

Township of Tay



Energy Conservation and Demand Management Plan

Effective July 1, 2019 to June 30, 2023

Reporting period 2018-2022

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Executive Summary

The Township of Tay's Energy Conservation and Demand Management Plan will continue to assist the municipality in meeting its energy related goals. The proposed measures to meet these goals need to be established annually through Council's adoption of the municipal budget. Municipal operations result in a significant portion of the community's overall GHG emissions. In conjunction with Tay's Local Climate Change Action Plan, this Energy Conservation and Demand Management Plan will help reduce energy usage and costs.

With the implementation of the 2014 Energy Conservation and Demand Management Plan, we were able achieve a 7.2% reduction in energy usage. This surpasses our goal to reduce energy usage by 5% in the outlined five year period (2013-2017).

The new plan proposes a 10% reduction of total ekWh usage for the next 5 years (2018-2022) using 2017 as a benchmark year. This sets a goal of nearly 580,000 ekWh of savings for the township. The plan outlines some of the measures to attain this goal, including; employee awareness, education and communication, as well as, operation and procedural improvements. It also includes suggested facility improvements with emphasis on energy saving retrofits and upgrades, to be done within the municipal budget.

It is important to note that the addition of facilities and processes to help deliver a higher level of service will lessen the amount of visible savings. However, with energy saving designs in planning, consideration of the Energy Conservation and Demand Management Plan and communication with the Energy management team, these additions should have little effect on the overall goal of our energy consumption reduction goals.

This Energy Conservation and Demand Management Plan, hopes to help the municipality lead the community by example in energy reduction and conservation, as well as, realize and surpass this 5 year energy related goal, and meet Tay's Local Climate Change Action Plan.

Background

Ontario Regulation 507/18 under the *Electricity Act, 1998*, requires every public agency to prepare, publish, and make available energy conservation and demand management plans (ECDMP). The purpose of this plan is to provide a basis for the Township of Tay to implement improvements to its infrastructure and operations that reduce overall energy consumption, their associated costs, as well as mitigate the environmental effects of the Township's operations. It is Tay's intention to further enhance the municipality's commitment towards energy conservation with the continued implementation of the proposed operational efficiency measures, capital upgrades and rehabilitation of aging municipal infrastructure.

This five year plan is valid from July 1 2019 to June 30, 2023. During this time, energy consumption data will continue to be reported on and managed by the Township.

Included in the plan is a requirement to report on:

- i) Information on the annual energy consumption during the last year for which complete information is available for a full year;
- ii) Goals and objectives for conserving and otherwise reducing energy consumption and managing the Tay Township's demand for energy;
- iii) Proposed measures under the Tay Township's energy conservation and demand management plan;
- iv) Cost and saving estimates for proposed measures;
- v) Description of any renewable energy generation facility operated, and the amount of energy produced on an annual basis by the facility;
- vi) Description of,
 - a. Ground source energy harnessed, if any, by ground source heat pump technology operated;
 - b. Solar energy harnessed, if any, by thermal air technology or thermal water technology operated;
 - c. The proposed plan (if any), to operate heat pump technology, thermal air technology or thermal water technology in the future;
- vii) 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.

1.1 Municipal Inventory

The Township tracks and reports on its annual energy consumption for a variety of facilities and operations. In total there are 39 facilities and operations included in this plan with a gross floor area of approximately 15,227 square meters.

The table below is a summary by facility type with the total gross floor area (if applicable)

Facility Type	Total Area (m2)
OFFICES	1,187
LIBRARIES	824
FIREHALLS	2,468
COMMUNITY SPACES	1,953
WASHROOM/CHANGE ROOM/OUTDOOR RECREATION	360
INDOOR RECREATION. (TAY RINK)	2,766
PARKING GARAGES/STORAGE	1,659
RENTAL SPACE (CANADA POST)	135
WATER TOWERS	420
WATER TREATMENT AND DISTRIBUTION	1,536
WASTE WATER TREATMENT AND COLLECTION	1,919
STREETLIGHTS & SIGNALS	N/A
TOTAL GROSS FLOOR AREA	15,227

A requirement of O. Reg 507/18 involves municipalities reporting electricity and natural gas consumption on an annual basis. Municipalities report energy and natural gas usage two years prior to the current year (i.e., the report for 2017 energy consumption is due by July 1, 2019). A complete list of the facilities and operations that Tay has included in its annual energy consumption report can be found in Appendix A titled Energy Consumption Benchmark (2017).

The 2018 energy consumption report (to be filed July 1, 2020) will also include the remaining washroom buildings, Hydro One street lighting and the vehicle radio transmitter shack that are owned and operated by the municipality. While O.Reg 507/18 does not require these facilities and operations to be tracked, and reported on, incorporating these operations into our next plan, will better assist us in meeting our overall energy conservation goals.

Commitment

2.1 Declaration:

The Township of Tay is committed to delivering responsive and cost effective municipal services and infrastructure that provides for the long term economic, social and environmental well-being of our residents and community.

Council will allocate the necessary resources to develop and implement a plan to reduce and stabilize greenhouse gas emissions and increase energy efficiency to reduce our environmental impact.

All departments will strive to recognize and act upon areas where energy savings can be realized.

2.2 Vision:

The Township aspires to be an environmentally sustainable community. We will exercise stewardship in our use of energy resources to optimize our delivery of services, and enhance the overall quality of life in our community.

2.3 Goals and Objectives:

The Township of Tay has identified 7 main goals:

1. To improve energy efficiency within Township facilities and operations, reduce greenhouse gas emissions and energy consumption in day-to-day operations and extend the lifecycle of Township assets, where possible;
2. To maximize fiscal resources through direct and indirect energy cost avoidance;
3. To increase conservation knowledge and mindfulness among staff through education and utilizing best practices;
4. To demonstrate leadership and awareness within the community by creating a culture of conservation and sustainability;
5. To increase the comfort and safety of the staff and citizens while using Township facilities;
6. To support Ontario's Long-Term Energy Plan target of 30 TWh by 2032; and
7. To support Ontario's Conservation First policy, where conservation is the first resource considered before building new generation and transmission facilities, wherever cost-effective.

2.4 Overall Target:

The completion of the energy consumption projects resulting from Tay's 2014 Energy Conservation and Demand Management Plan (ECDMP) has built the foundation for successful energy management practices. The completed projects since the adoption of the Township's initial ECDMP can be found in Appendix B.

The proposed energy reduction measures found in **Section 2.5** below will be included in the annual budget discussions with Council. The proposed energy conservation measures have been identified by the Energy Management Team in an effort to further reduce the municipality's energy consumption from the new (2017) baseline values.

A reduction target of 10% has been set for the municipality for the reporting period 2018-2022. This target aligns with Tay's Local Climate Change Action Plan (LCCAP), which was adopted by Council in April 2019. Under the LCCAP, the municipality is committed to reducing overall corporate GHG emissions 25% below 2015 levels by 2028, and community GHG emissions 6% by 2028. The LCCAP has been included in Appendix E as a reference.

2.5 Proposed Energy Conservation Measures

Facility/Operation Type	Facility/Operation	Proposed Energy Conservation Measure	Target Year	Actual Year	Estimated Savings (kwh)	Estimated Savings (cubic meters)	Estimated Savings (ekWh)
Offices	Administration Office	3 HVAC units replaced		2018		4,099	
		Computer upgrades/replacements (Energy star)	2019		1,226		
		Partial roof replacement (over vault)	2022			195	
		Replace two roof-top HVAC units	2022			2,733	
		Replace water heaters (20 year, done 1995)	2022			642	
		Lights off at Lunch	2019			515	
		Eliminate/Limit usage of space heaters	2019			4,050	
Libraries	Port McNicoll Library	Replace Furnace	2020			130	
	Waubashene Library	LED lighting		2018	720		
		Replace hot water tank	2022		642		
	Victoria Harbour Library	LED lighting (10 year, done 2008)	2022		844		
Community Spaces	Oakwood Community	Eliminate/reduce usage or update space heaters(kwh)	2020		1,920		
		Remainder of roof replacement	2019			718	
		New roof-top HVAC for lobby		2019		1,794	
		LED lighting (lobby)	2022		219		
		Hot water tank (1995 with 20yr life)	2022		642		
	Port McNicoll Community Centre	LED lighting		2018	590		
	Port McNicoll Recreation Centre	Duct-less A/C and heating unit installation (heat pump technology) in OPP Office		2018	941		
		Indoor/Outdoor lighting retro-fit to LED (50% of building)	2021	2018			
		Waubashene Portable	Decommission portable building or design an alternate space (renewable energy source) or insulate and install heat pump in current building	2022		5,308	

Facility/Operation Type	Facility/Operation	Proposed Energy Conservation Measure	Target Year	Actual Year	Estimated Savings (kwh)	Estimated Savings (cubic meters)	Estimated Savings (ekWh)
Fire halls							
	Victoria Harbour Fire Hall	LED Lighting		2018	2,651		
	Waubashene Fire Hall	LED Lighting		2018	1,463		
		Remotes for automatic open/close of bay doors	2019			159	
	Port McNicoll Fire Hall	investigate alternate heat source for meeting room (heat pump or furnace), consider in the design of hall expansion	2022		5,889		
Washroom/Change room/Outdoor Rec.							
	Talbot Park	LED lighting		2019	3,696		
	Waverly Community Centre	LED lighting	2020		1,344		
	Oakwood Park	LED lighting		2018	1,512		
		Hot water tank replaced		2019	642		
	Waubashene Ball Diamond	LED lighting	2021		1,344		
Talbot Park Rink							
	Tay Community Rink	LED lighting		2019	26,636		
Public Works Parking/Storage							
	Old Victoria Harbour Fire hall	Disconnect service, demolish building and/or sell property	2020		17,049	2,288	
	Township Office-Garage	Replace 2 furnaces	2019			2,093	
		Replace hot water tank	2019		642		
Canada Post							
	Canada Post	Furnace replacement		2018		103	
Water Towers							
	Port McNicoll Water Tower	Network environmental monitoring (humidity/temperature control)		2019	124		
	Victoria Harbour Water Tower	Network environmental monitoring (humidity/temperature control)	2020		380		
	Waubashene Water Tower	Network environmental monitoring (humidity/temperature control)		2019	372		

Facility/Operation Type	Facility/Operation	Proposed Energy Conservation Measure	Target Year	Actual Year	Estimated Savings (kwh)	Estimated Savings (cubic meters)	Estimated Savings (ekWh)	
Water Treatment and Distribution	Maple Street Booster Station	LED lighting		2019	308			
		Install heat pump	2022		3,344			
	Rope Water Treatment Plant	Install heat pump	2022		4,791			
Wastewater Treatment and Collection	Ellen Street Pumping Station	Installed continuous running alarm		2018	5,250			
	Winfield Pumping Station	Installed continuous running alarm		2018	5,250			
	Port McNicoll WWTP	Furnace replacement		2018		836		
		Exterior LED lighting	2022		1,150			
	Victoria Harbour WWTP	Consider converting to natural gas during phase 2 upgrades (electrical demand becomes too high) or install heat pumps	2022		20,315			
		Exterior LED lighting	2022		1,150			
Streetlights & Signals	Tay Streetlighting	Continue retro-fit program within budget constraints		2018	24,911			
				2019	42,924			
			2022		120,724			
Various	All Buildings	Process optimization, temperature control, network environmental monitoring, staff awareness/education	2018-2022				113000	
					Total(kwh/m3)	312,120	15,149	
					Total(ekWh)	312,120	157,472	113,000
					Total Savings	582,592		

2.6 Energy Conservation Approach

The Township of Tay will continue to follow a three step approach in implementing an effective plan to reach our overall target:

2.6.1 Corporate Commitment

- 1) Gain support from Council, the general public and staff by exercising a Leadership from the top down approach;
- 2) Continue to examine past and current energy consumption for areas of improvement;
- 3) Enhance communication and feedback from the Township's Energy Team to provide direction and change;
- 4) Benchmark against leading municipalities where possible

2.6.2 Project Creation

- 1) Continue to complete preventive maintenance practices on all major municipal facilities and operations;
- 2) Identify and plan conservation projects as part of the Township's Long Term Plan;
- 3) Continue to source incentive programs and grant opportunities;
- 4) Build a business case to justify the demonstrated need or savings resulting from the chosen project;
- 5) Obtain Council approval for projects as required.

2.6.3 Measure Results

- 1) Compare results and report on energy consumption annually;
- 2) Measure success of conservation efforts in terms of services delivery and savings in annual consumption;
- 3) Adjust efforts as required to meet operational goals and reduction targets.

Resource Planning

The Township’s Energy Management Team consists of the following:

Position	Roles/Responsibilities
Council	Adopt ECDMP
Chief Administrative Officer	Provide Leadership and Direction
Fire Chief	Provide Project Direction & Resources
Director of Public Works	Provide Project Direction & Resources
Manager of Parks, Recreation & Facilities	Trouble Shooter/Project Co-ordinator
Facilities Maintenance Coordinator	Trouble Shooter/Provide Recommendations
Water & Wastewater Superintendent	Trouble Shooter/Project Co-ordinator
I.C.T Coordinator	Trouble Shooter/Project Co-ordinator
Director of Finance	Provide Financial Direction & Resources
Financial Analyst	Data Analysis & Reporting
Treasury Student	Data Collection & Analysis

In 2016, the Township hired a Facilities Maintenance Coordinator responsible for the management and operation of our municipal buildings. This position has been instrumental in the Township developing sound preventative maintenance practices on our facilities, which have helped us reduce our lifecycle costs, plan for asset replacement before they reach failure, and increase our energy conservation measures.

3.1 Energy Awareness

Energy awareness efforts will continue to be communicated to staff, Council and the community. Changes to daily operating procedures may be required to further reduce overall energy consumption. Department heads and managers will be updated on a regular basis so that they may motivate department staff to continue with their conservation efforts.

3.2 Renewable Energy Sources

The Township of Tay aspires to show leadership in the promotion and development of renewable energy systems that are compatible with our asset management and land use planning objectives. The development of any renewable energy source is dependent on budget constraints at the time of project approval.

3.3 Local Climate Change Action Plan (LCCAP)

The Municipality is committed to the ongoing development of tailored actions that make the best use of its resources to mitigate and adapt to climate change. These actions go beyond acquiring or modifying assets based on greenhouse reductions targets and risk exposure. Bolstering resilience to climate change in

the Municipality also means modifying the scope of current operations, anticipating possible costs to support contingency funds, leveraging alternative funding mechanisms, integrating the disaster response perspective to planning, and revising levels of service. The Municipality will tailor these actions by striking a balance between its organizational capacity, financial and stakeholder support, and the local risks and vulnerabilities related to climate change.

Implementation

4.1 Execution of Proposed Measures

We will continue to develop operating procedures and communication programs to help us reach our energy conservation goals. Implementation will be planned methodically and will be outlined in the annual budget process, according to planned time lines and resource constraints.

Conservation awareness at all staffing levels is important to ensure success in our energy conservation goals. Continued education and communication are the most important tools for creating a culture of conservation. Purchasing procedures will continue to incorporate energy efficiency (where required) into the criteria for the selection of materials and equipment.

Another important component of an energy management program is adjusting our daily operations, which can change depending on the season and temperature. Completing seasonal adjustments to the thermostat at each facility is an important task for controlling and managing energy. Keeping a reliable temperature range at each occupied and unoccupied facility also helps to reduce overall consumption. This can be done by continuing to install lock boxes and guards to thermostats to prevent unauthorized temperature adjustments. A future initiative for the Township would be to install a building management system through the network at each of our facilities so that these controls could be adjusted remotely.

Furthermore, occupancy sensors to control interior/exterior lighting should be considered for facilities with intermittent use. System controls and mechanics should continue to be reviewed to determine further energy reduction opportunities, particularly with respect to our water and wastewater operations.

4.2 Financing Strategies

To ensure that the Township takes advantage of all funding and grant opportunities related to energy efficiency projects, the Township will continue to liaise with Tay/Newmarket Hydro, Sustainable Severn Sound and other energy industry experts to review current processes for improvements, and design projects that meet funding requirements.

We will also investigate and document options for the implementation of energy projects that utilize public-private partnerships, and other creative financing arrangements to maximize the overall funding available for energy improvements.

Evaluation

As part of the energy management strategy, continuous monitoring, verification, and reporting is an important tool to track consumption and savings data. Regular monitoring and recording of data will be provided to the key individuals and department heads to enhance the communication process and allow appropriate time for feedback. Annual reports will be presented to council to provide updates on initiatives, consumption/cost data savings, and a discussion of the progress of the plan.

