



# **Energy Conservation and Demand Management Plan 2019-2023**

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## **Executive Summary**

On June 24, 2014 the Council of the Township of Asphodel-Norwood adopted an Energy Management Plan in compliance with Ontario Regulation 397/11. The regulation also required municipalities and other public sector groups to report annually on energy use and greenhouse gas (GHG) emissions for buildings and facilities in which the agency conducts its operations, that are heated or cooled or are related to the treatment or pumping of water or sewage. The Township began this reporting in 2013 for the year 2011 and has continued to do so.

O.Reg 397/11 was replaced with Ontario Regulation 507/18 – Broader Public Sector: Energy Reporting and Conservation and Demand Plans. The new regulation requires municipalities to develop a five-year update to the Municipality's Energy Plan. The update must be published on the Municipality's website, made available at the Municipal Office and submitted to the Ministry of the Environment, Northern Development and Mines by July 1, 2019.

The Township of Asphodel-Norwood is conscious of energy management and understands the social, environmental and financial implications of conservation and the responsibility to make an effort to improve where feasible.

Through proactive monitoring of energy usage, forward-thinking facility renovations and building service equipment upgrades, the Township is committed to managing and reducing energy consumption across its facilities and operations.

In 2014, the Township joined the rest of the Greater Peterborough Area's member communities to develop a Climate Change Action Plan (CCAP) aimed at reducing GHG emissions.

Since 2014, the Township has completed many energy conservation measures, both large and small. Small actions have included replacing light fixtures with LED alternations, installing programmable thermostats and motion detection for lights. Large projects included the conversion of all streetlights to LED, the installation of a seasonal controller at the Community Centre, the conversion of all parking lot and exterior lights at the Community Centre to LED and in 2019 the conversion of the ice surface lights to LED.

The Township has adopted operational strategies to conserve energy including regular service schedules for HVAC and generator systems, fostering a staff culture for energy reduction, and monitoring grant and funding opportunities for energy conservation projects.

Going forward the Township will utilize the following strategies to continue to progress towards its energy conservation and GHG emissions reduction objectives:

- 1. Institutionalize energy efficiency and low carbon thinking into the organization**
- 2. Enhance operational efficiency of existing buildings**
- 3. Improve environmental performance of existing municipal facilities**

The municipality's commitment to energy conservation has allowed the Municipality to reach its electricity consumption reduction target. However, many opportunities remain for further energy conservation. Through proactive monitoring of energy consumption and forward-thinking facility renovations and building service equipment upgrades, the Municipality is striving to manage its energy usage in a responsible way.

## 1.0 Introduction

### 1.1 Background

On January 1, 2012, Ontario Regulation 397/11 – Energy Conservation and Demand Management Plans came into force. The regulation required municipalities, municipal service boards and other public sector groups (e.g. schools, hospitals, etc.) to report annually on energy use and greenhouse gas (GHG) emissions for buildings and facilities in which the agency conducts its operations, that are heated or cooled or are related to the treatment or pumping of water or sewage. In addition, public agencies were required to develop five-year energy conservation and demand management plans and publish them online by July 1, 2014.

In 2013, the Township reported its energy usage for the year 2011 and has continued this reporting annually in compliance with O. Reg 397/11. The Township also adopted an Energy Management Plan on June 24, 2014.

A five-year reporting update to the Township's Energy Plan is required to be published by July 1, 2019 in accordance with Ontario Regulation 507/18 – Broader Public Sector: Energy Reporting and Conservation and Demand Management Plans, which replaced O. Reg 397/11.

### 1.2 Purpose & Scope

The requirements for the five-year update to the Energy Conservation and Demand Management Plan are generally consistent with those of the original. However, there is an additional five-year review element. The Energy Plan includes energy-related information relevant to the Municipality, including other energy-related plans, strategies, goals and objectives for managing its energy needs and associated targets.

More specifically, the updated Energy Plan is to include the following components:

- A summary of annual energy consumption for relevant buildings and facilities
- A summary of past, current and proposed measures to which the Township has committed to conserve and reduce energy consumption

## 2.0 Commitment

The Township of Asphodel-Norwood is committed to energy management as a key component to its operations. It understands the social, environmental and financial implications of energy management and is striving to deliver improvements in a responsible way. Through proactive monitoring of energy usage and forward-thinking facility renovations and building service equipment upgrades, the Township is committed to managing and reducing energy consumption across its facilities and operations.

As part of this commitment, the Township joined with the rest of the Greater Peterborough Area's member communities in 2014 to develop a Climate Change Action Plan (CCAP) aimed at reducing GHG emissions. The Township adopted the Greater Peterborough Area Climate Change Action Plan on November 8, 2016.

### 2.1 Goals and Objectives

The Township's 2014 Energy Plan identified nine goals and objectives for the Township. Progress has been made on all nine goals with many objectives ongoing. The status of the goals and objectives are presented in Table 1.

**Table 1:**

Action	Status
To improve energy efficiency of our facilities by utilizing best practices to reduce our operating costs, energy consumption and greenhouse gas emissions.	Completed & Ongoing
To reduce the environmental impact of Municipality/Township operations	Completed & Ongoing
To create a culture of conversation	Completed & Ongoing
To increase the comfort and safety of staff & patrons of Asphodel-Norwood's facilities	Completed & Ongoing
To reduce our paper consumption by 5% by year end 2015	Completed – 8% reduction
To reduce electricity consumption by 3% year end 2016	Completed – 15% reduction
To retrofit 100% of all streetlights to an energy efficient LED fixture	Completed
To investigate the feasibility of installing daylight sensor controls on all facilities	Investigation Completed – Installation Ongoing
To create and implement and education	Completed & Ongoing

program for staff to increase energy awareness	
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### **3.0 Energy Conservation Actions**

The following section details the significant actions that the Municipality has completed to conserve energy and reduce GHG emissions.

#### 2014

VFD's installed at two sanitary pumping stations

#### 2015

Purchased a seasonal controller for the Community Centre

#### 2016

All Streetlights were retrofitted with LED

#### 2017

LED conversion for Community Centre exterior & interior lighting

Renewable Energy Source (Solar Panels) installed on the Community Centre roof

Commenced the motion detection program for facility lighting

LED conversion for Town Hall lighting (upstairs)

Purchased City Reporter software to support paperless park inspections

Renovation to Water Treatment Plant which included electrical upgrades, & new natural gas furnace

#### 2018

LED conversion for Community Centre parking lot lights

Replaced all windows in the Town Hall (upstairs)

New high efficiency air conditioner installed at Norwood Library Branch

In late 2018 commenced paperless road patrols with the purchase of the MESH software

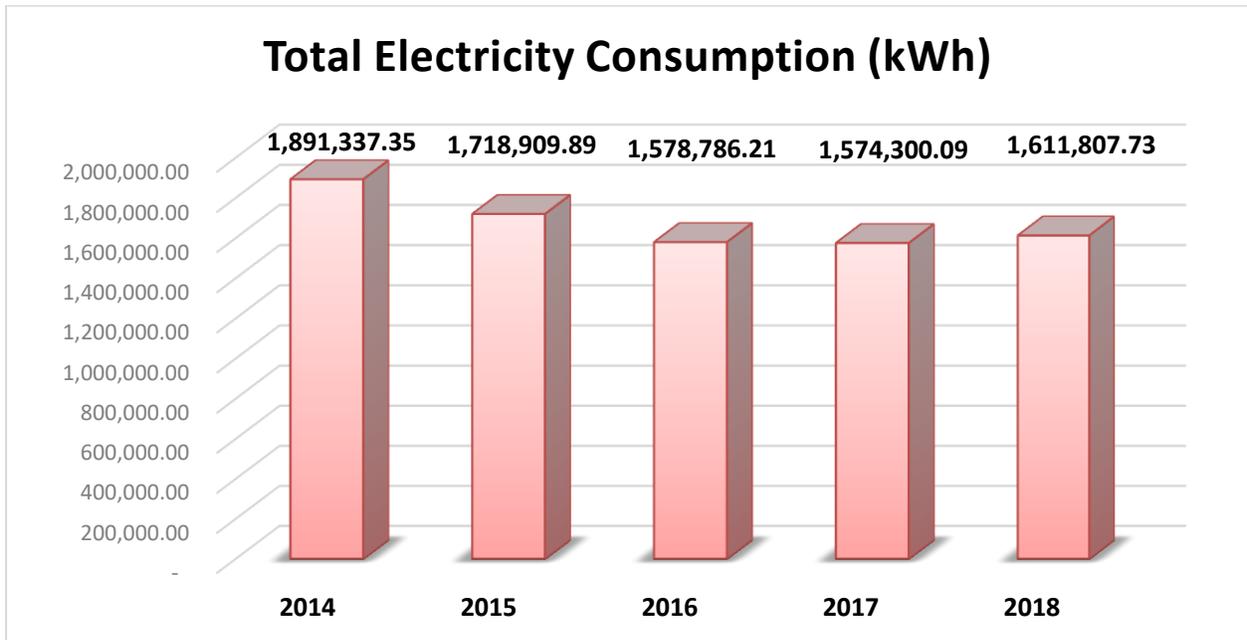
Added the facilities module to City Reporter to support paperless facility inspections

### 3.1 Operational Strategies

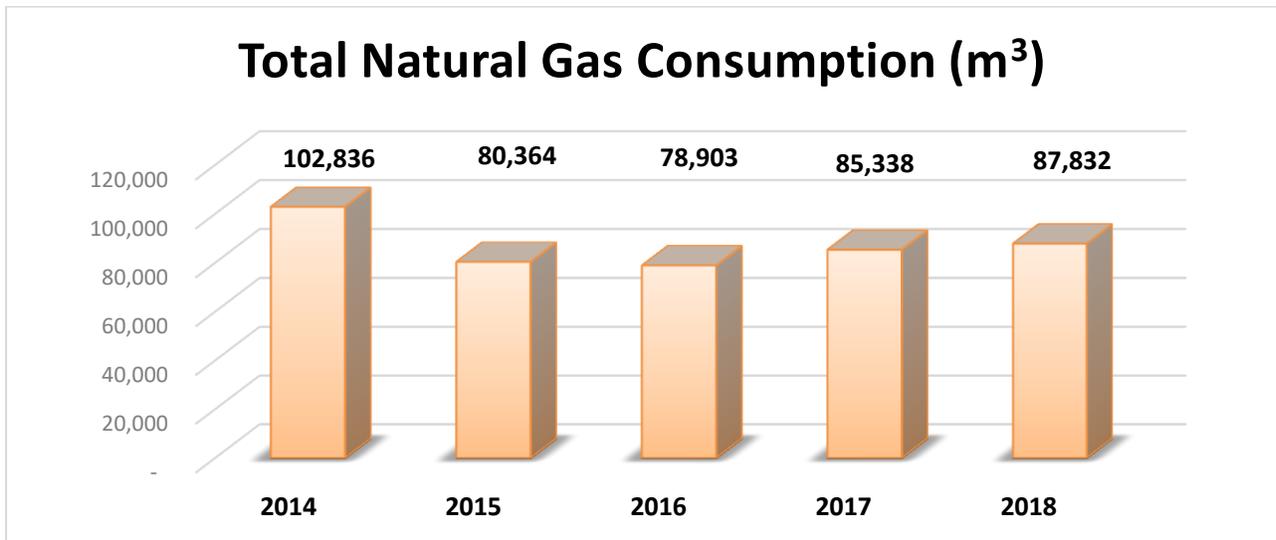
In addition to completed actions outlined above, the Township has established operational strategies to conserve energy which include:

- Setting a regular service schedule for all municipal furnaces and air conditioning units to ensure maximum efficiency
- Providing training to all employees on energy-saving practices and fostering a staff culture of conservation
- Monitoring grant and funding opportunities for energy conservation projects

