City of Windsor's ROSE:
Report **O**n the **S**tate of our **E**nvironment

2017

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Executive Summary

As part of the City of Windsor's Environmental Master Plan (EMP) Implementation, a number of environmental indicators are tracked over time. These indicators are categorized according to the 5 Goals of the Environmental Master Plan:

Goal A Improve Our Air & Water Quality

Goal B Create Healthy Communities

Goal C Green Windsor

Goal D Use Resources Efficiently

Goal E Promote Awareness

A Report on the State of our Environment to be completed every four to five years was suggested in the EMP as a way to report on the environmental indicators being tracked. In this report, a trend analysis of each indicator has been completed; various City of Windsor projects benefitting the environment have been summarized; and areas to move forward towards further implementation of the EMP have been identified.

A summary of the trends for each indicator can be found in Table 1. To simplify the information, a green checkmark was used if the trend of the indicator aligned with the goal, a yellow triangle was used if the trend remained unchanged, and a red "X" was used if the trend of the indicator was opposed that of the goal (also see "How to Interpret the Graphs" section of this report).

Executive Summary

Table 1 – Summary of the goal, trend and result for each environmental indicator monitored.

	Goal	Trend	Result
Goal A – Improve Our Air and Water Quality			
Air Quality Index			
Good Air Quality Index Days	↗	↔	▲
Smog Days	↘	↘	✓
Ground Level Ozone	↘	↘	✓
Quality of Wastewater			
Lou Romano Water Reclamation Plant	↗	↗	✓
Little River Pollution Control Plant	↗	↔	▲
Amount of Wastewater Treated	↘	↘	✓
Wastewater Treatment Plant Bypass	↘	↘	✓
Detroit River Quality	↗	↗	✓
Tributary Surface Water (Phosphorus Concentration)	↘	↔	▲
Water Consumption	↘	↘	✓
Goal B – Create Healthy Communities			
Community Gardens	↗	↗	✓
Trails	↗	↗	✓
Population Density	↗	↗	✓
Commuting	↘	↘	✓
Sustainable Construction	↗	↗	✓
Goal C – Green Windsor			
Natural Areas		Not enough data	
Natural Heritage	↗	↗	✓
City Owned Trees Planted and Removed	↗	↗	✓
Amount of Maintained and Natural Parkland	↗	↗	✓
Pesticide Use	↘	↗	✗
Brownfield Conversion	↗	↔	▲

Executive Summary

Table 1 Continued.

Goal D – Use Resources Efficiently			
Energy Consumption			
Buildings	↘	↗	✗
Sewage Treatment	↘	↘	✓
Streetlights & Traffic Signals	↘	↘	✓
Solid Waste Management			
Total Refuse Sent to Landfill	↘	↔	▲
Diversion Rate	↗	↔	▲
Fuel Use	↘	↘	✓
Greenhouse Gas Emissions			
Corporate	↘	↘	✓
Community	↘	↘	✓
Goal E – Promote Awareness			
Web-Based Outreach	↗	↗	✓
Attitudes Towards the Environment	Qualitative data		
Awareness of Environmentally-Related Programs	↗	↔	▲

The City of Windsor is moving forward on many Plans, programs and initiatives that involve protecting and enhancing our environment. Many of the indicators tracked in the 2017 ROSE are moving in the right direction or staying neutral.

In fact, there are only 2 indicators that are trending in the opposite direction of our goals - Pesticide Use and the Energy Consumption of Buildings and there are external factors contributing to these indicators including an increase in invasive species requiring the use of pesticides as well as an overall increase in the number of buildings operated by the City. Pesticide use has been decreasing since 2013, however the trend line since 2007 shows an overall increase.

Environment, Sustainability & Climate Change staff continue to work with various City of Windsor departments to implement our Environmental Master Plan as well as our Climate Change Adaptation Plan and Community Energy Plan.

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Introduction

Background

Windsor's first Report on the State of our Environment (ROSE) was completed in 2008 and approved by City Council in 2009. This report was identified in Windsor's Environmental Master Plan (EMP) as a way to monitor the Plan's ongoing implementation and progress. A second ROSE was developed and approved by Council in 2013. These documents provide data which can now be built upon. The ROSE is a way to track specific environmental indicators over time. It is our hope that these indicators will improve as a result of changes to corporate policy and operations, as well as community action.

This 2017 Report on the State of our Environment provides trends in data collected from 2007 in general, through 2016. The ROSE will continue to be updated approximately every four years.

As described in the original ROSE, the indicators chosen to be monitored over time were discussed with a group of City staff and community partners. In most cases, the indicators were chosen because they were relatively easy to track and they gave insight into the state of the environment. This is not an exhaustive list of environmental indicators, and there may be various factors influencing them. For example, the weather plays a role in many of the water quality indicators.

The indicators included in the ROSE have been grouped and presented in alignment with the five goals in the EMP:

Goal A Improve Our Air & Water Quality

Goal B Create Healthy Communities

Goal C Green Windsor

Goal D Use Resources Efficiently

Goal E Promote Awareness

The indicators that were chosen focus on the priorities that Council set out for the EMP, namely, to focus on the actions of the corporation and items that the City can control, in the context of larger environmental change. The focus was also kept as "local" as possible: the Working Group focused on indicators that reflect the health of Windsor's environment. Therefore, there are linkages from local actions and conditions to national priorities and issues, such as climate change.

How to Interpret the Graphs

Results

Legend

An upward goal or trend

A downward goal or trend

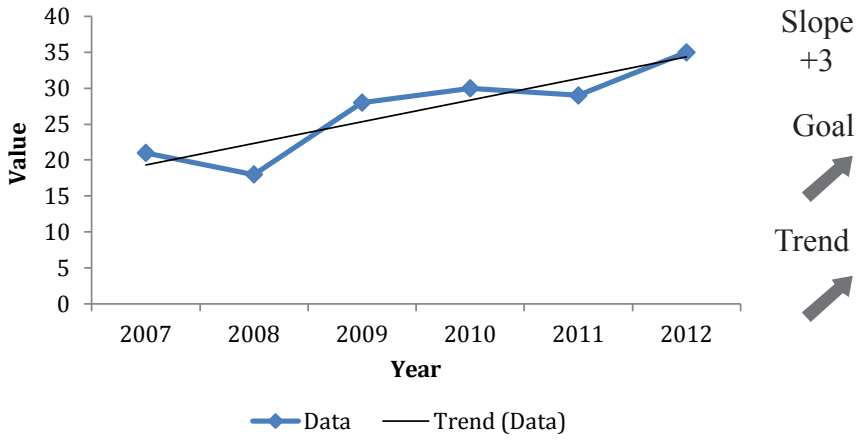
A trend that is unchanged

To determine if the Indicator is improving or declining over time, a trend line will be included on most figures. Trend lines with a slope greater than +1 will be considered to be increasing and those with a slope less than -1 will be considered to be decreasing. Slopes in between and including -1 and +1 will be considered to be unchanged. Trends will only be analysed if there are more than two data points available.

Some indicators are measured more qualitatively than quantitatively. These indicators will be rated as having an upward or downward trend on a case-by-case basis.

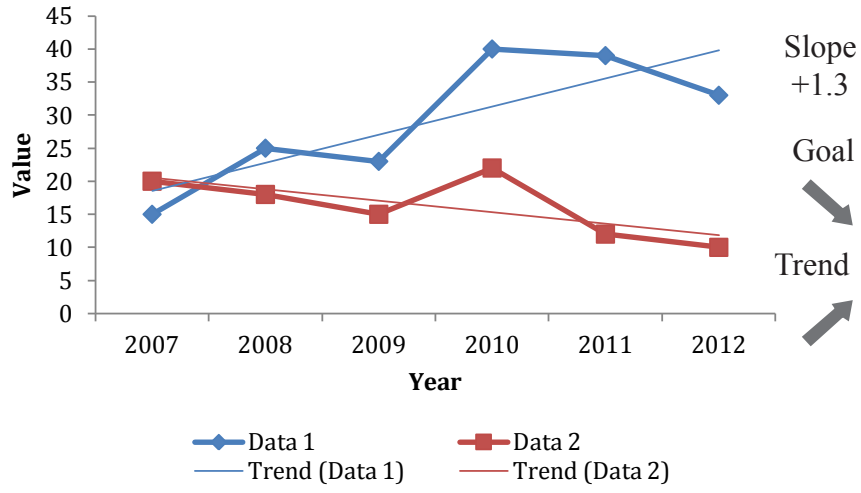
Sample Graph (A)

This graph shows data for an Indicator where the goal is to achieve an increase in the value over time (e.g. increase bike facilities, improve water quality, etc.). The direction of the goal arrow for these types of indicators is upward. In this sample, the trend is also upward since the trend line has a slope of +3. The trend is aligned with the goal.



Sample Graph (B)

This graph shows data for an Indicator where the goal is to achieve a decrease in the value over time (e.g. number of smog days, energy consumption, etc.). The direction of the goal arrow for these types of indicators is downward. In this sample, the slopes of the two data sets are averaged. The trend is upward since the trend lines have an average slope of +1.3 (if the average slope was -1.3 the trend would be downward). Therefore, the trend is not aligned with the goal.

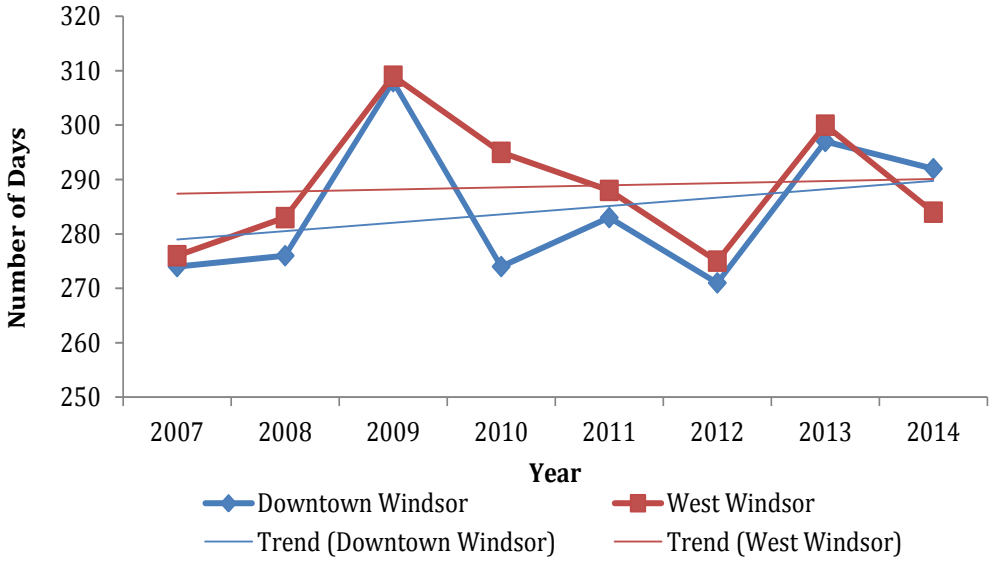


Goal A: Improve Our Air & Water Quality

Indicators

Air Quality Health Index

The Air Quality Health Index (AQHI) replaced the Air Quality Index (AQI) in 2015. The AQHI is a scale designed to help understand what the air quality around us means to our health. The AQHI differs from the traditional AQI as it reports on the health risk posed by a mixture of pollutants including ground-level ozone, particulate matter and nitrogen dioxide as opposed to the air quality of the single worst pollutant.



Goal

Trend

Figure 1.1 - Number of Good or Very Good Air Quality Index Days prior to AQHI Reporting.