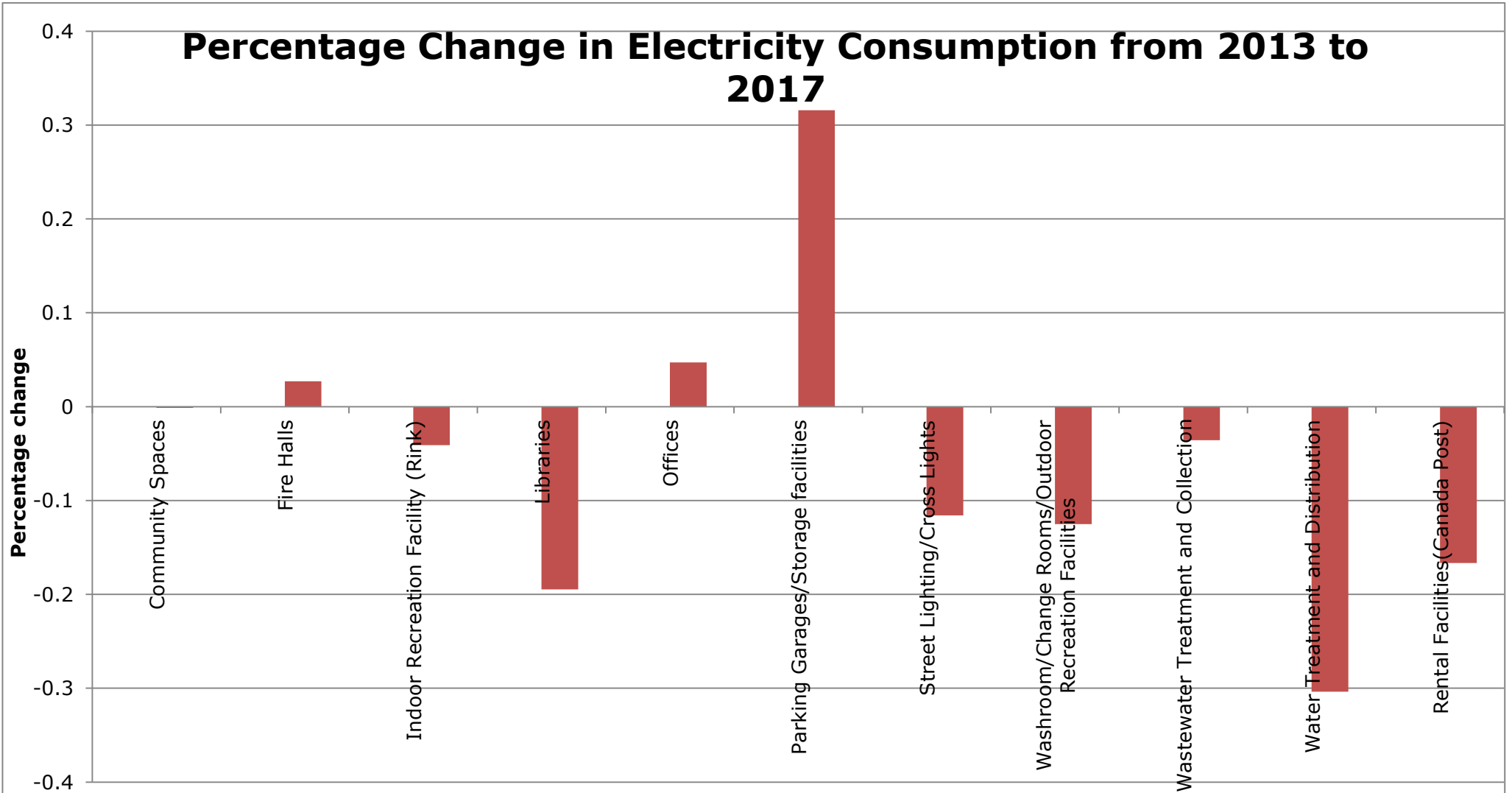
Summary of Energy Consumption:

The Township of Tay reports on two types of energy: natural gas and electricity. Our electricity is currently purchased through Hydro One and Tay/Newmarket Hydro, while natural gas is purchased through Enbridge.

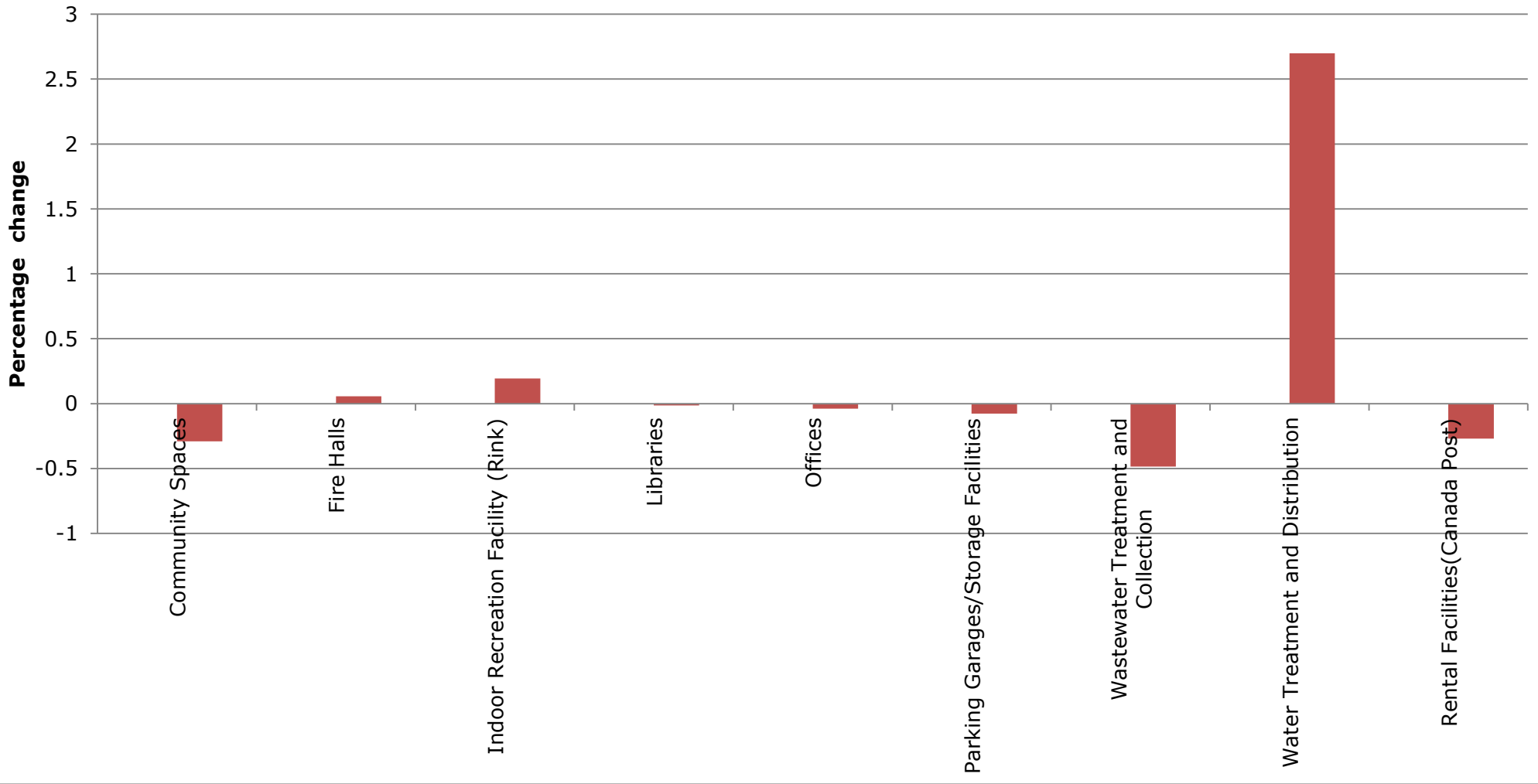
Overall, consumption of both electricity and natural gas has declined a total of 448,500 ekWh from the base reporting year (2013) to 2017. This represents a total savings of 7.2%.

These savings can be seen in both natural gas usage and electricity consumption. Shown below are representations displaying the percentage change in consumption from 2013 to 2017.

Percentage Change in Electricity Consumption from 2013 to 2017



Percentage Change in Natural Gas Consumption from 2013 to 2017



5.1 Electricity Consumption: Water and Wastewater

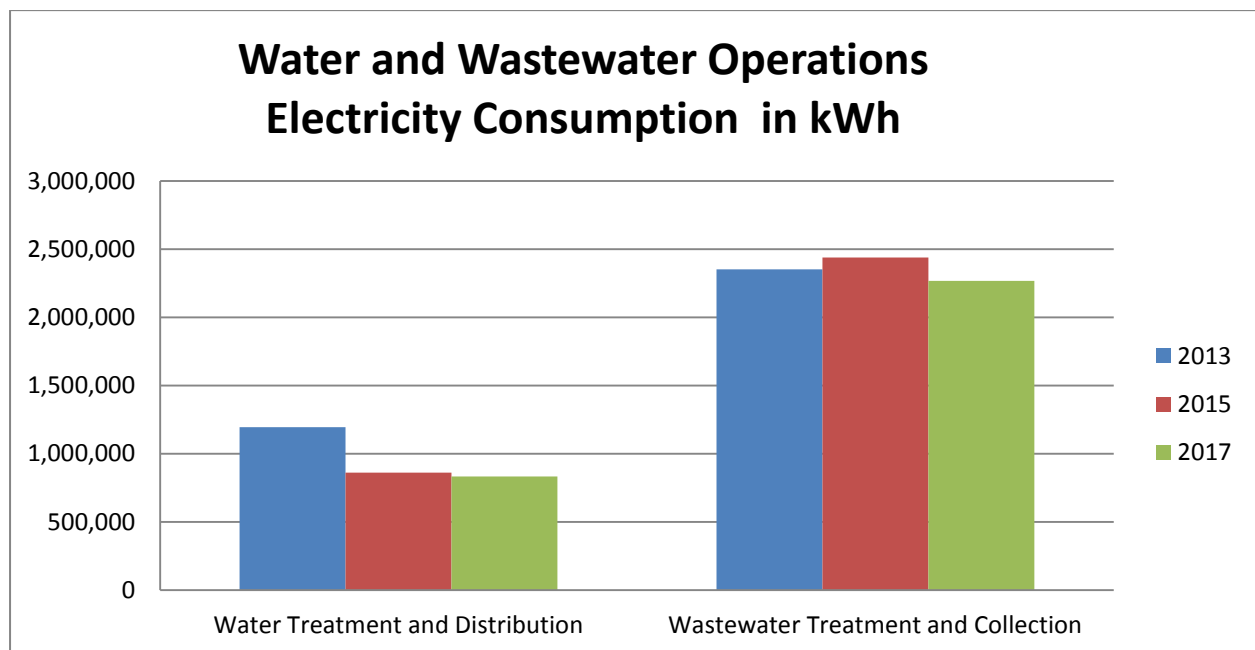
The Township of Tay's electricity consumption is derived mainly from Water and Wastewater operations.

The Township operates and records electrical consumption on the below facilities and operations:

- Two water treatment plants
- Three water booster stations
- Three water standpipes
- Two wastewater treatment plants
- Eight wastewater pumping stations

The chart below is a graphical representation of the total water and wastewater electricity consumption for years 2013, 2015 and 2017.

Figure 1: Electricity consumption for water and wastewater operations



Total electricity consumption for the water treatment and distribution system decreased from 1,194,225 kWh in the base reporting year (2013) to 831,521 kWh in 2017. This decrease represents an overall consumption decrease of 362,704 kWh or approximately 30%. The main driver of this decrease was the upgrades made to the Tay Area Water Treatment Plant (TAWTP) in 2014/2015. The Phase 1 upgrades to the plant included the transition to the Pall membrane system and converted the facility's heat source to natural gas. On an overall basis, the equivalent kWh (ekWh), which is the measure used when the

consumption of kWh and cubic meters of natural gas are combined, have declined by approximately 10%. The total 2017 ekWh for 2017 is 821,682 for the TAWTP, compared to 908,443 ekWh in 2013.

Total electricity consumption for the wastewater collection and treatment system decreased from 2,350,682 kWh in the base reporting year (2013) to 2,266,369 kWh in 2017. This decrease represents an overall consumption decrease of 84,313 kWh or approximately 3.5%. While this reduction is minor, it is important to note that in 2017, the new Headwork's building came online as part of the Phase 1 upgrades to the Victoria Harbour Wastewater Treatment Plant. This building is heavily ventilated year round, and is 100% electric heat. While, energy consumption at this facility is expected to increase (should see full impact by winter 2019/2020), the overall efficiency of operations has shown significant improvements, as debris that was previously the source of costly repairs is now intercepted at the Headwork's building before the wastewater enters the treatment plant.

Detailed graphs have been included in Appendix C of this plan, showing the consumption of energy by type of facility and/or operation for the reporting years 2013, 2015 and 2017.

- Total electricity consumption for the two water treatment plants compared to the total mega litres of water treated at these facilities;
- Total electricity consumption for the three active water booster stations compared to the total mega litres of water pumped through these facilities;
- Total electricity consumption for the three water towers compared to the total area (square meters) used to heat these facilities;
- Total electricity consumption for the seven wastewater pumping stations compared to the total mega litres of wastewater pumped through these stations;
- Total electricity consumption for the remaining wastewater pumping station (at treatment facility) and the two wastewater treatment facilities compared to the total mega litres of wastewater treated at these facilities;

These graph have been reviewed by the Energy Management Team and related staff, and have helped form the basis for the proposed measures to be implemented during the 2018-2022 reporting period.

5.2 Electricity Consumption: Municipal Operations (excluding water and wastewater)

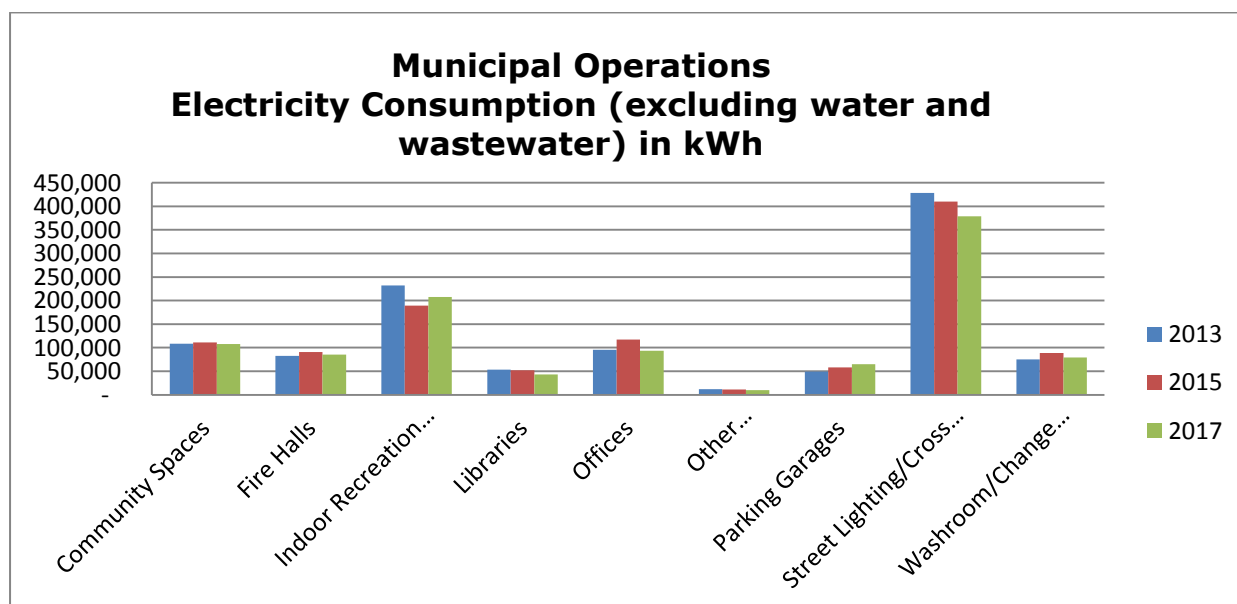
The Township of Tay consumes electricity during the course of routine municipal operations.

The Township operates and records electrical consumption on the below facilities and operations:

- Five community spaces
- Four active fire halls
- One indoor recreation facility (Tay Community Rink)
- Three public library branches
- One municipal administration office
- One rental facility (Canada Post)
- Three parking garages or storage facilities
- Four outdoor recreation facilities (Ball Diamonds and Rinks)
- Various streetlights and signals

The chart below is a graphical representation of the total municipal operations (excluding water and wastewater) electricity consumption for years 2013, 2015 and 2017.

Figure 2: Electricity consumption for municipal operations (excluding water and wastewater)



Total electricity consumption for municipal operations (excluding water and wastewater) decreased from 1,135,981 kWh in the base reporting year (2013) to 1,069,994 kWh in 2017. This decrease represents an overall consumption decrease of 65,987 kWh or approximately 5.8%.

The overall electricity consumption has decreased due to a number of infrastructure replacement projects that have been completed throughout the Township since the last ECDMP was put in place. A complete list of the completed projects can be found in Appendix B.

It is important to note that while infrastructure replacement projects have been completed to renew our aging infrastructure and reduce our energy consumption, operational processes have been implemented to enhance service level delivery to the community, often at the cost of increased energy consumption (LED signboards, communication equipment for emergency response personnel etc.). As a result, the estimated savings of a replacement project may not be transparent, as the consumption for the new service is included within the actual results for each municipal facility or operation.

Detailed graphs have been included in Appendix C of this plan, showing the consumption of energy by type of facility and/or operation for the reporting years 2013, 2015 and 2017.

- Total electricity consumption for the five community spaces compared to the total area (square meters) of these facilities;
- Total electricity consumption for the four active fire halls compared to the total area (square meters) of these facilities;
- Total electricity consumption for the three library branches and one rental facility (Canada Post) compared to the total area (square meters) of these facilities;
- Total electricity consumption for the three parking garages/storage facilities compared to the total area (square meters) of these facilities;
- Total electricity consumption for the four outdoor recreation facilities (Ball Diamond and Rinks) compared to the total area (square meters) of the washroom/change room facilities;

These graphs have been reviewed by the Energy Management Team and related staff, and have helped form the basis for the proposed measures to be implemented during the 2018-2022 reporting period.

Individual graphs for the indoor recreation facility (Tay Community Rink) and Offices (Administration Building) have been omitted, as the municipality does not own or operate a comparable facility.

5.3 Natural Gas Consumption: Water and Wastewater

An additional source of energy used by the municipality is natural gas. Variations in consumption can be directly related to temperature and weather conditions. It is important to recognize that not all operations have readily access to natural gas.

The Township operates and records natural gas consumption on the below facilities and operations:

- One water treatment plant (Tay Area Water Treatment Plant)
- Two water booster stations (Port McNicoll and Waubaushene)
- One wastewater treatment plant (Port McNicoll)

Total natural gas consumption for the water treatment and distribution system increased from 9,997 cubic meters in the base reporting year (2013) to 36,943 cubic meters in 2017. This represents an overall consumption increase of 26,943 cubic meters or approximately 270%. The main driver of this increase was the conversion to natural gas as the main heat source at the Tay Area Water Treatment Plant that was previously identified under electrical consumption section.

The charts below are a graphical representation of the total water and wastewater natural gas consumption for years 2013, 2015 and 2017.

Figure 3: Total natural gas consumption for water and wastewater operations.

