrofit (T8)
- New split AC unit (serving upstairs office)
- New furnace (serving ground floor office)
- New windows
- New refrigerator

Recent Energy Conservation Retrofits

- Add low flow (0.5 gpm) aerators to all washroom faucets
- Replace exterior wall packs with LED wall packs
- Upgrade to high efficiency gas tube heaters
- Use programmable thermostats for electric baseboards and program a temperatures reset for unoccupied hours

Incentives

H01 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Elora West Public Works Garage
Address: 110 Park Rd, Elora

Building Area: 11,562 sq ft

Primary Use: Public Works Garage

Heating System: Electric baseboards & tube heaters (garage)
Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Replace garage lighting with LED Fixtures	23,964	7.59	12	-	\$2,400	\$800	\$0	\$3,200	2.4	\$4,550	1.4	\$1,350	1.0
L02	Lighting Retrofit	Replace all T12 lamps with LED Fixtures	596	0.28	12.0	-	\$100	\$0	\$0	\$100	0.1	\$800	8.0	\$320	4.8
Process															
P01	Process Upgrade	Replace existing gas-fired power washer with new high efficiency unit	-	-	-	383	\$0	\$0	\$110	\$110	0.7	\$2,000	18.2	\$80	17.5
TOTAL			24,560	8		383	\$2,500	\$800	\$110	\$3,410	3.2	\$7,350	2.2	\$1,750	1.6

Previous Energy Conservation Retrofits

- Lighting retrofit (T8)
- New refrigerator

Recent Energy Conservation Retrofits

- Add low flow (0.5 gpm) aerators to all washroom faucets
- Replace exterior wall packs with LED wall packs
- Replace existing hot water heaters with new high efficiency condensing unit
- Replace through-wall AC units with new high efficiency units
- Upgrade to high efficiency gas tube heaters
- Use programmable thermostats for electric baseboards and program a temperatures reset for unoccupied hours

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- H02 Enbridge - Custom Stream - \$0.20/m3 for natural gas saved



Energy Conservation & Demand Management Plan Township of Centre Wellington

Site: Elora Fire Hall
Address: 72 Wellington Rd 7, Elora

Building Area: 5,450 sqft

Primary Use: Fire Hall

Heating System: Gas-fired furnace (tube heaters in bay)

Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
HVAC & Domestic Hot Water															
H01	Water Efficiency	Add low flow (0.5 GPM) aerators to all washroom faucets	-	-	-	223	\$0	\$0	\$70	\$70	0.4	\$11	0.2	-	0.2
H02	Water Efficiency	Add low flow (1.5 GPM) shower head to all changerooms	-	-	-	286	\$0	\$0	\$100	\$100	0.5	\$70	0.7	-	0.7
H03	DHW Upgrade	Replace existing hot water heaters with new high efficiency condensing unit	-	-	-	286	\$0	\$0	\$100	\$100	0.5	\$1,500	15.0	\$60	14.4
Building Envelope															
B01	Insulation Upgrade	Add 2 inches of spray foam to all outside walls	1,469	8	6	1,143	\$100	\$400	\$300	\$800	2.3	\$19,075	23.8	\$230	23.6
Office Equipment/Appliances															
O01	Appliance Upgrade	Upgrade to Energy Star fridge/freezer	1,183	0.5	12	-	\$120	\$50	\$0	\$170	0.1	\$1,500	8.8	\$50	8.5
TOTAL			2,651	8		1,938	\$220	\$450	\$570	\$1,240		\$22,156	17.9	\$340	17.6

Previous Energy Conservation Retrofits

- Lighting retrofit (T5)
- RTU retrofit (serving offices)
- Insulated bay door

Recent Energy Conservation Retrofits

- Upgrade to Energy Star certified windows
- Upgrade to fully insulated bay doors
- Upgrade to LED lighting meeting room
- Upgrade to high efficiency gas tube heaters

Incentives

- H01 \$0.20/m³ for natural gas saved
- H02 \$0.20/m³ for natural gas saved
- H03 \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Clyde Street Sewage Pumping Station
Address: 40 High St., Elora