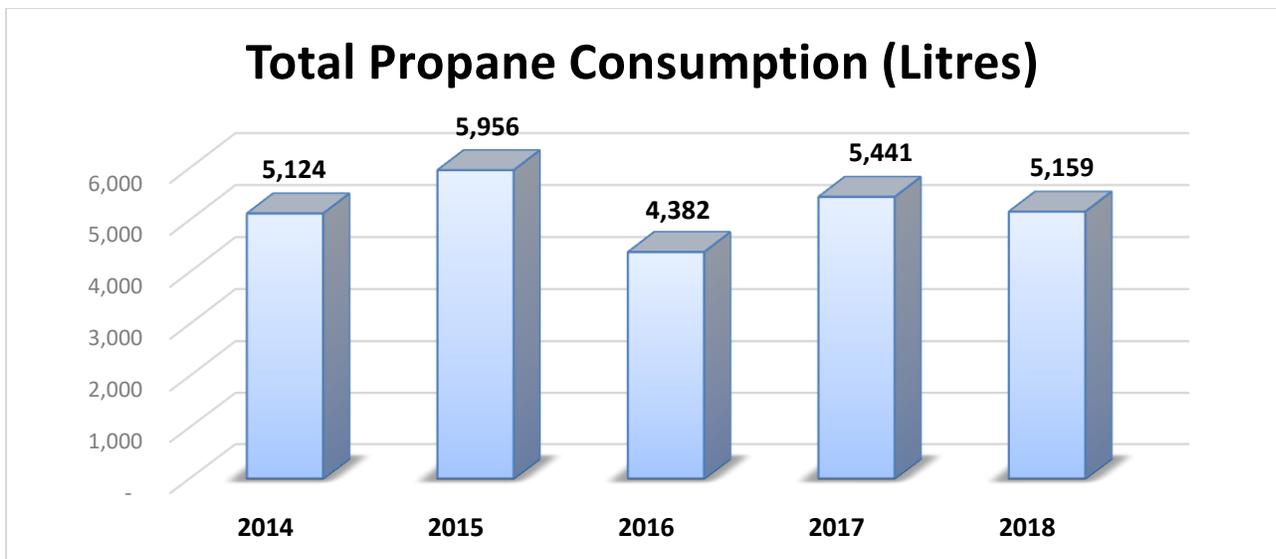
### 3.0 Comparison & Analysis



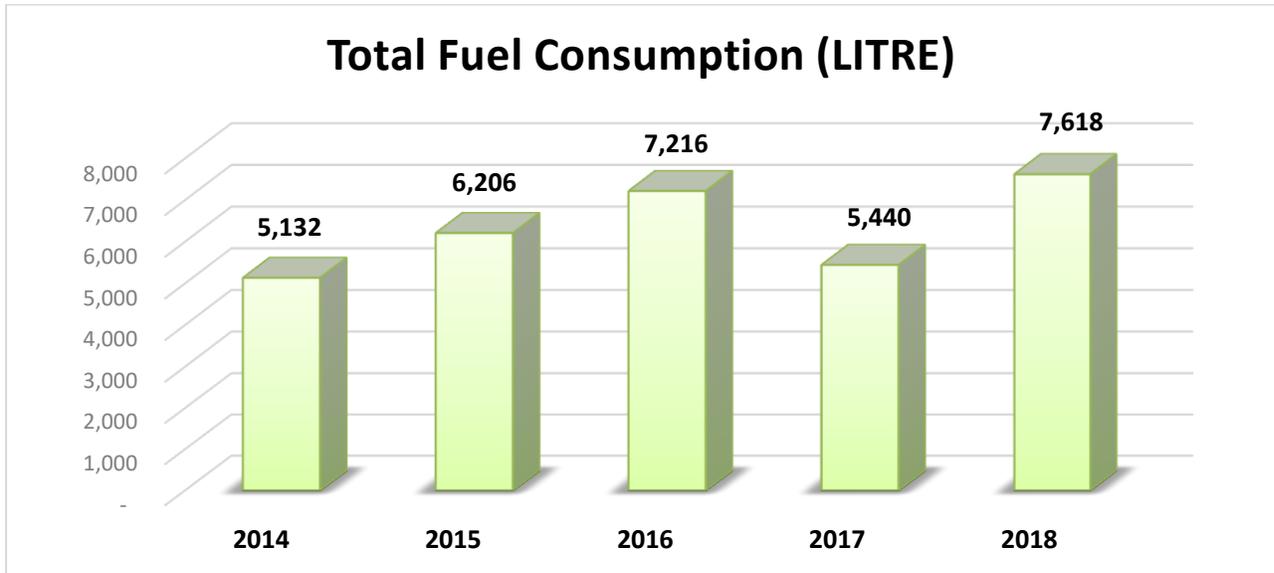
In the five-year span between 2014 and 2018 the Township’s overall electricity consumption (kWh) decreased by 279,529.62 kWh or 15%. The majority of this reduction is due to the LED conversion program. Moving forward the priority shall be Sanitary Pumping Stations and the Wastewater Treatment Plant.



Eight facilities including two sanitary pumping stations utilize natural gas. The consumption of natural gas has decreased by 15% from 2014-2018; this is partially due to the installation of programmable thermostats.



The Westwood Library is the only facility that heats with propane. The usage has been fairly consistent with no identified priorities for the next 5 year plan.



The Westwood Fire Hall/Heritage Centre is the only facility that utilizes oil (fuel). An increase of 2,486 litres or 33% has been realized over the five-year period of 2014-2018. This is due to the increase in use at the Heritage Centre.

## 4.0 Planned & Proposed Future Actions

### 4.1 Strategies

The following are strategies and actions that the Township will use to achieve further energy conservation and GHG emissions reductions.

Strategy 1: Institutionalize energy efficiency and low carbon thinking into the organization				
Timeframe	Underway or Complete	Short 1-4 Years	Medium 5-9 Years	Long 10+Years
Continue to implement employee training for energy efficiency	X	X	X	X
Continue to reinforce staff culture of conservation and behaviour change programs to reduce usage of electricity and heating in day-to-day activities	X	X	X	X
Implement policy to consider highest energy efficiency as part of procurement requirements and evaluation		X		

Monitor incentive programs and grant opportunities for implementing energy efficiency improvements	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
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<b>Strategy 2: Enhance operational efficiency of existing buildings</b>				
<b>Timeframe</b>	<b>Underway or Complete</b>	<b>Short 1-4Years</b>	<b>Medium 5-9Years</b>	<b>Long 10+Years</b>
Formalize and continue to deliver an equipment preventative maintenance program on an ongoing basis	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Conduct regular energy audits of Township facilities on a rotational basis to identify opportunities for improved efficiency and produce annual energy report cards for provincial reporting		<b>X</b>	<b>X</b>	<b>X</b>
Explore installation of building & by-law automation systems to optimize building operations		<b>X</b>	<b>X</b>	<b>X</b>
Continue to implement the utility bill validation process to identify and correct any billing issues and variations in energy usage	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>

<b>Strategy 4: Improve environmental performance of existing municipal facilities</b>				
<b>Timeframe</b>	<b>Underway or Complete</b>	<b>Short 1-4Years</b>	<b>Medium 5-9Years</b>	<b>Long 10+Years</b>
Conduct audits/assessments of each facility to identify opportunities to improve energy efficiency		<b>X</b>		
Continue the LED lighting retrofit program in remaining all facilities where feasible	<b>X</b>	<b>X</b>		
Replace appliances with Energy STAR rated appliances through attrition	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Install Variable Frequency Drives at Wastewater Treatment Plant & Booster Pumping Stations		<b>X</b>	<b>X</b>	

Continue to replace windows and doors with high efficiency according to building assessments	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Continue to replace mechanical equipment (boilers, chillers, air conditioning units) in remaining facilities with high efficiency according to building assessments through attrition	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Continue to upgrade fans and blowing equipment in remaining facilities according to building assessments through attrition	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
Continue with motion sensor lighting program in remaining facilities	<b>X</b>	<b>X</b>		

## 5.0 Conclusion

The Township is committed to energy conservation and reducing GHG emissions as a key component of its operations. This commitment has allowed the Township to reduce its overall consumption of electricity, natural gas and propane. However, many opportunities for further energy conservation remain. Through proactive monitoring of energy consumption and forward-thinking facility renovations and building service equipment upgrades, the Township is striving to manage its energy usage in a responsible way.

**Energy Consumption and Greenhouse Gas Emissions Reporting - for 2014**

Confirm consecutive 12-mth period (mth-yr to mth-yr)	Jan-14 to Dec-14
Sector	Municipal
Agency Sub-sector	Township
Organization Name	Township of Asphodel-Norwood

Operation Name	Operation Type	Address	City	Postal Code	Total Flow Area	Unit	Avg hrs/wk	Annual Flow (ML)	Electricity Quantity	Electricity Unit	Natural Gas Quantity	Natural Gas Unit	Fuel Oil 1&2 Quantity	Fuel Oil 1&2 Unit	Propane Quantity	Propane Unit
Asphodel Building	Fire stations and associated offices and facilities	1818 Asphodel 3rd Line	Norwood	K0L 2V0	161.00	Square meters	14	0.00000	30,756.24000	kWh	0.00000		5,132.50000	Litre	0.00000	
Belmont St. Lift Station	Facilities related to the pumping of water	Belmont St.	Norwood	K0L 2V0	0.00		168	54.29000	1,801.42300	kWh	0.00000		0.00000		0.00000	
Community Centre	Community centres	88 Alma St	Norwood	K0L 2V0	3,556.00	Square meters	105	0.00000	728,598.00000	kWh	60,399.00000	Cubic Meter	0.00000		0.00000	
Maple St. Lift Station	Facilities related to the pumping of water	Maple St.	Norwood	K0L 2V0	0.00		168	42.16000	8,405.71200	kWh	0.00000		0.00000		0.00000	
Medical Centre	Administrative offices and related facilities, including municipal council chambers	31 King St	Norwood	K0L 2V0	540.00	Square meters	39.97	0.00000	52,584.02000	kWh	6,020.00000	Cubic Meter	0.00000		0.00000	
Municipal Office	Administrative offices and related facilities, including municipal council chambers	2357 County Rd 45	Norwood	K0L 2V0	234.00	Square meters	40	0.00000	32,321.05000	kWh	10,811.00000	Cubic Meter	0.00000		0.00000	
Norwood Fire Hall	Fire stations and associated offices and facilities	27 Alma St	Norwood	K0L 2V0	225.00	Square meters	45.01	0.00000	21,565.38000	kWh	4,545.00000	Cubic Meter	0.00000		0.00000	
Norwood Public Library	Public libraries	2363 County Rd 45	Norwood	K0L 2V0	293.00	Square meters	20.93	0.00000	11,451.94000	kWh	2,215.00000	Cubic Meter	0.00000		0.00000	
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	4440 Highway 7	Norwood	K0L 2V0	1,878.00	Square meters	53.97	0.00000	41,923.74000	kWh	18,846.00000	Cubic Meter	0.00000		0.00000	
Street Lights: Norwood (PUC)	Other	Hwy 7	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	109,754.10000	kWh	0.00000		0.00000		0.00000	
Street Lights: Westwood	Other	County Rd	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	55,734.10000	kWh	0.00000		0.00000		0.00000	
Trentview Pumphouse	Facilities related to the pumping of water	River Road	Norwood	K0L 2V0	0.00		168	15.63000	13,106.73000	kWh	0.00000		0.00000		0.00000	
Victoria St. Lift Station	Facilities related to the pumping of water	Victoria St.	Norwood	K0L 2V0	0.00		168	115.91000	31,182.10000	kWh	239.00000	Cubic Meter	0.00000		0.00000	
Wastewater Treatment Facility	Facilities related to the treatment of sewage	34 Industrial Drive	Norwood	K0L 2V0	0.00		167.51	154.62000	531,783.30000	kWh	7,233.00000	Cubic Meter	0.00000		0.00000	
Water Treatment Facility	Facilities related to the treatment of water	12 County Rd 40	Norwood	K0L 2V0	0.00		167.51	212.35000	214,096.00000	kWh	0.00000		0.00000		0.00000	
Westwood Library	Public libraries	312 Centre Line Rd	Norwood	K0L 2V0	186.00	Square meters	11.97	0.00000	6,273.60400	kWh	0.00000		0.00000		5,123.90000	Litre
									1,891,337.43900 kWh	110,308.00000 Cubic Meter		5,132.50000 Litre		5,123.90000 Litre		