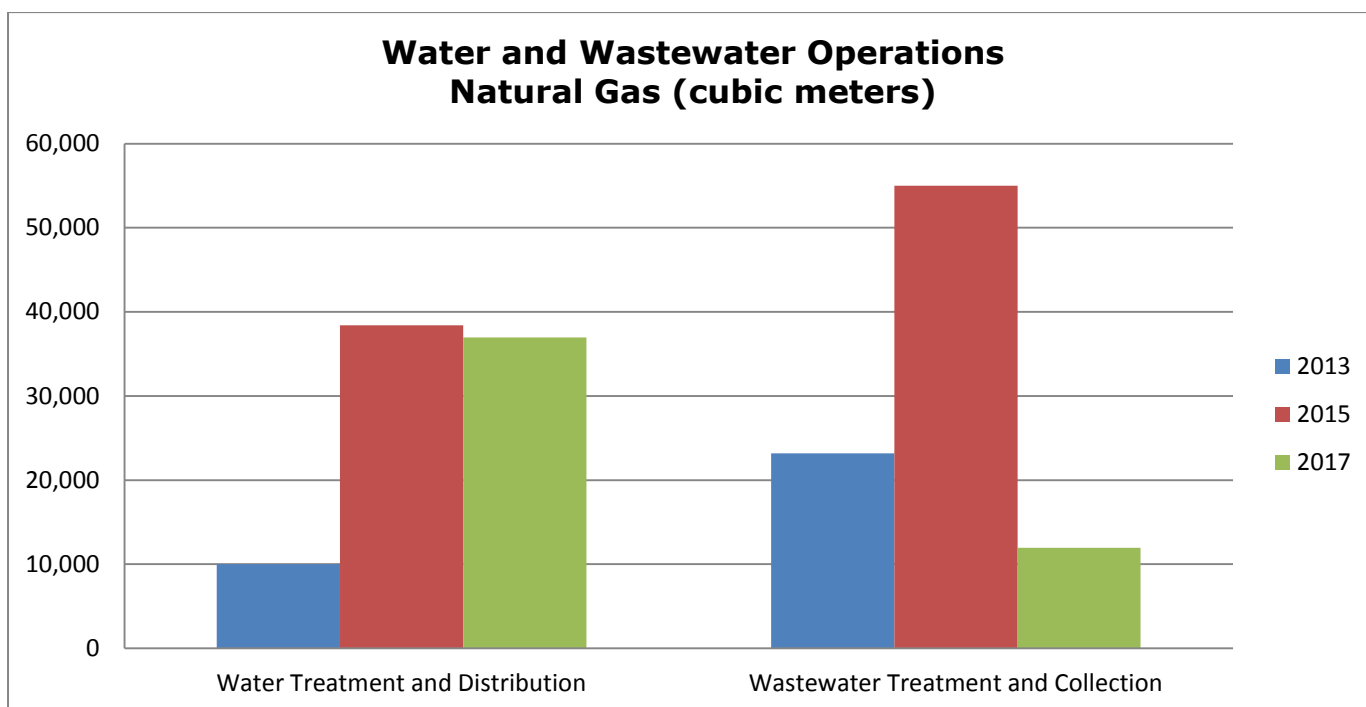
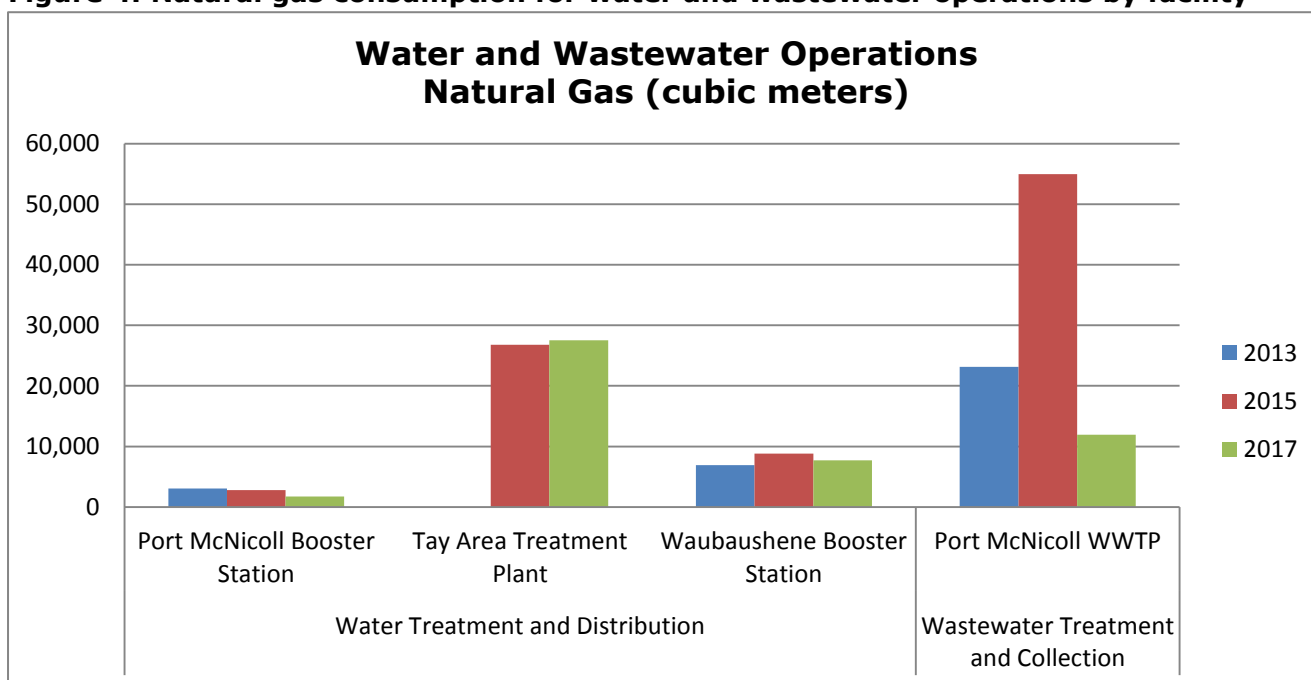


Figure 4: Natural gas consumption for water and wastewater operations by facility



From the above, you will also notice a steep incline in the natural gas consumption at the Port McNicoll Wastewater Treatment Plant (PMWWTP) in 2015 and then a significant drop in 2017. The cause of these variations is two-fold, first the gas meter for this facility is located in the fenced in parking lot. As a result, actual meter reads were only occurring a couple times a year (at most), with estimates being billed and adjusted once actual reads were available.

Secondly, the furnace at this location was broken in the fall of 2017, resulting in very little consumption. This furnace was replaced in early 2018.

A procedure has been put in place at this facility, where staff is able to read and report the meter readings to Enbridge on a monthly basis. Going forward, we should see more consistent energy billings to help our analysis.

Detailed graphs have been included in Appendix D of this plan, showing the natural gas consumption of energy by type of facility and/or operation for the reporting years 2013, 2015 and 2017.

- Total natural gas consumption for the two water booster stations (Port McNicoll and Waubaushene) and the one water treatment plant (TAWTP) compared to the total square meters of these facilities;
- Total natural gas consumption for the one wastewater treatment facility (PMWWTP) compared to the total square meters of these facilities;

These graph have been reviewed by the Energy Management Team and related staff, and have helped form the basis for the proposed measures to be implemented during the 2018-2022 reporting period.

5.4 Natural Gas Consumption: Municipal Operations (excluding water and wastewater)

The Township of Tay consumes natural gas during the course of routine municipal operations.

The Township operates and records natural gas consumption on the below facilities and operations:

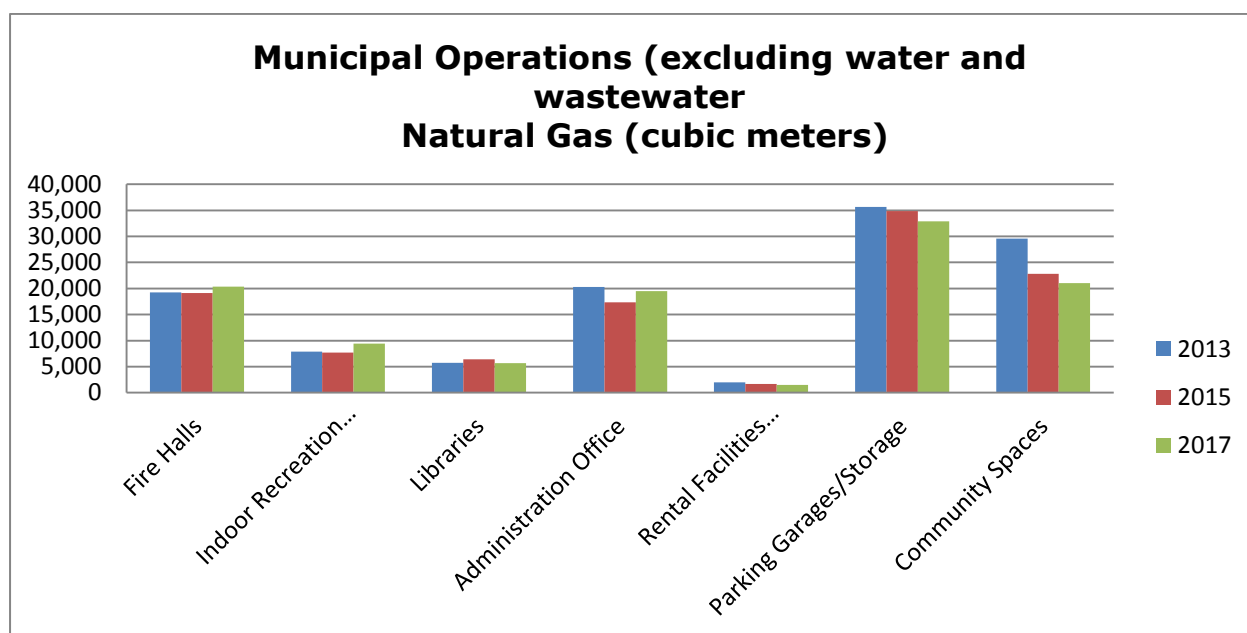
- Four active fire halls
- One indoor recreation facility (Tay Community Rink)
- Three public library branches
- One municipal administration office
- One rental facility (Canada Post)
- Three parking garages/storage facilities
- Three community spaces

Total natural gas consumption for municipal operations (excluding water and wastewater) decreased from 120,413 cubic meters in the base reporting year (2013) to 110,297 cubic meters in 2017. This represents an overall consumption decrease of 10,116 cubic meters or approximately 8.4%. The main driver of this

decrease was the replacement of aging infrastructure, such as roof, HVAC and furnace replacements at the Administration Office and the Albert Street Mini-Mall (which encompasses the Victoria Harbour Library, Harbour Shore Community Room and the Canada Post Office).

The chart below is a graphical representation of the total municipal operations (excluding water and wastewater) natural gas consumption for years 2013, 2015 and 2017.

Figure 5: Natural gas consumption for municipal operations (excluding water and wastewater)



Detailed graphs have been included in Appendix D of this plan, showing the natural gas consumption of energy by type of facility and/or operation for the reporting years 2013, 2015 and 2017.

- Total natural gas consumption for the four active fire halls compared to the total area (square meters) of these facilities;
- Total natural gas consumption for the three library branches and one rental facility (Canada Post) compared to the total area (square meters) of these facilities;
- Total natural gas consumption for the three parking garages/storage facilities compared to the total area (square meters) of these facilities;

- Total natural gas consumption for the three community spaces compared to the total area (square meters) of these facilities;

These graphs have been reviewed by the Energy Management Team and related staff, and have helped form the basis for the proposed measures to be implemented during the 2018-2022 reporting period.

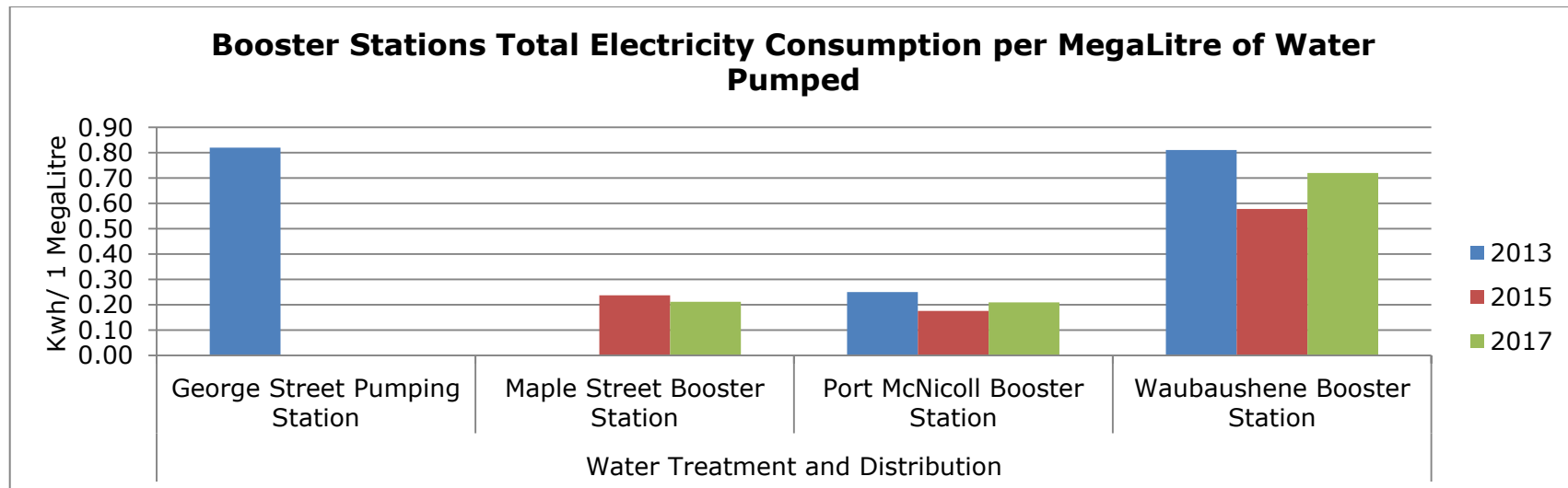
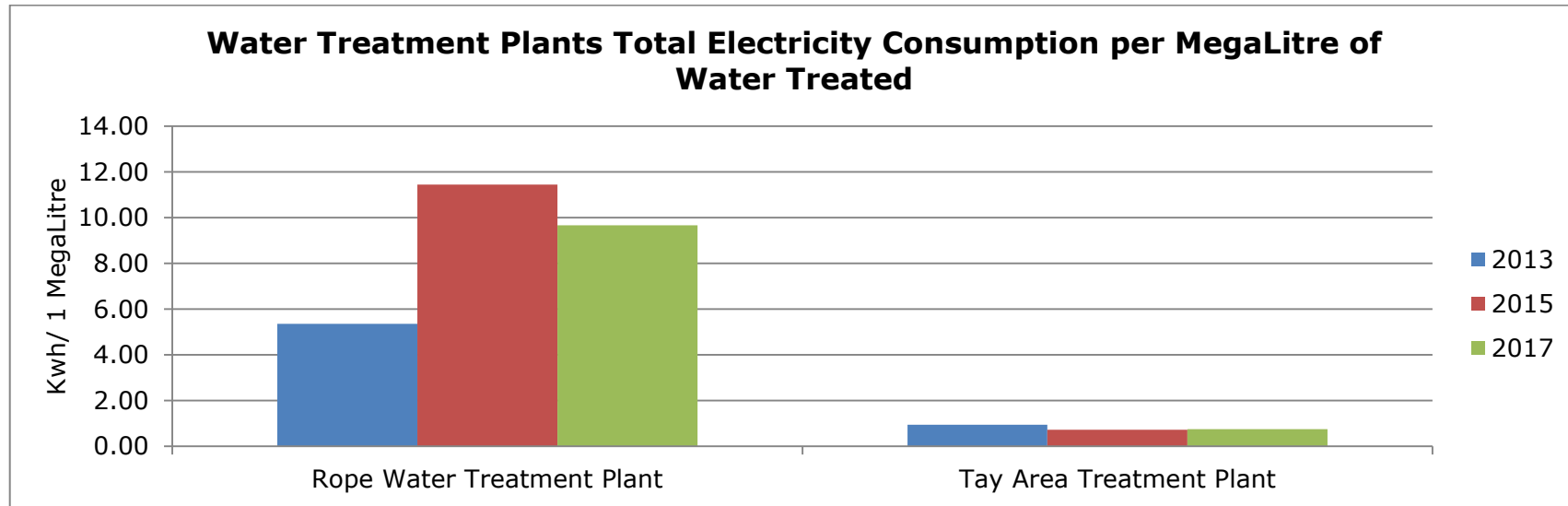
APPENDIX A: Energy Consumption Benchmark (2017)

