Energy Conservation & Demand Management Plan 2024-2029

Town of The Blue Mountains

Prepared by: BLUE SKY Energy Engineering & Consulting Inc. with AMO/LAS

Our Commitment to Energy Conservation

Message from the Chief Administrative Officer

The Town of The Blue Mountains recognizes the critical importance of energy management in fostering a sustainable future, enhancing operational efficiency, and improving the quality of life for our residents. We are committed to reaching our energy reduction and climate mitigation goals which support the Town's greenhouse gas (GHG) reduction targets.

This plan serves as a strategic framework to guide our efforts over the next five years in reducing energy consumption, minimizing greenhouse gas emissions, and promoting renewable and sustainable energy practices.

Our commitment to this plan is built on the following principles:

1. **Environmental Responsibility**: We will actively work to reduce our environmental footprint by implementing energy-efficient practices and technologies across municipal operations.
2. **Fiscal Stewardship**: We will seek cost-effective solutions that lower energy costs and deliver long-term savings to taxpayers.
3. **Community Leadership**: We will set an example of sustainability for residents, businesses, and neighboring communities to follow.
4. **Continuous Improvement**: We will measure and monitor our energy performance, identifying opportunities for further enhancements and innovation.

The Town is firmly committed to advancing energy efficiency initiatives and reducing our environmental impact and we are proud to endorse the 2029 Energy Conservation and Demand Management Plan. We are confident that this plan will not only help reduce energy consumption and emissions but also demonstrates fiscal responsibility and sustainability leadership within our community. Together, we can build a more sustainable and resilient future for the Town of The Blue Mountains.

Sincerely,

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1.0 Introduction

1.1 Background

The Town of The Blue Mountains (the Town) is a thriving small community within Grey County, and with a population of 9,390 residents (2021) was the second-fastest growing community in Canada (2021 census). The population increased by 33.7% from 2016 to 2021 and is expected to continue to grow significantly in the future. The Town's population growth places an increasing demand on services and infrastructure, leading to increased energy consumption at the Town's buildings and facilities. Energy efficiency and conservation are therefore a critical focus to minimizing energy cost and greenhouse gas emissions.

On October 21, 2019, Town Council endorsed a Declaration of a Climate Change Emergency. This declaration committed Council and Town staff to consider opportunities to address the climate change emergency through strategic planning budgeting, capital investments and other expenditures, planning, and community engagement. A greenhouse gas (GHG) reductions target of 40% by 2025 (from 2005) was established as part of the Town's first sustainability plan, The Blue Mountains Sustainable Path, along with a long-term goal to achieve net carbon zero by 2050. The Town's previous Energy Conservation and Demand Management Plan for 2019 – 2023 formalized the Town's net zero reduction target for 2050 for corporate GHG emissions. The Town's recent Municipal Net Zero Emissions Buildings policy (2023) outlines a number of pathways to achieve net zero building emissions and establishes a more ambitious and focused target of net zero building energy emissions by 2040.

The Town owns and/or operates buildings, fleet vehicles, water and wastewater facilities, waste management facilities, parks, and recreational properties. The operation of these corporate assets collectively contributes to greenhouse gas (GHG) emissions in the Town. The consumption of energy is an ongoing operational cost necessary to meeting the Town's various service and program delivery needs.

This Energy Conservation and Demand Management Plan (ECDM Plan) has been developed to support the Town's corporate GHG reduction goals and to fulfill the requirements of Ontario Regulation 25/23 (Broader Public Sector: Energy Reporting and Conservation and Demand Management (ECDM) Plans) which requires broader public sector organizations, including municipalities, to develop an energy conservation plan which are updated every five years. This report covers the period from 2024 to 2029 and builds on the previous plan covering the 2019 – 2023 period.

The ECDM Plan includes the following key elements:

- → Town of The Blue Mountains' energy conservation successes;

- → Review of historical and current energy performance trends;
- → Clear corporate goals, objectives and strategic priorities for managing energy use;
- → Specific, actionable and prioritized inventory of energy conservation and demand management measures planned over the next five years supporting the 2029 conservation goals;

The Town is committed to responsible asset management and portfolio reviews to identify opportunities for energy conservation and GHG emissions reductions. This report formalizes and consolidates the Town's energy management efforts and will be revisited and updated every five years, as required under the regulation.

1.2 Scope - Ontario Regulation 25/23

O. Reg. 25/23 states that energy use and the related GHG emissions must be reported for buildings or facilities the Town owns or leases that:

> "(a) 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
>
> (b) are related to the treatment of water of sewage, whether 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."
>
> (O.Reg. 25/23 s. 6)

This report includes all required facilities under O. Reg. 25/23 as well as several additional facilities that are unheated but consume energy (ball diamonds, unheated storage buildings, etc.).

A detailed list of Town facilities included in this plan can be found in Appendix A. This report does not include the energy impact or measures related to the Town fleet or streetlighting. Consumption of electricity, natural gas, propane, and fuel oil are included in this plan. Table 1.1 below presents a summary of Town facilities by asset type included in the scope of this report.

Table 1.1: Summary Town Facilities and Assets within Boundaries of this Plan

Department	Description	Number	Area (ft^2)
Community Serv. - Major	Community Centre, Arena, Harbour Facilities, Town Halls	7	85,723
Community Serv. - Minor	Community and Recreation Facilities, Cemetery	5	3,781
Community Serv. - Parks	Park Operations	1	1,132
Emergency Services	Fire Halls, OPP	3	19,991
Landfill	Landfill	1	2,500
Library Facilities	Library, Heritage Depot	2	12,876
Roads & Drainage	Works Buildings	2	8,867
Wastewater	WWTP, Pumping Stations	14	29,122
Water	WTP, Pumping Stations	10	15,092

1.3 Renewable Energy Sources

The Town has been actively pursuing methods of integrating renewable fuel sources into the facility portfolio.

Air source heat pumps use the outdoor air as a source of thermal energy in heating mode, and as a sink to reject energy when in cooling mode. They replace traditional furnace HVAC units and not only benefit the environment because of the elimination of natural gas but are extremely efficient resulting in low operating costs.

In addition to air source heat pumps, the Town is exploring the feasibility of installing a 470kW floating solar array on the lagoon at the Thornbury Wastewater Treatment Plant (TWWTP). This project was identified as part of a broader energy optimization study completed for the TWWTP in 2022, where 470 kW in solar photovoltaic generation, in combination with other energy-saving initiatives (such as waste heat recovery) could fully offset the energy needs of the TWWTP. At time of writing this ECDM Plan, an investigation into the infrastructure that would be needed to connect such a project to the grid in a net metering arrangement (whereby the TWWTP would earn credits to offset electricity costs) is underway and will include a preliminary design and high-level costing estimates for the project.