**Energy Consumption and Greenhouse Gas Emissions Reporting - for 2015**

Confirm consecutive 12-mth period (mth-yr to mth-yr)	Jan-15 to Dec-15
Sector	Municipal
Agency Sub-sector	Township
Organization Name	Township of Asphodel-Norwood

Operation Name	Operation Type	Address	City	Postal Code	Total Flow Area	Unit	Avg hrs/wk	Annual Flow (ML)	Electricity Quantity	Electricity Unit	Natural Gas Quantity	Natural Gas Unit	Fuel Oil 1&2 Quantity	Fuel Oil 1&2 Unit	Propane Quantity	Propane Unit
Asphodel Building	Fire stations and associated offices and facilities	1818 Asphodel 3rd Line	Norwood	K0L 2V0	161.00	Square meters	14	0.00000	19,348.24000	kWh	0.00000		6,206.30000	Litre	0.00000	
Belmont St. Lift Station	Facilities related to the pumping of water	Belmont St.	Norwood	K0L 2V0	0.00		168	4.02000	1,713.13000	kWh	0.00000		0.00000		0.00000	
Community Centre	Community centres	88 Alma St	Norwood	K0L 2V0	3,556.00	Square meters	105	0.00000	662,053.40000	kWh	43,285.00000	Cubic Meter	0.00000		0.00000	
Maple St. Lift Station	Facilities related to the pumping of water	Maple St.	Norwood	K0L 2V0	0.00		168	35.20000	11,783.82000	kWh	0.00000		0.00000		0.00000	
Medical Centre	Administrative offices and related facilities, including municipal council chambers	31 King St	Norwood	K0L 2V0	540.00	Square meters	39.97	0.00000	60,154.94000	kWh	4,783.00000	Cubic Meter	0.00000		0.00000	
Municipal Office	Administrative offices and related facilities, including municipal council chambers	2357 County Rd 45	Norwood	K0L 2V0	234.00	Square meters	40	0.00000	36,466.00000	kWh	10,168.00000	Cubic Meter	0.00000		0.00000	
Norwood Fire Hall	Fire stations and associated offices and facilities	27 Alma St	Norwood	K0L 2V0	225.00	Square meters	45.01	0.00000	18,297.61000	kWh	4,111.00000	Cubic Meter	0.00000		0.00000	
Norwood Public Library	Public libraries	2363 County Rd 45	Norwood	K0L 2V0	293.00	Square meters	20.93	0.00000	9,429.91000	kWh	1,711.00000	Cubic Meter	0.00000		0.00000	
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	4440 Highway 7	Norwood	K0L 2V0	1,878.00	Square meters	53.97	0.00000	36,313.62000	kWh	16,306.00000	Cubic Meter	0.00000		0.00000	
Street Lights: Norwood (PUC)	Other	Hwy 7	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	108,672.90000	kWh	0.00000		0.00000		0.00000	
Street Lights: Westwood	Other	County Rd	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	30,696.00000	kWh	0.00000		0.00000		0.00000	
Trentview Pumphouse	Facilities related to the pumping of water	River Road	Norwood	K0L 2V0	0.00		168	10.56000	3,460.00000	kWh	0.00000		0.00000		0.00000	
Victoria St. Lift Station	Facilities related to the pumping of water	Victoria St.	Norwood	K0L 2V0	0.00		168	154.00000	27,136.89000	kWh	156.00000	Cubic Meter	0.00000		0.00000	
Wastewater Treatment Facility	Facilities related to the treatment of sewage	34 Industrial Drive	Norwood	K0L 2V0	0.00		167.51	159.00000	486,689.10000	kWh	4,266.00000	Cubic Meter	0.00000		0.00000	
Water Treatment Facility	Facilities related to the treatment of water	12 County Rd 40	Norwood	K0L 2V0	0.00		167.51	212.00000	200,849.30000	kWh	0.00000		0.00000		0.00000	
Westwood Library	Public libraries	312 Centre Line Rd	Norwood	K0L 2V0	186.00	Square meters	11.97	0.00000	5,846.02600	kWh	0.00000		0.00000		5,956.10000	Litre
									1,718,910.88600 kWh	84,786.00000 Cubic Meter		6,206.30000 Litre		5,956.10000 Litre		

**Energy Consumption and Greenhouse Gas Emissions Reporting - for 2016**

Confirm consecutive 12-mth period (mth-yr to mth-yr)	Jan-16 to Dec-16
Sector	Municipal
Agency Sub-sector	Township
Organization Name	Township of Asphodel-Norwood

Operation Name	Operation Type	Address	City	Postal Code	Total Flow Area	Unit	Avg hrs/wk	Annual Flow (ML)	Electricity Quantity	Electricity Unit	Natural Gas Quantity	Natural Gas Unit	Fuel Oil 1&2 Quantity	Fuel Oil 1&2 Unit	Propane Quantity	Propane Unit
Asphodel Building	Fire stations and associated offices and facilities	1818 Asphodel 3rd Line	Norwood	K0L 2V0	161.00	Square meters	14	0.00000	14,165.49000	kWh	0.00000		7,216.00000	Litre	0.00000	
Belmont St. Lift Station	Facilities related to the pumping of water	Belmont St.	Norwood	K0L 2V0	0.00		168	8.00000	1,710.41600	kWh	0.00000		0.00000		0.00000	
Community Centre	Community centres	88 Alma St	Norwood	K0L 2V0	3,556.00	Square meters	105	0.00000	618,752.50000	kWh	47,402.00000	Cubic Meter	0.00000		0.00000	
Maple St. Lift Station	Facilities related to the pumping of water	Maple St.	Norwood	K0L 2V0	0.00		168	15.00000	13,264.51000	kWh	0.00000		0.00000		0.00000	
Medical Centre	Administrative offices and related facilities, including municipal council chambers	31 King St	Norwood	K0L 2V0	540.00	Square meters	39.97	0.00000	65,028.72000	kWh	4,505.00000	Cubic Meter	0.00000		0.00000	
Municipal Office	Administrative offices and related facilities, including municipal council chambers	2357 County Rd 45	Norwood	K0L 2V0	234.00	Square meters	40	0.00000	34,239.36000	kWh	8,726.00000	Cubic Meter	0.00000		0.00000	
Norwood Fire Hall	Fire stations and associated offices and facilities	27 Alma St	Norwood	K0L 2V0	225.00	Square meters	45.01	0.00000	17,675.50000	kWh	3,504.00000	Cubic Meter	0.00000		0.00000	
Norwood Public Library	Public libraries	2363 County Rd 45	Norwood	K0L 2V0	293.00	Square meters	20.93	0.00000	8,630.37300	kWh	1,983.00000	Cubic Meter	0.00000		0.00000	
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	4440 Highway 7	Norwood	K0L 2V0	1,878.00	Square meters	53.97	0.00000	38,496.82000	kWh	12,783.17000	Cubic Meter	0.00000		0.00000	
Street Lights: Norwood (PUC)	Other	Hwy 7	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	51,299.20000	kWh	0.00000		0.00000		0.00000	
Street Lights: Westwood	Other	County Rd	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	14,453.70000	kWh	0.00000		0.00000		0.00000	
Trentview Pumphouse	Facilities related to the pumping of water	River Road	Norwood	K0L 2V0	0.00		168	10.77000	23,520.00000	kWh	0.00000		0.00000		0.00000	
Victoria St. Lift Station	Facilities related to the pumping of water	Victoria St.	Norwood	K0L 2V0	0.00		168	15.34000	27,341.21000	kWh	132.00000	Cubic Meter	0.00000		0.00000	
Wastewater Treatment Facility	Facilities related to the treatment of sewage	34 Industrial Drive	Norwood	K0L 2V0	0.00		167.51	19.83000	473,239.50000	kWh	2,163.00000	Cubic Meter	0.00000		0.00000	
Water Treatment Facility	Facilities related to the treatment of water	12 County Rd 40	Norwood	K0L 2V0	0.00		167.51	19.83000	170,645.10000	kWh	0.00000		0.00000		0.00000	
Westwood Library	Public libraries	312 Centre Line Rd	Norwood	K0L 2V0	186.00	Square meters	11.97	0.00000	6,323.81300	kWh	0.00000		0.00000		4,381.80000	Litre
									1,578,786.21200 kWh	81,198.17000 Cubic Meter		7,216.00000 Litre		4,381.80000 Litre		

**Energy Consumption and Greenhouse Gas Emissions Reporting - for 2017**

Confirm consecutive 12-mth period (mth-yr to mth-yr)	Jan-17 to Dec-17
Sector	Municipal
Agency Sub-sector	Township
Organization Name	Township of Asphodel-Norwood

Operation Name	Operation Type	Address	City	Postal Code	Total Flow Area	Unit	Avg hrs/wk	Annual Flow (ML)	Electricity Quantity	Electricity Unit	Natural Gas Quantity	Natural Gas Unit	Fuel Oil 1&2 Quantity	Fuel Oil 1&2 Unit	Propane Quantity	Propane Unit
Asphodel Building	Fire stations and associated offices and facilities	1818 Asphodel 3rd Line	Norwood	K0L 2V0	161.00	Square meters	14	0.00000	18,740.00000	kWh	0.00000		5,440.90000	Litre	0.00000	
Belmont St. Lift Station	Facilities related to the pumping of water	Belmont St.	Norwood	K0L 2V0	0.00		168	10.00000	1,745.69000	kWh	0.00000		0.00000		0.00000	
Community Centre	Community centres	88 Alma St	Norwood	K0L 2V0	3,556.00	Square meters	105	0.00000	625,412.00000	kWh	51,181.00000	Cubic Meter	0.00000		0.00000	
Maple St. Lift Station	Facilities related to the pumping of water	Maple St.	Norwood	K0L 2V0	0.00		168	42.00000	34,513.05000	kWh	0.00000		0.00000		0.00000	
Medical Centre	Administrative offices and related facilities, including municipal council chambers	31 King St	Norwood	K0L 2V0	540.00	Square meters	39.97	0.00000	54,933.98000	kWh	3,056.00000	Cubic Meter	0.00000		0.00000	
Municipal Office	Administrative offices and related facilities, including municipal council chambers	2357 County Rd 45	Norwood	K0L 2V0	234.00	Square meters	40	0.00000	32,824.83000	kWh	10,071.00000	Cubic Meter	0.00000		0.00000	
Norwood Fire Hall	Fire stations and associated offices and facilities	27 Alma St	Norwood	K0L 2V0	225.00	Square meters	45.01	0.00000	20,305.95000	kWh	3,298.00000	Cubic Meter	0.00000		0.00000	
Norwood Public Library	Public libraries	2363 County Rd 45	Norwood	K0L 2V0	293.00	Square meters	20.93	0.00000	7,985.86000	kWh	2,685.00000	Cubic Meter	0.00000		0.00000	
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	4440 Highway 7	Norwood	K0L 2V0	1,878.00	Square meters	53.97	0.00000	37,785.48000	kWh	15,047.00000	Cubic Meter	0.00000		0.00000	
Street Lights: Norwood (PUC)	Other	Hwy 7	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	44,733.15000	kWh	0.00000		0.00000		0.00000	
Street Lights: Westwood	Other	County Rd	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	14,106.72000	kWh	0.00000		0.00000		0.00000	
Trentview Pumphouse	Facilities related to the pumping of water	River Road	Norwood	K0L 2V0	0.00		168	10.86000	24,648.23000	kWh	0.00000		0.00000		0.00000	
Victoria St. Lift Station	Facilities related to the pumping of water	Victoria St.	Norwood	K0L 2V0	0.00		168	207.29000	31,571.28000	kWh	136.00000	Cubic Meter	0.00000		0.00000	
Wastewater Treatment Facility	Facilities related to the treatment of sewage	34 Industrial Drive	Norwood	K0L 2V0	0.00		167.51	207.29000	498,709.00000	kWh	1,888.00000	Cubic Meter	0.00000		0.00000	
Water Treatment Facility	Facilities related to the treatment of water	12 County Rd 40	Norwood	K0L 2V0	0.00		167.51	197.50000	120,298.00000	kWh	983.00000	Cubic Meter	0.00000		0.00000	
Westwood Library	Public libraries	312 Centre Line Rd	Norwood	K0L 2V0	186.00	Square meters	11.97	0.00000	5,986.87000	kWh	0.00000		0.00000		5,441.30000	Litre
									1,574,300.09000 kWh		88,345.00000 Cubic Meter		5,440.90000 Litre		5,441.30000 Litre	