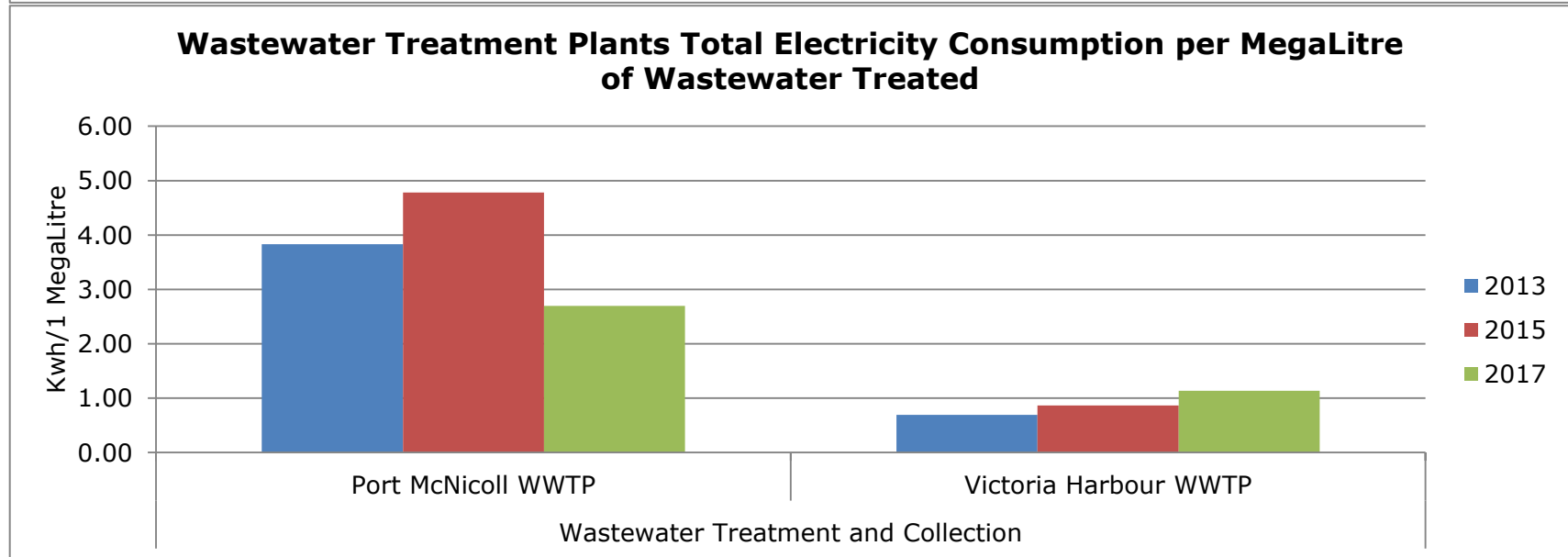
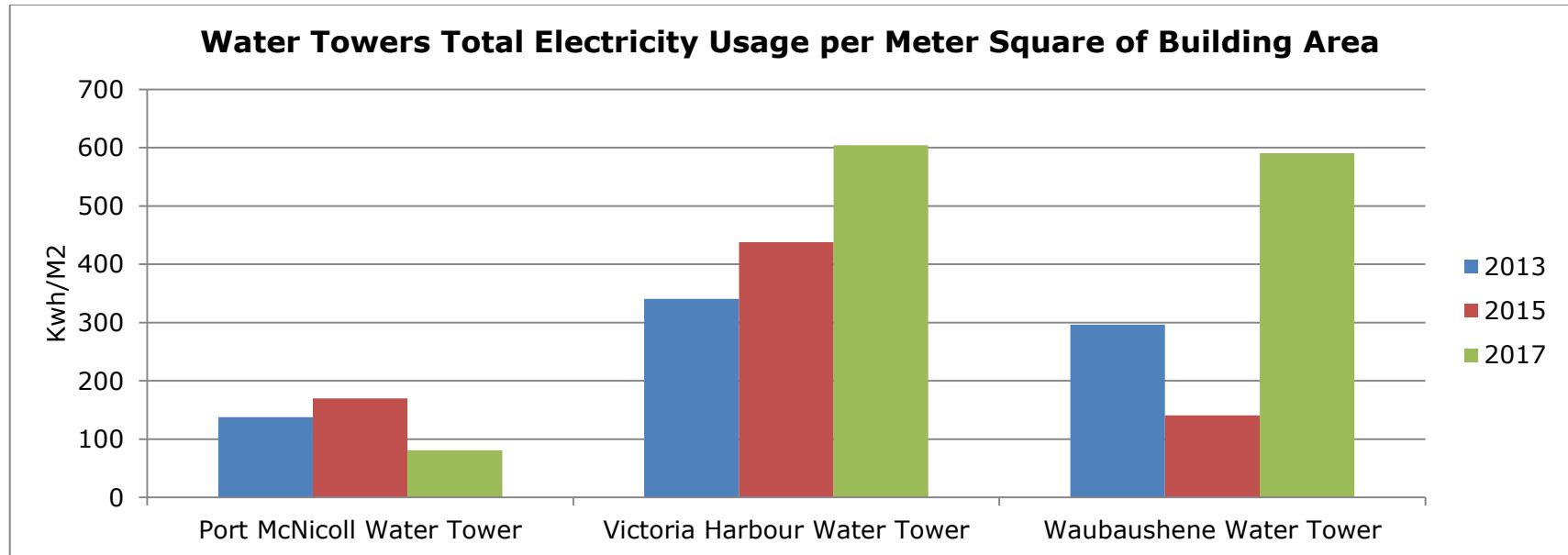
Facility Name	Address	Total Area (m2)	Fuel Types	Consumption	GHG Emissions (kg CO2e/yr)	GHG Intensity (kg CO2e/m2)
OFFICES						
Township of Tay - Office	450 Park Street	1,187	NG Elect.	19,521 m3 93,701 kWh	36,907 1,621	31 1
LIBRARIES						
Victoria Harbour Library	145 Albert Street	217	NG Elect.	2,754 m3 13,994 kWh	5,207 242	24 1
Port McNicoll Library	715 Fourth Avenue	434	NG Elect.	1,864 m3 20,546 kWh	3,524 355	8 1
Waubashene Library	17 Thiffault Street	173	NG Elect.	1,031 m3 8,370 kWh	1,949 145	11 1
FIREHALLS						
Port McNicoll Firehall	714 Third Street	283	NG Elect.	2,551 m3 10,937 kWh	4,823 189	17 1
Victoria Harbour Fire Hall	266 Park Street	766	NG Elect.	5,454 m3 32,008 kWh	10,311 554	13 1
Waubashene Fire Department	445 Fallowfield Lane	372	NG Elect.	6,212 m3 15,923 kWh	11,745 275	32 1
Old Fort Fire Hall	2224 Old Fort Road	155	NG Elect.	1,473 m3 13,030 kWh	2,785 225	18 1
New Old Fort Fire Hall	2201 Old Fort Road	892	NG Elect.	4,659 m3 13,154 kWh	8,808 228	10 0
COMMUNITY SPACES						
Oakwood Community Centre	290 Park Street	869	NG Elect.	12,822 m3 71,752 kWh	24,242 1,241	28 1
Port McNicoll Community Centre	560 7th Avenue	404	NG Elect.	7,031 m3 11,410 kWh	13,293 193	33 0
Port McNicoll Recreation Centre	541 Calvert Street	538	Elect.	13,444 kWh	233	0
Harbour Shores Community Room	145 Albert Street	73	NG Elect.	1,158 m3 5,995 kWh	2,189 104	30 1
Waubashene Portable	445 Fallowfield Lane	69	Elect.	5,308 kWh	92	1
WASHROOM/CHANGE ROOM/OUTDOOR REC.						
Waverley Community Centre	1049 Truax Lane	90	Elect.	24,998 kWh	432	4
Oakwood Park	280 Park Street	90	Elect.	23,946 kWh	414	5
Port McNicoll Talbot Park	560 Calvert Street	90	Elect.	16,240 kWh	281	7
Waubashene Ball Diamond	445 Fallowfield Lane	90	Elect.	14,157 kWh	245	13
INDOOR REC. (TALBOT RINK)						
Port McNicoll Talbot Park Rink	560 Calvert Street	2,766	NG Elect.	9,407 m3 20,7647 kWh	17,785 3,592	6 1
PARKING GARAGES						
Township of Tay - Garage	450 Park Street	1,325	NG Elect.	29,900 m3 45,957 kWh	56,530 795	43 1
Old Victoria Harbour Fire Hall	216 Albert Street	204	NG Elect.	2,288 m3 17,049 kWh	4,326 335	21 2
New Old Fort Fire Hall	2201 Old Fort Road	130	NG Elect.	696 m3 1,966 kWh	1,316 34	10 0
OTHER (CANADA POST)						
Canada Post - Victoria Harbour	145 Albert Street	135	NG Elect.	1,476 m3 9,782 kWh	2,791 169	21 1
WATER TOWERS						
Waubashene Water Tower	214 Browns Line	140	Elect.	12,405 kWh	215	2
Victoria Harbour Water Tower	205 Jephson Street	140	Elect.	12,683 kWh	219	2
Port McNicoll Water Tower	464 Simcoe Street	140	Elect.	4,117 kWh	71	1
WATER TREATMENT AND DISTRIBUTION						
Rope Water Treatment Plant	204 Ruta Road	106	Elect.	88,727 kWh	153	1
Port McNicoll Booster Station	4885 Talbot Street	168	NG Elect.	1,713 m3 71,863 kWh	3,239 1,243	19 7
Tay Area Treatment Plant	45 Lighthouse Crescent	953	NG Elect.	27,522 m3 535,596 kWh	52,034 9,265	55 10
Waubashene Booster Station	3 Pine Street	235	NG Elect.	7,708 m3 56,106 kWh	14,573 971	62 4
Maple Street Booster Station	340 Albert Street	74	Elect.	50,017 kWh	865	12
WASTE WATER TREATMENT AND COLLECTION						
Port McNicoll WWTP	551 First Avenue	1,153	NG Elect.	11,941 m3 1,275,123 kWh	22,576 22,057	20 19
Victoria Harbour WWTP	158 Industrial Road	899	Elect.	829,477 kWh	14,348	16
Winfield Pumping Station	6 Winfield Drive	13	Elect.	40,533 kWh	701	54
Bourgeois Pumping Station	26 Bourgeois Beach Road	13	Elect.	2,753 kWh	47	4
Mitchells Pumping Station	184 Mitchells Beach Road	13	Elect.	3,321 kWh	57	4
Ellen Street Pumping Station	40 Ellen Street	13	Elect.	41,364 kWh	716	55
Robins Point Pumping Station	270 Robins Point Road	13	Elect.	4,300 kWh	74	6
PM Pumphouse - First Avenue Station	717 First Avenue	13	Elect.	68,523 kWh	1,185	91
Wycliffe Cove	Wycliffe	13	Elect.	978 kWh	16	1
STREETLIGHTS						
Port McNicoll Crossing Light	Port McNicoll		Elect.	2,390 kWh	41	41
Tay Street lighting	Various locations		Elect.	376,290 kWh	6,509	6,509

APPENDIX B: Completed Energy Projects (2014-2017)

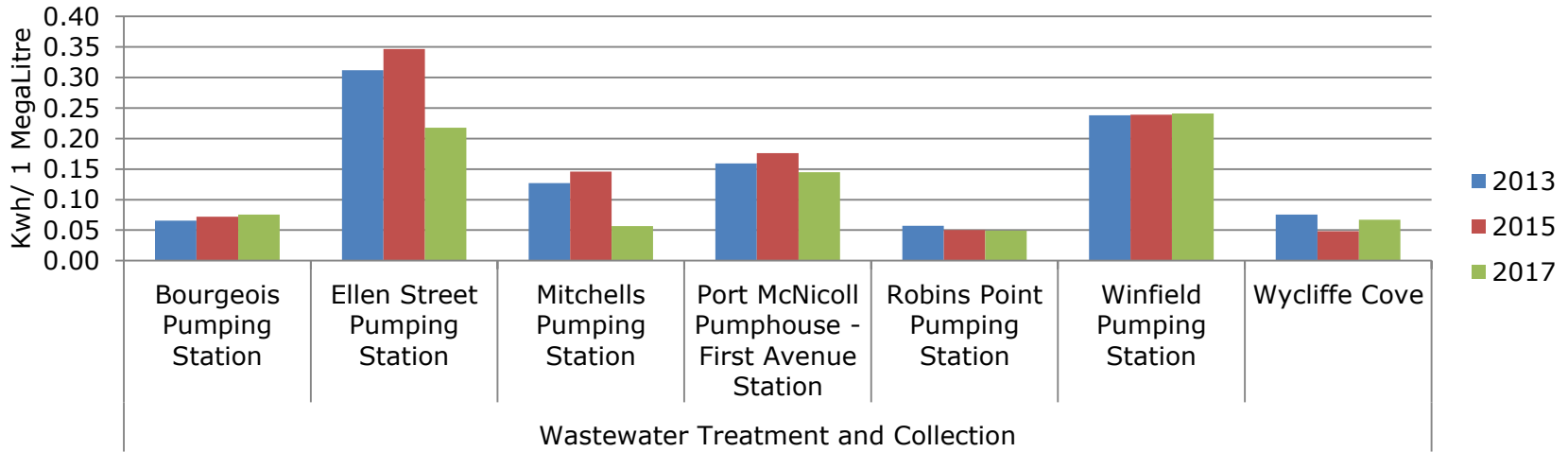
Facility/Operation Type	Facility/Operation	Completed Energy Measures	Completion Date
Offices	Administration Office	Roof replacement (excluding area over vault)	2014
		interior LED lighting	2016
		LED community sign board installed	2017
Libraries	Port McNicoll Library	Electric hot water tank converted to natural gas	2017
		Heat control thermostat installed	2015
	Victoria Harbour Library	Roof-top heating units repaired	2015
		New roof (entire building)	2016
	Waubaushe Library	New stucco (entire building)	2017
		Furnace replacement	2016
Community Spaces	Oakwood Community	LED lighting (Gym and Kitchen)	2016
		HVAC replaced	2014
		Partial Roof replacement (remainder to be completed in 2019)	2015
	Harbour Shores Community Room	New roof (entire building)	2016
		New stucco (entire building)	2017
	Port McNicoll Community Centre	New roof	2016
		LED lighting	2016
		HVAC replacement	2017
	Waubaushe Portable	Hot water tank replacement	2017
		New roof	2014
Fire halls	New Old Fort Fire Hall	LED community sign installed (level of service increase)	2017
		Led lighting	2017
	Port McNicoll Fire Hall	New roof	2013
		EOC A/C unit installed (level of service increase)	2017
	Victoria Harbour Fire Hall	New Roof	2016
Washroom/Change room/Outdoor Rec.	Talbot Park Oakwood Park	Faulty Light replaced	2017
		New roof	2015
Talbot Park Rink	Port McNicoll Rink	Compressor replaced	2015
Public Works Parking/Storage	Township Office-Garage	LED lighting	2017
Canada Post	Canada Post	New roof (entire building)	2016
		New stucco (entire building)	2017
Water Treatment and Distribution	Tay Area Treatment Plant	Natural Gas added	2014/2015
Wastewater Treatment and Collection	Port McNicoll WWTP	Demand Optimized to reduce demand load	2017
		New headworks building added (efficiency of operations)	2016/2017
	Victoria Harbour WWTP	UV disinfection system added (efficiency of operations)	2016/2017
Streetlights & Signals	Tay Street lighting Port McNicoll Cross lights	Led lighting retro fit program	2014-2017
		Removed. School no longer in use.	2016

APPENDIX C: Municipal Operations Electricity Consumption (2013-2017)