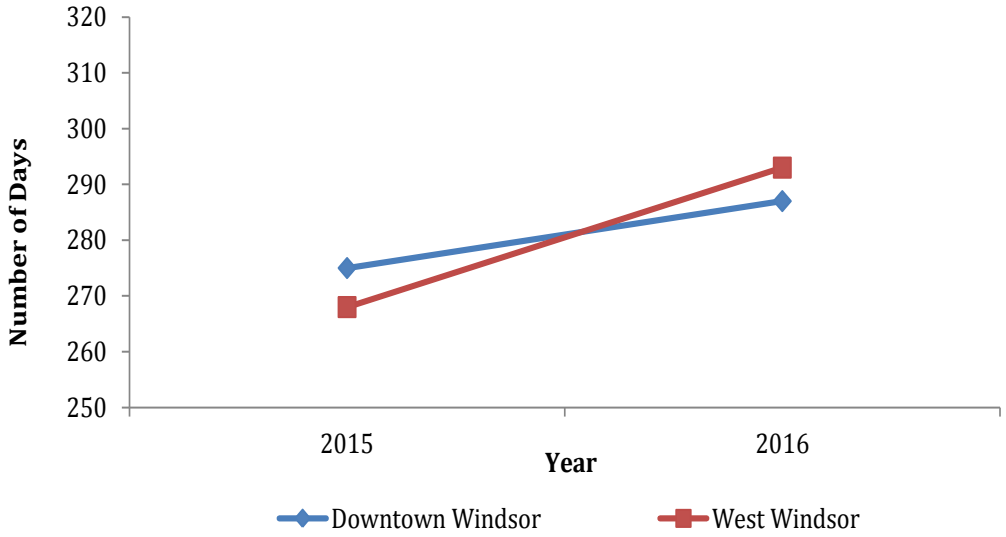


Figure 1.2 - Number of Good or Very Good Air Quality Health Index Days since AQHI Reporting.

Smog Days

Replacing the AQI with the AQHI also impacted Smog Advisories. A new alert system was put in place in 2015 based on the Air Quality Health Index. If a high risk AQHI value is forecast to last for 1 to 2 hours, a Special Air Quality Statement (SAQS) will be issued. If the high risk AQHI is forecast to be persistent, a duration of a least 3 hours, then a Smog and Air Health Advisory (SAHA) will be issued.

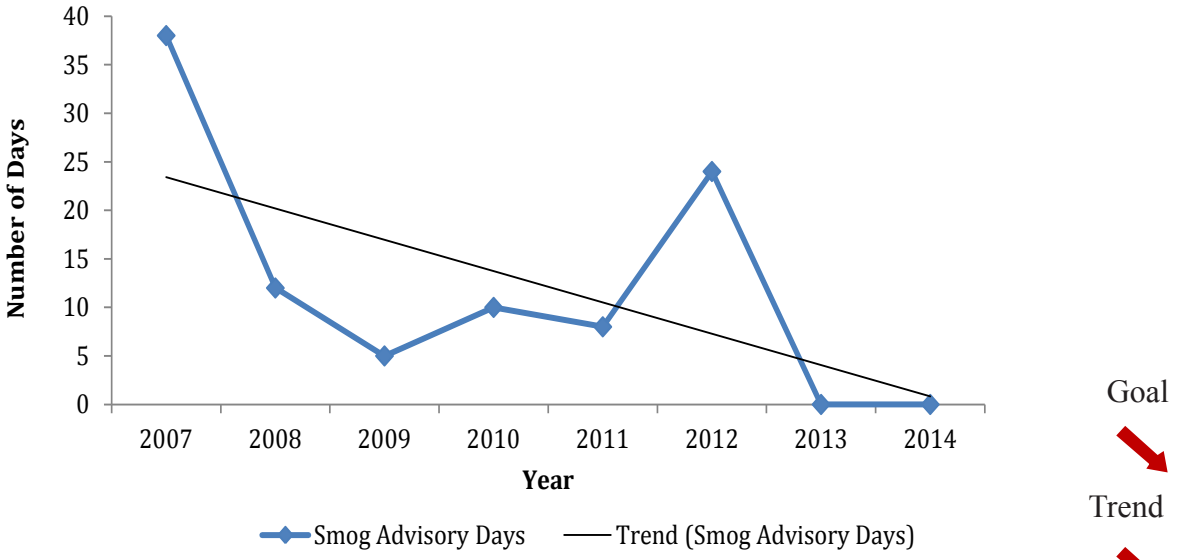


Figure 1.3 - Number of Smog Advisory Days prior to AQHI Reporting.

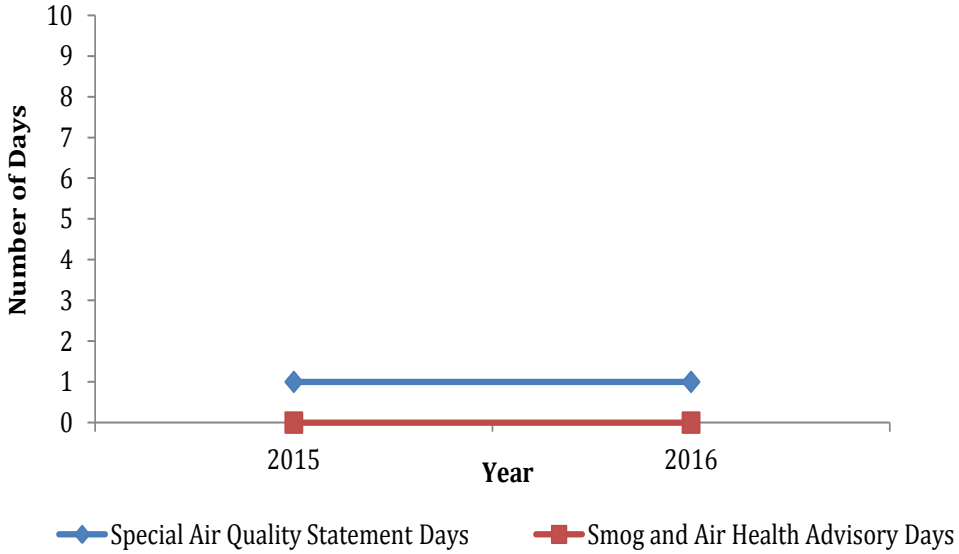


Figure 1.4 - Number of Special Air Quality Statement Days and Smog and Air Health Advisory Days since AQHI Reporting.

Goal A: Improve Our Air & Water Quality

Ground Level Ozone

Ground level ozone is produced in emissions from burning fossil fuels, coal plants, factories, evaporated gas, paints and solvent fumes. Ground level ozone is the primary air pollutant responsible for smog. Ozone irritates the lungs, and can cause significant health problems for people at risk.

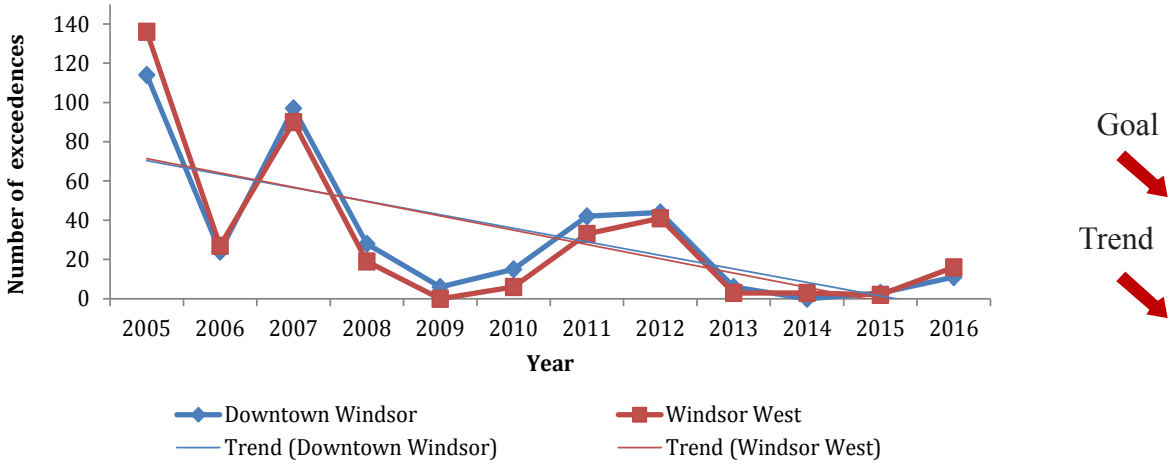


Figure 1.5 - Number of One-hour Exceedences of acceptable Ground Level Ozone Concentrations (as set by the MOECC).

Quality of Wastewater

Treating wastewater is vital for maintaining water quality. Wastewater treatment removes particulate matter/sediments, and both organic and inorganic pollutants before the water is discharged into the Detroit River. Treatment plants strive for a high percentage of removal for biological oxygen demand, suspended solids and total phosphorous to protect the health of the river ecosystem.

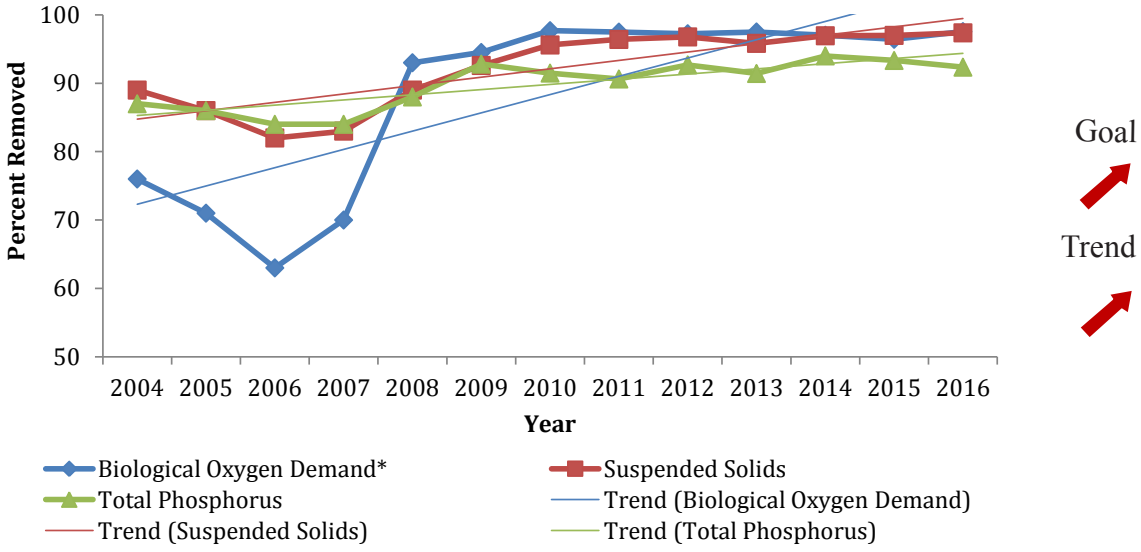


Figure 1.6 - Contaminant removal at Lou Romano Water Reclamation Plant.

*In 2007 the Lou Romano plant began measuring Carbonaceous Biological Oxygen Demand (BOD) in its effluent in place of Total BOD. This does not allow for a completely direct comparison.

Goal A: Improve Our Air & Water Quality

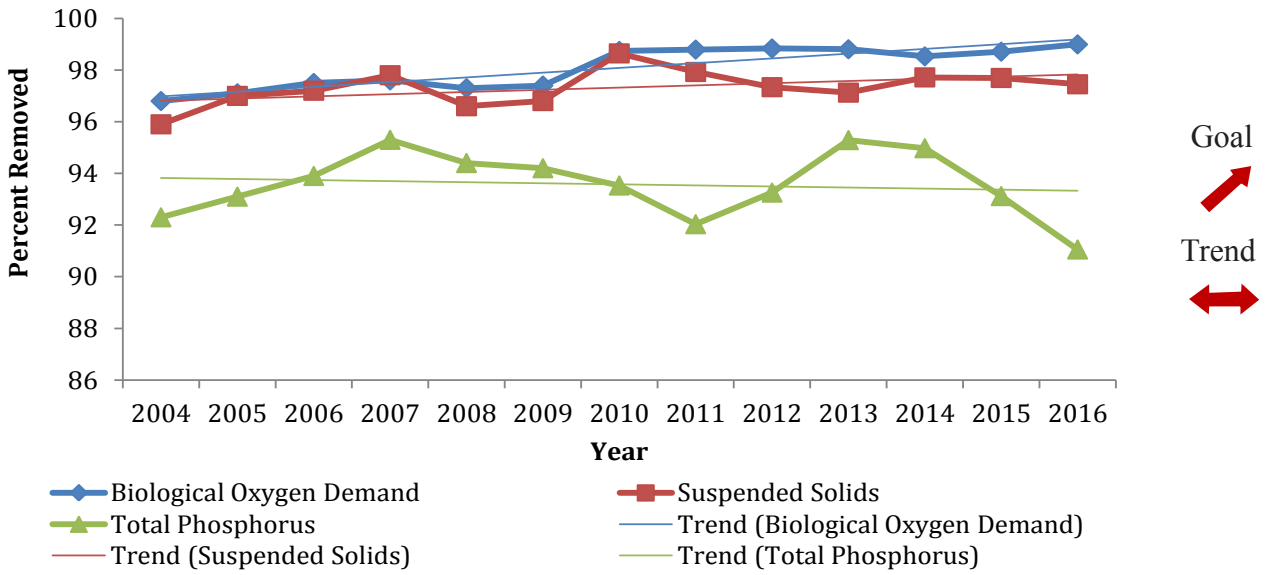


Figure 1.7 - Contaminant removal at Little River Pollution Control Plant.