2.0 Our Accomplishments

The Town has delivered projects to improve efficiency and reduce energy consumption across the facility portfolio. Although the energy used by the water and wastewater departments has increased over the last five years (2019-2023) due to population growth, the Town is pleased to report that both the larger and smaller Town facilities have measured an energy reduction of 8.5% and 14.8% respectively. This is further discussed in Section 3.0 of this report.

The following are a few of the recent energy saving measures completed by the Town:

- Roof replacement at the Beaver Valley Community Centre (improved insulation and albedo)
- Town wide lighting retrofit to LED
- Replacement / upgrade of several domestic and commercial HVAC systems
- Fleet vehicle modernization for improved fuel economy
- Window replacement at the library, police detachment and water treatment plant
- Craigleith Heritage Depot HVAC optimization
- Craigleith Heritage Depot building envelope retrofit

In addition to the list above, the Craigleith Wastewater Treatment Facility has upgraded several of their heating systems (illustrated n Figure 2.1 below) and have automated several exhaust louvers (illustrated in Figure 2.2 below). The automation of exhaust air louvers greatly reduces heat losses over the winter period.

Figure 2.1 Craigleith WWTP Air Source Heat Pump and Unit Heater Upgrades

Figure 2.2 Craigleith WWTP New Exhaust Air Louver Controls

3.0 Historical Energy Trends

3.1 Our Energy Baseline

A review of energy consumption and emission trends over the last decade reveals a reduction in GHG emissions, though energy consumption has increased in some facilities. A picture of energy and GHG consumption / emissions is illustrated in the following section starting with historical energy consumption baselines.

The Town's recent Declaration of a Climate Change Emergency refers to 2005 as the baseline year for all reduction targets. Detailed energy consumption data by facility is only available from 2011 therefore this report will present data from 2011, as a reference, and from 2019 to 2023 to show recent trends.

Table 3.1 below presents the Township's 2023 energy performance, compared to historical milestones of 2011 and 2019.

Table 3.1: Town of The Blue Mountains Energy Consumption Summary

Energy Type	Unit Measure	2011	2019	2023	Change 2019 - 2023	Change 2011 - 2023
Electricity	**MWh**	**3,883.2**	**5,492.9**	**5,805.8**	5.7%	49.5%
Natural Gas	**m^3**	**146,147**	**160,130**	**153,758**	-4.0%	5.2%
Propane	**L**	**4,083**	**1,418**	**5,519**	289.2%	35.2%
Fuel Oil	**L**	**24,464**	**24,388**	**13,932**	-42.9%	-43.1%
Total Energy Consumed[1]	**eMWh**	**5,684.7**	**7,419.0**	**7,582.9**	2.2%	33.4%
Total GHG Emissions	**tCO2e**	**929.7**	**536.3**	**516.5**	-3.7%	-44.4%

Note 1: ekWh (equivalent kWh) is a calculated value using the thermal energy content of Natural Gas, Propane and Fuel Oil to convert consumption to units of "equivalent" kWh (ekWh) for comparison.

In 2023, the Town's facilities consumed 7,582.9 eMWh of energy which resulted in 516 tonnes of greenhouse gas emissions (tCO_2e). Although this represents a 2.2% increase in energy use since 2019 (and a 33% increase since 2011), GHG emissions have dropped significantly; 3.7% and 44% from 2019 and 2011 respectively. This emissions improvement has been driven by a reduction in fuel oil / natural gas consumption as well as outside factors. Ontario shut down the last of the coal driven power plants in 2014 and subsequently all purchased electricity from the grid became significantly cleaner, reducing the GHG emissions from its use.

The overall energy consumption increase is primarily from electricity consumed by the water and wastewater divisions. This is driven in part by the significant population growth throughout the region resulting in higher demand for supporting infrastructure. The Town is pleased to report that the major and minor buildings of the community service department have reduced their energy use by 10.2% and

8.6% respectively between 2019 and 2023.

These trends are illustrated in Figure 3.1 and Figure 3.2 below. Figure 3.1 below shows the total annual energy consumption from Town facilities by fuel source (electricity, natural gas, fuel oil and propane). Please note that natural gas, typically measured by consumed volume (m^3) has been converted to equivalent kilowatt hours (ekWh) along with the fuel oil (L) and propane (L) to combine all energy sources under one common set of units.

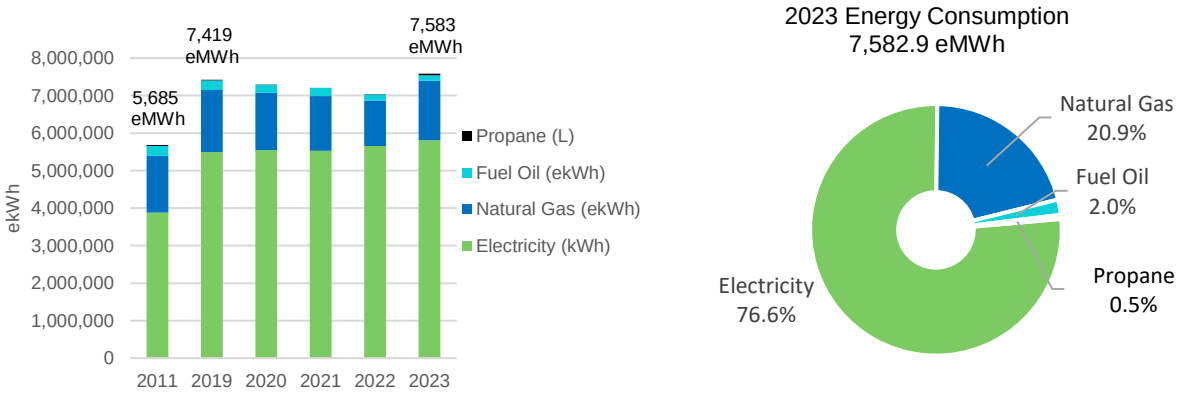

Figure 3.1 Annual Energy Consumption by Energy Source (ekWh)

The Town primarily uses electricity (76.6%) and natural gas (20.9%) however fuel oil and propane are used at one facility each. Figure 3.2 below breaks down the total energy consumed each year by department.