Building Area: 1,496 sq ft

Primary Use: Facilities related to the pumping of sewage

Heating System: electric
Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Control	Occupancy sensors for interior lights	981	-	-	-	\$100	\$0	\$0	\$100	0.1	\$100	1.0	-	1.0
L02	Lighting Retrofit	Replace exterior lighting with LED lighting	524	0.12	12	-	\$50	\$10	\$0	\$60	0.1	\$175	2.9	\$45	2.2
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	10,975	3	6	-	\$1,100	\$200	\$0	\$1,300	1.1	\$1,000	0.8	-	0.8
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	29,900	2	8	-	\$3,000	\$100	\$0	\$3,100	3.0	\$5,236	1.7	\$2,100	1.0
TOTAL			42,381	5		0	\$4,250	\$310	\$0	\$4,560	4.2	\$6,511	1.4	\$2,145	1.0

Previous Energy Conservation Retrofits

- Upgrade facility
- Efficient light fixtures

Recent Energy Conservation Retrofits

- Partial upgrade of exterior lighting
- VFD control of pump

Incentives

- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- B01 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Civic Centre
Address: 1 MacDonald Square, Elora



Building Area: 12,000

Primary Use: Office

Heating System: Gas-fired furnace
Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L02	Lighting Retrofit	Replace all exterior lights with LED	1,100	0.2	12	-	\$100	\$0	\$0	\$100	0.1	\$360	3.6	\$30	3.3
TOTAL			1,100	0.2		0	\$100	\$0	\$0	\$100	0.1	\$360	3.6	\$30	3.3

Previous Energy Conservation Retrofits

- Lighting retrofit (primarily T8 + LED)
- Roof retrofit with increased insulation
- HVAC units
- A/C system for server
- Virtualization of server
- Energy Star printers and computer screens

Recent Energy Conservation Retrofits

- Add low flow (0.5 GPM) aerators to all washroom faucets
- Increase server room setpoint from 21°C to 26°C
- Program a temperature setback for overnight hours
- Reduce light fixtures in overlit areas
- Replace all non-CFL exterior lights with CFLs
- Replace existing furnace serving the north west end of both floors with a high efficiency furnace
- Replace existing gas hot water heater with new high efficiency condensing unit

Incentives

L02 SaveOnEnergy - Prescriptive Stream - Lighting



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Elora Community Centre
Address: 60 David St West, Elora

Building Area: 34,211

Primary Use: Arena + Community Centre

Heating System: Gas-fired furnace (electric in arena)
Air Conditioning: DX cooling (ammonia for ice surface)

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Replace all exterior flood lights for baseball fields with 500 W LED flood lights	8,170	19	6	-	\$800	\$1,000	\$0	\$1,800	0.8	\$39,000	21.7	\$7,600	17.4
HVAC & Domestic Hot Water															
H01	HVAC Upgrade	Replace existing RTU (serving community hall) with new high efficiency RTU with Demand Control Ventilation (DCV)	3,279	8	6	1,329	\$300	\$400	\$400	\$1,100	2.8	\$7,000	6.4	\$2,180	4.4
H02	DHW Upgrade	Replace existing hot water heaters with new high efficiency condensing unit	-	-	-	8,330	\$0	\$0	\$2,500	\$2,500	15.7	\$6,000	2.4	\$1,700	1.7
Building Envelope															
B01	Insulation Upgrade	Add 2 inches of spray foam to all outside walls	43,718	53	6	3,987.78	\$4,400	\$2,700	\$1,200	\$8,300	11.9	\$120,000	14.5	\$800	14.4
TOTAL			55,167	79		13,647	\$5,500	\$4,100	\$4,100	\$13,700	31.3	\$172,000	12.6	\$12,280	11.7

Previous Energy Conservation Retrofits

- Lighting retrofit (T5 & T8)
- RTU retrofit (serving dressing rooms, offices, lobby)
- Cooling tower retrofit (arena)
- Ceiling retrofit (arena)

Recent Energy Conservation Retrofits

- Add low flow (0.5 gpm) aerators to all washroom faucets
- Add low flow (1.5 gpm) shower head to all changerooms
- Lighting retrofit (Replaced T12 Lighting Systems)

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 SaveOnEnergy - Prescriptive Stream - HVAC - RTU Controls / DCV
- H02 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved
- B01 \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Well E3
Address: 54 First Line, Elora

Building Area: 1,130 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric

Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Control	Occupancy sensors for interior lights	457	-	-	-	\$50	\$0	\$0	\$50	0.05	\$100	2.0	\$15	1.7
L02	Lighting Retrofit	Replace exterior lighting with LED lighting	3,145	0.72	12	-	\$310	\$100	\$0	\$410	0.3	\$1,050	2.6	\$270	1.9
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	70,240	21	6	-	\$7,000	\$1,100	\$0	\$8,100	7.0	\$8,000	1.0	-	1.0
Building Envelope															
B02	Insulation Upgrade	Upgrade building insulation	41,029	13	8	-	\$4,100	\$900	\$0	\$5,000	4.1	\$3,955	0.8	-	0.8
TOTAL			114,871	22		0	\$7,360	\$1,200	\$0	\$8,560	7.4	\$9,150	1.1	\$285	1.0