Amount of Wastewater Treated

The amount of wastewater being treated indicates the amount of water each household is using, in addition to the amount of stormwater that is sent to the treatment plants. A lower amount can indicate better water conservation on the part of the community. Additionally, this number is impacted by the stormwater collected by combined sewers that is sent to the wastewater treatment plants.

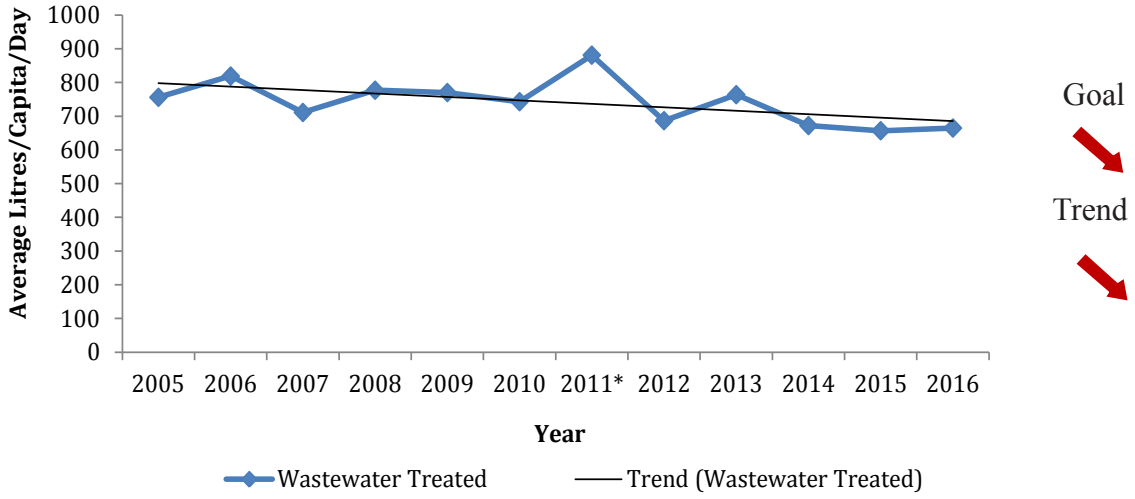


Figure 1.8 - Total Amount of Wastewater Treated.

*In 2011, total rainfall in Windsor measured 1,568.2mm compared to the average total rainfall of 805mm. This well-above-average rainfall contributed significantly to the large amount of wastewater treated at each plant in 2011.

Goal A: Improve Our Air & Water Quality

Wastewater Treatment Plant Bypass

A wastewater treatment plant bypass occurs when wastewater reaching a wastewater treatment plant exceeds the plant's design capacity, often due to a rain event. This data is tracked at both of Windsor's wastewater treatment plants. All bypass events at Windsor's treatment plants receive some level of treatment before discharge.

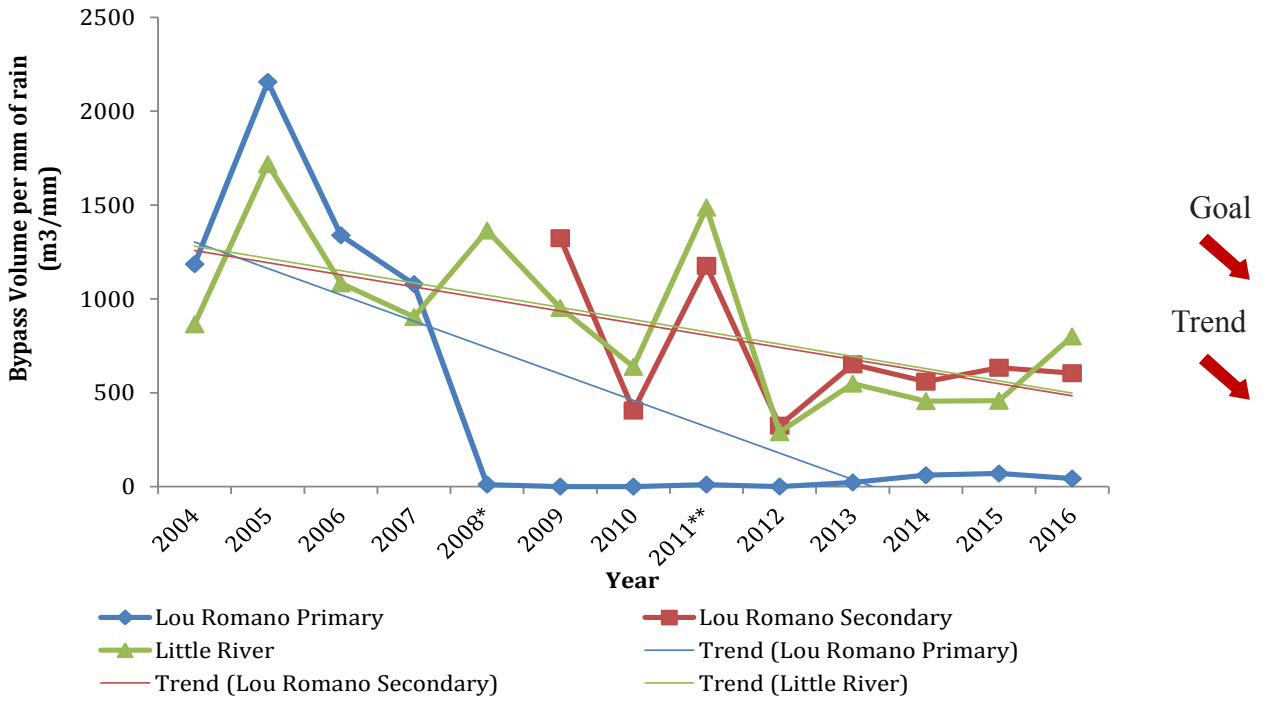


Figure 1.9 - Wastewater Treatment Plant Bypass Volumes Normalised for Amount of Rainfall.

*The number previously reported for 2008 Lou Romano Secondary Bypass has been removed as was deemed to be an outlier. In 2008, the Lou Romano Water Reclamation Plant was undergoing an expansion of its primary treatment processes from 165 Megalitres to 275 Megalitres and upgrading the facility to include 220 Megalitres of secondary treatment. The secondary treatment process experienced some difficulties during the initial operation phase resulting in a greater amount of secondary treatment bypass.

** In 2011, total rainfall in Windsor measured 1,568.2mm compared to the average total rainfall of 805mm. This is well-above-average rainfall contributed significantly to the bypass amounts at each plant in 2011.

Goal A: Improve Our Air & Water Quality

Detroit River Quality

The Detroit River was listed as a Great Lakes' Area of Concern in the 1980s. The Detroit River Canadian Cleanup (DRCC) is a community-based partnership between industry, government (including the City of Windsor), academics, environmental organizations and citizens that work together to improve the health of the Detroit River ecosystem. The DRCC initiative, implemented as part of the Canada-U.S. Great Lakes Water Quality Agreement, tracks the status of 14 potential beneficial water use impairments (BUIs) that indicate the health of different parts of the ecosystem. Progress is being made through restoration and monitoring. Since the 2008 ROSE was written, the DRCC partners have proposed changing the status of several BUIs.

Table 1.1 – The Status of Detroit River Beneficial Use Impairments. Updates since the 2013 ROSE are denoted in red.

	Beneficial Use Impairment	2008 Status	2013 Status	2016 Status
1	Restrictions on fish and wildlife consumption	Impaired (fish)	Impaired (fish)	Impaired (fish)
2	Tainting of fish and wildlife flavour	Unknown	Proposed Not Impaired	Not Impaired
3	Degradation of fish and wildlife populations	Impaired	Impaired	Impaired
4	Fish tumours or other deformities	Impaired	Impaired	Impaired
5	Bird or animal deformities or reproductive problems	Impaired	Impaired	Impaired
6	Degradation of benthos	Impaired	Impaired	Impaired
7	Restrictions on dredging activities	Impaired	Impaired	Impaired
8	Eutrophication or undesirable algae	Not impaired	Not impaired	Not impaired
9	Restrictions on drinking water consumption, or taste and odour problems	Not impaired	Not impaired	Not impaired
10	Beach closings	Impaired	Proposed Not Impaired	Not Impaired
11	Degradation of aesthetics	Impaired	Impaired	Not Impaired
12	Added costs to agriculture or industry	Impaired	Not impaired	Not impaired
13	Degradation of phytoplankton and zooplankton populations	Unknown	Proposed Not Impaired	Requires Further Assessment
14	Loss of fish and wildlife habitat	Impaired	Impaired	Impaired

Goal ↗

Trend ↗

Goal A: Improve Our Air & Water Quality

Tributary Surface Water

Turkey Creek (Grand Marais Drain) and Little River are two major tributaries of the Detroit River. Phosphorus is a nutrient that can become elevated due to urban and rural land uses associated with fertilizer use, pet and wildlife droppings and faulty septic systems. Excess phosphorus in freshwater promotes the growth of algae. When the algae dies, dissolved oxygen in the water is consumed to biodegrade the algae. This process is called eutrophication. When the level of oxygen is reduced due to eutrophication the fragile ecosystem becomes strained and can lead to fish and wildlife deaths and poor water quality.

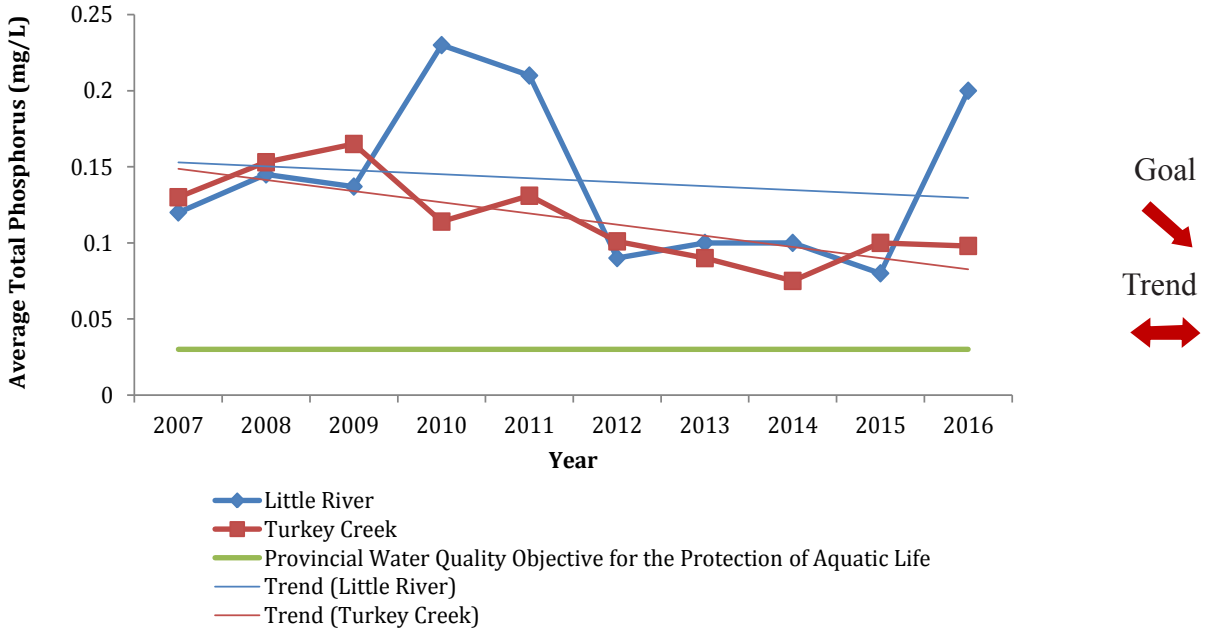


Figure 1.10 - Total Phosphorus in Windsor Tributaries.