**Energy Consumption and Greenhouse Gas Emissions Reporting - for 2018**

Confirm consecutive 12-mth period (mth-yr to mth-yr)	Jan-18 to Dec-18
Sector	Municipal
Agency Sub-sector	Township
Organization Name	Township of Asphodel-Norwood

Operation Name	Operation Type	Address	City	Postal Code	Total Flow Area	Unit	Avg hrs/wk	Annual Flow (ML)	Electricity Quantity	Electricity Unit	Natural Gas Quantity	Natural Gas Unit	Fuel Oil 1&2 Quantity	Fuel Oil 1&2 Unit	Propane Quantity	Propane Unit
Asphodel Building	Fire stations and associated offices and facilities	1818 Asphodel 3rd Line	Norwood	K0L 2V0	161.00	Square meters	14	0.00000	12,630.00000	kWh	0.00000		7,618.60000	Litre	0.00000	
Belmont St. Lift Station	Facilities related to the pumping of water	Belmont St.	Norwood	K0L 2V0	0.00		168	10.00000	1,801.60000	kWh	0.00000		0.00000		0.00000	
Community Centre	Community centres	88 Alma St	Norwood	K0L 2V0	3,556.00	Square meters	105	0.00000	669,020.13000	kWh	52,676.00000	Cubic Meter	0.00000		0.00000	
Maple St. Lift Station	Facilities related to the pumping of water	Maple St.	Norwood	K0L 2V0	0.00		168	42.00000	15,385.31000	kWh	0.00000		0.00000		0.00000	
Medical Centre	Administrative offices and related facilities, including municipal council chambers	31 King St	Norwood	K0L 2V0	540.00	Square meters	39.97	0.00000	47,930.11000	kWh	4,331.00000	Cubic Meter	0.00000		0.00000	
Municipal Office	Administrative offices and related facilities, including municipal council chambers	2357 County Rd 45	Norwood	K0L 2V0	234.00	Square meters	40	0.00000	37,382.11000	kWh	11,962.00000	Cubic Meter	0.00000		0.00000	
Norwood Fire Hall	Fire stations and associated offices and facilities	27 Alma St	Norwood	K0L 2V0	225.00	Square meters	45.01	0.00000	18,475.88000	kWh	3,011.00000	Cubic Meter	0.00000		0.00000	
Norwood Public Library	Public libraries	2363 County Rd 45	Norwood	K0L 2V0	293.00	Square meters	20.93	0.00000	12,922.36000	kWh	1,923.00000	Cubic Meter	0.00000		0.00000	
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	4440 Highway 7	Norwood	K0L 2V0	1,878.00	Square meters	53.97	0.00000	40,910.80000	kWh	13,929.00000	Cubic Meter	0.00000		0.00000	
Street Lights: Norwood (PUC)	Other	Hwy 7	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	45,726.26000	kWh	0.00000		0.00000		0.00000	
Street Lights: Westwood	Other	County Rd	Norwood	K0L 2V0	1.00	Square meters	84	0.00000	17,129.33000	kWh	0.00000		0.00000		0.00000	
Trentview Pumphouse	Facilities related to the pumping of water	River Road	Norwood	K0L 2V0	0.00		168	13.36000	27,139.42000	kWh	0.00000		0.00000		0.00000	
Victoria St. Lift Station	Facilities related to the pumping of water	Victoria St.	Norwood	K0L 2V0	0.00		168	208.85000	30,213.69000	kWh	269.00000	Cubic Meter	0.00000		0.00000	
Wastewater Treatment Facility	Facilities related to the treatment of sewage	34 Industrial Drive	Norwood	K0L 2V0	0.00		167.51	208.85000	516,465.88000	kWh	2,330.00000	Cubic Meter	0.00000		0.00000	
Water Treatment Facility	Facilities related to the treatment of water	12 County Rd 40	Norwood	K0L 2V0	0.00		167.51	204.81000	114,916.24000	kWh	1,153.00000	Cubic Meter	0.00000		0.00000	
Westwood Library	Public libraries	312 Centre Line Rd	Norwood	K0L 2V0	186.00	Square meters	11.97	0.00000	5,559.41000	kWh	0.00000		0.00000		5,159.00000	Litre
									1,613,608.53000 kWh	91,584.00000 Cubic Meter		7,618.60000 Litre		5,159.00000 Litre		

**2013**

Facility	Facility Type	kWh	m3	Fuel Oil 1 & 2 (L)	Propane (L)	GHG (tCO2 eq)
Asphodel Building	Fire stations and associated offices and facilities	23,391.91	-	3,641.10	-	11.74
Belmont St. Lift Station	Facilities related to the pumping of water	1,698.40	-	-	-	0.13
Community Centre	Community centres	717,888.90	45,872.00	-	-	141.28
Maple St. Lift Station	Facilities related to the pumping of water	4,075.40	-	-	-	0.31
Medical Centre	Administrative offices and related facilities, including municipal council chambers	50,687.91	4,998.00	-	-	13.30
Municipal Office	Administrative offices and related facilities, including municipal council chambers	32,195.91	9,697.00	-	-	20.78
Norwood Fire Hall	Fire stations and associated offices and facilities	22,830.16	2,985.00	-	-	7.38
Norwood Public Library	Public libraries	11,726.71	2,018.00	0.00	-	4.71
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	40,246.67	15,514.00	-	-	32.38
Street Lights: Norwood (PUC)	Other	110,005.80	-	-	-	8.36
Street Lights: Westwood	Other	48,599.55	-	-	-	3.69
Trentview Pumphouse	Facilities related to the pumping of water	16,182.00	-	-	-	1.23
Victoria St. Lift Station	Facilities related to the pumping of water	32,631.78	201.00	-	-	2.86
Wastewater Treatment Facility	Facilities related to the treatment of sewage	503,301.40	6,304.00	-	-	50.17
Water Treatment Facility	Facilities related to the treatment of water	793.97	-	-	-	0.06
Westwood Library	Public libraries	7,491.86	-	-	2,700.70	4.73
<b>Total</b>	<b>N/A</b>	<b>1,623,748.33</b>	<b>87,589.00</b>	<b>3,641.10</b>	<b>2,700.70</b>	<b>303.11</b>

**2014**

Facility	Facility Type	kWh	m3	Fuel Oil 1 & 2 (L)	Propane (L)	GHG (tCO2 eq)
Asphodel Building	Fire stations and associated offices and facilities	30,756.24	-	5,132.50	-	15.27
Belmont St. Lift Station	Facilities related to the pumping of water	1,801.42	-	-	-	0.07
Community Centre	Community centres	728,598.00	60,399.00	-	-	143.34
Maple St. Lift Station	Facilities related to the pumping of water	8,405.71	-	-	-	0.34
Medical Centre	Administrative offices and related facilities, including municipal council chambers	52,584.02	6,020.00	-	-	13.49
Municipal Office	Administrative offices and related facilities, including municipal council chambers	32,321.05	10,811.00	-	-	21.73
Norwood Fire Hall	Fire stations and associated offices and facilities	21,565.38	4,545.00	-	-	9.46
Norwood Public Library	Public libraries	11,451.94	2,215.00	-	-	4.65
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	41,923.74	18,846.00	-	-	37.31
Street Lights: Norwood (PUC)	Other	109,754.10	-	-	-	4.39
Street Lights: Westwood	Other	55,734.10	-	-	-	2.23
Trentview Pumphouse	Facilities related to the pumping of water	13,106.73	-	-	-	0.52
Victoria St. Lift Station	Facilities related to the pumping of water	31,182.10	239.00	-	-	1.70
Wastewater Treatment Facility	Facilities related to the treatment of sewage	531,783.30	7,233.00	-	-	34.95
Water Treatment Facility	Facilities related to the treatment of water	214,096.00	-	-	-	8.57
Westwood Library	Public libraries	6,273.60	-	-	5,123.90	8.15
<b>Total</b>	<b>N/A</b>	1,891,337.44	110,308.00	5,132.50	5,123.90	306.16
Increase / Decrease from previous year		14%	21%	29%	47%	1%

Indicates Increase

Indicates Decrease

**2015**

Facility	Facility Type	kWh	m3	Fuel Oil 1 & 2 (L)	Propane (L)	GHG (tCO2 eq)
Asphodel Building	Fire stations and associated offices and facilities	19,348.24	-	6,206.30	-	17.65
Belmont St. Lift Station	Facilities related to the pumping of water	1,713.13	-	-	-	0.06
Community Centre	Community centres	662,053.40	43,285.00	-	-	105.01
Maple St. Lift Station	Facilities related to the pumping of water	11,783.82	-	-	-	0.41
Medical Centre	Administrative offices and related facilities, including municipal council chambers	60,154.94	4,783.00	-	-	11.15
Municipal Office	Administrative offices and related facilities, including municipal council chambers	36,466.00	10,168.00	-	-	20.50
Norwood Fire Hall	Fire stations and associated offices and facilities	18,297.61	4,111.00	-	-	8.41
Norwood Public Library	Public libraries	9,429.91	1,711.00	-	-	3.57
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	36,313.62	16,306.00	-	-	32.10
Street Lights: Norwood (PUC)	Other	108,672.90	-	-	-	3.80
Street Lights: Westwood	Other	30,696.00	-	-	-	1.07
Trentview Pumphouse	Facilities related to the pumping of water	3,460.00	-	-	-	0.12
Victoria St. Lift Station	Facilities related to the pumping of water	27,136.89	156.00	-	-	1.25
Wastewater Treatment Facility	Facilities related to the treatment of sewage	486,689.10	4,266.00	-	-	25.10
Water Treatment Facility	Facilities related to the treatment of water	200,849.30	-	-	-	7.03
Westwood Library	Public libraries	5,846.03	-	-	5,956.10	9.38
<b>Total</b>	<b>N/A</b>	1,718,910.89	84,786.00	6,206.30	5,956.10	246.63
Increase / Decrease from previous year		-10%	-30%	17%	14%	-24%