Previous Energy Conservation Retrofits

- Some lighting retrofit (T8)
- VFD control of well pump

Recent Energy Conservation Retrofits

- None

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- B02 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh



Energy Conservation & Demand Management Plan Township of Centre Wellington

Site: Bridge Street Water Tower
Address: 125 Bridge St., Elora

Building Area: 269 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric

Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Interior incandescent light retrofit to LED	624	0.41	12	-	\$60	\$40	\$0	\$100	0.1	\$100	1.0	-	1.0
L02	Lighting Control	Occupancy sensors for interior lights	869	-	-	-	\$90	\$0	\$0	\$90	0.1	\$200	2.2	\$30	1.9
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	4,390	1	6	-	\$400	\$100	\$0	\$500	0.4	\$2,000	4.0	\$50	4.0
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	4,297	1	8	-	\$400	\$100	\$0	\$500	0.4	\$942	1.9	\$430	1.9
TOTAL			10,179	3		0	\$950	\$240	\$0	\$1,190	1.0	\$3,242	2.7	\$510	2.3

Previous Energy Conservation Retrofits

• None

Recent Energy Conservation Retrofits

• None

Incentives

- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 SaveOnEnergy - Prescriptive Stream - Programmable temperature control for electric space heating and cooling
- B01 SaveOnEnergy - Custom (Non-Lighting) Stream - \$800/kW



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Water Booster Pumping Station
Address: 460 Wellington Road 18

Building Area: 549 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric

Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Control	Occupancy sensors for interior lights	736	-	-	-	\$70	\$0	\$0	\$70	0.1	\$100	1.4	\$15	1.2
L02	Lighting Retrofit	Replace exterior lighting with LED lighting	1,048	0.24	12	-	\$100	\$20	\$0	\$120	0.1	\$350	2.9	\$90	2.2
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	21,950	7	6	-	\$2,200	\$340	\$0	\$2,540	2.2	\$2,000	0.8	-	0.8
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	4,869	4	8	-	\$500	\$300	\$0	\$800	0.5	\$1,922	2.4	\$500	1.8
TOTAL			28,604	11		0	\$2,870	\$660	\$0	\$3,530	2.9	\$4,372	1.2	\$605	1.1

Previous Energy Conservation Retrofits

- None

Recent Energy Conservation Retrofits

- Optimize daily runtime of booster pump
- VFD control of pump

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- B01 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Sportsplex Fergus
Address: 550 Belsyde Avenue, Fergus

Building Area: 163,305 sq ft

Primary Use: Indoor sports arena

Heating System: Gas-fired furnace (electric in arena)
Air Conditioning: DX cooling (ammonia for ice surface)

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Occupancy sensors in intermittent use areas (change rooms, board rooms, community halls, offices, mech rooms, storage, etc.)	48,800	-	-	-	\$4,880	\$0	\$0	\$4,880	4.9	4,000	0.8	-	0.8
HVAC & Domestic Hot Water															
H01	HVAC Upgrade	Economizers and Demand Control Ventilation on all AHUs (excluding swimming pool area which requires further investigation)	48,800	-	-	-	\$4,880	\$0	\$0	\$4,880	4.9	\$60,000	12.3	\$30,000	6.1
H02	HVAC Upgrade	HRVs on all AHUs	-	-	-	9,200	\$0	\$0	\$2,800	\$2,800	17.4	\$100,000	35.7	\$1,900	35.0
H03	HVAC Upgrade	Replace dehumidifiers in Pad B	29,000	-	-	4,600	\$2,900	\$0	\$1,400	\$4,300	11.6	\$100,000	23.3	\$3,000	22.6
H04	DHW Upgrade	Replace existing hot water heaters with new high efficiency condensing unit	-	-	-	9,200	\$0	\$0	\$2,800	\$2,800	17.4	\$6,000	2.1	\$1,840	1.5
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	29,300	-	-	13,900	\$2,900	\$0	\$4,200	\$7,100	29.2	\$285,784	40.3	\$2,900	39.8
Process															
P01	Process Upgrade	Add variable frequency drives and associated controls to all pumps (exceeding 5 HP) to reduce pump speed during part load operation	487,616	83	12	-	\$48,800	\$8,520	\$0	\$57,320	48.8	\$67,500	1.2	\$10,200	1.0
P02	Process Upgrade	Upgrade all pump motors to premium efficiency	36,571	135	12	-	\$3,700	\$13,770	\$0	\$17,470	3.7	\$45,000	2.6	\$15,000	1.7
Office Equipment/Appliances															
O01	Appliance Control	Timer control on kitchen and canteen fumehood	1,306	-	-	-	\$100	\$0	\$0	\$100	0.1	\$100	1.0	-	1.0
TOTAL			681,393	218		36,900	\$ 68,160	\$ 22,290	\$ 11,200	\$ 101,650	137.9	\$ 668,384	6.6	\$ 64,840	5.9