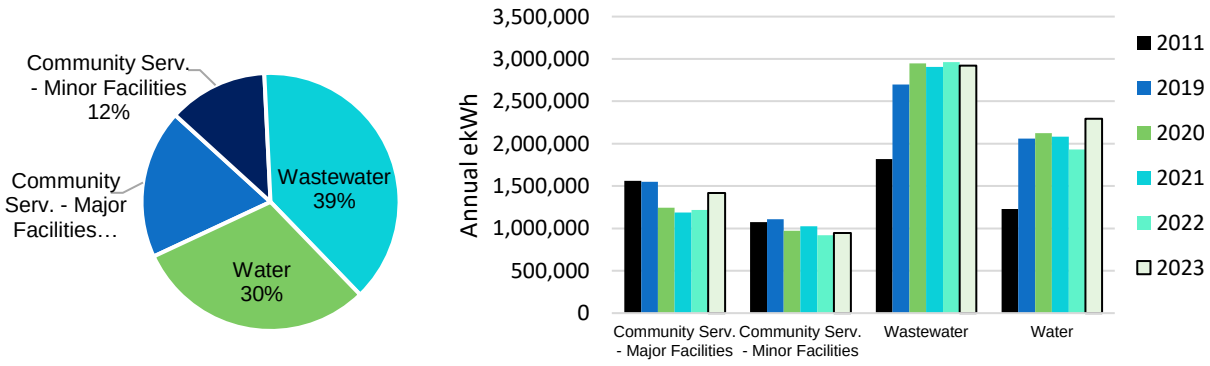

Figure 3.2 Annual Energy Consumption by Department (ekWh)

Figure 3.2 above illustrates the energy reduction trend across the community services major and minor facilities, from 2011 and through 2019 to 2023. The increase in energy use by the major community services facilities in 2023 is due to a return to normal operations after the COVID19 pandemic but is still lower than 2019 values. The graph also shows the significant increase in energy use compared to 2011 in the water and wastewater divisions. Increased water and wastewater consumption was the result of a large ghost population in the community during the Covid19 outbreak. The water and wastewater divisions consumed over 69% of the Town's energy in 2023 followed by the community services major buildings (19%) and the community services minor buildings (12%).

Please note that the Community Services – Major Building category refers to the larger facilities including the Arena and Town Hall. The Community Services – Minor Buildings category is a combination of numerous smaller locations. The full breakdown can be found in Appendix A.

The following ten facilities utilize over 78% of the total energy consumed at the Town (all fuel types combined). Table 3.2 lists their energy consumption along with the facility energy use intensity (EUI).

Table 3.2: Facilities with Highest Energy Consumption in 2023

Facility	Area (ft^2)	Energy Consumption 2023 (eMWh)	EUI 2023 (ekWh/ft^2)
Craigleith Wastewater Treatment Plant	n/a	1,537.7	n/a
Thornbury Water Treatment Plant	n/a	1,511.1	n/a
Thornbury Wastewater Treatment Plant	n/a	761.1	n/a
Beaver Valley Arena	31,190	689.1	22.1
Town Hall	26,451	363.1	13.7
Mill Sewage Lift Station	n/a	268.5	n/a
Arrowhead Road Booster Station	n/a	227.7	n/a
L.E. Shore Memorial Library	10,400	211.1	21.9
Beaver Valley Community Centre	10,000	207.4	21.7
Fire Hall One	14,390	180.9	12.6

3.2 Consumption Breakdown

Historical energy consumption is broken down further to help illustrate the energy use across facilities, measure progress, and to assist in identifying opportunities for conservation at the Town.

Electricity Breakdown:

The following section illustrates a detailed breakdown of electricity consumption at Town facilities. Figure 3.3 illustrates electricity use by facility in 2023 (graph on left) and historical consumption from 2011 to 2023 (graph on right).

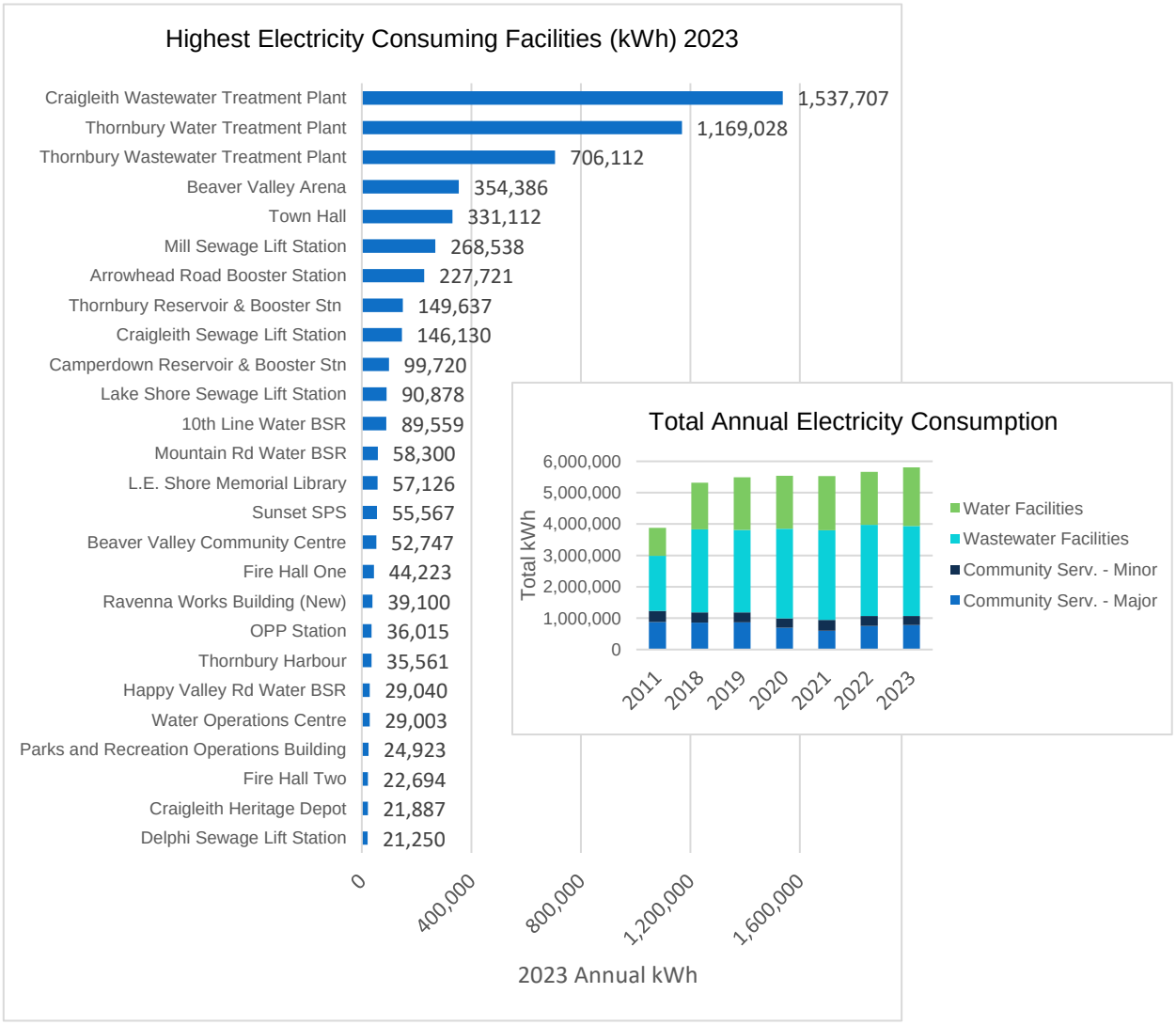

Figure 3.3 Electricity Consumption by Facility and Year

The Craigleith WWTP, Thornbury WTP and the Thornbury WWTP are the three largest electricity consumers followed by the Beaver Valley Arena and Town Hall. Figure 3.4 below highlights the breakdown of electricity use by department.