Water Consumption

A lower amount of water consumption may indicate better water conservation on the part of the community as a whole.

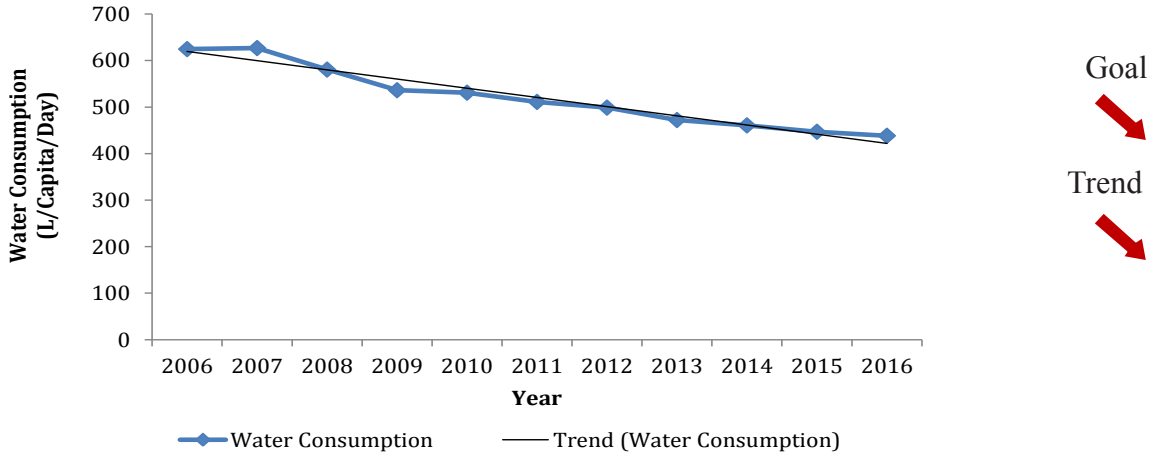


Figure 1.11 - Water Consumption in Litres per Capita per Day.

Goal A: Improve Our Air & Water Quality

City of Windsor Initiatives

Transit Windsor Initiatives

Transit Windsor has launched a $2.7 million Intelligent Transit system - riders can now use smartphones and laptops to check out when the next bus will arrive in real time. This increase in access to information will hopefully increase ridership. In addition, Transit Windsor will be offering service in the Town of LaSalle, and has received Federal and Municipal funding to purchase 24 new clean diesel buses which will help decrease current emissions. Other initiatives approved to move forward are a service delivery review and a complete revitalization of their transit bus shelters across the city.

Climate Change Adaptation Implementation

The City of Windsor continues to implement our Climate Change Adaptation Plan. Flow monitoring and hydraulic modelling of the City's sewer system is helping to gather more information about the City's sewer system. Combined and over-under sewers continue to be replaced with separate wastewater and stormwater sewers to help decrease combined sewer overflows. The rainfall Intensity, Duration and Frequency (IDF) curves have been updated for Windsor and Essex County. This will help us better prepare and design for the potentially wetter weather ahead. The Federal government recently announced funding for 14 sewer and treatment plant infrastructure projects in Windsor to assist with flooding and water quality.

Rainbarrel Sales

For the past few years the City of Windsor has been pleased to sell rainbarrels at cost at the Essex Windsor Solid Waste Authority annual truckload sale. 300 rainbarrels were sold both in 2016 and 2017 to residents who will be disconnecting their downspouts to keep rainwater from their roof from entering our sewer system.

Climate Resiliant House

The City of Windsor owns a residential home at the Lanspeary Park greenhouses that we have begun converting into a Climate Resilient House. The house will be upgraded with features protecting it from extreme weather events and be available to the public as a demonstration project. Current work to the house includes downspout disconnection and rainbarrel installation, improved grading, installation of a backwater valve, sump pump with overflow and an infiltration trench as well as a raingarden. Public open houses and viewings of the house are expected to be offered in 2018. In addition, videos were made while the work was being done to show homeowners how to complete these projects.

Low Impact Development at South Windsor Arena

An infiltration trench will be constructed at the South Windsor Arena as part of the parking lot expansion. This will result in stormwater being managed on site as opposed to going into our sewer system. This low impact development feature will be monitored to measure success over time.

Goal A: Improve Our Air & Water Quality

Compact of Mayors Greenhouse Gas Reporting

The Compact of Mayors is a global network of cities pledging to reduce greenhouse gas emissions, enhance resilience to climate change, and track progress in a standardized and transparent manner. In 2015 the City of Windsor agreed to participate and completed a thorough greenhouse gas inventory for the entire city using 2014 data. This process will be completed frequently to track and monitor greenhouse gas reduction progress.

Storm and Sanitary Sewer Use Master Plan

City administration has hired a consultant to develop a Storm and Sanitary Sewer Use Master Plan. The plan will provide an understanding of how the City's sewer network will respond to various rainfall intensities, help to determine flooding risks across the City, as well as inform appropriate changes to stormwater management to reduce risk to the sewer network.

Anti-Idling Bylaw Updated

In 2016 an update to the Anti-Idling bylaw was approved by Council limiting idling time to 3 minutes, excluding transit vehicles and other exemptions. Idling promotional and campaign materials have been developed so that schools can implement their own anti-idling campaigns.

Corporate Climate Action Plan

As part of Windsor's Community Energy Plan (discussed in more detail in Goal D), the Corporation hired a consultant to develop a Corporate Climate Action Plan to decrease City of Windsor greenhouse gas emissions. Recommended actions were developed in the following categories: Organizational and Institutional Policy Change, Buildings, Non-Transit Fleet, Transit Fleet, Water and Wastewater, Streetlights and Traffic Signals, Renewable Energy Generation and Solid Waste Management. Implementation of the recommended actions over time will help the City of Windsor decrease our contribution to climate change.

Green the Fleet Plan Implementation

Since the Greening of the City Fleet Plan was approved by City Council in 2012, the corporate fleet has implemented a number of measures to move the City's fleet towards operations that improve the environment: right-sizing the fleet to ensure appropriate vehicles are purchased to meet specific job requirements, continuing with preventative maintenance programs for the various classes of vehicles, conversion of the fleet to LED lighting and introducing electric vehicles into the corporate fleet.

Goal A: Improve Our Air & Water Quality

Areas to Move Forward

- Develop a plan to modify City of Windsor operations on poor air quality days;
- Update the City's Greening the City Fleet Manual;
- Reinstitute free bus rides on Special Air Quality Statement and Smog and Air Health Advisory Days;
- Implement a rainbarrel water collection program on select City properties to show water conservation techniques;
- Implement and promote recommendations made in the Sustainable Purchasing Policy and Guide specifically related to general building maintenance (paint, sealants, adhesives and other building materials) janitorial cleaning products as well as furniture and office systems;
- Complete a Storm and Sanitary Sewer Master Plan;
- Implement recommendations in the Corporate Climate Action Plan (2017) such as increasing ridership, advancing transit vehicle replacement and exploring alternative propulsion vehicles;
- Promote increased and smoother traffic flow for all modes (including cyclists and pedestrians) by using Intelligent Transportation Systems (ITS), e.g. to improve signal coordination, provide priorities for transit and introduce electronic way-finding and transit route information;
- Create a wet weather flow study for the Lou Romano Water Reclamation Plant.

Goal B: Create Healthy Communities

Indicators

Community Gardens

Community gardens growing vegetables and native flowering plants promote biodiversity and limit the use of pesticides and manufactured fertilizer, thereby providing access to a source of healthy, fresh food for the community. They also foster community spirit and can turn a vacant piece of property or part of a City park into a thriving neighbourhood gathering place.

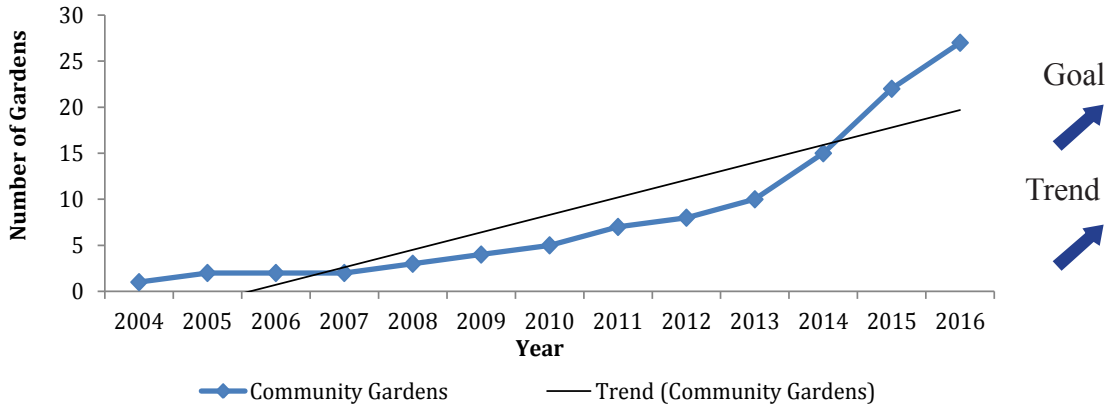


Figure 2.1 - Number of Community Gardens in Windsor.

Trails

Populations that walk, bike, and participate in outdoor sports have a more active lifestyle than those that do not. Cities with active, engaged citizens are healthier, more vibrant and economically competitive places. Multi-use trails are dedicated trails located both off-road and within the public right of way that may be used for mixed uses, including mobility devices, walking, running or bicycling. Bike Facilities include Sharrows (road markings indicating that cyclists and motorists share the lane), signed bicycle routes and bicycle lanes.

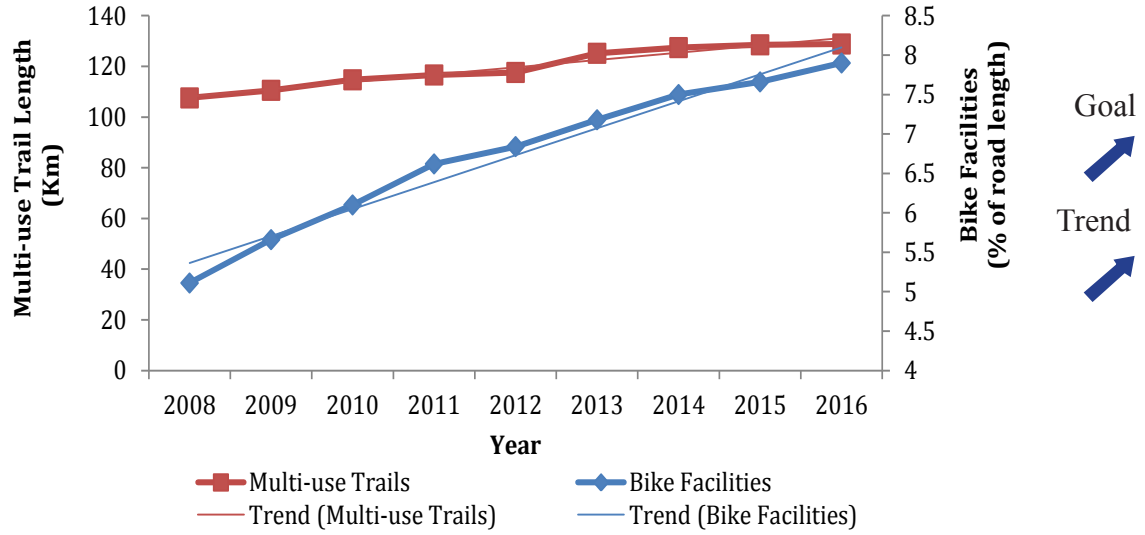


Figure 2.2 - Amount of Bicycling Facilities and Multi-Use Trails.

Goal B: Create Healthy Communities

Population Density

Urban density is an indicator of how sustainable a city's built form is. Density influences the design and form of the city and how people interact within it, as well as the effectiveness of transit. A more dense population is more resource-sustainable.