Recent Energy Conservation Retrofits

- Pad B Ice Surface LED Lighting
- Pool LED Lighting
- Street Scape LED Lighting
- Add low flow (0.5 gpm) aerators to all washroom faucets
- Add low flow (1.5 gpm) shower head to all changerooms
- Implementation of a Building Automation System (BAS)

Incentives

- H01 SaveOnEnergy - Prescriptive Stream - HVAC - RTU Controls / DCV
- H02 Enbridge - Custom Stream - \$0.20/m3 for natural gas saved
- H03 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh
- H04 Enbridge - Custom Stream - \$0.20/m3 for natural gas saved
- B01 Enbridge - Custom Stream - \$0.20/m3 for natural gas saved
- P01 SaveOnEnergy - Prescriptive Stream - VFDs
- P02 SaveOnEnergy - Prescriptive Stream - Motors



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Theatre On The Grand Performing Arts
Address: 244 St. Andrew Street West, Fergus



Building Area: 6,350 sq ft

Primary Use: Performing arts facilities

Heating System: Gas-fired furnace
Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO _{2e})	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Replace dimmable halogen pot lights with dimmable LEDs	1,280	1.28	12	-	\$100	\$100	\$0	\$200	0.1	\$320	1.6	\$120	1.0
Building Envelope															
B01	Insulation Upgrade	Add 2 inches of spray foam to all outside walls	4,900	15	12	700	\$500	\$1,500	\$200	\$2,200	1.8	\$22,225	10.1	\$140	10.0
TOTAL			6,180	16		700	\$600	\$1,600	\$200	\$2,400	1.9	\$22,545	9.4	\$260	9.3

- Previous Energy Conservation Retrofits**
- Roof retrofit
 - New RTUs with programmable thermostats
 - Lighting retrofit (T8)

- Recent Energy Conservation Retrofits**
- Replace old refrigerated display case with new energy efficient unit

- Incentives**
- L01 SaveOnEnergy - Prescriptive Stream - Lighting
 - B01 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Fergus East Public Works Garage
Address: 600 Glengarry Crescent, Fergus

Building Area: 6,743 sqft

Primary Use: Public Works Garage

Heating System: Furnace (offices) & tube heaters (garage)

Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Replace all exterior spot lights with LED lights	1,664	0.4	12	-	\$200	\$0	\$0	\$200	0.2	\$350	1.8	\$90	1.3
L02	Lighting Retrofit	Replace sand dome lighting with LED lighting	2,239	0.6	12	-	\$200	\$100	\$0	\$300	0.2	\$500	1.7	\$180	1.1
L03	Lighting Control	Use occupancy sensor to control LED retrofit lighting in sand dome	702	0.2	-	-	\$100	\$0	\$0	\$100	0.1	\$400	4.0	\$30	3.7
L04	Lighting Retrofit	Replace all T12 lamps with LED Fixtures	960	0.3	12.0	-	\$100	\$30	\$0	\$130	0.1	\$2,250	17.3	\$600	12.7
HVAC & Domestic Hot Water															
H01	HVAC Upgrade	Upgrade to high efficiency gas tube heaters for garage area	-	-	-	1,829	\$0	\$0	\$500	\$500	3.5	\$14,000	28.0	\$400	27.2
H02	HVAC Control	Use programmable thermostats for office furnace and program a temperatures reset for overnight	-	-	-	137	\$0	\$0	\$40	\$40	0.3	\$150	3.8	\$75	1.9
H03	Water Efficiency	Add low flow (0.5 GPM) aerators to all washroom faucets	-	-	-	229	\$0	\$0	\$100	\$100	0.4	\$15	0.2	-	0.2
H04	HVAC Upgrade	Replace through-wall AC units with new mini split systems	470	5	6	-	\$0	\$300	\$0	\$300	0.0	\$1,950	6.5	\$480	4.9
Process															
H05	Process Upgrade	Replace existing gas-fired power washer with new high efficiency unit	-	-	-	150	\$0	\$0	\$50	\$50	0.3	\$2,000	40.0	\$30	39.4
TOTAL			6,036	7		2,345	\$600	\$430	\$690	\$1,720	5.0	\$21,615	12.6	\$1,885	11.5