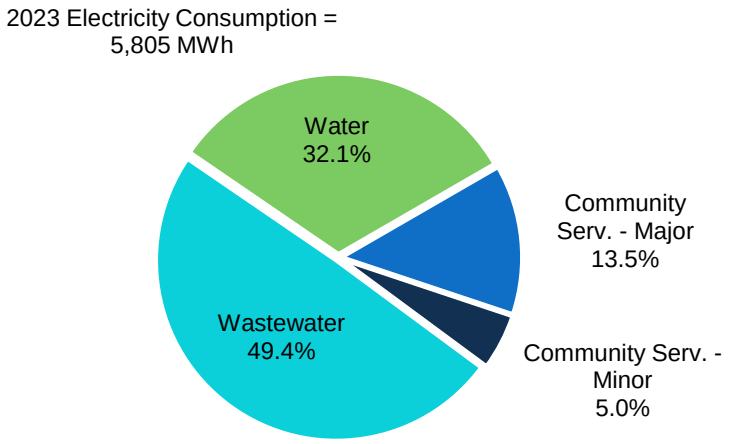

Figure 3.4 2023 Electricity Use by Department

The Wastewater (49%) and Water (32%) departments are the largest consumers of electricity in the Town followed by the major Community Services facilities (14%) and the minor facilities (5.0%).

Natural Gas Breakdown:

Natural gas consumption is broken down and illustrated in the section below. This fossil fuel is important to understand as it contributes the most to GHG emissions.

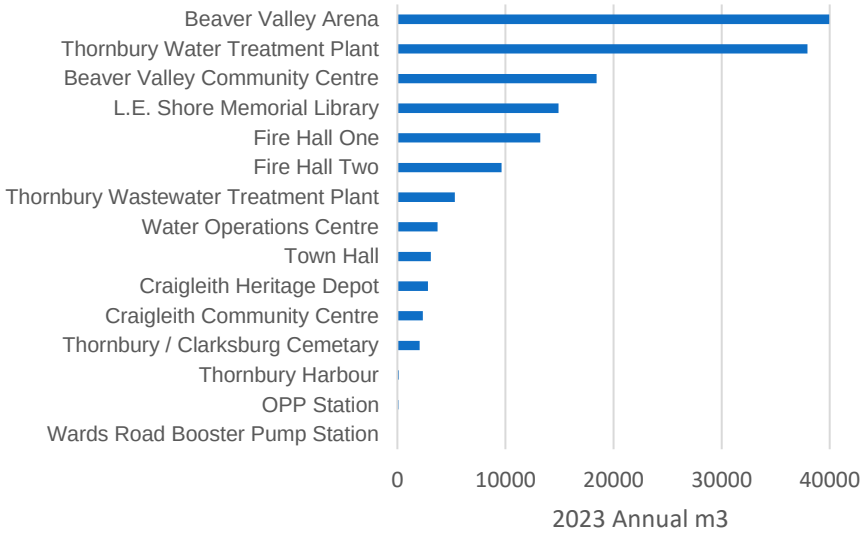

Figure 3.5 2023 Natural Gas Consumption (m^3) by Facility

Figure 3.5 above shows the natural gas consumption in order of greatest use for 2023. The Beaver Valley Arena followed by the Thornbury Water Treatment Plant are the largest consumers of natural gas. Figure 3.6 below trends natural gas consumption by department from 2011 to 2023.

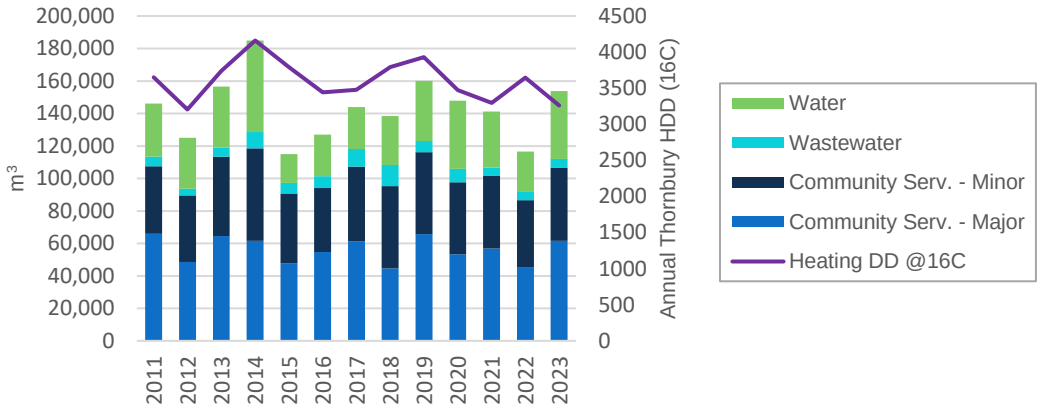

Figure 3.6 Annual Natural Gas Consumption (m^3) by Department

Figure 3.6 above shows the natural gas consumption trend from year to year. The values vary significantly from year to year which is anticipated as natural gas consumption is influenced by weather conditions (as it is primarily used for heating). Figure 3.6 also presents the annual Heating Degree Days (HDD) measured from the Thornbury weather station. HDD an indicator of outdoor air temperature; the colder the day, the higher the heating needs therefore the higher the HDDs.

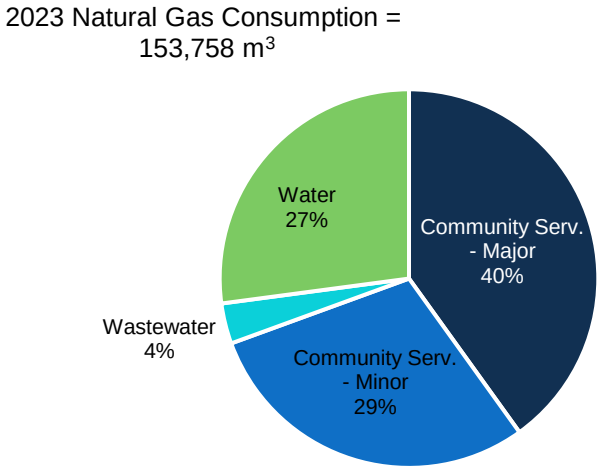

Figure 3.7 2023 Natural Gas Use by Department

Figure 3.7 above presents the breakdown of natural gas consumption by department in 2023. The major community services facilities are the highest consumers responsible for 40% of natural gas consumption.