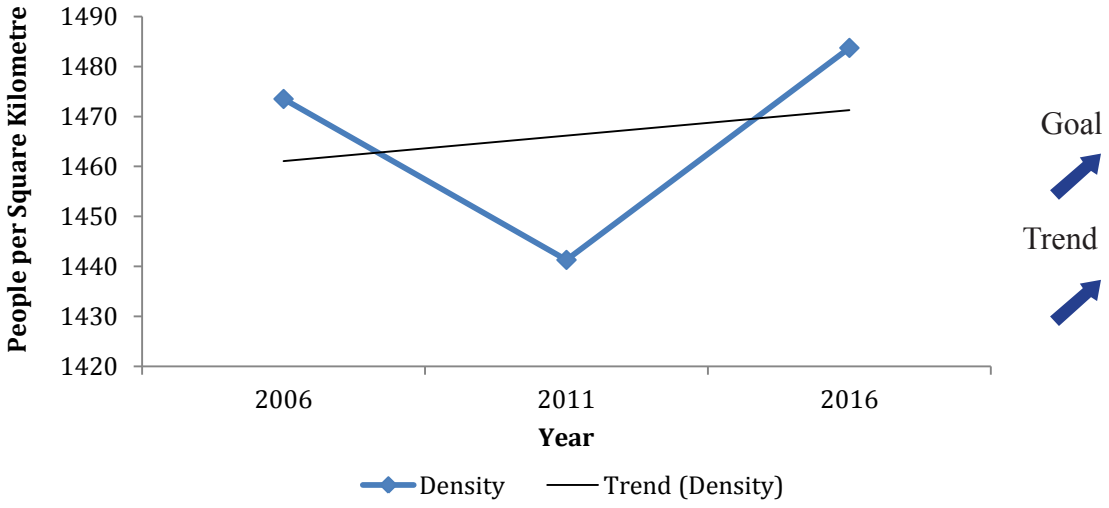


Figure 2.3 - Windsor's Population Density.

Commuting

Commuting rates are determined by the number of kilometres driven, in total, by Windsorites. The greater the number of kilometres driven, the higher the impact will be on air quality and congestion. This impacts the health of residents and the environment.

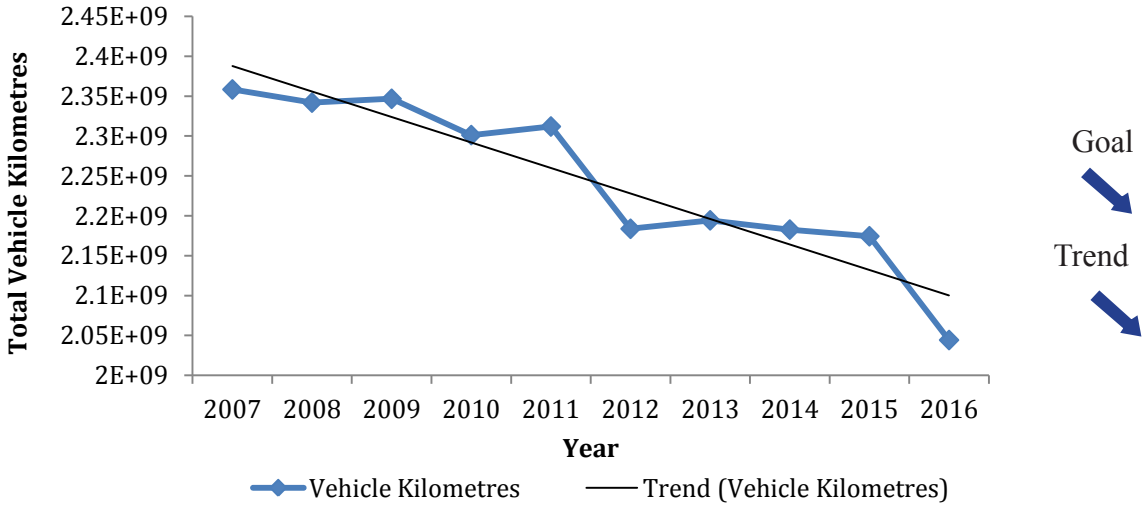


Figure 2.4 - Total Vehicle Kilometres Travelled .

Goal B: Create Healthy Communities

Sustainable Construction

Green buildings and design, which includes LEED and other rating systems, are fundamental to energy efficient, environmentally sustainable development in Windsor. Sustainable construction practices help save water, reduce greenhouse gas (GHG) emissions, and contribute to the health and quality of life of communities. Projects registered since the last ROSE report are listed in red.

Table 2.1 – LEED Registered Projects

Building	Registration Date	Certification Date	Certification Level
Devonshire Mall Common Area	October 2016		
Target, Devonshire Mall	February 2013	May 2013	LEED for Retail
La Bella Strada	September 2011		
HMCS Hunter	April 2010	July 2016	Gold
City of Windsor Fire Hall No. 7	January 2010	August 2010	Silver
Ojibway Nature Centre	December 2009	October 2012	Silver
Confidential Project	May 2009	August 2015	Silver
Union Gas Windsor District Office	January 2008	April 2011	Gold
Dr. David Suzuki Public School	June 2007	November 2011	Platinum
Ecole secondaire de Windsor	March 2007	May 2013	Gold
University of Windsor Centre for Engineering Innovation	November 2006		
Toldo Medical Education Building	November 2006		

Goal ↗

Trend ↗

Goal B: Create Healthy Communities

City of Windsor Initiatives

Community Gardens on City Property Policy

In 2014 administration developed a Community Gardens on City Property Program. A community garden is a place where people come together to grow fruits, vegetables, herbs and flowers. The food grown at a community garden is shared within the community. The program provides a structure and process for community gardens on City-owned property. Currently there are 7 community gardens on vacant City of Windsor property or in City of Windsor Parks with 5 gardens in the process of being built. Community groups may apply to start a community garden on city property by filling out an application form on the Community Gardens page of our website: www.windsorenvironmentalmasterplan.ca.

Active Transportation Initiatives

Local interest and political support for Active Transportation has been growing. The City of Windsor has been actively implementing its Bicycle Use Master Plan which saw an increase in capital funding including the allocation of $6.8 million in the years 2013 and 2014 alone. Some of the Active Transportation initiatives include:

- the annual cycling education and awareness campaigns;
- the distribution of Parks, Trails and Recreation Maps illustrating the expanding cycling network;
- the construction of cycling infrastructure; and
- the inclusion of complete streets concepts in municipal road project environmental assessment studies.

In 2017, Council directed the undertaking of an Active Transportation Master Plan to cohesively link the pedestrian, cycling and transit networks and develop strategies and make policy recommendations to support its active transportation goals.

Incentives to Increase Economic Development in Core Areas

In an effort to encourage investment and revitalization in Windsor's downtown, the city has eliminated development charges for developers. Council agreed to drop development cost charges for a large area of the downtown and surrounding neighbourhoods. In addition, the Downtown Community Improvement Program was created to include new incentives to developers for residential, commercial and mixed use development projects in the downtown, a target sector that was previously not eligible under the Community Improvement Plan program.

Streetscaping using Sustainable Practices

During the recent repaving of Wyandotte Street East, many sustainable street design practices were incorporated to help create a healthier community. Dedicated bike lanes were added to encourage cycling and an increase of benches and lighting were included to promote safety and walkability. Curb extensions, or bumpouts, were used as a traffic calming measure, and planter boxes with a variety of trees and shrubs were incorporated to add shade and other environmental benefits.

Goal B: Create Healthy Communities

Open Streets

In 2016 two Open Streets Windsor events were held on Sunday mornings along an 8km route running from the Sandwich town BIA to the Ford City BIA. The events closed the streets to cars and opened the streets to active transportation, community groups, music etc. The events encouraged active transportation and physical activity, community building, and promoted local businesses. The events were deemed to be very successful with hundreds of Windsor residents taking to the streets to enjoy their city. There is currently one Open Streets event being planned in September of 2017 as part of the Canada 150 celebrations.

Road Diet along Riverside Drive Pilot Project

Two lanes of Riverside Drive through downtown Windsor were closed to traffic on a Saturday in 2016 as part of pilot project to study the effects of surrendering prime roadway to other more people-friendly uses. The two lanes were converted into community space using plants, seating and things for people on foot to watch and do with some of the best street-level view possible of the Detroit River. If it ever became permanent, the resulting "traffic calming" along Riverside Drive might trigger development along a stretch of prime real estate east of the downtown core currently left vacant due to the volume and speed of traffic there now.

Improving Thermal Comfort and Reducing the Urban Heat Island Effect

The City of Windsor continues to work with Health Canada to develop reports studying the Urban Heat Island Effect in Windsor. A 2014 report titled *Designing City of Windsor Parks to Improve Thermal Comfort in Summer* recommended developing policies and design standards to increase shade and water features and use cool surface materials in parks. The Parks Master Plan approved in 2016 incorporated some of the findings of this report and previous reports. A further study completed in 2015 titled *Downtown Windsor Heat Island Study* outlined several recommendations for the downtown including implementing heat mitigating design through cool street design guidelines, a pilot project in the downtown, an interdisciplinary team to review upcoming capital projects, and prioritizing urban heat island reduction for transit users as well as in the Urban Forest Management Plan.

Goal B: Create Healthy Communities

Areas to Move Forward

- Complete the City's Transit Master Plan (TMP) to increase ridership;
- Continue Open Streets Windsor;
- Develop a Complete Streets Policy;
- Identify priority areas for connectivity among the City's walking facilities;
- Develop a work plan to expand the walking network in priority areas;
- Complete a guidebook outlining best practices for new development;
- Complete an Active Transportation Master Plan;
- Complete a Transit Study for the downtown region;
- Set minimum density requirements;
- Design commercial and residential land use to maximize access to public transit;
- Investigate the possibility of reducing development charges for developers of energy efficient homes and businesses;
- Develop a Regional Growth Plan in collaboration with county municipalities.

Indicators

Natural Areas

The percentage of natural areas in Windsor is one indicator of our ecological integrity. Natural areas include all forest, wetland and prairie features larger than 0.5 hectares (1.25 acres) but do not include parks, lawns and other intensively managed areas. These areas help to improve air quality, prevent flooding, store carbon, reduce water pollution impacts, as well as provide critical habitat for various urban flora and fauna.

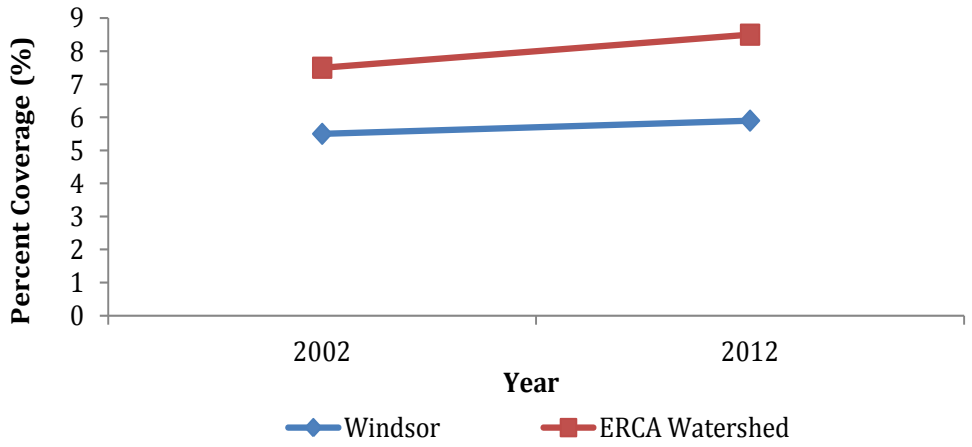


Figure 3.1 - Percent coverage of Natural Areas in Windsor and the ERCA Watershed.

*Windsor 2002 data based on the Biodiversity Conservation Strategy Report (BCS), ERCA 2002. ERCA Watershed 2002 data based on ERCA BoD Report FA 48/02. All 2012 data is from the Essex Region Natural Heritage Strategy Study (ERNHSS), ERCA 2012/13. The minimum size of forest patch identified was 0.5 hectares in 2002 and 0.1 hectares in 2012. The data source for non-wetland features that was used in 2002 was a 2000 digital aerial photo, and in 2012 a 2008 digital aerial photo. The data source for wetland features in 2002 and 2012 was the Ontario Ministry of Natural Resources (OMNR).
** Trends are only assessed on indicators with more than two data points.