Previous Energy Conservation Retrofits

- Lighting retrofit (T8)

Recent Energy Conservation Retrofits

- None

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- L03 SaveOnEnergy - Prescriptive Stream - Lighting
- L04 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved
- H02 Enbridge - Rebate - \$75/thermostat
- H04 SaveOnEnergy - Prescriptive Stream - HVAC - Split System & Single Package
- H05 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Fergus 1 Well House
Address: 295 Queen St. E., Fergus

Building Area: 1,154 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric

Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Interior Linear Fluorescent Fixture Upgrade to LED	400	0.3	12	-	\$40	\$0	\$0	\$40	0.04	\$800	20.0	\$320	12.0
L02	Lighting Control	Occupancy sensors for interior lights	200	-	-	-	\$20	\$0	\$0	\$20	0.02	\$100	5.0	\$15	4.3
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	37,315	11	6	-	\$3,700	\$600	\$0	\$4,300	3.7	\$5,000	1.2	\$50	1.2
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	133,672	7	8	-	\$13,400	\$500	\$0	\$13,900	13.4	\$4,039	0.3	-	0.3
TOTAL			171,587	18		0	\$17,160	\$1,100	\$0	\$18,260	17.2	\$9,939	0.5	\$385	0.5

Previous Energy Conservation Retrofits

- Some lighting retrofit (T8)
- VFD control of well pump

Recent Energy Conservation Retrofits

- Interior T12 fluorescent light retrofit to T8 fluorescents
- Replace single pane windows and seal air leaks

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 Enbridge - Rebate - \$75/thermostat



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Queen Street Shops
Address: 295 Queen St. E., Fergus

Building Area: 6,618 sq ft

Primary Use: Public Works Garage

Heating System: electric
Air Conditioning: DX in office (none in garage)

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Propane Savings (L/yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Propane Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO _{2e})	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Control	Occupancy sensors for the garage area	2,500	-	-	-	\$300	\$0	\$0	\$300	0.3	\$200	0.7	\$30	0.6
L02	Lighting Control	Occupancy sensors for the office area	3,000	-	-	-	\$300	\$0	\$0	\$300	0.3	\$500	1.7	\$75	1.4
L03	Lighting Retrofit	Replace exterior lighting with LED lighting	2,100	0.5	12	-	\$200	\$0	\$0	\$200	0.2	\$700	3.5	\$180	2.6
HVAC & Domestic Hot Water															
H01	HVAC Upgrade	Replace electric heating with propane heating; furnace for office area and IR tube heaters for garage area	23,800	70	4	-3,520	\$2,380	\$0	-\$2,100	\$280	-6.0	\$12,000	42.9	-	42.9
H02	HVAC Controls	Use programmable thermostats for electric baseboards in the office area and program temperature reset for overnight	730	-	-	-	\$100	\$0	\$0	\$100	0.1	\$450	4.5	\$50	4.0
H03	HVAC Controls	Use programmable thermostats for electric heaters in garage area and program temperature reset for overnight and during no occupancy time periods	2,720	12	4	-	\$270	\$0	\$0	\$270	0.3	\$300	1.1	\$50	0.9
H05	DHW Upgrade	Replace existing hot water heaters with new propane high efficiency condensing unit	680	6	12	-100	\$100	\$600	-\$60	\$640	-0.2	\$1,500	2.3	-	2.3
Building Envelope															
B01	Door and Window Upgrade	Replace single pane windows and seal air leaks	3,400	14	8	-	\$300	\$0	\$0	\$300	0.3	\$21,800	72.7	\$340	71.5
B02	Insulation Upgrade	Upgrade building insulation	10,200	14	8	-	\$1,000	\$0	\$0	\$1,000	1.0	\$23,200	23.2	\$1,020	22.2
TOTAL			49,130	116		-3,620	\$4,950	\$600	-\$2,160	\$3,390		\$60,650	17.9	\$1,745	17.4