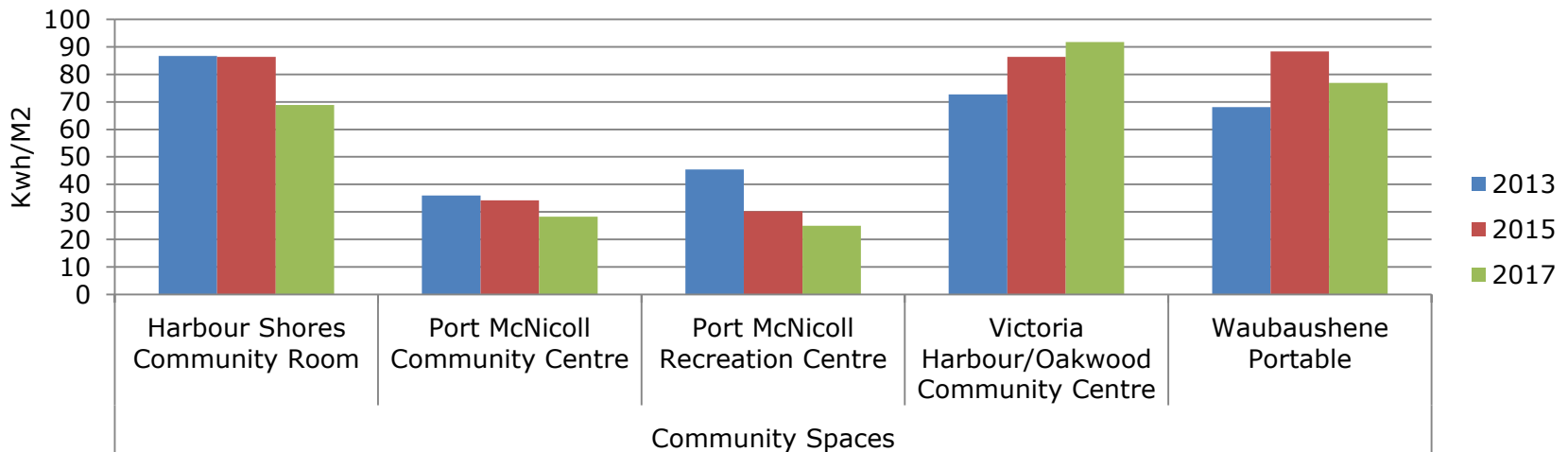


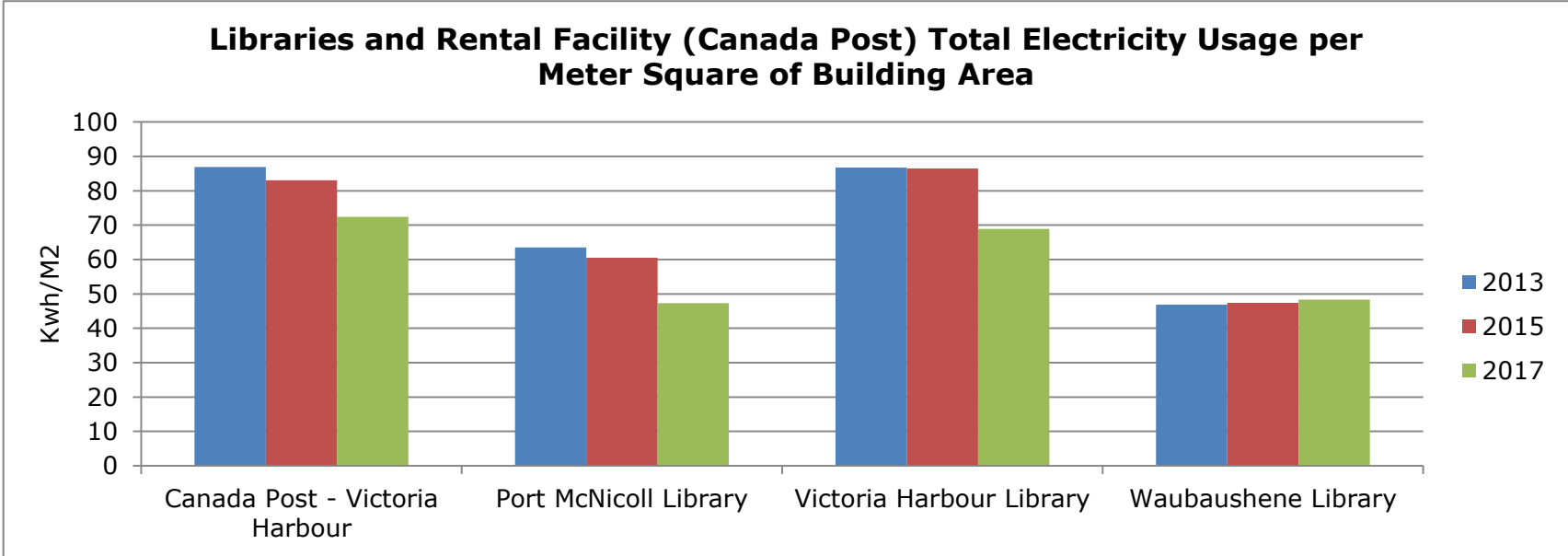
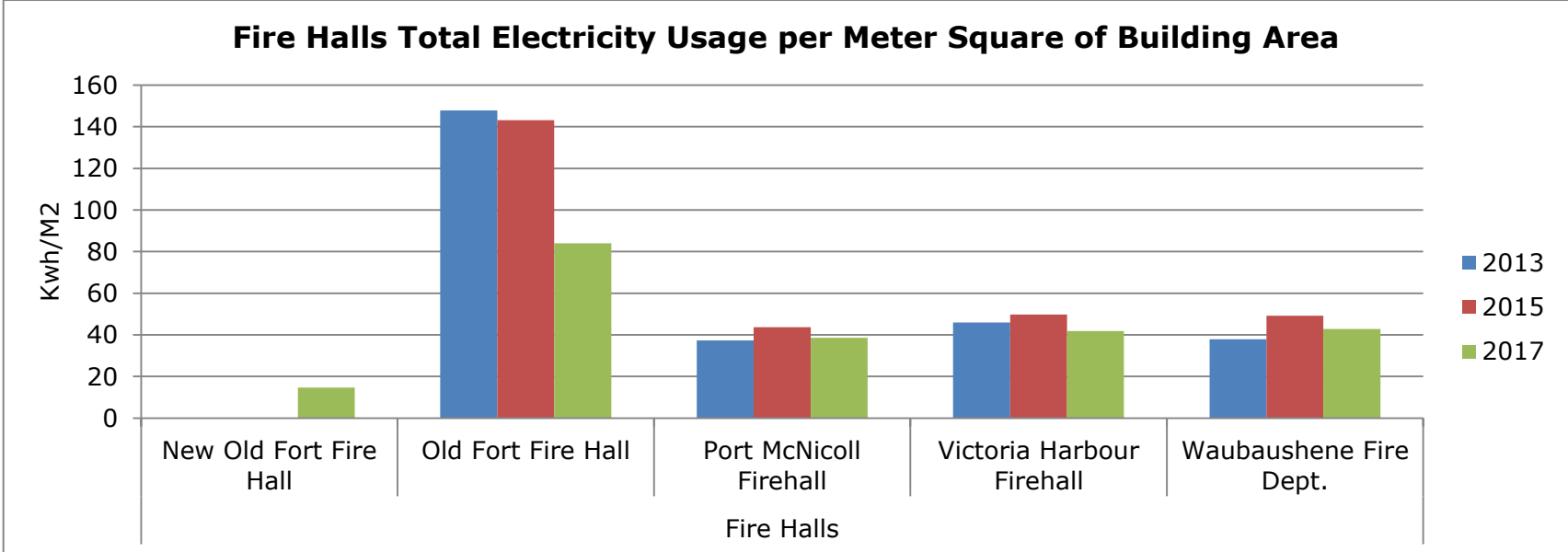


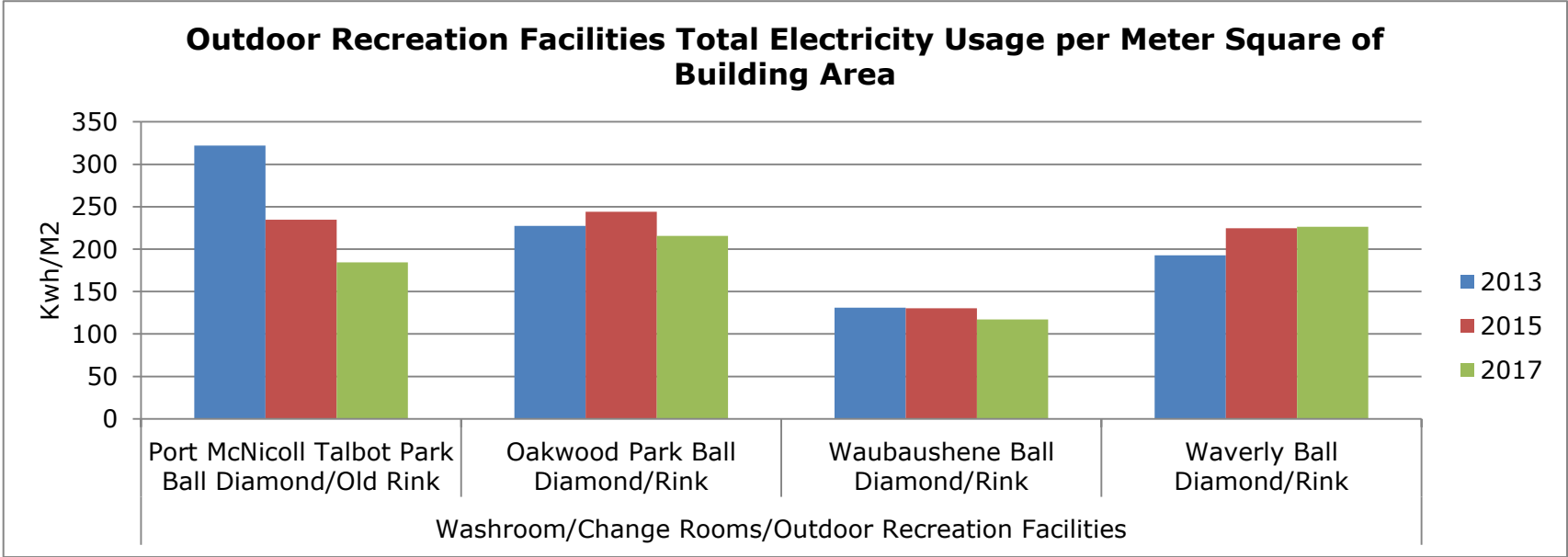
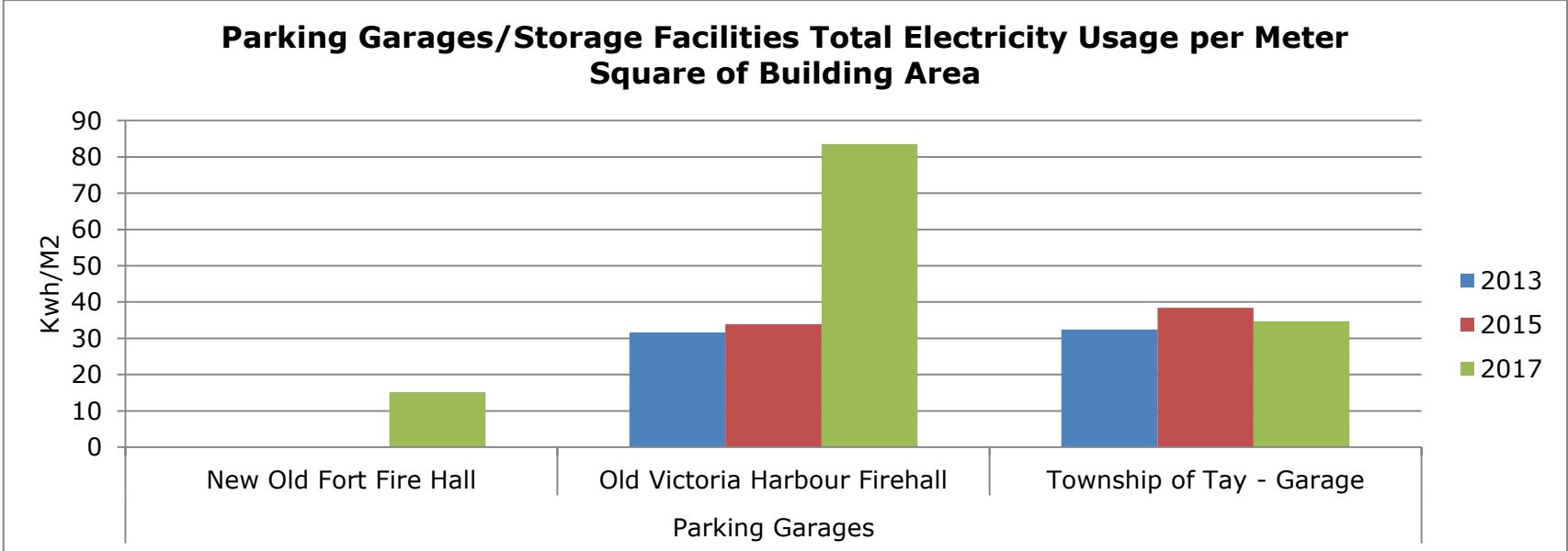
Pumping Stations Total Electricity Consumption per MegaLitre of Wastewater Pumped



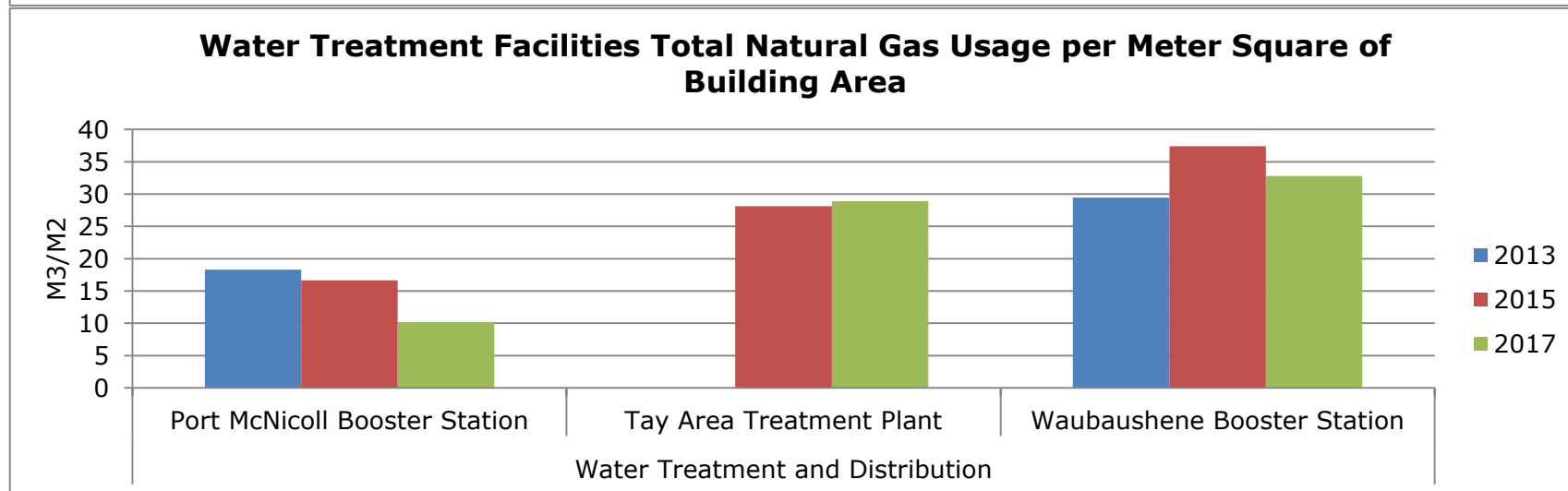
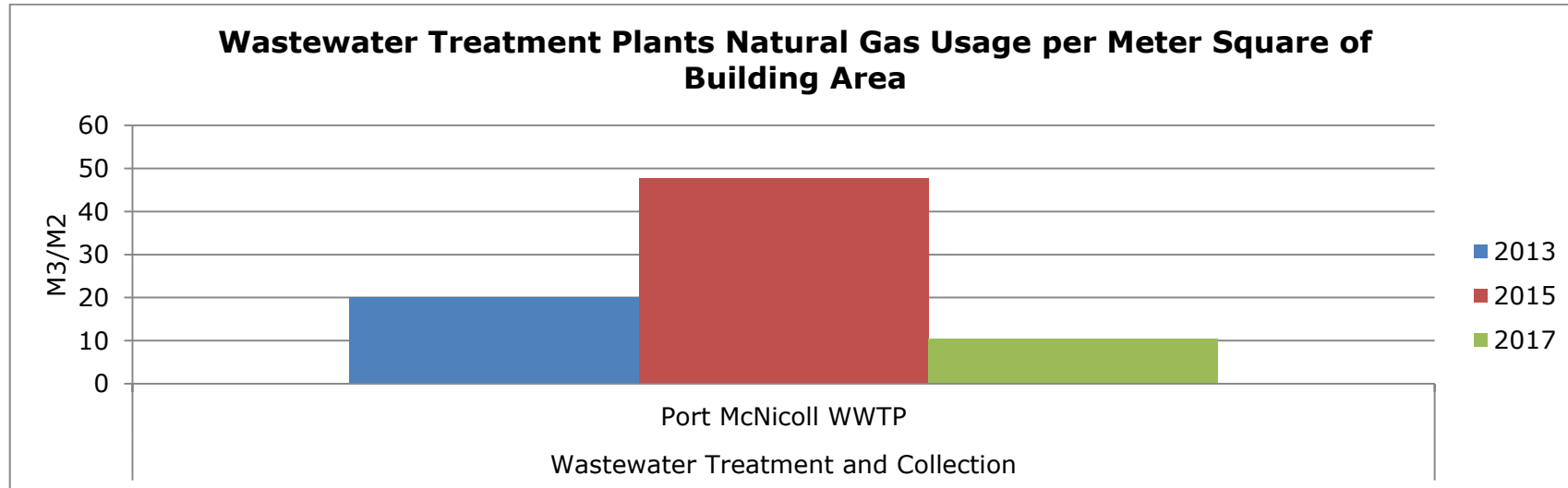
Community Spaces Total Electricity Usage per Meter Squared of Building Area

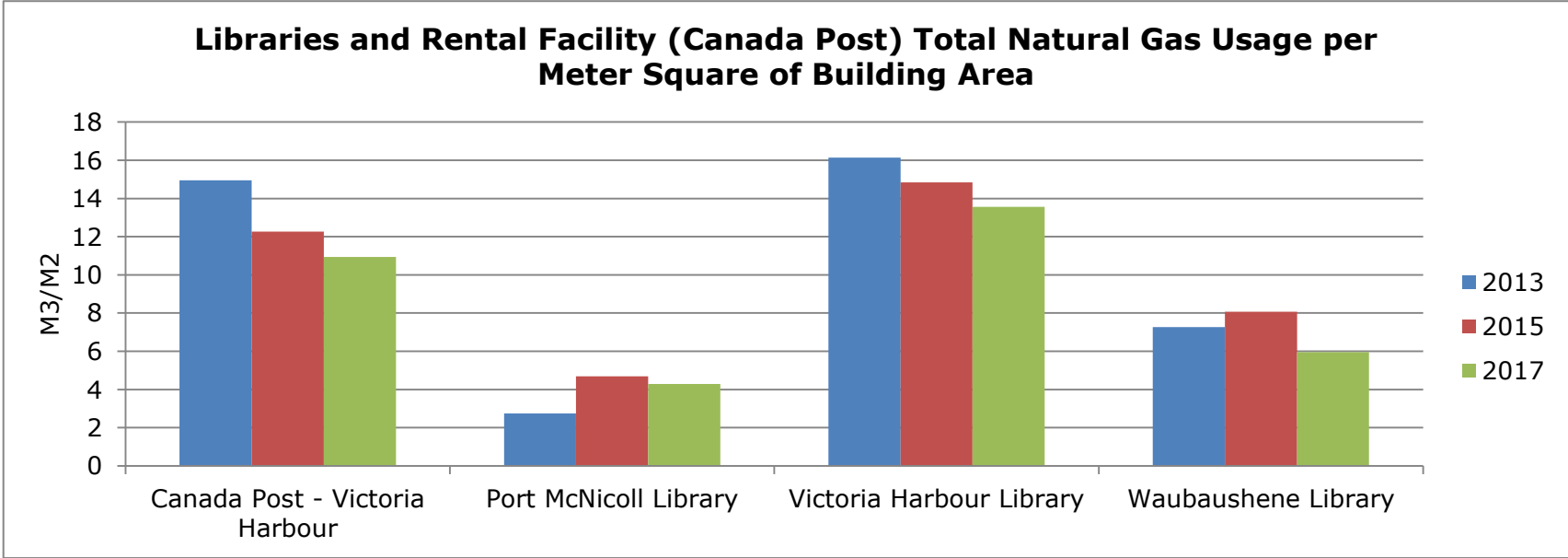
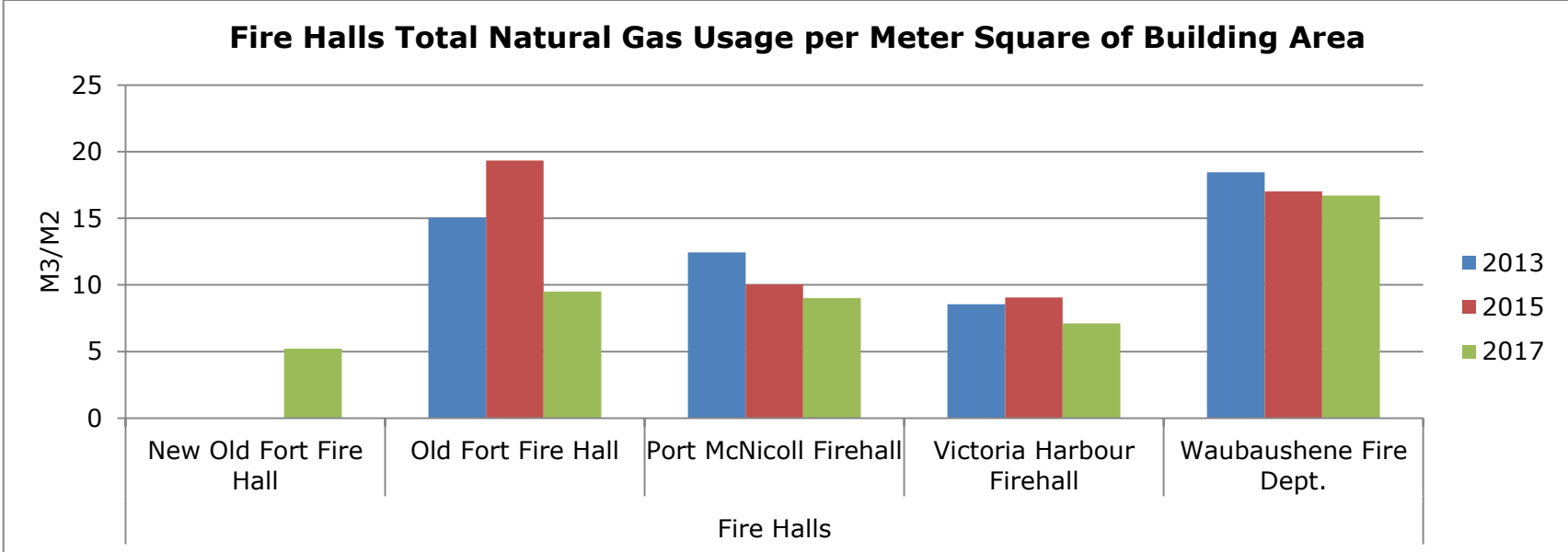