Goal C: Green Windsor

Natural Heritage

Natural Heritage lands provide for the protection and conservation of Windsor's most environmentally significant and sensitive natural areas, including provincially designated areas of natural and scientific interest (ANSI) and wetlands. Natural Heritage lands are similar to Natural Areas with the exception that Natural Heritage Lands are designated as such in the City of Windsor's Official Plan. There is overlap between land designated as Natural Heritage and natural areas, however some natural areas may not be designated as Natural Heritage.

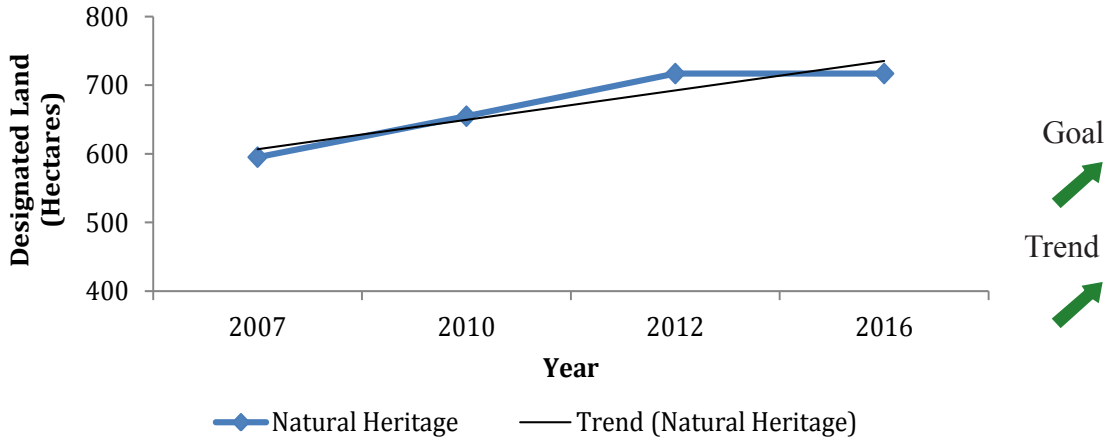


Figure 3.2 - Amount of Land Designated as Natural Heritage in Windsor's Official Plan.

City Owned Trees Planted and Removed

Trees play an important role in the health of our city. Trees filter air and water pollution, and help prevent severe flooding. The more trees there are, the healthier the social and natural environment will be for us and future generations.

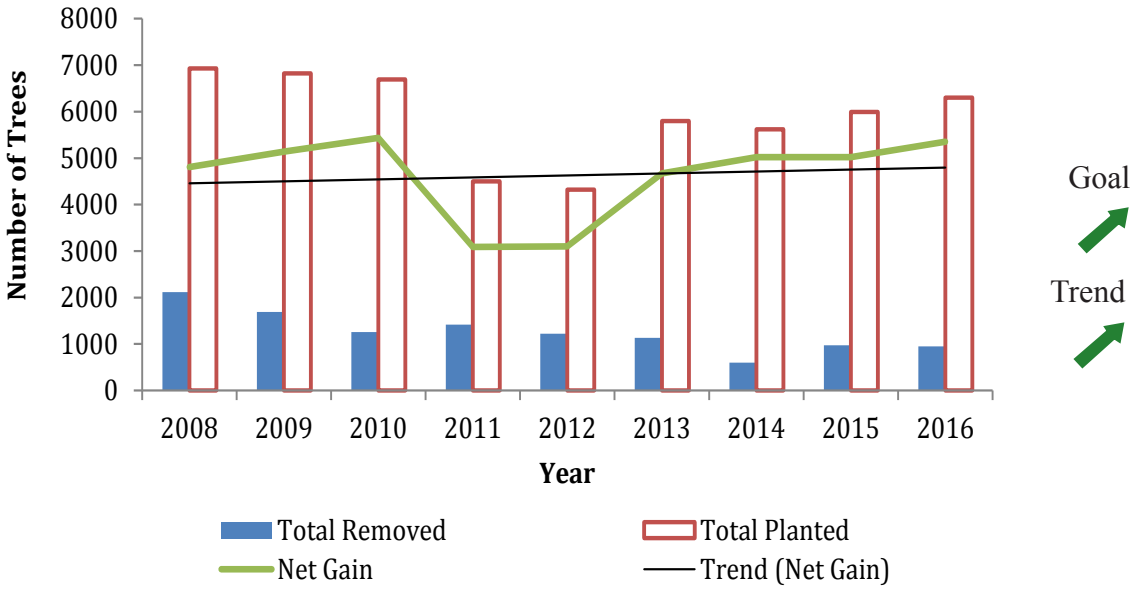


Figure 3.3 - Number of City-owned Street Trees Planted and Removed.

Amount of Maintained and Natural Parkland

The higher the amount of natural parkland available to the public, the greater the degree of exposure and interaction between the public and nature there will be. Other benefits include opportunities for people to enjoy outdoor activities and recreation.

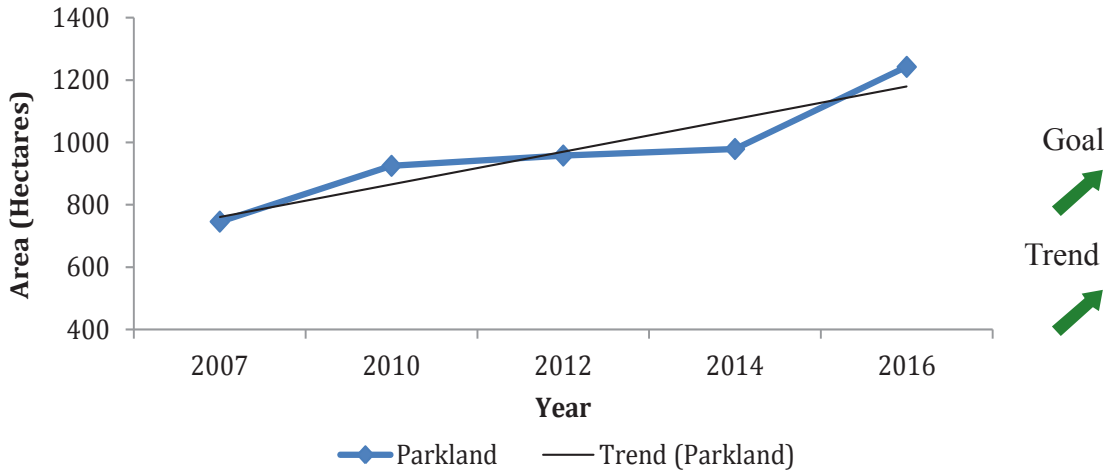


Figure 3.4 - Amount of Maintained and Natural Parkland.

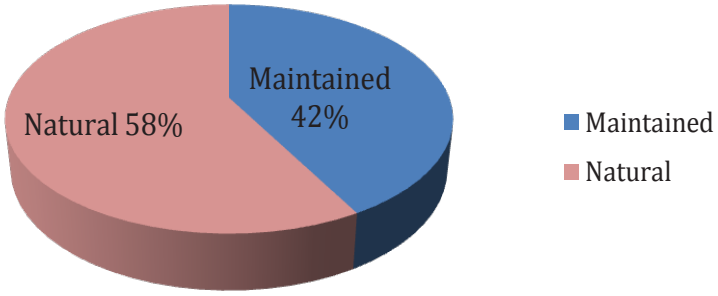


Figure 3.5 - 2016 Maintained and Natural Parkland Proportions.

Goal C: Green Windsor

Pesticide Use

Pesticides are harmful to the environment and to human health. The amount of pesticide used is one determinant of toxicity exposure for each community. In 2009 the Province of Ontario imposed legislation on the use of commercial pesticides. City of Windsor property such as sidewalks and golf courses are exempt from this legislation. Where possible, the City uses herbicidal vinegar on these areas.

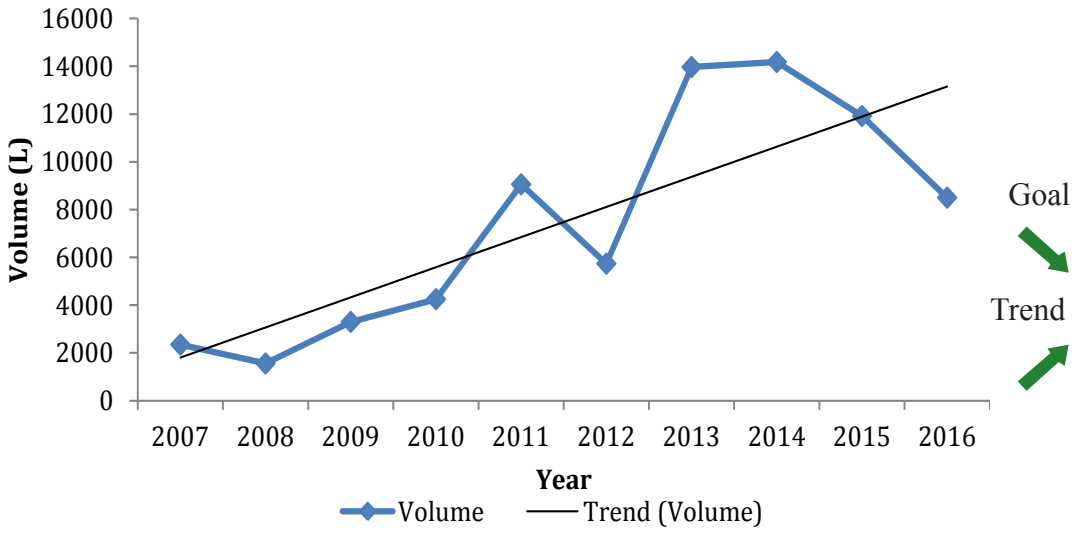


Figure 3.6 - Amount of Pesticide Used.

Brownfield Conversion

Brownfields are abandoned, idled or underused properties where expansion or redevelopment is complicated by a real or perceived environmental contamination as a result of historical industrial or commercial land use practices. Records of site condition (RSC) are filed with the Ministry of the Environment any time a property moves to a more sensitive land use. The number of RSC's filed annually is a general indication of how many brownfields are being repurposed.

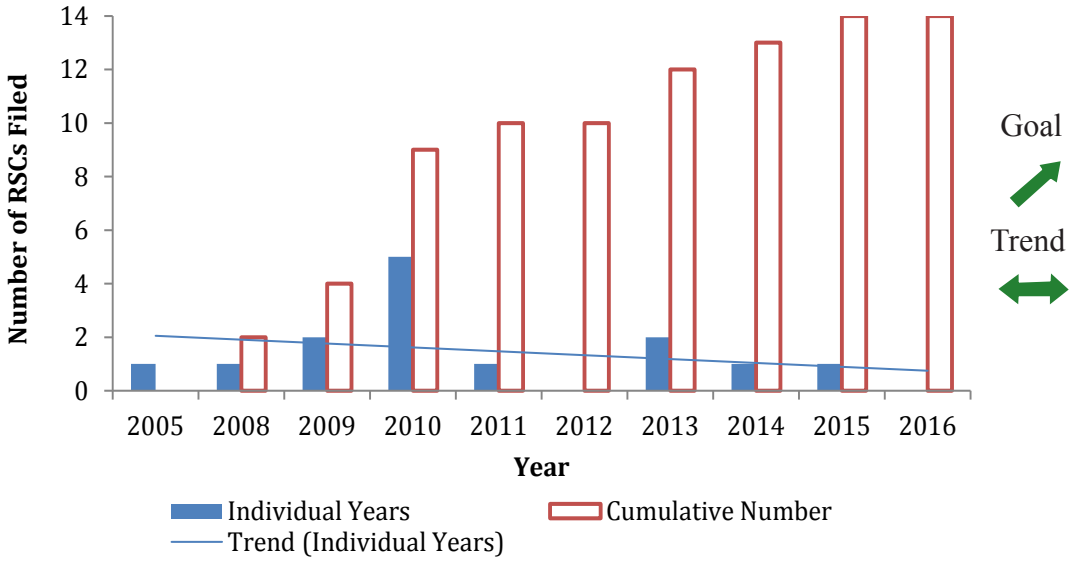


Figure 3.7 - Number of Records of Site Condition (RSCs) filed.