Propane and Fuel Oil Breakdown:

In 2023, 5,520 L of Propane was consumed at only one facility, Ravena Hall. Similarly, fuel oil was used to heat one facility, the Ravena Works building, and in 2023 the consumption was 13,932L.

3.3 Carbon Emissions

The carbon footprint related to energy consumption by the Town is broken down below. The rate of greenhouse gas production varies by energy source and is directly affected by the emissions conversion factors and the Town's energy consumption. Emission conversion factors used in this report were published values for Ontario and can vary year to year based on the how clean is the energy generation. The GHG emissions were calculated for the Town and are broken down by fuel source in Figure 3.8 below.

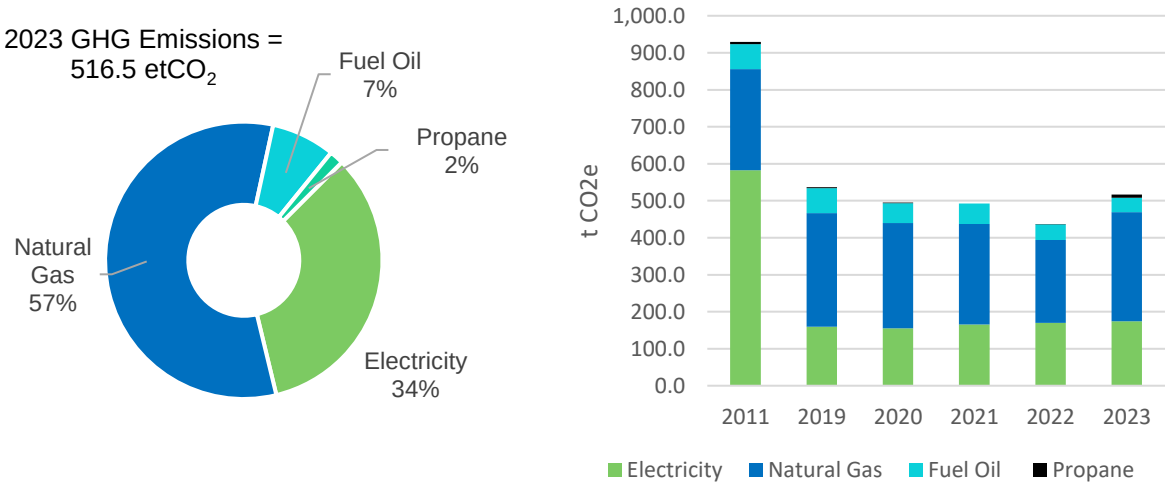

Figure 3.8 Total 2023 GHG Emissions by Fuel Source and Year

To reduce carbon emissions, the energy conservation plan will in part focus on measures to reduce fossil fuel use (primarily used for heating) as it is responsible for 57% of the Town's emissions. Figure 3.8 above also illustrates the trend of annual emissions starting in 2011 and trending from 2019 to 2023. Emissions have been reduced at these facilities by approximately 4% since 2019 and 44% since 2011.

Please note that emissions conversion factors have changed significantly for electricity production in Ontario. Specifically in 2014 electricity became significantly cleaner when the last of the coal fired electricity generation plants were shut down. This, along with energy conservation improvements, is why there is a significant drop illustrated between 2011 and 2019.

Figure 3.9 below illustrates the GHG emissions generated from energy consumption at various facilities

in 2023.

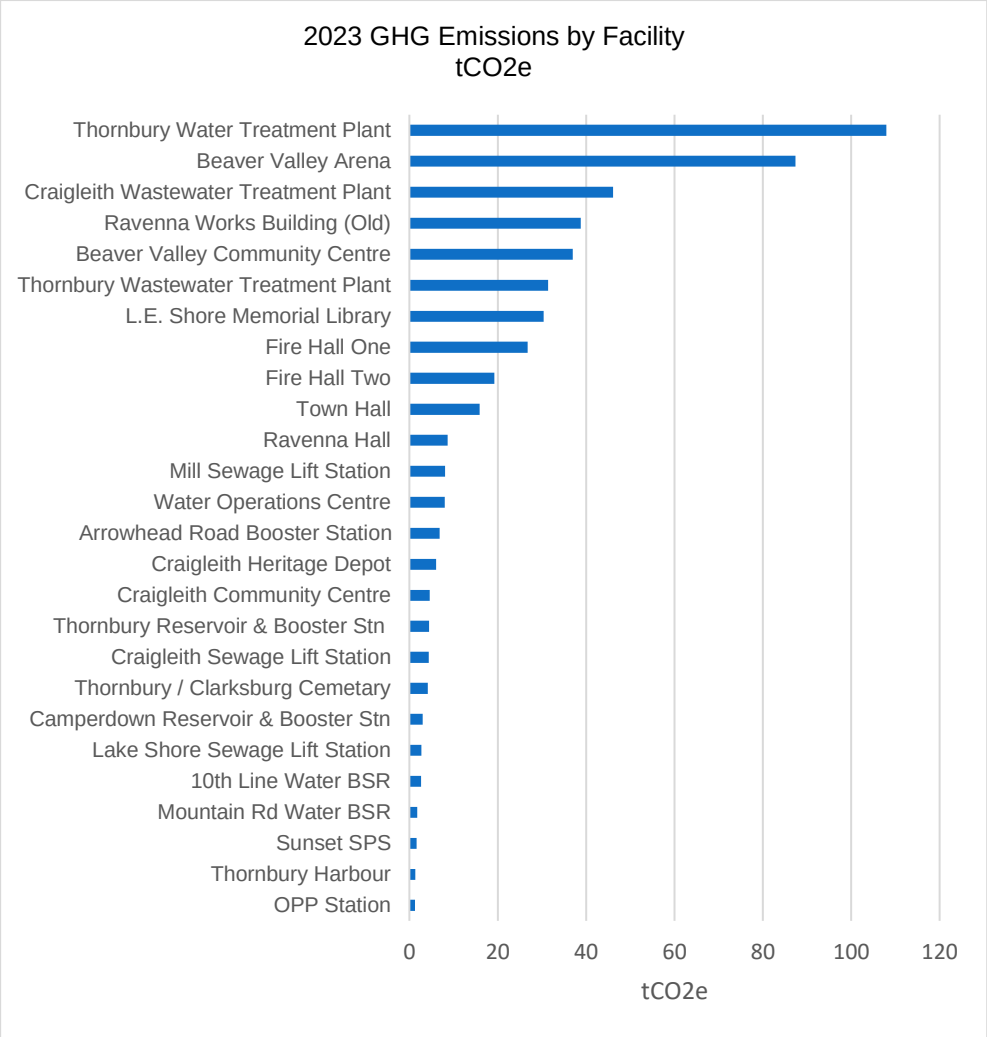

Figure 3.9 2023 GHG Emissions (tCO_2e) by Facility

Thornbury WTP and Beaver Valley Arena are the largest contributors to the Town's GHG emission footprint followed by Craigleith WWTP and the Ravenna Works Building (Old). The facilities have the highest level of emissions in large part due to their reliance on fossil fuels (natural gas and fuel oil).