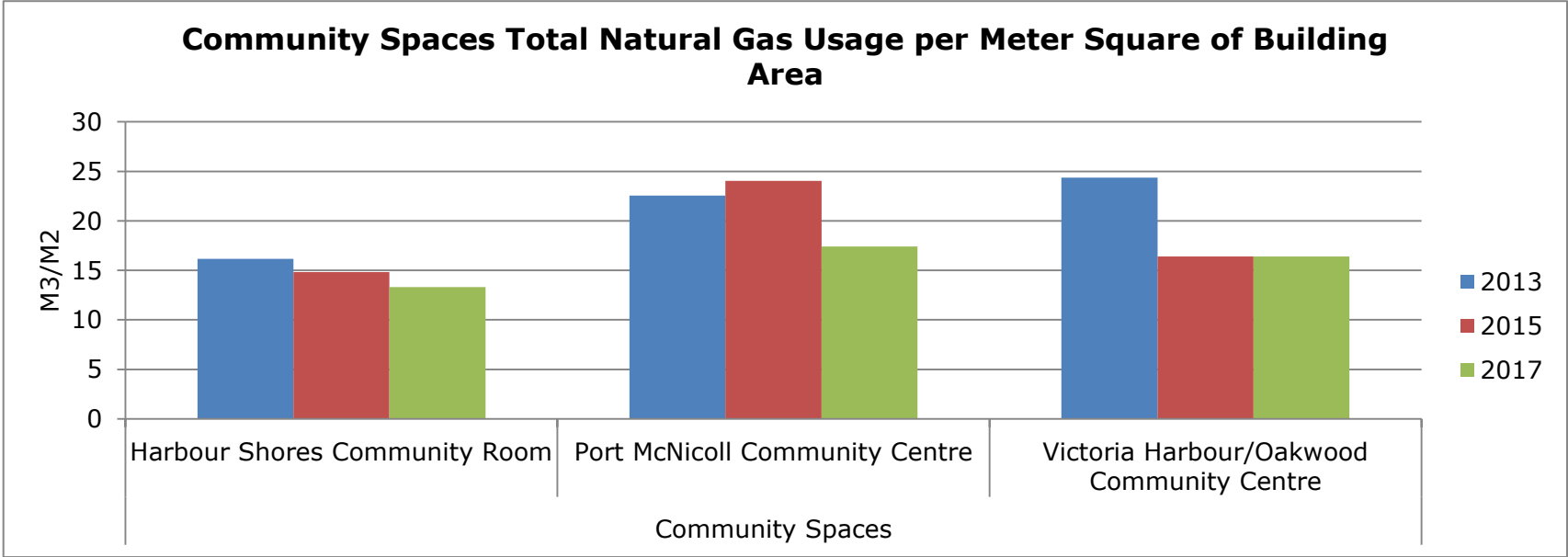
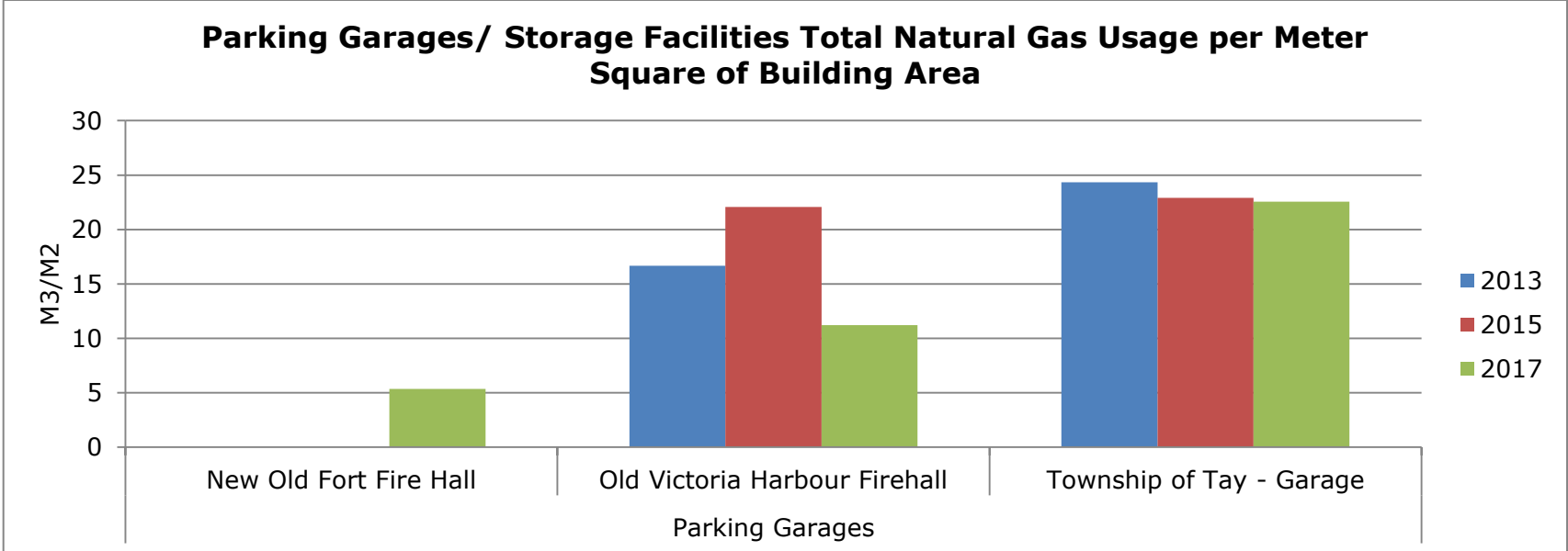




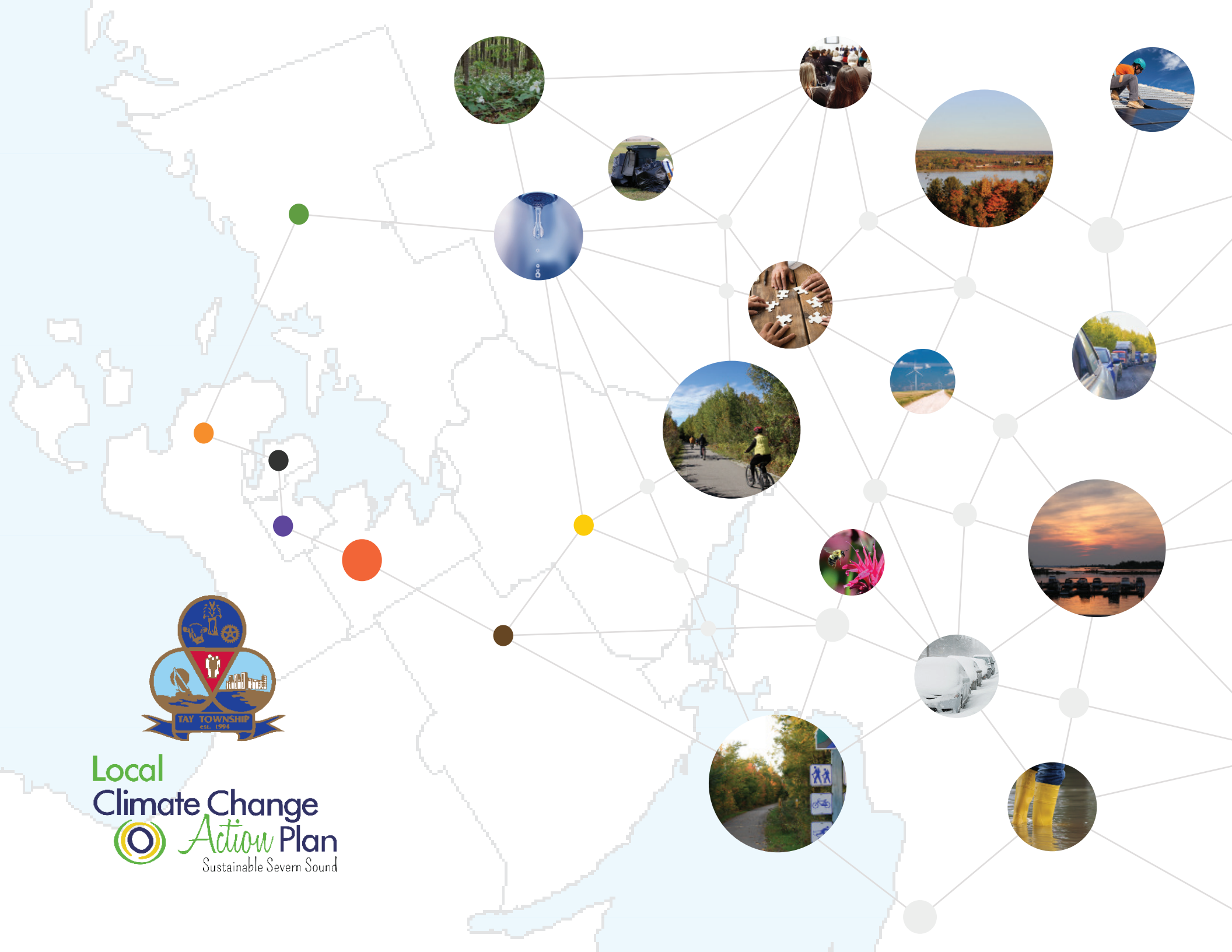
APPENDIX D: Municipal Operations Natural Gas Consumption (2013-2017)







APPENDIX E: LOCAL CLIMATE CHANGE ACTION PLAN



**Local
Climate Change
Action Plan**
Sustainable Severn Sound

Sustainable Severn Sound (SSS) and the Sustainability Committee (SC)

Sustainable Severn Sound (SSS) is a regional sustainability program supported by seven municipalities in the County of Simcoe and the District Municipality of Muskoka including the Towns of Midland and Penetanguishene, and the Townships of Georgian Bay, Severn, Oro-Medonte, Tiny and Tay. This project also receives in-kind support and Sustainability Committee (SC) representation from the North Simcoe Community Futures Development Corporation / Société d'aide au développement des collectivités Simcoe Nord (NSCFDC), the Severn Sound Environmental Association (SSEA), the Simcoe-Muskoka District Health Unit (SMDHU) and the County of Simcoe. The SC serves as an advisory committee to SSS by supporting the SSS objectives to: (1) educate municipalities and their communities on sustainable practices and policies and connect them to resources, tools and funding, (2) advance the adoption of practices/policies within municipal operations to support climate change action, greenhouse gas mitigation and sustainable communities, and (3) advocate for sustainable environmental, social and economic practices and policies at the direction of the partner municipalities.



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This preparation of this plan was carried out with assistance from the Municipalities for Climate Innovation Program (MCIP), a fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities (FCM). Notwithstanding this support, the views expressed are the personal views of the authors, FCM and the Government of Canada accept no responsibility for them. This plan was prepared by Tracy Roxborough and Victoria Ervick of SSS.

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Background

In collaboration with our municipal and community partners, SSS released the area's first Local Climate Change Action Plan (LCCAP): Regional Greenhouse Gas (GHG) Summary in June 2018. The LCCAP includes both a corporate and community inventory of GHG emissions for each of our municipal partners including: Midland, Penetanguishene, Georgian Bay, Severn, Oro-Medonte, Tiny and Tay; identifies regional GHG reduction targets to be achieved by 2028, and recommends 18 high-level actions to reduce municipal and community contributions to climate change.

On March 14, 2018, your Council further demonstrated Tay's commitment to taking action on climate change and approved a model resolution put forth by SSS to join the Federation of Canadian Municipalities (FCM) Partners for Climate Protection (PCP) program. The PCP program is a national network of municipal governments working to address climate change, and is a joint initiative between FCM and ICLEI - Local Governments for Sustainability. The PCP network includes over 350 Canadian municipalities, each working in alignment with the PCP's 5 milestone performance-based framework (Table 1) for reducing GHG emissions. In July 2018, the Township of Tay successfully achieved Milestone 1 of the program and is in the position to move rapidly to Milestone 3 with the guidance of SSS.

Up to half of Canada's GHG emissions are under the influence of municipal governments. By reducing GHG emissions from municipal operations and in the larger community, Tay will receive multiple benefits, such as reduced resource (energy, water) expenses, healthier communities, more resilient infrastructure and reduced impact on the environment. In order to accomplish this, support and buy-in is needed by Council, municipal staff, and the citizens of Tay.

Table 1. The PCP program framework

Milestone	Status
Milestone 1 – Creating a GHG emissions inventory and forecast	Achieved Jul-2018
Milestone 2 – Setting an emissions reduction target	In-progress
Milestone 3 – Develop a local action plan	In-progress
Milestone 4 – Implementing a local action plan or set of activities	Expected 2020 & on-going
Milestone 5 – Progress and reporting results	2020 & on-going



Alignment with existing plans and policies

The LCCAP, this municipal-level climate change action plan and Tay's PCP membership commitment supports a number of key strategic plans within the Township including:

1. Township of [Tay's corporate strategic plan](#) and the Township's goal to, *'build a strong and collaborative community, provide value for money spent and to establish priorities to preserve and protect the environment, waterfront, heritage, character and lifestyles of Tay.'*
2. [The Township's Energy Conservation and Demand Energy Management \(CDM\) Plan](#) (requirements anticipated to be amended under Ontario's [Electricity Act](#) (re: [O. Reg. 397/11: Energy Conservation and Demand Management Plans](#)),
3. [Tay's Asset Management Plan \(AMP\)](#) (re: [O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure](#)), and
4. [Official Plan](#) (re: [Growth Plan for the Greater Golden Horseshoe, 2017, Section 4.2.10](#)).

Recognizing the recent changes to O. Reg 397/11, the Township of Tay will still be required to report annually on its facility energy consumption and associated GHG emissions under the amended Electricity Act. The Township is legislated to update its CDM Plan and to have a Strategic Asset Management Policy in place by July 2019, which is to include vulnerabilities that may be caused by climate change to the municipality's infrastructure assets. Beyond these requirements, these efforts are considered best practice, and are being adopted by municipalities in Ontario and across Canada.



GHG emissions

As presented in the LCCAP, the Township of Tay's total GHG emissions account for approximately 8% of the area's total emissions (Figure 1). This equates to 41,052 tonnes of CO₂ equivalent (tCO₂e)¹, with corporate emissions accounting for 1% (898 tCO₂e) of Tay's total GHG emissions and community GHG emissions accounting for 99% at 40,154 tCO₂e (Figure 2).

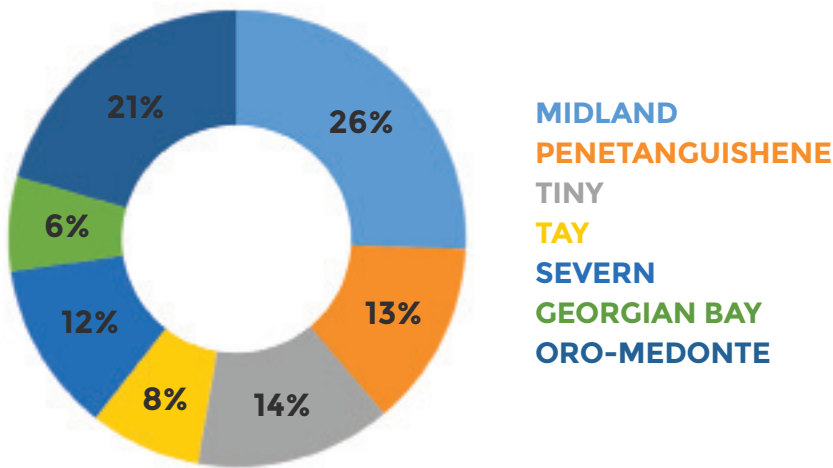


Figure 1. Per cent (%) of total regional GHG emissions, per municipality, 2015

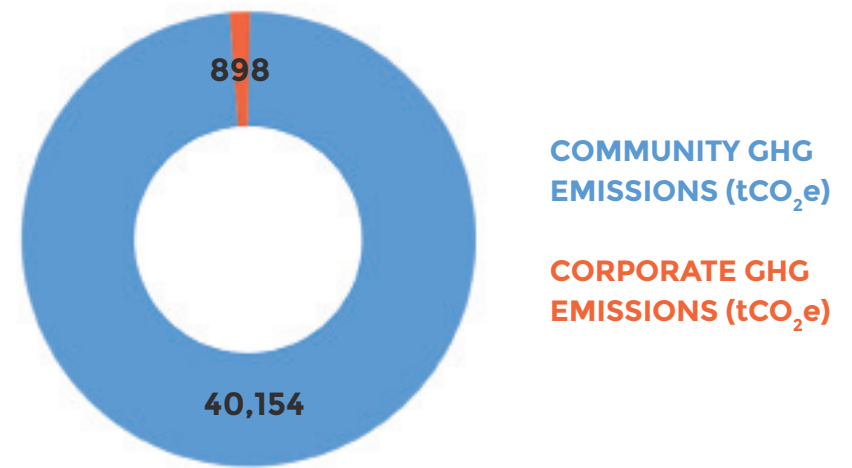


Figure 2. Tay's total GHG emission (tCO₂e), 2015

¹ Carbon dioxide equivalent is a measure used to compare the emissions from various greenhouse gases based upon their global warming potential. Organisation for Economic Co-operation and Development, 2018. Available from: www.oecd.org

GHG emissions per capita

Measuring GHG emissions on a per capita basis allows us to examine and benchmark the emissions of each municipality relative to its population. With a recorded population of 10,033 (Statistics Canada, 2016)² the Township of Tay emitted approximately 4.09 tCO₂e per capita. As shown in Table 2, Tay has the lowest per capita GHG emission rate compared amongst our 7 municipal partners. It is important to note that it is the absolute amount of GHG emissions that ultimately affects the environment. For example, an area with a high per capita emission rate but a small population (Georgian Bay) could produce fewer emissions than one with a lower per capita emission rate and larger population (Tay). Therefore, there are still several opportunities to significantly reduce both corporate and community GHG emissions. As compared to the majority of the world's countries and population, Canadians and Ontarians have some of the world's highest per capita emissions, higher than most other developed countries, even other northern countries with cold climates. To contribute to the GHG emission target of 80% less by 2050 as set by the Federal government, Ontario's emissions in 2050 will have to be less than 2 tCO₂e per person³. This will require a significant transformation in the way we live and how we use energy.