Previous Energy Conservation Retrofits

- None

Recent Energy Conservation Retrofits

- Fix and operate existing garage ceiling fans for destratification

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- L03 SaveOnEnergy - Prescriptive Stream - Lighting
- H02 SaveOnEnergy - Prescriptive Stream - Programmable temperature control for electric space heating and cooling
- H03 SaveOnEnergy - Prescriptive Stream - Programmable temperature control for electric space heating and cooling
- B01 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh
- B02 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Fergus Fire Hall
Address: 250 Queen St W, Fergus



Building Area: 8,152 sq ft

Primary Use: Fire Hall

Heating System: Gas-fired furnace (tube heaters in bay)

Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
HVAC & Domestic Hot Water															
H01	HVAC Upgrade	Upgrade to high efficiency gas tube heaters	-	-	-	1,150	\$0	\$0	\$300	\$300	2.2	\$7,000	23.3	\$230	23.3
H02	Water Efficiency	Add low flow (0.5 GPM) aerators to all washroom faucets	-	-	-	690	\$0	\$0	\$200	\$200	1.3	\$14	0.1	-	0.1
H03	Water Efficiency	Add low flow (1.5 GPM) shower head to all changerooms	-	-	-	885	\$0	\$0	\$300	\$300	1.7	\$70	0.2	-	0.2
H04	DHW Upgrade	Replace existing hot water heaters with new high efficiency condensing unit	-	-	-	1,845	\$0	\$0	\$600	\$600	3.5	\$1,500	2.5	\$370	2.5
Building Envelope															
B01	Insulation Upgrade	Add 2 inches of spray foam to all outside walls	4,550	11	6	3,540	\$500	\$500	\$1,100	\$2,100	7.1	\$28,532	13.6	\$710	13.6
TOTAL			4,550	11		8,110	\$500	\$500	\$2,500	\$3,500	15.8	\$37,116	10.6	\$1,310	10.2

Previous Energy Conservation Retrofits

- Lighting retrofit (T8)
- RTU retrofit (serving offices)

Recent Energy Conservation Retrofits

- Lighting Retrofit (LED)
- Upgrade to fully insulated bay doors
- Upgrade to high efficiency gas tube heaters

Incentives

- H01 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved
- H04 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved
- B01 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: F5 Well Station
Address: 900 Scotland St. E., Fergus

Building Area: 667 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric
Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Interior T12 fluorescent light retrofit to LED Fixtures	145	0.09	12	-	\$14	\$10	\$0	\$24	0.01	\$160	6.7	\$80	6.7
L02	Lighting Retrofit	Interior incandescent light retrofit to LED	125	0.1	12	-	\$10	\$8	\$0	\$18	0.01	\$20	1.1	-	1.1
L03	Lighting Control	Occupancy sensors for interior lights	344	-	-	-	\$30	\$0	\$0	\$30	0.03	\$100	3.3	\$15	3.3
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	21,950	7	6	-	\$2,200	\$300	\$0	\$2,500	2.2	\$2,000	0.8	-	0.8
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	55,995	4	8	-	\$5,600	\$300	\$0	\$5,900	5.6	\$2,335	0.4	-	0.4
TOTAL			78,559	11		0	\$7,854	\$618	\$0	\$8,472	7.9	\$4,615	0.5		0.5

Previous Energy Conservation Retrofits
• None

Recent Energy Conservation Retrofits
• VFD control of pump

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L03 SaveOnEnergy - Prescriptive Stream - Lighting



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Victoria Park Senior Centre
Address: 150 Albert St West, Fergus



Building Area: 5,875 sq ft

Primary Use: Community Hall

Heating System: Gas-fired furnace
Air Conditioning: DX cooling

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Replace compact fluorescent lights (CFLs) with LED	640	0.20	12	-	\$60	\$0	\$0	\$60	0.1	\$95	1.6	\$35	1.0
L02	Lighting Control	Install occupancy or vacancy sensors to control lights in all rooms	4,368	-	-	-	\$400	\$0	\$0	\$400	0.4	\$2,000	5.0	\$300	4.3
HVAC & Domestic Hot Water Savings															
H01	HVAC Control	Replace old thermostats (Tstat) with programmable Tstat and program a temperatures reset for overnight	3,559	-	-	1,200	\$400	\$0	\$400	\$800	2.6	\$600	0.8	\$75	0.7
H02	HVAC Upgrade	Replace existing furnace/AC units with high efficiency furnace/AC units	3,559	5	6	2,400	\$400	\$300	\$700	\$1,400	4.9	\$20,000	14.3	\$1,040	13.5
H04	DHW Upgrade	Replace existing hot water heater with new high efficiency condensing unit	-	-	-	800	\$0	\$0	\$200	\$200	1.5	\$1,500	7.5	\$160	6.7
TOTAL			12,126	5		4,400	\$1,260	\$300	\$1,300	\$2,860	9.5	\$24,195	8.5	\$1,610	7.9