4.0 Goals and Targets

The Town of The Blue Mountains has established the following goals and targets for the five years of this energy conservation plan. Our goals and targets were developed within the context of the Town's Climate Change Emergency mandate, the current energy performance, and the projected savings from projects identified in the plan. The energy targets cover a five-year period from 2024 to 2029.

4.1 Objectives and Goals

1. Leverage asset management planning to facilitate deep retrofits and fuel switching opportunities to improve energy efficiency and reduce emissions.
2. Create a culture of energy conservation throughout the Town's operations through education and outreach.
3. Seek opportunities to utilize renewable energy sources and energy efficient components where feasible.
4. Improve the visibility of energy consumption data and analysis to track performance and drive change.
5. Support the implementation of the Net Zero Energy Emissions Buildings Policy
6. Utilize the Social Cost of Carbon ($170/tonne) identified in the Town's Net Zero Energy Emissions Buildings Policy in the financial decision-making process for all projects with assets lasting beyond 2030.

4.2 2029 Energy Reduction Targets

Our target is to reduce the consumption of energy in all existing Town operations by an average of 10% (758 eMWh) by 2029 compared to 2023 levels (7,582.9 eMWh) and reduce GHG emissions by 20% (108 tCO2e). The town will implement a continuous improvement approach to our energy conservation targets, where projects are evaluated based on economic and technical viability, resulting in realistic payback periods for selected projects.

As indicated in the Town's Net Zero Energy Emissions Buildings Policy, the long-term GHG target is to reach net zero by 2040 for all facilities. Several steps will be required to significantly reduce emissions. Figure 4.1 below presents a possible pathway to net zero in 2040.

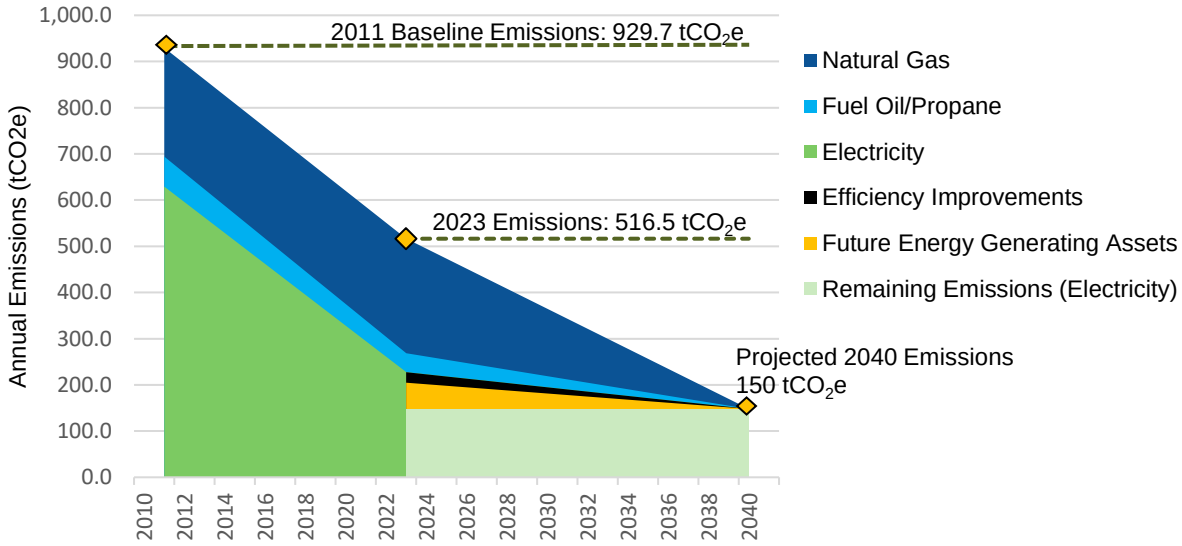

Figure 4.1 Corporate Facilities: Pathways to Net Zero 2040

Figure 4.1 illustrates the baseline GHG emissions from 2011 (929.7 tCO_2e), the current emissions in 2023 (516.5 tCO_2e) and the current opportunities for emissions reductions to 2040 (projected GHGs 150 tCO_2e).

The impact of fossil fuel consumption on emissions is significant and the elimination of natural gas, propane and fuel oil, is key to achieving a net zero target. Figure 4.1 presents the emissions impact of fuel switching from natural gas, fuel oil and propane, to electricity for all facilities by 2040. This would reduce the Town's current GHG emissions levels by approximately 56%. The most cost-efficient method of making this conversion is through a mature capital asset management system that upgrades assets and fuel switches at end-of-life.

In addition to the elimination of fossil fuels the pathway illustrated above includes a 10% efficiency improvement between 2023 and 2040. The 10% efficiency improvement / consumption reduction will help us reduce the remaining emissions. This value is anticipated to be conservative as building rebuilds, future equipment upgrades, and new practices and technologies will yield further reductions in the carbon footprint of the existing facilities. The graph also includes the savings from future renewable energy assets (such as solar arrays) that could be added to the Town portfolio. The pathway shown in Figure 4.1 includes the savings from a 470kW solar array and assumes that this capacity could be doubled in one or more subsequent projects at locations across Town facilities, where feasible. The efficiency improvements and these potential renewable energy assets provide an additional 15% reduction in GHG emissions.

The remaining 150 tCO_2e, is from the remaining electricity consumption required to run the facilities. This could be reduced further by the decarbonization of the province's grid electricity, further energy

efficiency efforts, or by the installation of additional renewable energy assets. Remaining emissions, if these are not addressed in the Ontario grid, would need to be offset by Town purchases of carbon credits or green energy.

The Town recognizes that achieving net zero is a difficult and costly long-term goal, as such we aim to approach this target through long term facility planning and revitalization efforts as they present themselves and funding opportunities become available.