Indicates Increase

Indicates Decrease

**2016**

Facility	Facility Type	kWh	m3	Fuel Oil 1 & 2 (L)	Propane (L)	GHG (tCO2 eq)
Asphodel Building	Fire stations and associated offices and facilities	14,165.49	-	7,216.00	-	20.24
Belmont St. Lift Station	Facilities related to the pumping of water	1,710.42	-	-	-	0.06
Community Centre	Community centres	618,752.50	47,402.00	-	-	111.61
Maple St. Lift Station	Facilities related to the pumping of water	13,264.51	-	-	-	0.47
Medical Centre	Administrative offices and related facilities, including municipal council chambers	65,028.72	4,505.00	-	-	10.83
Municipal Office	Administrative offices and related facilities, including municipal council chambers	34,239.36	8,726.00	-	-	17.71
Norwood Fire Hall	Fire stations and associated offices and facilities	17,675.50	3,504.00	-	-	7.25
Norwood Public Library	Public libraries	8,630.37	1,983.00	-	-	4.06
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	38,496.82	12,783.17	-	-	25.54
Street Lights: Norwood (PUC)	Other	51,299.20	-	-	-	1.82
Street Lights: Westwood	Other	14,453.70	-	-	-	0.51
Trentview Pumphouse	Facilities related to the pumping of water	23,520.00	-	-	-	0.84
Victoria St. Lift Station	Facilities related to the pumping of water	27,341.21	132.00	-	-	1.22
Wastewater Treatment Facility	Facilities related to the treatment of sewage	473,239.50	2,163.00	-	-	20.91
Water Treatment Facility	Facilities related to the treatment of water	170,645.10	-	-	-	6.07
Westwood Library	Public libraries	6,323.81	-	-	4,381.80	6.98
<b>Total</b>	<b>N/A</b>	1,578,786.21	81,198.17	7,216.00	4,381.80	236.13
Increase / Decrease from previous year		-9%	-4%	14%	-36%	-4%

Indicates Increase

Indicates Decrease

**2017**

Facility	Facility Type	kWh	m3	Fuel Oil 1 & 2 (L)	Propane (L)	GHG (tCO2 eq)
Asphodel Building	Fire stations and associated offices and facilities	18,740.00	-	5,440.90	-	15.21
Belmont St. Lift Station	Facilities related to the pumping of water	1,745.69	-	-	-	0.03
Community Centre	Community centres	625,412.00	51,181.00	-	-	107.58
Maple St. Lift Station	Facilities related to the pumping of water	34,513.05	-	-	-	0.60
Medical Centre	Administrative offices and related facilities, including municipal council chambers	54,933.98	3,056.00	-	-	6.73
Municipal Office	Administrative offices and related facilities, including municipal council chambers	32,824.83	10,071.00	-	-	19.61
Norwood Fire Hall	Fire stations and associated offices and facilities	20,305.95	3,298.00	-	-	6.59
Norwood Public Library	Public libraries	7,985.86	2,685.00	-	-	5.21
Public Works	Storage facilities where equipment or vehicles are maintained, repaired or stored	37,785.48	15,047.00	-	-	29.10
Street Lights: Norwood (PUC)	Other	44,733.15	-	-	-	0.77
Street Lights: Westwood	Other	14,106.72	-	-	-	0.24
Trentview Pumphouse	Facilities related to the pumping of water	24,648.23	-	-	-	0.43
Victoria St. Lift Station	Facilities related to the pumping of water	31,571.28	136.00	-	-	0.80
Wastewater Treatment Facility	Facilities related to the treatment of sewage	498,709.00	1,888.00	-	-	12.20
Water Treatment Facility	Facilities related to the treatment of water	120,298.00	983.00	-	-	3.94
Westwood Library	Public libraries	5,986.87	-	-	5,441.30	8.49
<b>Total</b>	<b>N/A</b>	1,574,300.09	88,345.00	5,440.90	5,441.30	217.53
Increase / Decrease from previous year		0%	8%	-33%	19%	-9%

Indicates Increase

Indicates Decrease

Year 2013					
Combined Facilities	kWh	m3	Fuel Oil 1 & 2	Propane (L)	GHG (tCO2 eq)
Administrative offices & related facilities	82,883.82	14,695.00	-	-	34.08
Community Centres	717,888.90	45,872.00	-	-	141.28
Facilities related to the pumping of water	54,587.58	201.00	-	-	4.53
Facilities related to the treatment of sewage & water	504,095.37	6,304.00	-	-	50.23
Fire stations & related facilities	46,222.07	2,985.00	3,641.10	-	19.11
Other	158,605.35	-	-	-	12.06
Public Libraries	19,218.57	2,018.00	0.00	2,700.70	9.44
Storage Facilities	40,246.67	15,514.00	-	-	32.38

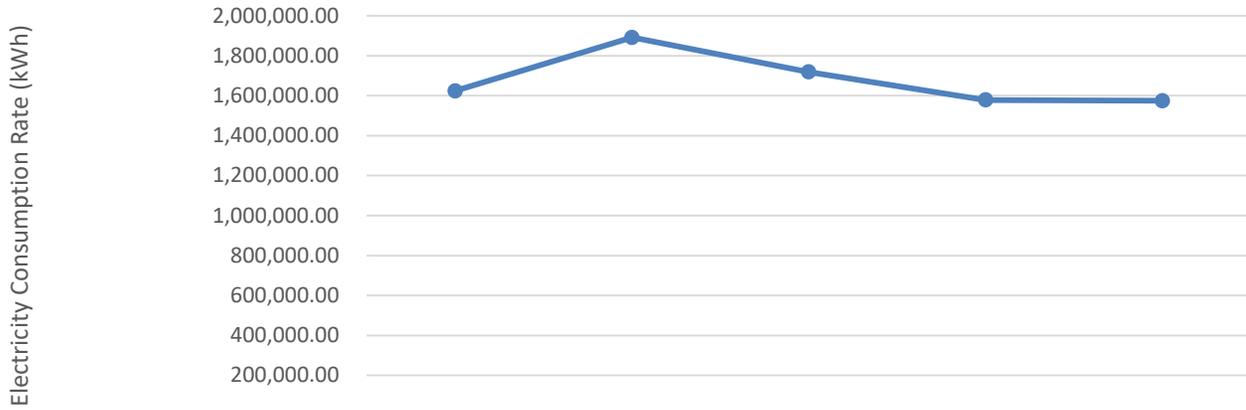
Year 2014					
Combined Facilities	kWh	m3	Fuel Oil 1 & 2	Propane (L)	GHG (tCO2 eq)
Administrative offices & related facilities	84,905.07	16,831.00	-	-	35.22
Community Centres	728,598.00	60,399.00	-	-	143.34
Facilities related to the pumping of water	54,495.97	239.00	-	-	2.63
Facilities related to the treatment of sewage & water	745,879.30	7,233.00	-	-	43.52
Fire stations & related facilities	52,321.62	4,545.00	5,132.50	-	24.72
Other	165,488.20	-	-	-	6.62
Public Libraries	17,725.54	2,215.00	-	5,123.90	12.79
Storage Facilities	41,923.74	18,846.00	-	-	37.31

Year 2015					
Combined Facilities	kWh	m3	Fuel Oil 1 & 2	Propane (L)	GHG (tCO2 eq)
Administrative offices & related facilities	84,905.07	16,831.00	-	-	35.22
Community Centres	-	-	-	-	-
Facilities related to the pumping of water	52,321.62	4,545.00	5,132.50	-	24.72
Facilities related to the treatment of sewage & water	165,488.20	-	-	-	6.62
Fire stations & related facilities	768,844.67	75,913.00	-	-	175.73
Other	745,879.30	7,233.00	-	-	43.52
Public Libraries	-	-	-	-	-
Storage Facilities	54,495.97	239.00	-	-	2.63

Year 2016					
Combined Facilities	kWh	m3	Fuel Oil 1 & 2	Propane (L)	GHG (tCO2 eq)
Administrative offices & related facilities	84,905.07	16,831.00	-	-	35.22
Community Centres	-	-	-	-	-
Facilities related to the pumping of water	768,844.67	75,913.00	-	-	175.73
Facilities related to the treatment of sewage & water	745,879.30	7,233.00	-	-	43.52
Fire stations & related facilities	41,923.74	18,846.00	-	-	37.31
Other	165,488.20	-	-	-	6.62
Public Libraries	-	-	-	-	-
Storage Facilities	52,321.62	4,545.00	5,132.50	-	24.72

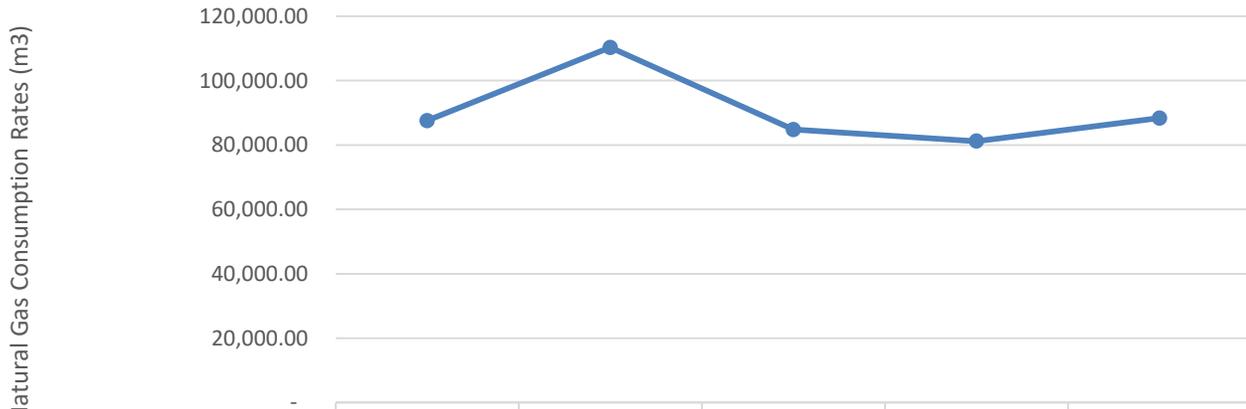
Year 2017					
Combined Facilities	kWh	m3	Fuel Oil 1 & 2	Propane (L)	GHG (tCO2 eq)
Administrative offices & related facilities	84,905.07	16,831.00	-	-	35.22
Community Centres	-	-	-	-	-
Facilities related to the pumping of water	41,923.74	18,846.00	-	-	37.31
Facilities related to the treatment of sewage & water	165,488.20	-	-	-	6.62
Fire stations & related facilities	54,495.97	239.00	-	-	2.63
Other	745,879.30	7,233.00	-	-	43.52
Public Libraries	-	-	-	-	-
Storage Facilities	768,844.67	75,913.00	-	-	175.73

### Asphodel-Norwood Electricity Consumption Rates (kWh)



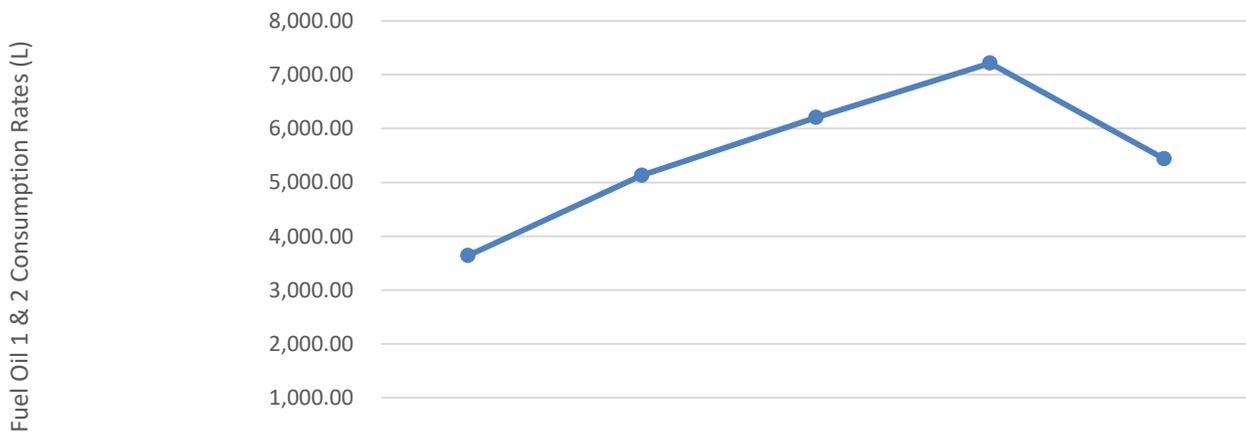
	2013	2014	2015	2016	2017
Electricity Consumption Rate	1,623,748.33	1,891,337.44	1,718,910.89	1,578,786.21	1,574,300.09