Previous Energy Conservation Retrofits

- Lighting retrofit (primarily T8 + CFL)
- Window retrofit
- LCD Computer Monitors

Recent Energy Conservation Retrofits

- Add low flow (0.5 gpm) aerators to all washroom faucets

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 Enbridge - Rebate - \$75/thermostat
- H02 SaveOnEnergy - Prescriptive Stream - HVAC - Split System & Single Package
- H04 Enbridge - Custom Stream - \$0.20/m³ for natural gas saved



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Scotland St. Tower
Address: 490 St Andrews St. E., Fergus

Building Area: 667 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric
Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Interior T12 fluorescent light retrofit to LED Fixtures	124	0.09	12	-	\$12	\$10	\$0	\$22	0.01	\$160	7.3	\$80	3.6
L02	Lighting Retrofit	Interior incandescent light retrofit to LED	642	0.5	12	-	\$60	\$50	\$0	\$110	0.1	\$120	1.1	\$10	1.0
L03	Lighting Control	Occupancy sensors for interior lights	979	-	-	-	\$100	\$0	\$0	\$100	0.1	\$200	2.0	\$30	1.7
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	4,390	1	6	-	\$400	\$100	\$0	\$500	0.4	\$2,000	4.0	\$50	3.9
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	9,300	1	8	-	\$900	\$100	\$0	\$1,000	0.9	\$2,335	2.3	-	2.3
TOTAL			15,436	3		0	\$1,472	\$260	\$0	\$1,732	1.5	\$4,815	2.8	\$170	2.7

Previous Energy Conservation Retrofits

• None

Recent Energy Conservation Retrofits

• VFD control of pump

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- L03 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 SaveOnEnergy - Prescriptive Stream - Programmable temperature control for electric space heating and cooling



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: F4 Well Station
Address: 730 Gartshore St., Fergus



Building Area: 2,131 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric

Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Control	Occupancy sensors for interior lights	1,227	-	-	-	\$120	\$0	\$0	\$120	0.1	\$200	1.7	\$30	1.4
L02	Lighting Retrofit	Replace exterior lighting with LED lighting	3,145	0.72	12	-	\$310	\$100	\$0	\$410	0.3	\$1,050	2.6	\$270	1.9
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum). Install centralized room heating control	46,095	14	6	-	\$4,610	\$700	\$0	\$5,310	4.6	\$5,000	0.9	-	0.9
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	82,038	8	8	-	\$8,200	\$600	\$0	\$8,800	8.2	\$7,460	0.8	-	0.8
Process															
P01	Process Upgrade	Replace timed backwash control to pressure based control	13,673	-	-	-	\$1,400	\$0	\$0	\$1,400	1.4	\$3,000	2.1	-	2.1
TOTAL			146,177	23		0	\$14,640	\$1,400	\$0	\$16,040	14.6	\$16,710	1.0	\$300	1.0

Previous Energy Conservation Retrofits

- None

Recent Energy Conservation Retrofits

- Iron Filter Medium and Filter Replacement
- VFD control of pump

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- L02 SaveOnEnergy - Prescriptive Stream - Lighting



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Generator Building
Address: 730 Gartshore St., Fergus

Building Area: 1,744 sq ft

Primary Use: Generator building

Heating System: electric
Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Retrofit	Interior T12 fluorescent light replacement with LED Fixtures	154	0.2	12	-	\$15	\$20	\$0	\$35	0.02	\$400	11.4	\$200	5.7
L02	Lighting Control	Occupancy sensors for interior lights	232	-	-	-	\$20	\$0	\$0	\$20	0.02	\$100	5.0	\$15	4.3
L03	Lighting Retrofit	Replace exterior lighting with LED lighting	524	0.1	12	-	\$50	\$10	\$0	\$60	0.1	\$175	2.9	\$45	2.2
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	10,975	3	6	-	\$1,100	\$200	\$0	\$1,300	1.1	\$1,000	0.8	-	0.8
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	82,038	2	8	-	\$8,200	\$100	\$0	\$8,300	8.2	\$6,104	0.7	-	0.7
TOTAL			93,923	6		0	\$9,385	\$330	\$0	\$9,715	9.4	\$7,779	0.8	\$260	0.8