5.0 Strategies – Our Five-Year Plan

Strategies have been developed to focus our energy conservation efforts and ensure continuous progress towards the Town's energy conservation goals. The following focus areas have been selected to drive conservation strategy over the next 5-year period:

- Low carbon and energy efficient guidelines for capital planning and new buildings;
- Ongoing commissioning, condition assessments and energy audits;
- Energy performance monitoring and tracking program;
- Life cycle costing and internal cost of carbon values to be integrated into capital planning and purchasing processes;
- Energy conservation training / education;
- Development and implementation of a revolving funding program.

The Town will continue to take advantage of alternative forms of funding for the projects and programs. The Town may qualify for third-party grants and/or low interest loans from sources such as the Green Municipal Fund (GMF) for capital projects that ambitiously reduce GHG emissions if the Town can demonstrate the feasibility and impact of the proposed project. At time of writing, GMF is offering up to $5 million per capital project, with up to 25% as a grant and the remainder as a loan, for up to 80% of eligible project costs; however, a prerequisite to accessing this assistance is to conduct a GHG feasibility pathway study identifying a sequence of GHG reduction measures. The feasibility study must aim to reduce GHG emissions by at least 50 percent compared to the current or baseline performance of the building within 10 years, and by at least 80 percent compared to the current or baseline performance of the building (i.e., near net-zero GHG emissions) within 20 years. Such a study would provide a level of detail and focus that would go beyond the scope of this ECDM Plan.

5.1 Energy Efficient Guidelines for Capital Planning and New Buildings

The Town of The Blue Mountains will embed energy management into the Town's capital and operational decision-making processes, including capital and asset management plans, budgeting, procurement and project design.

Life Cycle Costing:

Due to the long life of many larger capital purchases, for example boilers with 25-year useful lifespans, it is critical for the Town to ensure that the best decisions are made when replacing at end of life. The total cost of operating the asset over its lifetime must be included with the initial capital cost when comparing financial criteria. This is called life cycle costing (LCC). Energy efficient technologies are often financially and environmentally preferable when costs over the total life of an asset are reviewed.

LCC will be incorporated into the process for all large capital purchases.

Internal Cost of Carbon

To support the Net Zero policy and achieve the longer-term Net Zero goals, the Town will carefully consider all capital purchases and prioritize fuel switching technologies to minimize fossil fuels. To assist with decision making, the Town will consider an internal price for carbon emissions that will be added to total project life cycle costs to evaluate options when replacing large equipment. This is currently described as a Social Cost of Carbon within the Town's Municipal Net Zero Emissions Buildings Policy and is established at $170/tonne of CO2e for projects with lifespans past 2030.

Energy Efficient Purchasing Guidelines

To ensure consistency across the portfolio an energy efficient guideline will be developed for future capital purchases covering a diverse range of topics including:

- Heating systems - boilers, packaged rooftop units, baseboards, heat pumps;
- Refrigeration and cooling systems – ice plant equipment, space cooling, refrigerators;
- Air Handling – high efficiency fans, heat reclaim, exhaust fans;
- Domestic Hot Water – fuel switching, tankless options; and,
- Building Controls.

Energy Efficiency Standard for New Buildings

Tied in with the guidelines and standards for asset management discussed above, the Town will begin the development of an energy efficiency standard for new buildings. This will include, at a minimum, the following criteria:

- Ensure new construction meets or exceeds the standards set out by the National Energy Code of Canada for Buildings (NECB);
- Commit to an integrated design process that takes a holistic approach, incorporating energy efficiency, renewable energy, and sustainable green design features;
- Minimize or eliminate the need for fossil fuel consumption; and,
- Create energy generation opportunities if economically viable.

These guidelines will ensure that energy efficient technologies are selected consistently across the portfolio and that choices minimize the use of fossil fuels wherever possible. These standards may take the form of procurement language to assist staff in adhering to the Town's Municipal Net Zero Emissions Buildings Policy.

5.2 Ongoing Commissioning, Condition Assessments and Energy Audits

The Town will deliver technical improvements to our facilities identified through building recommissioning, facility condition assessments and energy audits. This will support continuous improvement efforts and will improve the energy efficiency of the existing building portfolio leading to both cost savings and reductions in GHG emissions.

The projects will predominantly be related to one of the following buildings systems:

- Heating systems - boilers, packaged rooftop units
- Refrigeration and cooling systems – space cooling, refrigerators, ice plant
- Air Handling
- Building and Process Controls
- Building Envelope
- Lighting
- Domestic Hot Water
- Water and Wastewater treatment optimization

Updating the Town's Building Condition Assessments is an important part of the Town's Asset Management Planning efforts and will incorporate energy performance as part of the condition evaluations. Exploring focused and in-depth GHG reduction pathway studies can also help identify specific opportunities for key, high-emitting facilities and enable the Town to access third-party capital project funding to enable more ambitious GHG emissions reductions.

5.3 Energy Performance Monitoring, Measuring and Tracking

The Town will continue to improve energy measurement, monitoring and tracking systems to increase the visibility of energy use across the portfolio. The objective will be to improve the data interface such that staff can access and use the information to track consumption, monitor progress from projects, and to identify opportunities.

Energy management tools such as RETscreen and Portfolio Manager will be used to complete detailed studies on energy use at the facilities, and to identify opportunities for improvement. The tools will allow facility managers to track and quantify energy savings from delivered projects, ensuring improvement measures are delivered to their technical specifications.

The Town will aim to provide a regular corporate GHG emissions inventory as per The Blue Mountains Future Story, Bold Action 1: Achieve Milestone 5 in the Federation of Canadian Municipalities Partners for Climate Protection program.

5.4 Energy Conservation Training

The Town will maximize long-term energy savings investments through ongoing staff energy training. The Town's Management Team is committed to ensuring that energy conservation and consumption are a priority for all staff throughout the organization. An improved understanding of how energy is used, controlled and its environmental impact is important for all municipal staff.

Each staff member can contribute significantly to the overall energy conservation goals of the corporation. Both general energy training and specific technical training on efficient use of equipment and systems is a proven method of ensuring building and operations staff minimize consumption within existing systems.

5.5 Revolving Energy Fund

A revolving energy fund is a tool to provide capital for energy retrofits and upgrades independent of the tax base. The fund diverts a portion of the energy savings from conservation projects into a separate fund along with all energy incentives received, and annual revenues from renewable energy assets. This funding mechanism helps to accelerate the upgrade of equipment and facilities to support both the energy and the GHG reduction goals.

The Town will develop a framework and set up a revolving energy fund to support energy conservation efforts.