### Asphodel-Norwood Natural Gas Consumption Rates (m3)



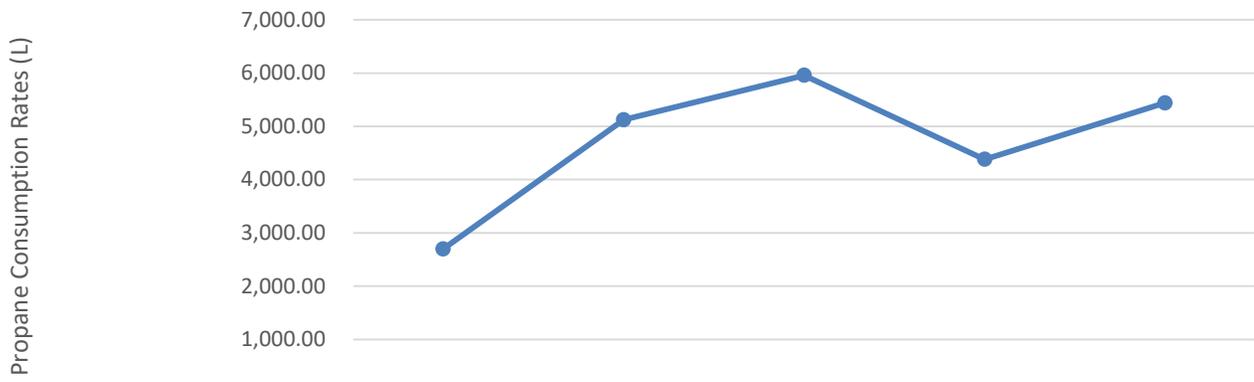
	2013	2014	2015	2016	2017
Natural Gas Consumption	87,589.00	110,308.00	84,786.00	81,198.17	88,345.00

### Asphodel-Norwood Fuel Oil 1 & 2 Consumption Rates (m3)



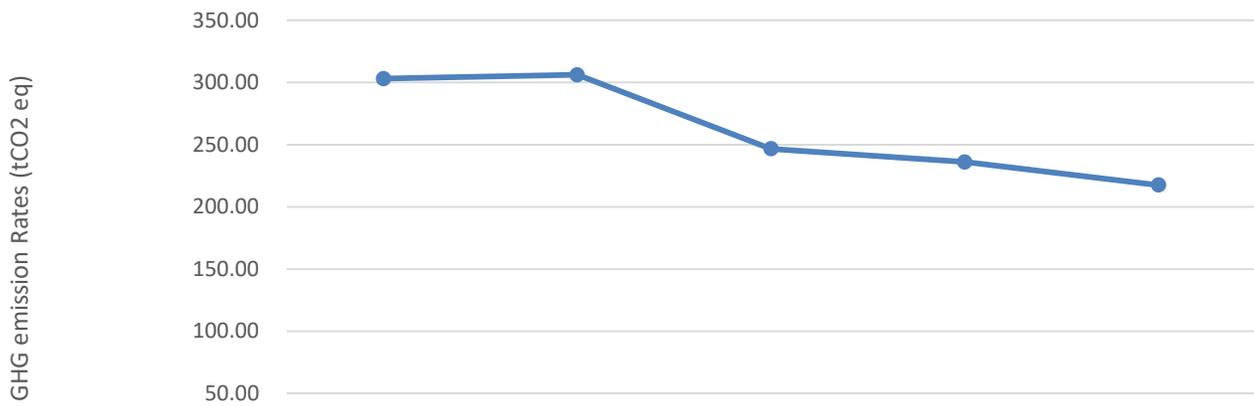
	2013	2014	2015	2016	2017
Fuel Oil 1&2 Consumption Rate	3,641.10	5,132.50	6,206.30	7,216.00	5,440.90

### Asphodel-Norwood Propane Consumption Rates (L)



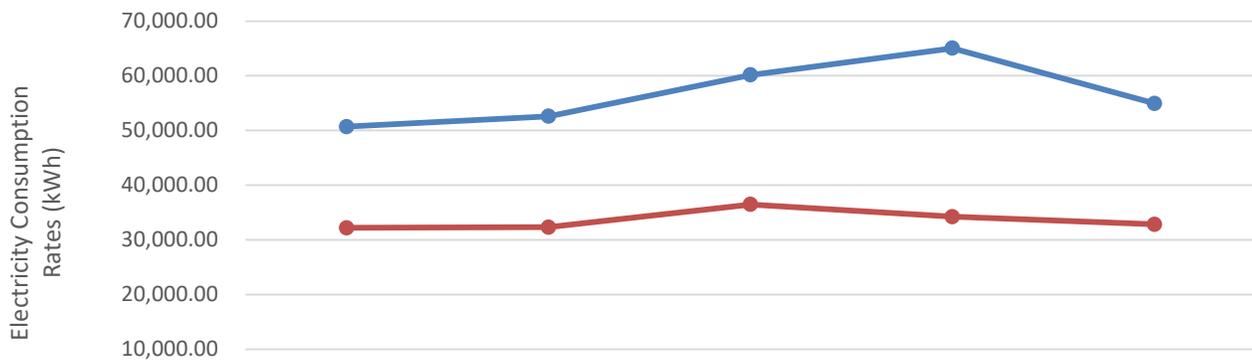
	2013	2014	2015	2016	2017
Propane Consumption Rate	2,700.70	5,123.90	5,956.10	4,381.80	5,441.30

### Asphodel-Norwood GHG Emission Rates (tCO2 eq)



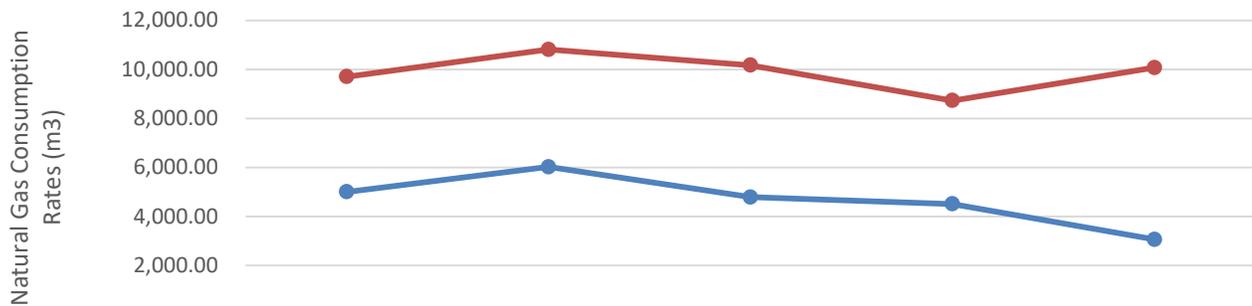
	2013	2014	2015	2016	2017
GHG Emission Rates	303.11	306.16	246.63	236.13	217.53

### Asphodel-Norwood Administrative Facilities Electricity Consumption Rates (kWh)



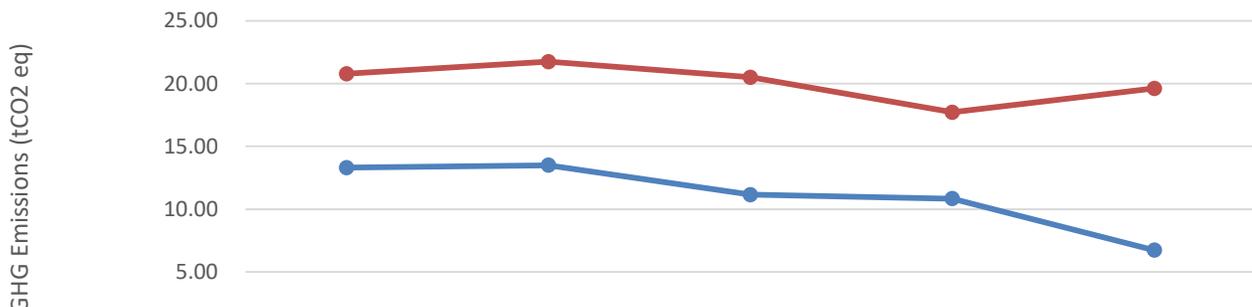
	2013	2014	2015	2016	2017
Medical Centre	50,687.91	52,584.02	60,154.94	65,028.72	54,933.98
Municipal Office	32,195.91	32,321.05	36,466.00	34,239.36	32,824.83

### Asphodel-Norwood Administrative Facilities Natural Gas Consumption Rates (m3)



	2013	2014	2015	2016	2017
Medical Centre	4,998.00	6,020.00	4,783.00	4,505.00	3,056.00
Municipal Office	9,697.00	10,811.00	10,168.00	8,726.00	10,071.00

### Asphodel-Norwood Administrative facilities GHG Emission Rates (tCO2 eq)



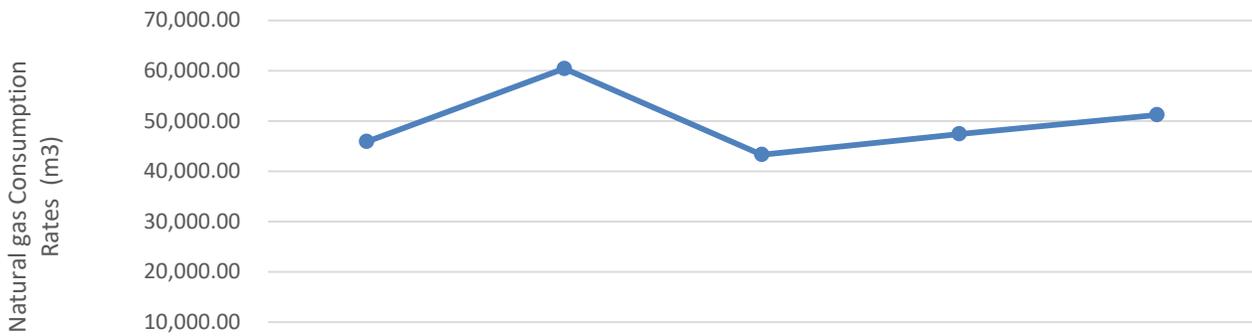
	2013	2014	2015	2016	2017
Medical Centre	13.30	13.49	11.15	10.83	6.73
Municipal Office	20.78	21.73	20.50	17.71	19.61

### Asphodel-Norwood Community Centre Electricity Consumption Rate (kWh)



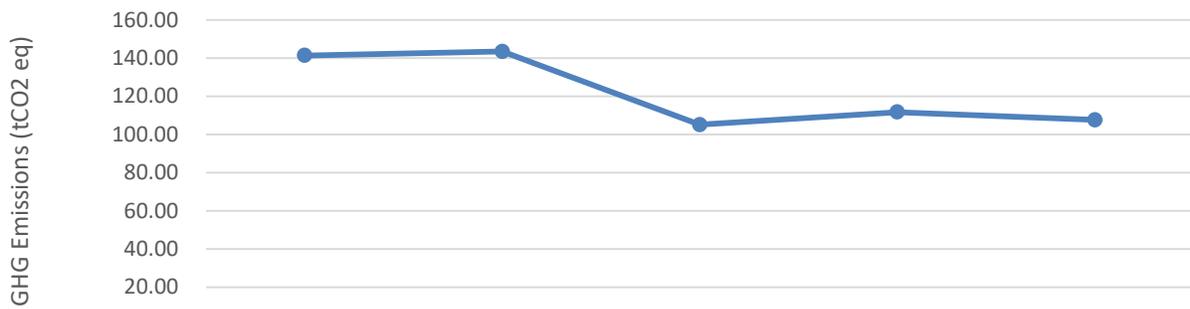
Year	2013	2014	2015	2016	2017
Community Centre	717,888.90	728,598.00	662,053.40	618,752.50	625,412.00