Recent Energy Conservation Retrofits
• None

Incentives
L01 SaveOnEnergy - Prescriptive Stream - Lighting
L02 SaveOnEnergy - Prescriptive Stream - Lighting
L03 SaveOnEnergy - Prescriptive Stream - Lighting



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**

Site: Gartshore Street Water Tower
Address: 945 Gartshore St., Fergus

Building Area: 517 sq ft

Primary Use: Facilities related to the pumping of water

Heating System: electric

Air Conditioning: none

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO ₂ e)	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L02	Lighting Control	Occupancy sensors for interior lights	1,490	-	-	-	\$150	\$0	\$0	\$150	0.1	\$200	1.3	\$30	1.1
L03	Lighting Retrofit	Replace exterior lighting with LED lighting	1,572	0.36	12	-	\$160	\$40	\$0	\$200	0.2	\$525	2.6	\$135	2.0
HVAC & Domestic Hot Water															
H01	HVAC Control	Limit heat output of heaters (maintain 5°C maximum) and install centralized room heating control	2,195	1	6	-	\$220	\$30	\$0	\$250	0.2	\$1,000	4.0	\$50	3.8
Building Envelope															
B01	Insulation Upgrade	Upgrade building insulation	9,300	0.4	8	-	\$900	\$30	\$0	\$930	0.9	\$1,810	1.9	-	1.9
TOTAL			14,558	1		0	\$1,430	\$100	\$0	\$1,530	1.1	\$3,535	2.3	\$215	2.2

Previous Energy Conservation Retrofits

- None

Recent Energy Conservation Retrofits

- Replace interior tower lighting with LED lighting

Incentives

- L02 SaveOnEnergy - Prescriptive Stream - Lighting
- L03 SaveOnEnergy - Prescriptive Stream - Lighting
- H01 SaveOnEnergy - Prescriptive Stream - Programmable temperature control for electric space heating and cooling



**Energy Conservation & Demand Management Plan
Township of Centre Wellington**



Site: Fergus WWTP
Address: 350 Queen Street West, Fergus

Building Area: 2,200 sq ft

Primary Use: Facilities related to the pumping of sewage

Heating System: electric, natural gas, recovered biogas

Air Conditioning: DX cooling RTU

Opportunity #	Measure Type	Description	Electrical Consumption Savings (kWh/yr)	Electrical Demand Savings (kW)	Months of Reduced Demand	Natural Gas Savings (m ³ /yr)	Electrical Consumption Savings (\$/yr)	Electrical Demand Savings (\$/yr)	Natural Gas Savings (\$/yr)	Energy Cost Savings (\$/yr)	Estimated GHG Reduction (t CO _{2e})	Estimated Capital Cost (\$)	Payback (yrs)	Incentive (\$)	Adjusted Payback (yrs)
Lighting															
L01	Lighting Control	Occupancy Sensor	20,027	-	-	-	\$2,000	\$0	\$0	\$2,000	2.0	\$2,500	1.3	\$90	1.2
Process															
P01	Process Upgrade	Replace 2 centrifugal blowers with high efficiency turbo blowers	139,685	17	12	-	\$14,000	\$1,700	\$0	\$15,700	14.0	\$150,000	9.6	\$13,970	8.7
P02	Process Upgrade	Investigate diffuser fouling and perform required maintenance	93,123	11	12	-	\$9,300	\$1,100	\$0	\$10,400	9.3	\$5,000	0.5	-	0.5
P03	Process Upgrade	Upgrade dual fuel boiler	-	-	-	30,556	\$0	\$0	\$9,200	\$9,200	57.8	\$50,000	5.4	\$6,111	4.8
TOTAL			252,835	28		30,556	\$25,300	\$2,800	\$9,200	\$37,300	83.0	\$207,500	5.6		5.6

Previous Energy Conservation Retrofits

- Lighting retrofit (T8)
- New split AC unit (serving upstairs office)
- New furnace (serving ground floor office)
- New windows
- New refrigerator

Recent Energy Conservation Retrofits

- Correct blower DO control
- Upgrade Lighting
- Upgrade aeration basin airflow control and SCADA

Incentives

- L01 SaveOnEnergy - Prescriptive Stream - Lighting
- P01 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh
- P03 SaveOnEnergy - Custom (Non-Lighting) Stream - \$0.10/kWh

Appendix E – Support For Energy Conservation and Demand Management Plan

Appendix E Support For Energy Conservation And Demand Management Plant

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