Goal C: Green Windsor

City of Windsor Initiatives

Raingarden at the Ojibway Nature Centre

The first City of Windsor raingarden was completed at the Ojibway Nature Centre. Raingardens are one method of low impact development. These initiatives help reduce the peak flow rates to City sewers, reduce contaminant loadings into watercourses and reduce total flows to the wastewater treatment plant when located in combined sewer areas. During the summer of 2014 the City of Windsor greenhouse started cultivating native plants for use at the Ojibway Nature Centre as well as at the Lou Romano Water Reclamation Plant native plant garden.

Update to the City of Windsor Parks Master Plan Completed

The Update to the City of Windsor Parks Master Plan was completed in 2015 and is a twenty year vision for Windsor's Parks. The Plan, titled *Rediscover Our Parks*, is a high level document identifying the needs and recommendations for consideration in the way we enhance and maintain our parks and outdoor spaces. The Vision statement reads "To provide a robust parks and recreation experience for all to enjoy" with a mission "To sustainably develop and maintain parkland and recreational activities with our natural and cultural resources, fostering economic growth within the city while cultivating a quality of life for diverse, healthy, active and livable neighbourhoods".

Natural Playground at Mitchell Park

The City's first natural playground has been constructed at Mitchell Park. This is the first of its kind in Windsor and is considered to be a pilot project. The playground is universally accessible meeting all the current CSA and AODA standards. The playground uses natural materials to give children the opportunity to explore nature by climbing up hills or exploring hand carved log structures, rolling over different surfacing materials and balancing on rocks. The playground is fun for children of all ages and skill levels, including those with disabilities by providing a variety of cognitive, social, developmental and physical play opportunities.

Planting of Native Tree Species

Where possible, native tree species are planted in City of Windsor parks and public areas. These species can include, but are not limited to Hackberry, Tulip Tree, Red Oak and Kentucky Coffeetree. A concerted effort to plant native species has taken place along the waterfront. To increase the genetic diversity of our urban forest, non-native and ornamental trees are also planted.

Goal C: Green Windsor

Updated Tree Inventory and Urban Forest Management Plan

In 2015 council approved our forestry department to begin updating our tree inventory as well as hire a consultant to produce an Urban Forest Management Plan. The data received from the tree inventory will first be used to identify the City's most problematic trees, which will be removed in an effort to reduce future risk. The data will also be incorporated into the creation of the City's first Urban Forest Management Plan, which will be a document to help define and guide our urban forestry objectives. Strategies will outline the description of the urban forest in our community with detailed explanations of the extensive benefits that trees provide urban communities. The Plan will outline the outcomes needed to achieve our urban forest vision along with comprehensive solutions required to implement them.

Naturalized Area Management and Naturalized Area Creation

Natural areas such as the Ojibway Prairie Complex are managed to protect and preserve the incredible biodiversity found in these areas. Endangered habitats of tallgrass prairie, and oak savannah are managed by controlling invasive species, woody species and undertaking prescribed burns. Consideration for local Species at Risk, and projects to improve their status are being undertaken on a city wide basis. In an effort to reduce mowing and improve habitat the City of Windsor has naturalized portions of numerous parks, as well as the shoulders of the E.C. Row Expressway.

Goal C: Green Windsor

Areas to Move Forward

- Naturalize underutilized lands to the extent possible;
- Develop a coordinated approach to invasive species management, specifically phragrmites;
- Set acquisition targets for the Greenway system;
- Provide incentives for new Carolinian tree species planted on private property, where appropriate;
- Conduct an assessment of the current state of Windsor's Greenway System Linkages by performing a Landscape Analysis;
- Prepare Management Plans for Greenway System components and individual sites;
- Explore potential for a private tree by-law;
- Support native plant and community gardens through community partnerships;
- Assess the vulnerability of the City's trees to Climate Change.

Goal D: Use Resources Efficiently

Indicators

Energy Consumption

In 2014, Windsor spent over $842 million dollars on energy. Buildings use about half of the total energy in Windsor. Windsor's energy use per household is 35% higher than the Ontario average, with home heating and cooling being one of the largest sources of energy consumption. Using energy efficient appliances and light bulbs, as well as practicing conservation helps to reduce energy use. The figures below represent Corporate, City of Windsor energy consumption.

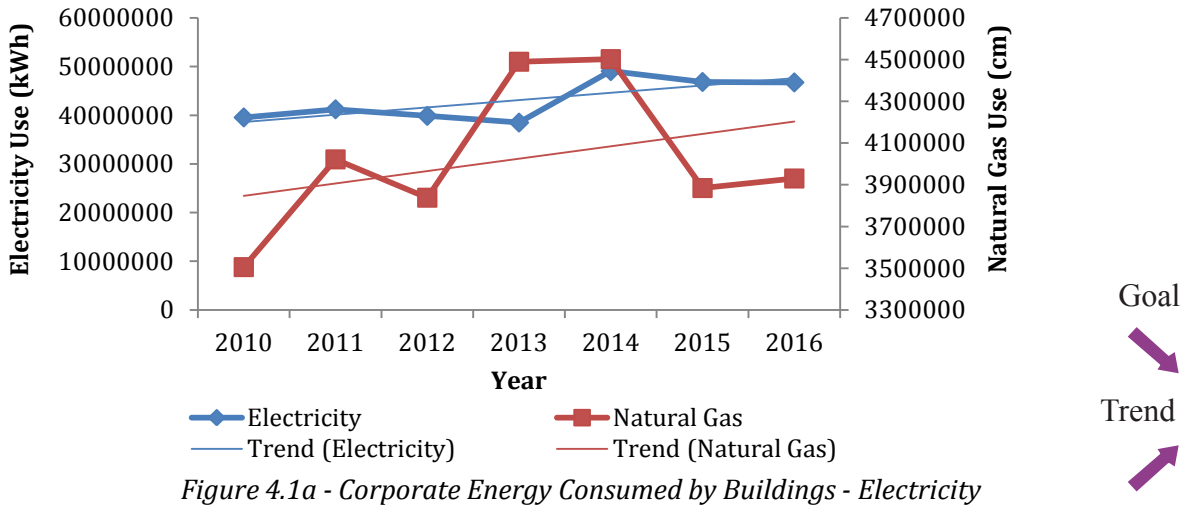


Figure 4.1a - Corporate Energy Consumed by Buildings - Electricity and Natural Gas.

Modern District Energy systems use a network of insulated pipes to efficiently and reliably deliver heating and cooling from the place where the heating or cooling is generated, to homes, buildings and industrial facilities. District Energy systems are a pathway to weather resilient, low carbon cities.

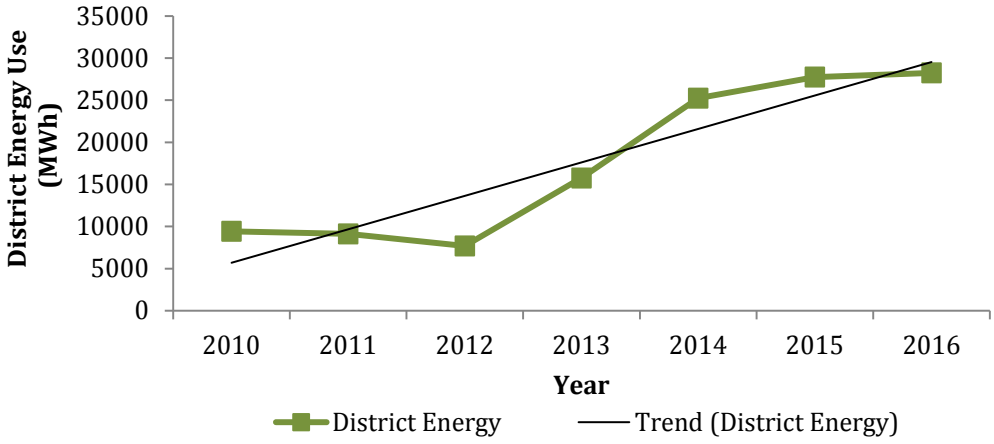


Figure 4.1b - Corporate Energy Consumed by Buildings - District Energy.

Goal D: Use Resources Efficiently

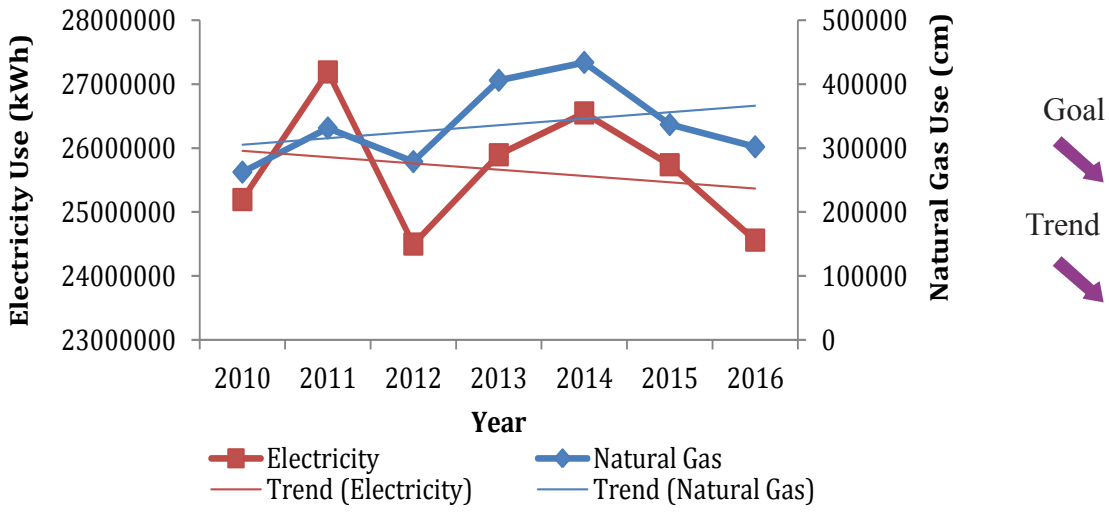


Figure 4.2 - Corporate Energy Consumed by Sewage Treatment.

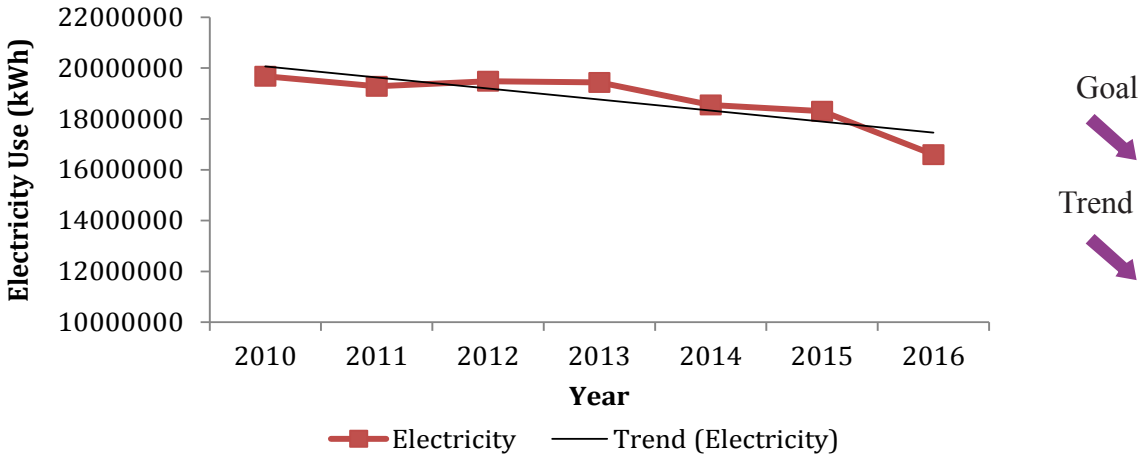


Figure 4.3 - Corporate Energy Consumed by Streetlights & Traffic Signals.