6.0 Action Plan – Looking Ahead

A critical part of any plan is the detailed list of specific actions needed to achieve the desired goals and objectives. The Town of The Blue Mountains has developed a key opportunity list, driven by the ECDM plan strategies, which will help ensure the Town meets the energy reduction goals set out in Section 4.0 of this report.

Energy conservation measures can be categorized as technical (e.g. installing heat pumps), organizational (e.g. establishing energy efficient policies or protocols), or behavioral (e.g. running a daylight harvesting campaign, where lights are turned off on sunny days). Through application of this ECDM Plan, the Town of The Blue Mountains has an opportunity to significantly reduce overall energy use leading to reduced greenhouse gas emissions and costs. The specific action plan is shown in Table 6.1 below.

Table 6.1: Town of The Blue Mountains Energy Conservation Action Plan

CONSERVATION TARGET: 10% (758 eMWh) by 2029 compared to 2023 levels (7,582.9 eMWh) and reduce GHG emissions by 20% (108 tCO2e)

Facility	Strategic Focus	Project Type	Description	Timing
All	Capital Planning	Guidelines	Develop energy efficient purchasing guidelines for key infrastructure: Heating systems, pumping, cooling system, ice plant equipment, equipment controls, building envelope.	2025
All	Capital Planning	Guidelines	Develop natural gas reduction strategy which would be integrated into capital/asset management processes	2025
N/A	New Builds	Guidelines	Develop energy efficient standard for new buildings	2026
N/A	Training	Staff Training	Arrange for general and technical energy conservation training	2026
Town Hall	Ongoing Upgrades	Controls	BAS system for the HVAC systems	2025
Beaver Valley CC	Ongoing Upgrades	Efficiency	Commercial and Domestic Hot Water System Optimization	2025
Beaver Valley CC	Ongoing Upgrades	Building Envelope	Exterior cladding and Insulation replacement	2025
Operations facility	New Build	Design Guidelines	New climate resilient facility	2025
Fire Station	New Build	Design Guidelines	New climate resilient facility	2025
Water Operations Centre	New Build	Design Guidelines	Expansion – ensure this is a climate resilient addition	2025
Ravenna Works Building	Capital Planning	Fuel Switching	Upgrade heating system from fuel oil to propane or electricity.	2026
All	Measurement/ Monitoring	Information Systems	Continue to develop and enhance energy data management using RETscreen and EnergyStar Portfolio Manager.	Ongoing

7.0 Conclusion

Municipal Energy Management depends on the successful integration of energy-efficient practices into the "business as usual" conduct of the organization. It includes the regular assessment of energy use performance and requires the implementation of measures that reduce energy waste and increase efficiency.

Energy management is important to the Town of the Blue Mountains because it results in reduced costs through better equipment maintenance, high efficiency design and operation, and cost-effective planning and lower GHG emissions. This plan will assist the Town in delivering its energy conservation goals, lowering carbon emissions and utility costs.

Appendix A

List of Facilities Included in the Plan

Table A.1: Town Facilities and Infrastructure within Boundaries of this Plan

Name	Address	Use	Area (ft^2)
Beaver Valley Community Centre	58 Alfred Street West	Community Serv. - Major	14390
Beaver Valley Arena	58 Alfred Street West	Community Serv. - Major	31190
Thornbury Harbour	41 Bruce Street North	Community Serv. - Major	1132
Harbour Account #2 (Boat Docks)	41 Bruce Street North	Community Serv. - Major	n/a
Town Hall	32 Mill Street	Community Serv. - Major	26451
Old Town Hall	26 Bridges St. E	Community Serv. - Major	11600
Town Hall Trailer	26 Bridges St. E	Community Serv. - Major	960
Ravenna Hall	628299 Grey Road 119	Community Serv. - Minor	1376
Thornbury / Clarksburg Cemetery	44 Russell St West	Community Serv. - Minor	951
Craigleith Community Centre	132 Lakeshore Road East	Community Serv. - Minor	954
Tomahawk Recreation Complex	417230 10th Line, Thornbury	Community Serv. - Minor	500
Moreau Pavillion / BVCC Fields	Alfred Street West	Community Serv. - Minor	n/a
Parks and Recreation Operations Building	417222 10th Line, Thornbury	Community Serv. - Parks	3000
Fire Hall One	496916 Grey Road 2	Emergency Services	10000
Fire Hall Two	796338 Grey Road 19	Emergency Services	6400
OPP Station	364 Clark Street	Emergency Services	3591
Landfill Operations Building & Scale House	788090 Grey Road 13	Landfill	2500
Craigleith Heritage Depot	113 Lakeshore Road East	Library Facilities	2476
L.E. Shore Memorial Library	173 Bruce Street South	Library Facilities	10400
Ravenna Works Building (New)	490611 Grey Road 2	Roads & Drainage	5647
Ravenna Works Building (Old)	490611 Grey Road 2	Roads & Drainage	3220
Alta Sewage Lift Station	107 Oak Court	Wastewater	n/a
Craigleith Sewage Lift Station	236 Lakeshore Road East	Wastewater	2033
Craigleith Wastewater Treatment Plant	146 Long Point Road	Wastewater	15000
Delphi Sewage Lift Station	209137 Highway 26	Wastewater	572
Elgin Sewage Lift Station	50 Elgin Street	Wastewater	212.5
Lake Shore Sewage Lift Station	129 Lake Shore Road	Wastewater	1600
Mill Sewage Lift Station	18 Bay Street East	Wastewater	1092
Moore Sewage Lift Station	86 Moore Cres	Wastewater	212.5
Peel Sewage Lift Station	230 Peel Street	Wastewater	n/a
Thornbury Wastewater Treatment Plant	1 Grey Street South - Unit 2	Wastewater	6000

Name	Address	Use	Area (ft^2)
Sunset SPS	373 Sunset Boulevard	Wastewater	2400
Shore Acres SPS	159 Lakewood Drive	Wastewater	n/a
Margaret SPS	159 Lakewood Drive	Wastewater	n/a
Summit SPS	126 Lisa's Lane	Wastewater	n/a
Arrowhead Road Booster Station	122 Arrowhead Road	Water	1292
Thornbury Water Treatment Plant	230 Peel Street	Water	6472
Wards Road Booster Pump Station	155 Wards Road	Water	150
Water Operations Centre	81 Victoria Street South	Water	3000
10th Line Water BSR	417314 10th Line	Water	1413
Camperdown Reservoir & Booster Stn	103 Camperdown Court	Water	120
Happy Valley Rd Water BSR	136 Happy Valley Road	Water	440
Mountain Rd Water BSR	795930 Grey Road 19	Water	30
Swiss Meadows Standpipe Water BSR	251 Swiss Meadows Blvd	Water	n/a
Thornbury Reservoir & Booster Stn	1 Grey Street South - Unit 1	Water	2175