### Asphodel-Norwood Community Centre Natural Gas Consumption Rate (m3)



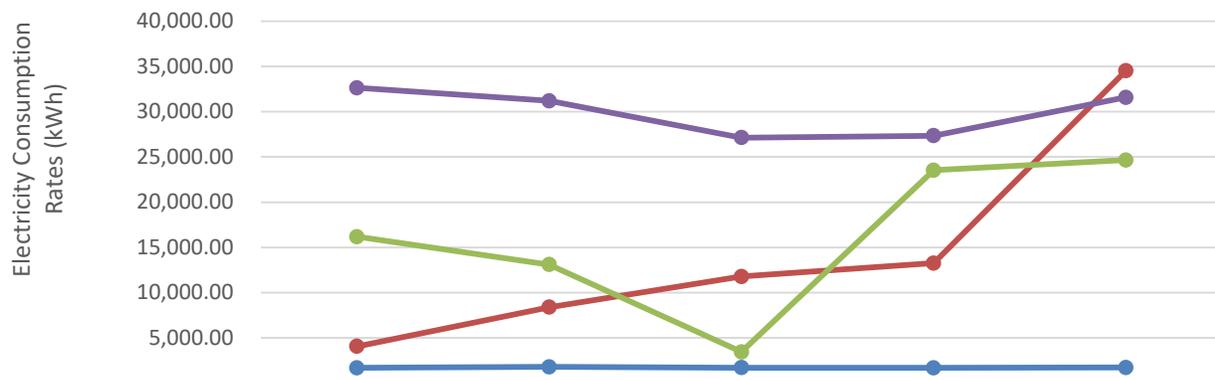
Year	2013	2014	2015	2016	2017
Community Centre	45,872.00	60,399.00	43,285.00	47,402.00	51,181.00

### Asphodel-Norwood Community Centre GHG Emissions Rates (tCO2 eq)



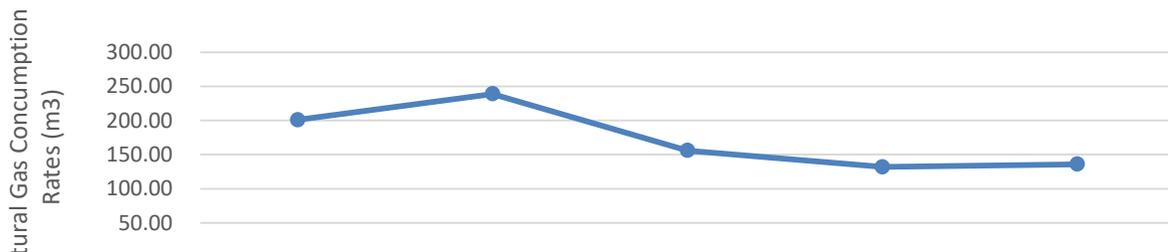
Year	2013	2014	2015	2016	2017
Community Centre	141.28	143.34	105.01	111.61	107.58

### Asphodel-Norwood Water Facilities Related to the Pumping of Water Electricity Consumption Rates



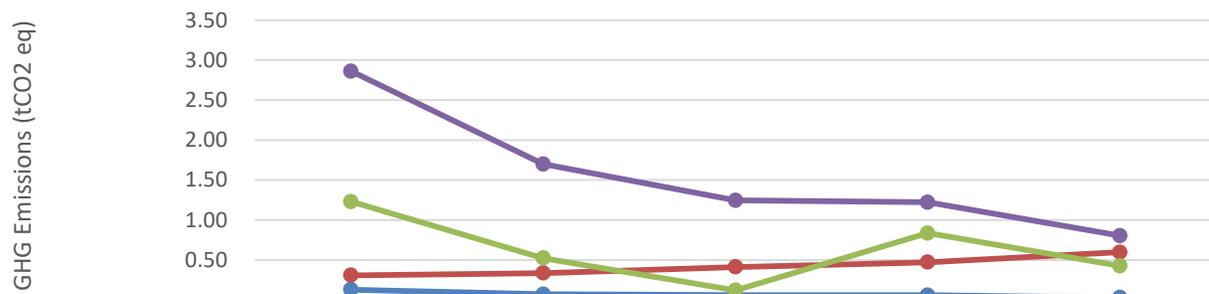
	2013	2014	2015	2016	2017
Belmont St. Lift Station	1,698.40	1,801.42	1,713.13	1,710.42	1,745.69
Mapple St. Lift Station	4,075.40	8,405.71	11,783.82	13,264.51	34,513.05
Trentview pumphouse	16,182.00	13,106.73	3,460.00	23,520.00	24,648.23
Victoria St. Lift Station	32,631.78	31,182.10	27,136.89	27,341.21	31,571.28

### Asphodel-Norwood Facilities Related to the Pumping of Water Natural Gas Consumption Rates (m3)



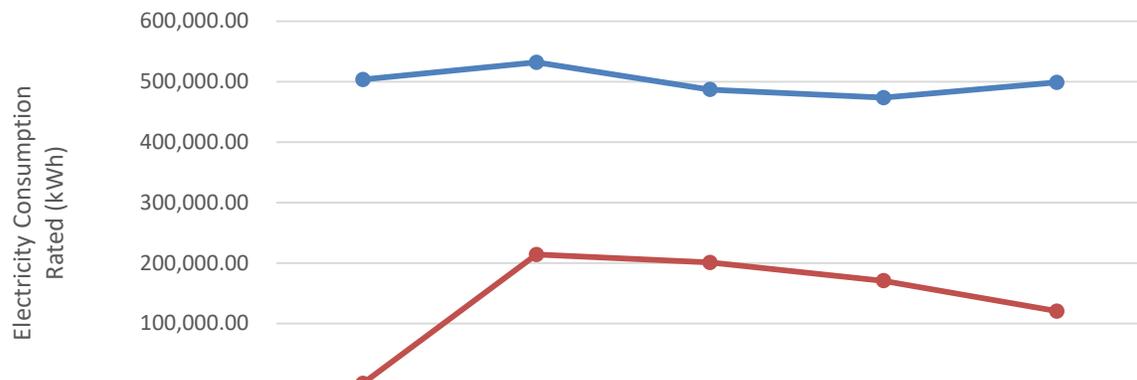
	2013	2014	2015	2016	2017
Victoria St Lift Station	201.00	239.00	156.00	132.00	136.00

### Asphodel-Norwood Facilities Related to the Pumping of Water GHG Emission Rates (tCO2 eq)



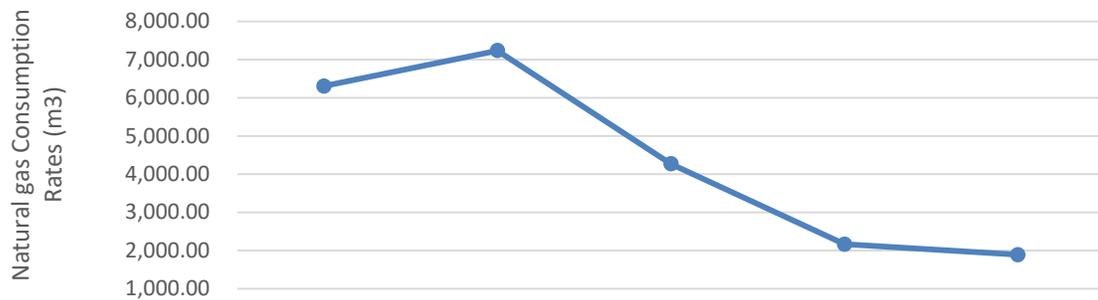
	2013	2014	2015	2016	2017
Belmont St. Lift Station	0.13	0.07	0.06	0.06	0.03
Maple St. Lift Station	0.31	0.34	0.41	0.47	0.60
Trentview Pumphouse	1.23	0.52	0.12	0.84	0.43
Victoria St. Lift Station	2.86	1.70	1.25	1.22	0.80

### Asphodel-Norwood Facilities Related to the Treatment of Sewage & Water Electricity Consumption Rates (kWh)



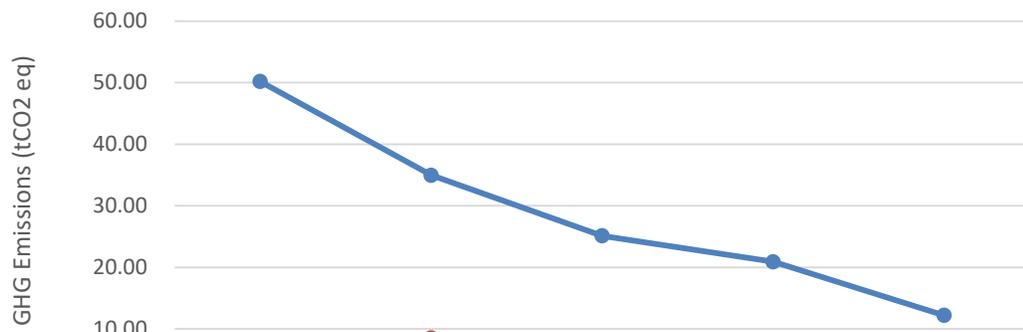
	2013	2014	2015	2016	2017
Waste Water Treatment Facility	503,301.40	531,783.30	486,689.10	473,239.50	498,709.00
Water Treatment Facility	793.97	214,096.00	200,849.30	170,645.10	120,298.00

### Asphodel-Norwood Facilities Related to Treatment of Sewage & Water Natural Gas Consumption Rates (m3)



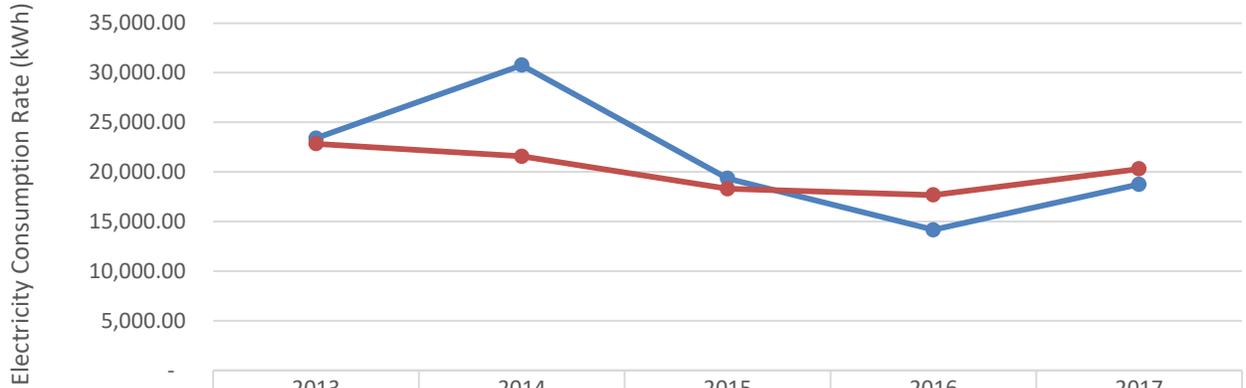
	2013	2014	2015	2016	2017
Waste Water Treatment Facility	6,304.00	7,233.00	4,266.00	2,163.00	1,888.00

### Asphodel-Norwood Facilities Related to the Treatment of Sewage & Water GHG Emissions (tCO2 eq)



	2013	2014	2015	2016	2017
Waste Water Treatment Facility	50.17	34.95	25.10	20.91	12.20
Water Treatment Facility	0.06	8.57	7.03	6.07	3.94