Table 2. Per capita GHG emissions (tCO₂e) per municipality, 2015

Municipality	Permanent population (Census 2016, Statistics Canada)	Total GHG emissions, 2015 (corporate + community)	Per capita emissions, including corporate (tCO ₂ e)
Georgian Bay	2,499	33,784	13.51
Midland	16,864	136,323	8.08
Penetanguishene	8,962	68,805	7.67
Tiny	11,787	74,024	6.28
Oro-Medonte	21,036	108,159	5.14
Severn	13,477	63,078	4.75
Tay	10,033	41,052	4.09
		AVERAGE	7.07

² Statistics Canada, Census Profile, 2016 Census. Available from: <https://www12.statcan.gc.ca/census-recensement/2016/dp/pd/prof/details/pagecfm?Lang=E&Geo1=CSD&Code1=3543071&Geo2=CD&Code2=3543&Data=Count&SearchText=tay&SearchType=Begin&SearchPR=01&B1=All&TABID=1>

³ The Environmental Commissioner of Ontario, 2018. Climate action in Ontario: What's next? Available from: <https://eco.on.ca/reports/2018-climate-action-in-ontario/>

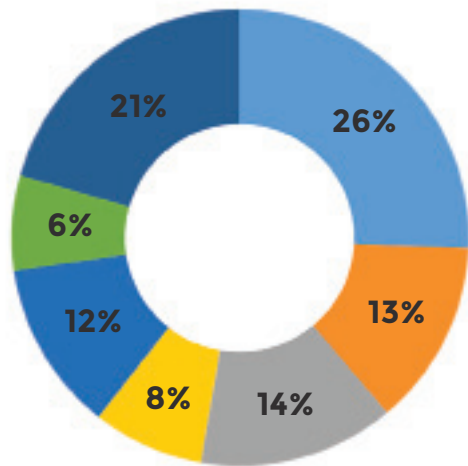
Community GHG emissions

Following the PCP's program [Canadian Supplement to the International Emissions Analysis Protocol](#), community energy use and emissions were reported by sector (transportation, residential, solid waste, commercial and institutional, and industrial) and collected for the baseline year of 2015. The Township of Tay's community GHG emissions account for 8% of the area's total community emissions (Figure 3), being the 6th highest, or 2nd lowest, GHG emitter out of the 7 municipalities inventoried.

As illustrated in Table 3, transportation is the largest emitter of GHGs, accounting for 46% (18,519 tCO₂e) of Tay's total community emissions. The personal vehicle, in large part, remains the dominant method of choice for travel in our area, which can be attributed to the largely rural setting of the community. SSS and the Township of Tay recommend residents to consider alternatives to the obvious choice, such as telecommuting, carpooling, biking, walking or public transit, when possible.

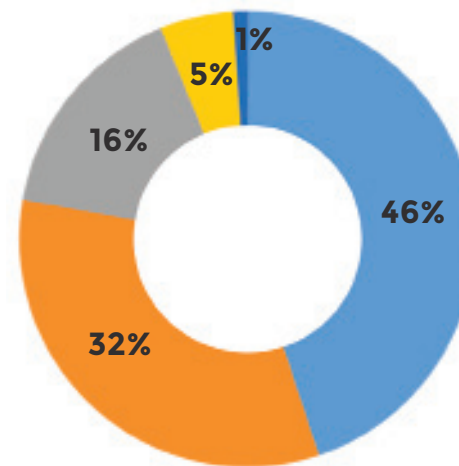
Table 3. Tay's community GHG emissions (tCO₂e) per sector, 2015

Sector	GHG emissions (tCO ₂ e)	% of total community emissions
Transportation	18,519	46%
Residential	12,913	32%
Waste	6,305	16%
Commercial	2,053	5%
Industrial	364	1%
Total	40,154	100%



MIDLAND
PENETANGUISHENE
TINY
TAY
SEVERN
GEORGIAN BAY
ORO-MEDONTE

Figure 3. Community GHG emissions (per cent) per municipality as contributed to the regional total, 2015



TRANSPORTATION
RESIDENTIAL
WASTE
COMMERCIAL
INDUSTRIAL

Figure 4. Tay's community GHG emissions (per cent) per sector, 2015

The residential sector was the 2nd largest emitter of community emissions in 2015. GHG emissions from energy use was approximately 12,913 tCO₂e which is equivalent to 277,996 GJ of energy consumption. Moving forward, SSS will explore opportunities to work with the community to encourage a reduction in the amount of electricity and natural gas used in our homes through conservation, improved efficiency, and the use of renewable energy sources. We also encourage the Township of Tay to consider a strong planning policy that supports more sustainable homes, developments and neighbourhoods that exceeds Building Code and/or Planning Act requirements.

Community GHG emissions forecast, 2015-2028

In 2015, 40,154 tCO₂e were emitted through community day-to-day activities, including the energy used in residential, commercial, institutional and industrial sectors, and the GHG emissions created as a result of transportation and solid waste generation. Based upon the projected increase of the Township's population to approximately 11,400 by 2031 from 2011, as contained in Schedule 7 of the Growth Plan and the County of Simcoe Official Plan, the Township's community GHG emission forecast is projected per a 0.68% annual population growth rate to 2028. As a result of that increase and considering business-as-usual (BAU) operations, GHG emissions are expected to grow to 43,854 tCO₂e, or by 9.2 % by 2028, if no significant action is taken. This increase over 2015 GHG emission levels would allow an additional 3,700 tCO₂e to be emitted by the community by 2028.

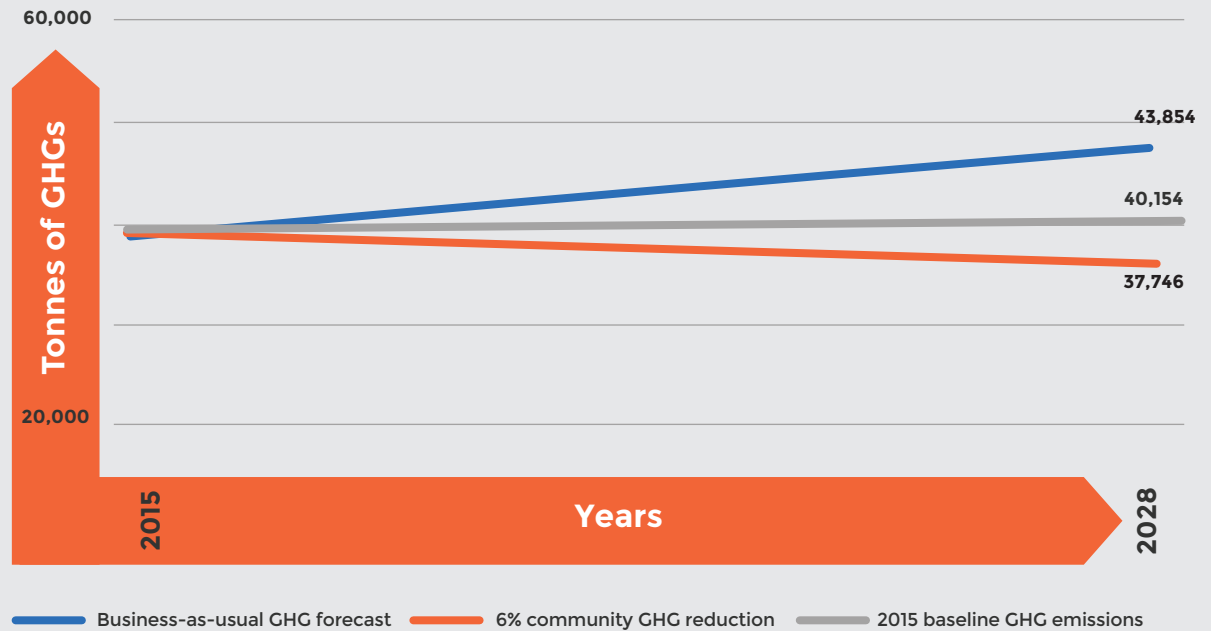


Figure 5. Community GHG emissions forecast, 2015-2028

Community GHG emissions reduction target to 2028

Based upon the limited influence that the Township of Tay has on community GHG emissions, the recommended community GHG reduction target is 6% less by 2028. This target represents an absolute emissions reduction of 2,678 less tCO₂e relative to 2015 baseline emissions of 40,154 tCO₂e, representing a 2028 target of 37,746 tCO₂e. Achieving this target would be equivalent to:

- Removing 590 cars from the road
- Replacing 11,804 20-year-old refrigerators with new models
- Installing 3,935 residential solar hot water systems.

Corporate GHG emissions

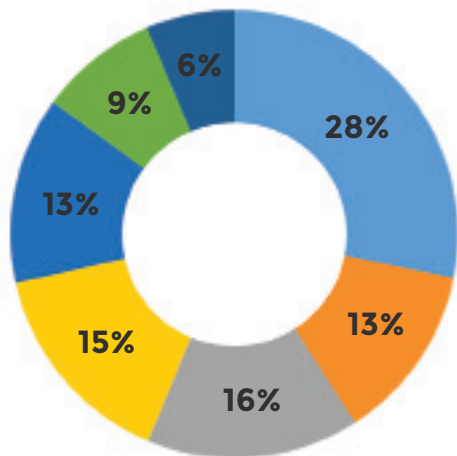
This municipal climate change action plan includes recommendations to reduce energy and emissions from municipal operations including fleet, water and wastewater, buildings and facilities, solid waste, and streetlights. The corporate data inventoried focuses exclusively on energy and GHG emissions that are directly controlled by the Township. It does not include emissions that are a consequence of activities from sources not controlled or owned by the Township (including third-party contractors, construction activities, business, or air travel) or those that occur outside Tay's geographical boundary.

In 2015, the baseline year, the Township of Tay's total corporate energy use was approximately 27,124 GJ. This is equivalent to 898 tCO₂e and accounts for approximately 15% of the region's total corporate emissions as presented in the LCCAP (Table 4 and Figure 5). Tay's total corporate emissions are generated from the use of diesel, gasoline, electricity and natural gas. In comparison, the Township of Tiny's municipal GHG emissions accounted for 15% of the regional corporate total, while Penetanguishene's corporate GHG emissions account for 13% of the regional corporate total.

As illustrated in Table 4 and Figure 7, the Township's GHG emissions predominately stem from fleet (38%) and infrastructure related to water and wastewater (34%). Most water and wastewater emissions are generated from electricity and natural gas, used to heat and power each of the Township's 39 water related buildings, while fleet emissions are generated from diesel and gasoline consumption. Of Tay's top 5 GHG emitting buildings and facilities, two are related to water and wastewater infrastructure (Table 5), and make up approximately 27% (251 tCO₂e) of Tay's total corporate emissions.

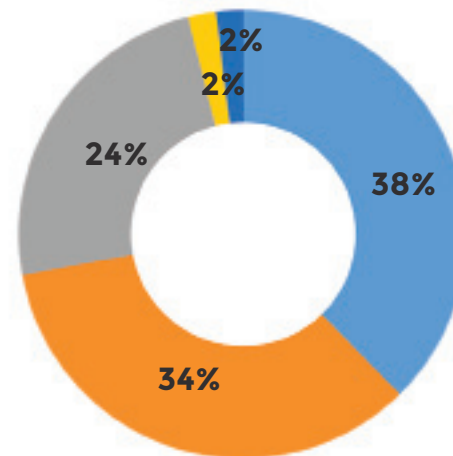
Table 4. Tay's corporate GHG emissions (tCO₂e) per sector, 2015

Sector	GHG emissions (tCO ₂ e)	% of total community emissions
Fleet	342	38%
Water & wastewater	309	34%
Buildings & facilities	217	24%
Streetlights	16	2%
Solid waste	14	2%
Total	898	100%



MIDLAND
PENETANGUISHENE
TINY
SEVERN
GEORGIAN BAY
ORO-MEDONTE

Figure 6. Corporate GHG emissions (per cent) as contributed per municipality, 2015



FLEET
WATER & WASTEWATER
BUILDINGS
STREETLIGHTS
WASTE

Figure 7. Tay's corporate GHG emissions (per cent) per sector, 2015

Corporate GHG emissions forecast, 2015-2028

In 2015, the Township's corporate GHG emissions were 898 tCO₂e as a result of day-to-day municipal operations. Based upon the projected increase of the Township's population to approximately 11,400 by 2031 from 2011, as contained in Schedule 7 of the Growth Plan and the County of Simcoe Official Plan, the Township's corporate GHG forecast is projected per a 0.68% population increase to 2028. As a result of that increase and considering BAU operations, corporate GHG emissions are expected to grow to 983 tCO₂e, or by 9.5% by 2028. As GHG emissions are directly correlated to energy costs, the expectation is that municipal expenses would also increase relative to this increase of GHGs. Under the Paris Agreement, Canada has committed to reducing GHG emissions by 30% below 2005 levels by 2030⁵. The 25% target to be achieved by the Township remains consistent with the selected Federal target.

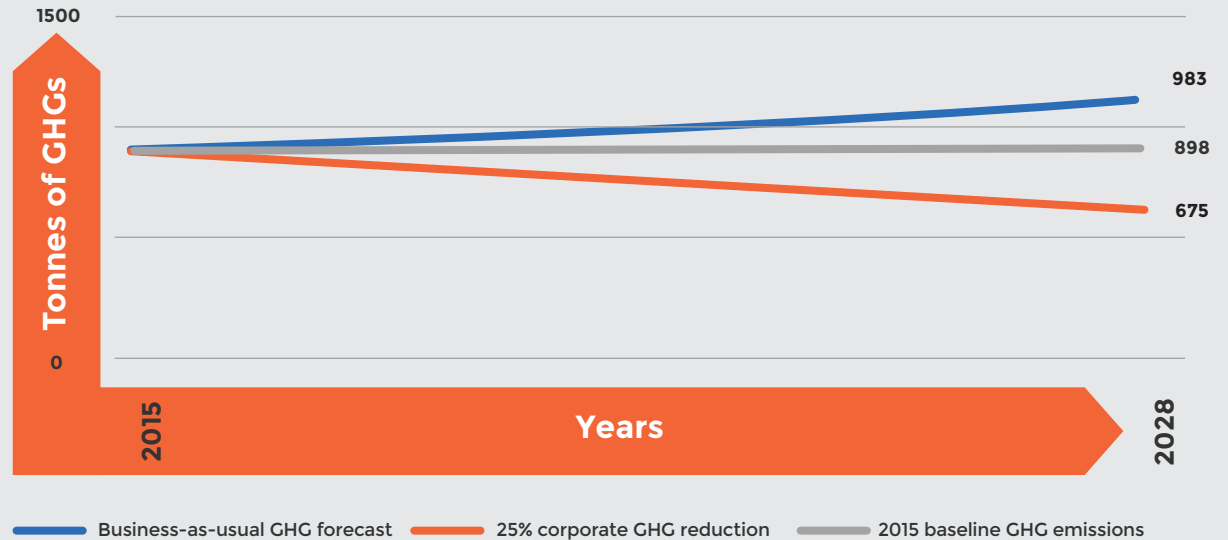


Figure 8. Corporate GHG emission forecast, 2015-2028

Corporate GHG emissions reduction target to 2028

SSS has recommended that Council support a corporate GHG emissions reduction target of 25% below 2015 levels by 2028. This target represents an absolute emissions reduction of 223 tCO₂e relative to 2015 baseline emissions, having the Township strive to emit no more than 675 total tCO₂e from corporate activities in 2028, and is equivalent to:

- Removing 71 cars from the road.
- Replacing 1,412 20-year-old refrigerators with new models.
- Installing 471 residential solar hot water systems⁶.

⁵ Government of Canada, 2018. Available from: <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/progress-towards-canada-greenhouse-gas-emissions-reduction-target.html>

⁶ Equivalent calculations produced from the calculations derived from the Partners for Climate Protection Tool (PCP Milestone Tool) per the selection of an absolute 31% GHG reduction from 2015-2028 for the Township of Tay.

Based on Ontario's average historical cost for electricity in 2015 and the average commodity price* for natural gas paid by Tay in 2015, the Town-ship spent approximately \$338,864 on energy consumption for their top 5 buildings alone in the baseline year. Achieving a 25% GHG reduction target would result in a projected cost-savings of up-to approximately \$847,161 from the top 5 buildings and facilities alone⁷ over the next ten years, or \$84,716 per year. This is a conservative estimate⁸, which considers average annual costs for buildings and facilities only, with the opportunity for greater cost savings highly likely if the targets are achieved and GHG emissions are reduced across each of the 5 sectors.

Table 5. Tay's top 5 GHG emitting facilities and estimated energy cost, 2015

Municipal operation	Address	Total square feet (sq.ft)	Energy usage		GHG emissions (tCO ₂ e) per facility
			Kilowatts per hour (kWh)	Cubic metre (m ³)	
Port McNicoll WWTP	551 First Ave.	6114	1,764,585	56,307	178
Tay Treatment Plant	45 Lighthouse Cres.	7815	558,422	26,801	73
Garage	450 Park St.	13,735	47,472	30,353	59
Administrative office	450 Park St.	7804	110,768	17,336	37
Oakwood Community Centre	290 Park St.	9354	67,527	12,817	26
Total			2,548,774	143,614	373
Estimated total cost (\$)*			\$317,322	\$21,542	\$338,864

*Estimates are based on commodity price and do not include fixed or semi-fixed costs (i.e. delivery charges, etc.)

⁷ This projection uses 2015 historical costs and does not include expected energy cost increases, price fluctuations, nor hedge/spot market billing scenarios. The projected cost savings is only representative of the buildings and facilities sector and does not include opportunities within the other 4 sectors ((1) fleet, (2) streetlights, (3) waste, (4) water and sewage).