### Asphodel-Norwood Fire Stations & Related Facilities Electricity Consumption Rate (kWh)



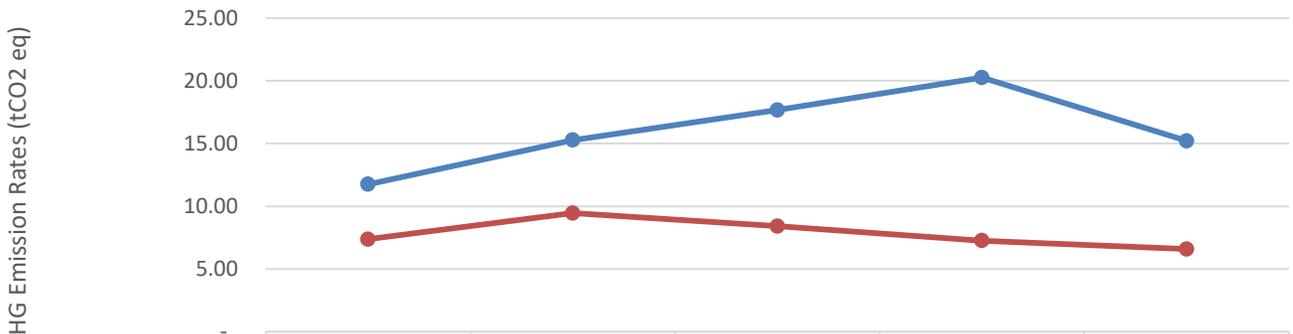
Asphodel Building	23,391.91	30,756.24	19,348.24	14,165.49	18,740.00
Norwood Fire Hall	22,830.16	21,565.38	18,297.61	17,675.50	20,305.95

### Ashpodel-Norwood Fire Stations & Related Facilitites Fuel Oil 1&2 (L) & Natural Gas (m3) Consumption Rates



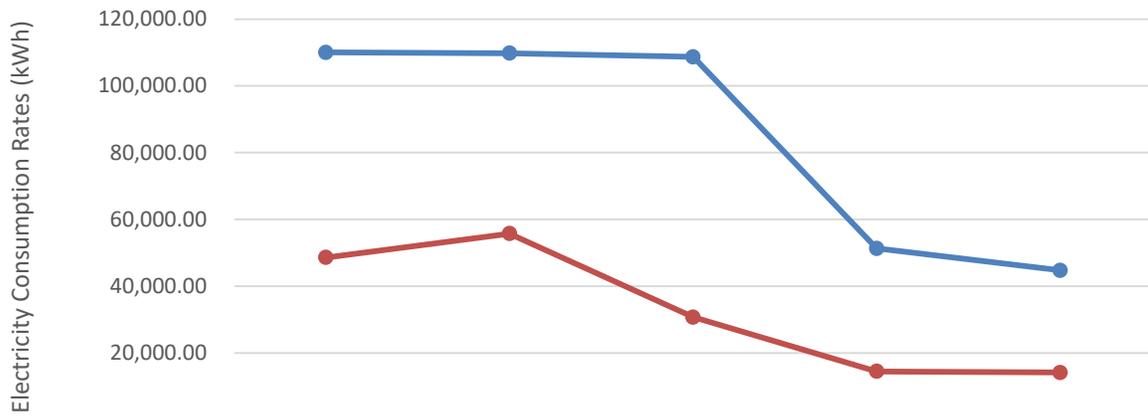
Asphodel Building (Fuel Oil 1&2)	3,641.10	5,132.50	6,206.30	7,216.00	5,440.90
Norwood Fire Hall (Natural Gas)	2,985.00	4,545.00	4,111.00	3,504.00	3,298.00

### Asphodel-Norwood Fire Stations & Related Facilitites GHG Emissions (tCO2 eq)



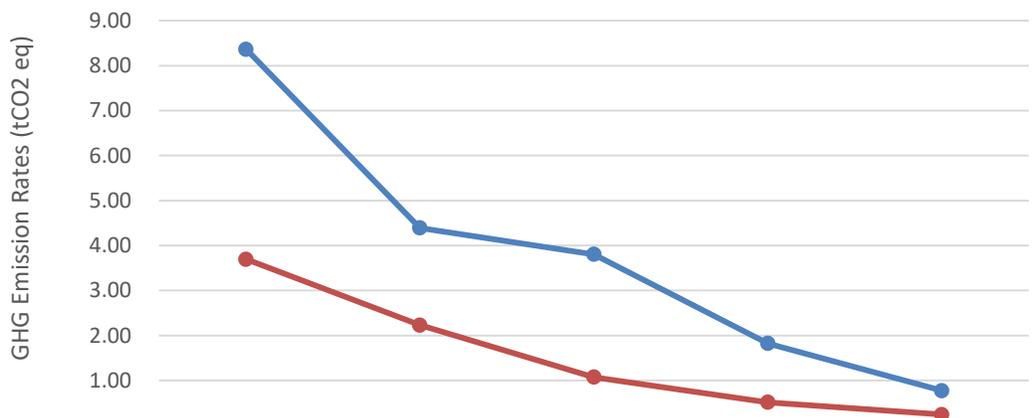
Asphodel Building	11.74	15.27	17.65	20.24	15.21
Norwood Fire Hall	7.38	9.46	8.41	7.25	6.59

### Asphodel-Norwood Miscellaneous (Other) Facilities Electricity Consumption Rates (kWh)



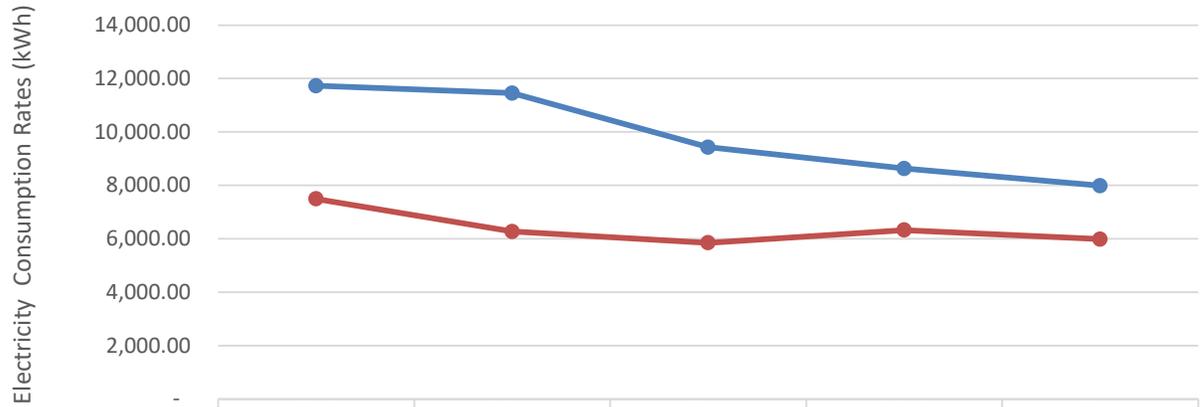
	2013	2014	2015	2016	2017
Street Lights Norwood (PUC)	110,005.80	109,754.10	108,672.90	51,299.20	44,733.15
Street Lights Westwood	48,599.55	55,734.10	30,696.00	14,453.70	14,106.72

### Asphodel-Norwood Miscellaneous (Other) Facilities GHG Emissions (tCO2 eq)



	2013	2014	2015	2016	2017
Street Lights Norwood (PUC)	8.36	4.39	3.80	1.82	0.77
Street Lights Westwood	3.69	2.23	1.07	0.51	0.24

### Asphodel-Norwood Public Libraries Electricity Consumption Rates (kWh)



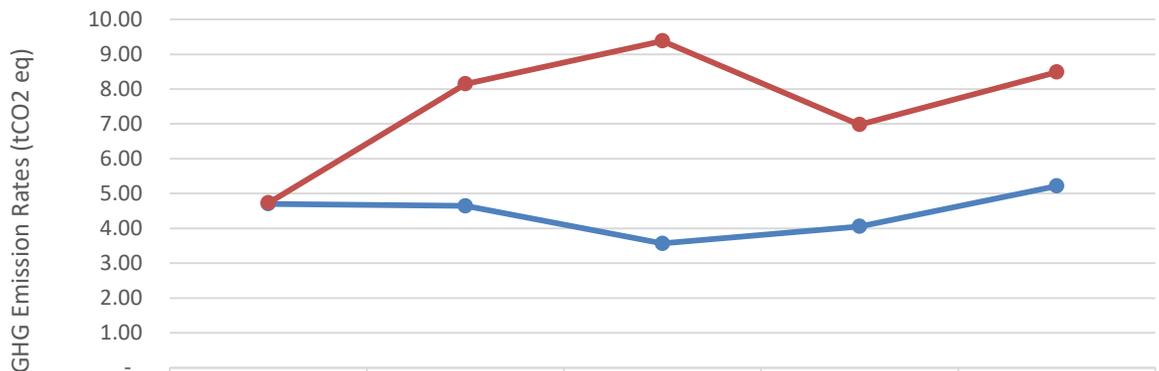
	2013	2014	2015	2016	2017
Norwood Public Library	11,726.71	11,451.94	9,429.91	8,630.37	7,985.86
Westwood Public Library	7,491.86	6,273.60	5,846.03	6,323.81	5,986.87

### Asphodel-Norwood Public Libraries Natural Gas (m3) & Propane (L) Consumption Rates



	2013	2014	2015	2016	2017
Norwood Public Library	2,018.00	2,215.00	1,711.00	1,983.00	2,685.00
Westwood Public Library	2,700.70	5,123.90	5,956.10	4,381.80	5,441.30

### Asphodel-Norwood Public Libraries GHG Emission Rates (tCO2 eq)

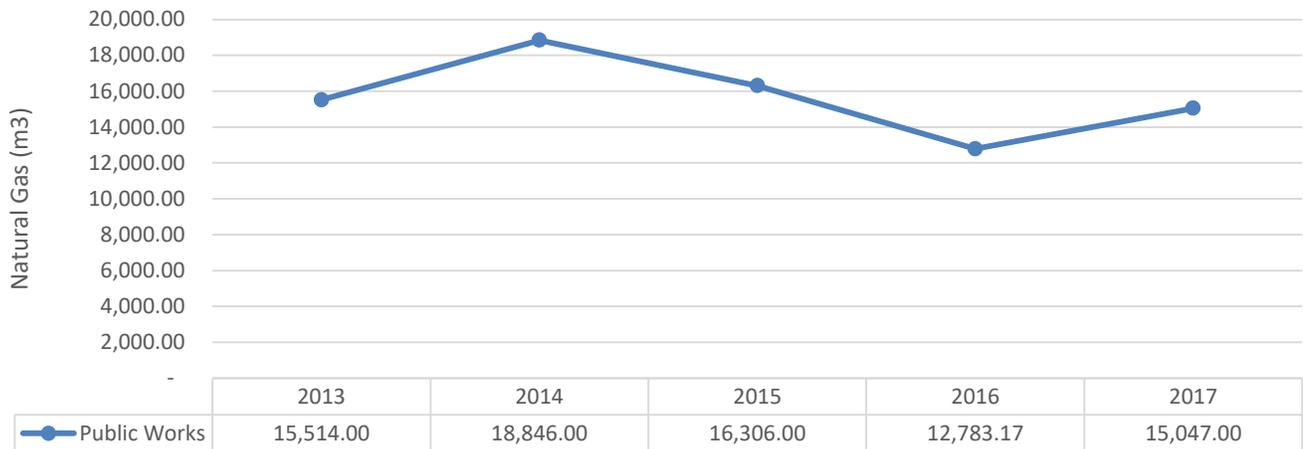


	2013	2014	2015	2016	2017
Norwood Public Library	4.71	4.65	3.57	4.06	5.21
Westwood Public Library	4.73	8.15	9.38	6.98	8.49

### Ashodel-Norwood Storage Facilities Electricity Consumption Rates (kWh)



### Asphodel-Norwood Storage Facilities Natural Gas Consumption Rates (m3)



### Asphodel-Norwood Storage Facilities GHG Emissions Rates (tCO2 eq)