⁸ This estimate assumes average building and facilities energy costs of \$338,864 per year over 10 years, for a total of \$3,388,640 in costs, with a direct 25% reduction in those costs presented as a result of the achieved 25% reduction in corporate GHG emissions.

Opportunities for reducing corporate GHG emissions

As part of the implementation plan, SSS staff will review Tay's long-term and annual capital budgets on an on-going basis to identify opportunities to reduce corporate GHG emissions. Moving forward, SSS will provide recommendations as to what scheduled projects and/or plans have the potential to reduce GHG emissions, how those initiatives may result in additional GHG reductions through enhanced sustainability options, and will work closely with municipal staff to integrate these recommendations into municipal operations, policies and procedures as feasible. With that being said, as changes to policy, legislation, technology, climate and/or other changes occur, the recommended actions will evolve. Some of the recommendations are directly aligned with Tay's Energy Conservation and Demand Management Plan, Asset Management Plan and/or Strategic Plan, and all have positive environmental, social and economic outcomes.

Actions and recommendations

Table 6 lists the actions SSS and the Sustainability Committee have identified to guide the Township in meeting their 25% corporate and 6% community GHG reduction targets. These recommendations will be updated every 5 years by SSS and the Sustainability Committee to reflect new projects and GHG emission reduction opportunities.

Implementation costs

For the purpose of this plan, four expenditure categories were used to estimate the total cost associated with the implementation of each action in Table 6.

Capital	Capital expenditures by local jurisdictions are typically for projects and programs related to local jurisdictional operations, such as installing solar photovoltaics (PV) on municipal facilities, or bike lane construction.
Salary	Represents the personnel costs required to implement CAP activities. Salary costs were estimated at staff hours per action.
Consultants	Municipalities often hire external consultants to support the implementation of climate plan actions.
Materials	Some actions may require materials and supplies (i.e. brochures and meeting materials).

The cost is expressed as low (\$ = less than \$1,000), moderate (\$\$ = more than \$1,000 but less than \$5,000), medium (\$\$\$ = more than \$5,000 but less than \$10,000), high (\$\$\$\$ = more than \$10,000 but less than \$20,000), ICA (more than \$20,000). If the cost of any action is estimated as more than \$20,000, this will automatically require the preparation and municipal review of an ICA, either provided by SSS or by Township staff. As relevant, the expected return on investment (ROI) will also be considered by both SSS and the municipality prior to implementation.



Table 6. Actions to reduce GHG emissions, 2019-2028

Recommended action items	Year	EOI
Include updates of municipal & community energy consumption & climate messaging in regular newsletters, water bills & tax bills	Spring/fall, 2019	Green
Consider recommendations to update Emergency Management Plans to include climate change impacts (i.e., extreme weather, wildfire, flooding, etc.)	June/July, 2019	Yellow
Ensure business decisions & activities, including staff reports, bids, tenders & contracts - include climate change considerations involving the energy efficiency & expected GHG impact of that decision &/or activity, & how it relates to the Tay's PCP program commitment	Mar-May, 2019	Yellow
Include GHG inventories, GHG targets & climate change action items into Official Plans & municipal Strategic Plans (i.e., Council strategic plans, AT, transit, parks & recreation, master plans, etc.)	February, 2019 & on-going	Yellow
Include climate change language & influence of management decisions on GHG emissions in a new Asset Management Policy as part of 2019 AMP update	April, 2019	Orange
Prepare an inventory of municipal buildings & their associated energy audit status (not-completed, completed, implemented, etc.) & utilize this inventory in the update of the municipalities' CDM Plan in 2019, complete further actions as feasible - prioritizing top 5 GHG emission sources (see Table 5)	May, 2019+	Green
Develop a 'no-mow' & complementary pollinator policy with municipal commitments to improve the environment for pollinators & reduce corporate fuel use	2020	Yellow
Designate warming centres for winter, designate cooling centres for summer, & ensure on-site cooling locations for summer festivals & events	2021	Yellow
Develop a Sustainable Fleet Management Plan to reduce GHGs associated with corporate transportation	2021	Yellow
Investigate the feasibility of completing building & facility waste audits, complete audits & implement recommendations as deemed feasible	2022	Yellow
Prepare a Water Conservation & Management Plan to reduce corporate & community water use & to minimize the risk for flooding & drought	2022	Yellow
Complete a climate change vulnerability & risk assessment	2023	Yellow
Establish a Corporate Energy Revolving Fund* to finance corporate energy retrofit projects (i.e. revenues could be generated by renewable projects, energy inventive savings, & a percentage of savings generated by externally funded energy reduction projects)	2023	Yellow
Establish a local municipally-owned & managed forest plot to supply municipal & community tree planting projects (i.e., 1 hectare)	2024+	Red
Develop a community & corporate energy plan	2025+	Red

* The concept is to develop a sustainable municipal fund that is derived from a portion of the cost-savings achieved as a result of energy efficiency projects, renewable energy savings, energy grants &/or rebates, etc. , to finance GHG reduction & energy conservation projects.

Department lead	Secondary Lead	tCO ₂ e reduction by 2028**	Implementation cost***
Communications	CAO	N/a	\$
Emergency services	CAO	N/a	\$
CAO	All/multiple	Med: 45	\$\$
CAO	All/multiple	N/a	\$
Finance	Public works	N/a	\$
Finance	Public works	High: 55	\$\$
Parks/recreation	Public works	Low: 10	\$\$
Emergency services	Communications	N/a	\$
Finance	Public works	High: 55	\$\$\$
Parks/recreation	Public works	Low: 10	\$\$\$\$
Public works	Communications	Low: 10	\$\$\$\$
Public works	Parks/recreation	N/a	\$\$
Finance	CAO	N/a	\$\$
Parks/recreation	Public works	Low: 10	ICA
Planning	Public works	N/a	ICA

LEGEND

Priority (Light Green = Highest)



Ease of implementation (EOI)
'quick-win', medium, hard, difficult



GHG reduction potential

- Low: Equal to or less than 1% GHG reduction, estimated at approximately 10 tCO₂e less
- Med: Equal to or less than 5% GHG reduction, estimated at approximately 45 tCO₂e less
- High: Greater than 5% GHG reduction, estimated at approximately 55 tCO₂e or more
- NA: No estimate available

Total corporate GHG emissions (tCO₂e) per 2015 baseline	898
Total GHG reduced (estimated tCO₂e) through implementation of the action items	195
Estimated GHG reductions by 2028	21%
Additional GHG reduction (tCO₂e) potential through low-level implementation of Table 7 actions	86
Total achievable GHG reductions by 2028	25%

** Low estimates of GHG reductions are presented, actual GHG reductions are anticipated to be 15-20% higher than estimated.

*** These estimates for implementation include consideration for costs associated with capital, salary, consultant & materials/supplies.

The cost is expressed as low (\$ = less than \$1,000), moderate (\$\$ = more than \$1,000 but less than \$5,000), medium (\$\$\$ = more than \$5,000 but less than \$10,000), high (\$\$\$\$ = more than \$10,000 but less than \$20,000), & ICA (more than \$20,000). It should be noted that the majority of actions are not 'stand-alones,' in that most align with required municipal activities, either as existing work plan items, or as anticipated items required per Provincial legislation

Table 7. Additional actions to reduce corporate GHG emissions

List of actions	Approx. cost of implementation*
Adoption of climate change policies and GHG emissions considerations in all municipal plans & documents	\$
Adding or rearranging windows for increased daylight in retrofits & new builds	\$-\$\$\$
Adoption of green driving policy (i.e., anti-idling, right-sizing, car-pooling, telecommuting, etc.)	\$
Employee training and awareness program to conserve water, energy & resources	\$\$
Environmental stewardship or conservation actions (i.e., tree planting & preservation, habitat enhancements, etc.)	\$-\$\$\$\$
Install occupancy sensors to control interior building or facility lighting	\$-\$
Install/add exterior lighting control for buildings & facilities	\$\$-\$\$\$
Install low-flow faucets with sensors & automatic shut-offs	\$-\$
Purchase/replace office equipment with energy efficient models	\$-\$
Replace weather-stripping for doors & windows	\$-\$
Use cool/white roofs on buildings & facilities	\$\$\$-ICA
Seal building(s) or facility with caulking or spray foam	\$-\$
Upgrade indoor lighting systems	\$\$-\$\$\$\$
Vehicle replacement with a hybrid, electric, or alternative fuel vehicle	ICA
Add insulation in building(s) or facility	\$-\$\$\$
Add solar thermal water heaters for recreation facilities	\$\$\$-\$\$\$\$
Install sub-metering (building monitoring system)	\$\$\$-\$\$\$\$
Operator (building) training to optimize performance & return-on-investment	\$\$
Renovation/reconfiguring building or facility interior	\$\$\$-ICA
Replace window glazing & doors	\$\$-\$\$\$\$
Retrofit/replace supply fan motor & variable frequency drives (VFDs) in buildings & facilities	\$\$-\$\$\$\$
Update inefficient heating/furnaces & cooling systems	\$\$\$-ICA
Upgrade outdoor lighting systems	\$\$-ICA
Add Demand Controlled Ventilation for larger buildings and facilities	\$\$-\$\$\$
Replace the roof, considering green roof, solar shingles, renewable technologies, etc.	\$\$\$-ICA
Install electric vehicle (EV) charging station(s)	\$\$
Install solar photo-voltaic (PV) systems or solar thermal installations for buildings or facilities	\$\$\$-ICA
Replace heating, ventilation &/or air-conditioning system (HVACs) with a renewable technology (i.e., ground-source heat pump)	ICA
Replace HVACs with more energy efficient models (i.e., radiant, chilled beams, displacement or natural ventilation, water-source heat pumps)	ICA

Estimated GHG reduction potential per action (one-time reduction)

LOW 10 (tCO₂e) of GHGs reduced

Equal to or less than 1% GHG reduction, estimated at approximately 10 tCO₂e or less

MED 45 (tCO₂e) of GHGs reduced

Equal to or less than 5% GHG reduction, estimated at approximately 45 tCO₂e or less

HIGH 55 (tCO₂e) of GHGs reduced

Greater than 5% GHG reduction, estimated at approximately 55 tCO₂e or more

N/a

No estimate available

*The cost is expressed as low (\$ = less than \$1,000), moderate (\$\$ = more than \$1,000 but less than \$5,000), medium (\$\$\$ = more than \$5,000 but less than \$10,000), high (\$\$\$\$ = more than \$10,000 but less than \$20,000), & ICA (more than \$20,000). These are estimates only, as the cost will be impacted by a number of factors, including fees & services, project scope, size & location of project, or facility, & varying cost, quality & availability of materials, etc.



Summary

The regional LCCAP and your municipal-level action plan puts your municipality in a position to take results-driven action towards your 25% corporate and 6% community GHG reduction targets while also working towards your on-going Township priorities. This document builds upon the work already completed by the Township (i.e. energy and water conservation efforts, building upgrades, and streetlight replacements) and encourages these actions to continue through a lens that supports GHG emission reduction.

Many GHG and energy reduction actions are being pursued within existing municipal work plans and in many cases through initiatives driven by co-benefit priorities (i.e., cost-savings through retrofits and improvements, protection of land and water, multi-modal communities). As your municipalities' Associate Member of the PCP program, SSS has committed to completing Milestones 2 and 3 on behalf of the Township and SSS staff will continue to:

1. Submit formal reports to the PCP Secretariat every 2 years on behalf of the Township, documenting Tay's achievements in the PCP program to meet membership requirements,
2. Submit progress reports to the PCP program Secretariat to track actions and provide recognition as the Township advances through the milestone framework, and
3. Complete an annual PCP Members Survey, which will provide FCM with information that can be used to recognize the Township of Tay's achievements in FCM's yearly National Measures Report.



Acknowledgements

SSS and the Sustainability Committee would like to thank the Township of Tay, especially Councillor Catherine Root and CAO Mr. Robert Lamb, the Council and staff PCP program point-of-contacts, respectively, for supporting climate change action within the municipality. The insight and support provided by Councillor Root and Township representatives has allowed SSS and the SC to succeed in delivering on our goal to complete the LCCAP, and to develop your municipal-level climate change action plan, establishing the framework for climate change action within the municipality.

Links and resources

1. Sustainable Severn Sound <https://www.sustainablesevernsound.ca/>
2. SSS's Local Climate Change Action Plan: Greenhouse Gas (GHG) Summary <https://www.sustainablesevernsound.ca/about-page.php?id=3>
3. Federation of Canadian Municipalities, Partners for Climate Protection program <https://fcm.ca/home/programs/partners-for-climate-protection.htm>
4. Canadian Supplement to the International Emissions Analysis Protocol https://fcm.ca/Documents/reports/PCP/PCP_Protocol_Canadian_Supplement_EN.pdf
5. Township of Tay, Official Plan, 2018 <https://drive.google.com/open?id=1zzNNDngWGCbiklkZfeUxEYGjn8RJpg86>
6. Township of Tay, Strategic Plan, 2015-2018 <https://drive.google.com/drive/folders/0B0yPSaaMSvkOdUppdnZuaEFSZDQ7>
7. Township of Tay, Energy Conservation and Demand Energy Management (CDM) Plan, 2014-2019 <https://drive.google.com/open?id=0B0yPSaaMSvkOX3M1VURiUJ2YjQ>
8. Township of Tay, Asset Management Plan (AMP), 2013 <https://drive.google.com/open?id=1tCQo70RO74lf9FgUODXVSUCsOnK30Sck>
9. O. Reg. 397/11: Energy Conservation and Demand Management Plans (anticipated to be amended under Ontario's Electricity Act*) <https://www.ontario.ca/laws/regulation/r11397>
10. Ontario's Electricity Act* <https://www.ontario.ca/laws/statute/98e15>
11. O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure <https://www.ontario.ca/laws/regulation/r17588>
12. Growth Plan for the Greater Golden Horseshoe, 2017 http://placestogrow.ca/index.php?Itemid=14&id=430&option=com_content&task=view#4.2.10



PCP representative Mr. Robert Lamb, CAO, accepts the PCP recognition statue from Ian McVey, Regional PCP program representative, June 2018.



Contact information

Sustainable Severn Sound (SSS) and the Sustainability Committee
P.O. Box 8, 105 Fourth Street
Midland, ON
L4R 4K6
P: 705.526.1371 x. 112
E: info@sustainablesevernsound.ca
W: www.sustainablesevernsound.ca

Connect with us on social media

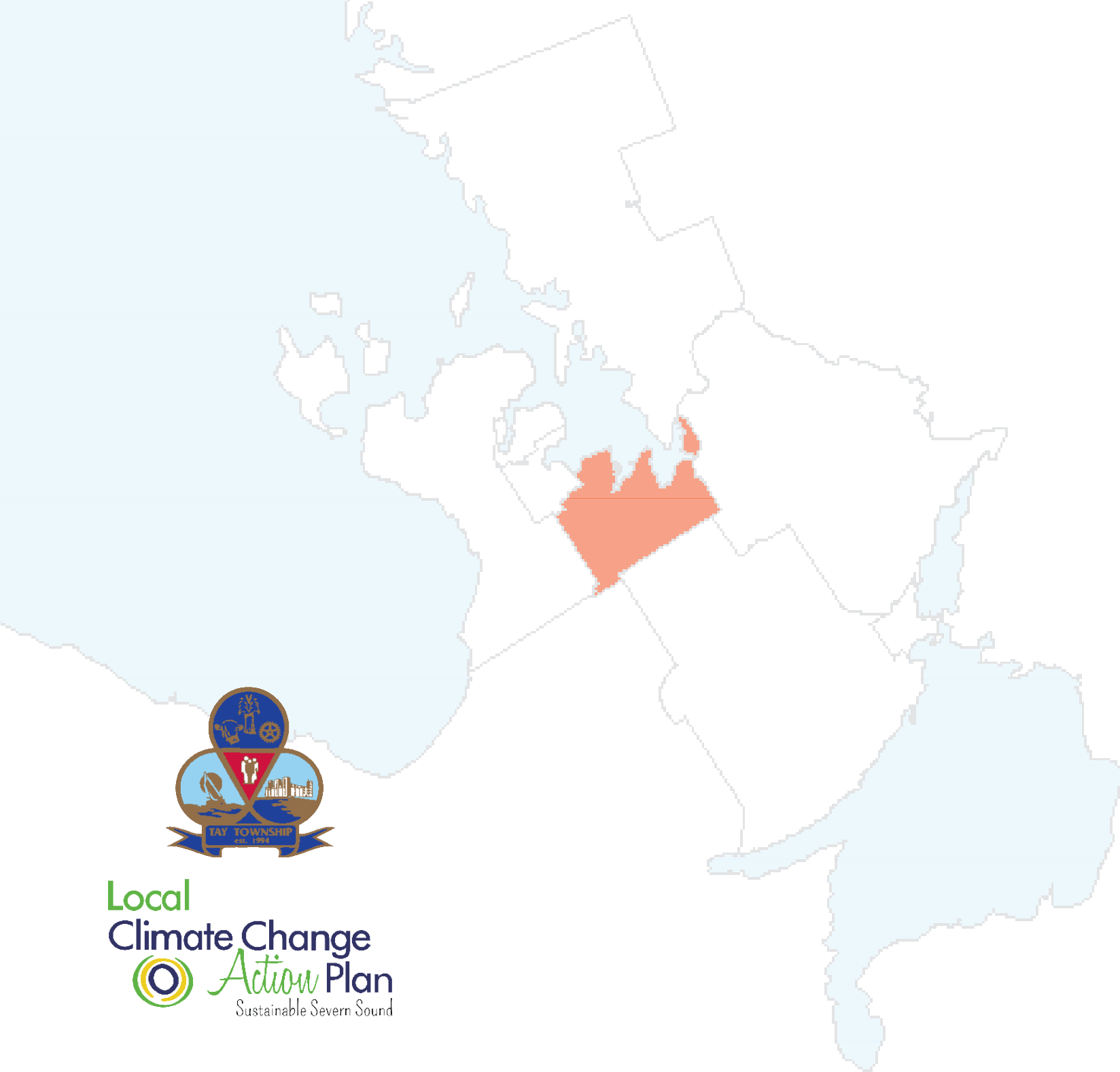


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Local
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 Action Plan
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