Goal D: Use Resources Efficiently

Solid Waste Management

A decrease in the amount of total refuse sent to landfill may reflect an increase in backyard composting or product re-use, such as re-usable water bottles. The diversion rate considers the percentage of recyclable products (plastic, paper, paint, batteries etc) and yard waste being collected. The higher the waste diversion rate, the more waste that is diverted from landfill. Preventing waste from reaching landfill through waste diversion benefits our health and the environment through reduction of greenhouse gas emissions, protection of water quality, and it also affects the life cycle of the landfill.

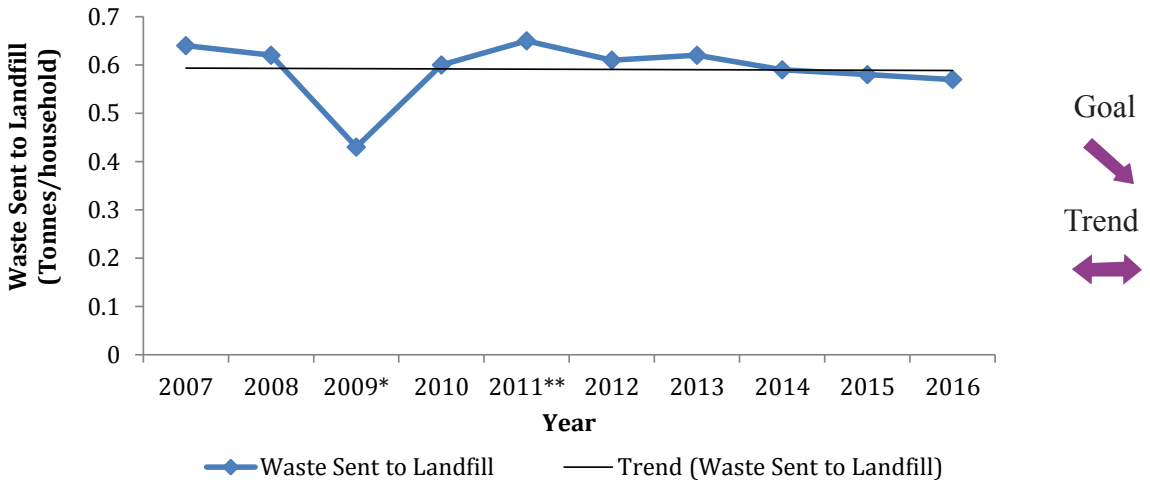


Figure 4.4 - Total Amount of Waste Sent to Landfill.

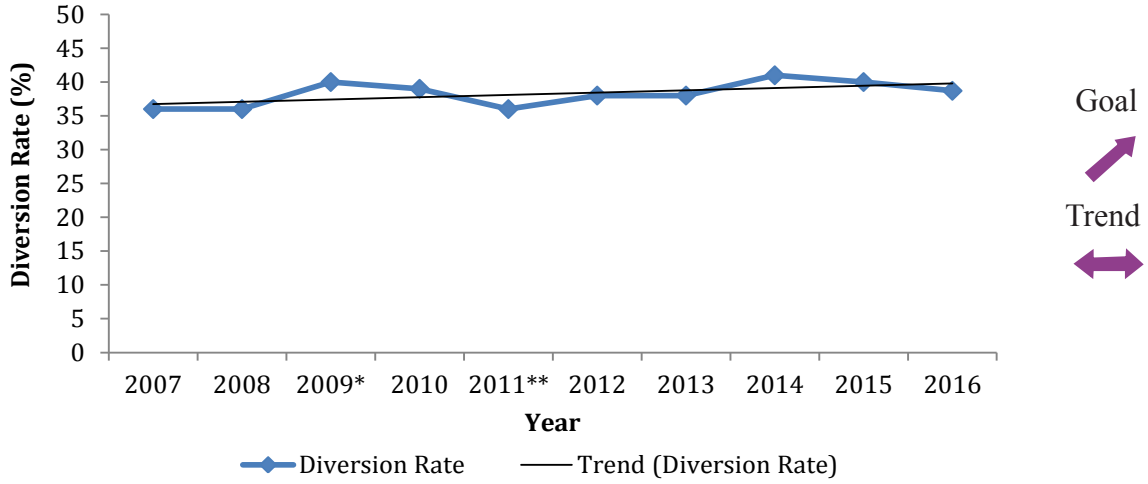


Figure 4.5 - Percentage of Solid Waste Diverted from Landfill.

*In 2009 a unionized worker strike occurred and garbage pick up stopped for several months which had an impact on the amount of waste sent to landfill and subsequently the diversion rate.

**2011 was the first year that the City of Windsor contracted out garbage to a private company.

Fuel Use

Fuel use causes negative effects on air quality and human health. As vehicles are replaced by the City of Windsor, consideration is given to fuel-efficient vehicles and the right size of vehicles. Proper maintenance of vehicles and driving habits will also impact total fuel usage. This indicator includes fuel use from all City of Windsor vehicles, local vehicles used by staff for work purposes, parks equipment, Fire & Rescue Services and Transit Windsor.

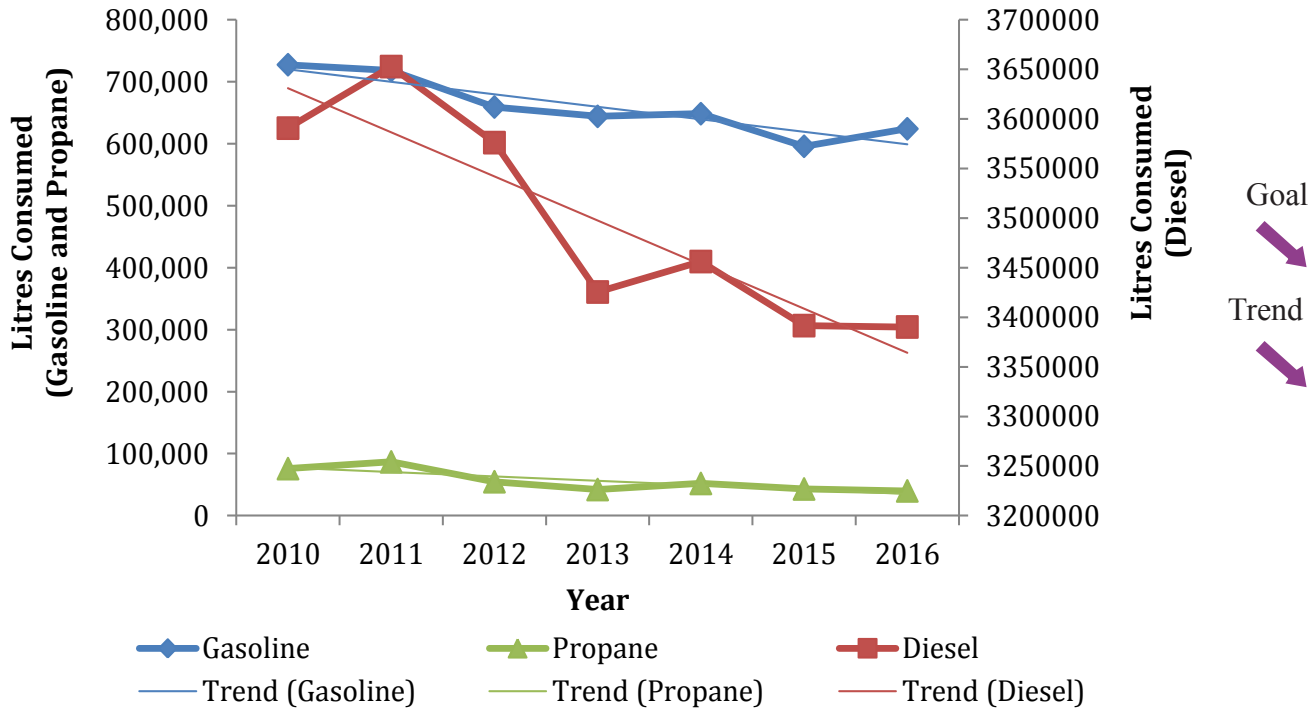


Figure 4.6 - Fuel Consumption by Type.

Goal D: Use Resources Efficiently

Greenhouse Gas Emissions

Greenhouse gas emissions (including carbon dioxide, nitrous oxide and methane) are linked to increases in human influenced climate change. High levels of greenhouse gases also contribute to poor air quality. The greenhouse gas inventory includes electricity, district energy, natural gas consumption, fuels required for vehicles and waste disposal. Greenhouse gas emissions are inventoried for both the City of Windsor and the community at large. The City of Windsor does not measure corporate waste so this has been omitted from the corporate inventory.

Greenhouse gas emissions reporting for the ROSE is not as in depth as the reporting done for the Community Energy Plan so there are some minor discrepancies in the data reported.

Corporate

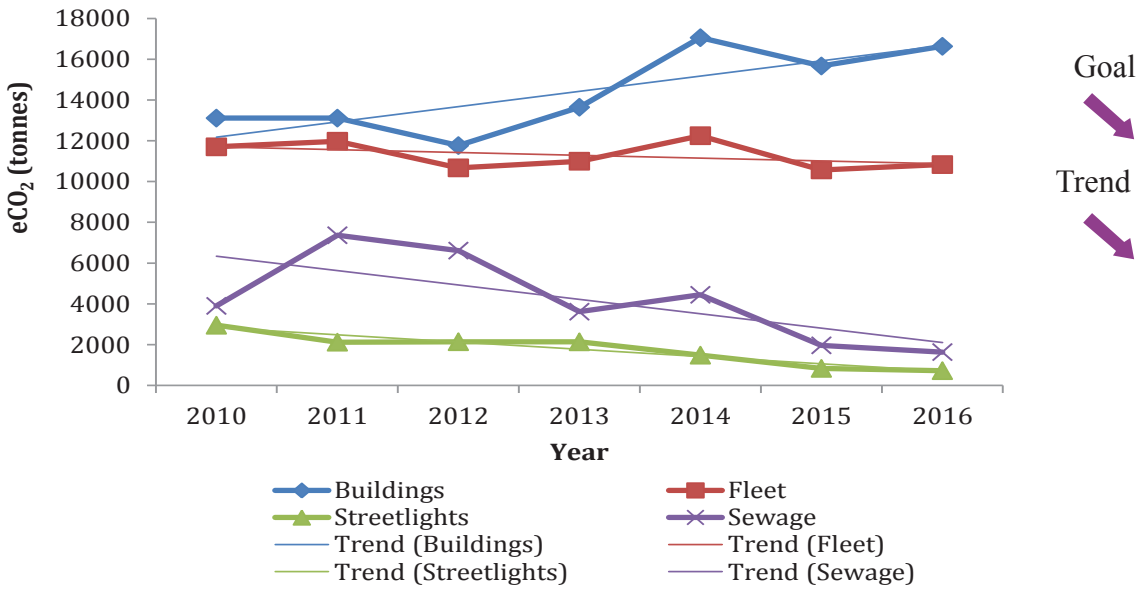


Figure 4.7a - Corporate Greenhouse Gas Emissions .

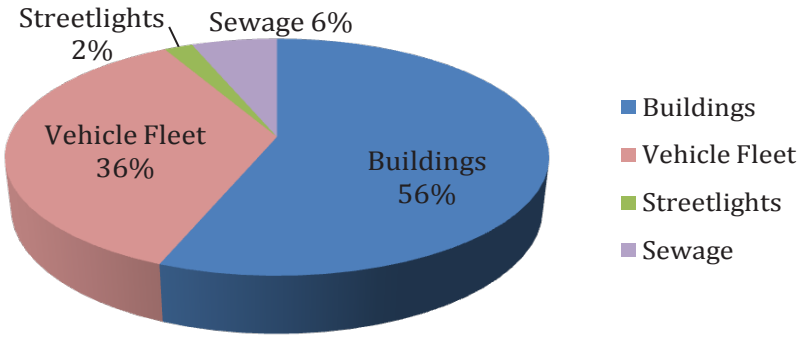


Figure 4.7b - 2016 Corporate Greenhouse Gas Emissions by Sector

Community

The City of Windsor's Community Energy Plan will help guide further energy initiatives across the community. Greenhouse gas emissions reporting for the ROSE is not as in depth as the reporting done for the Community Energy Plan so there are some minor discrepancies in the data reported. In addition, it was realised that a substantial portion of the industrial natural gas use is for electricity-generating purposes which is then fed into the grid, and is therefore included as a grid asset rather than a source of emissions.

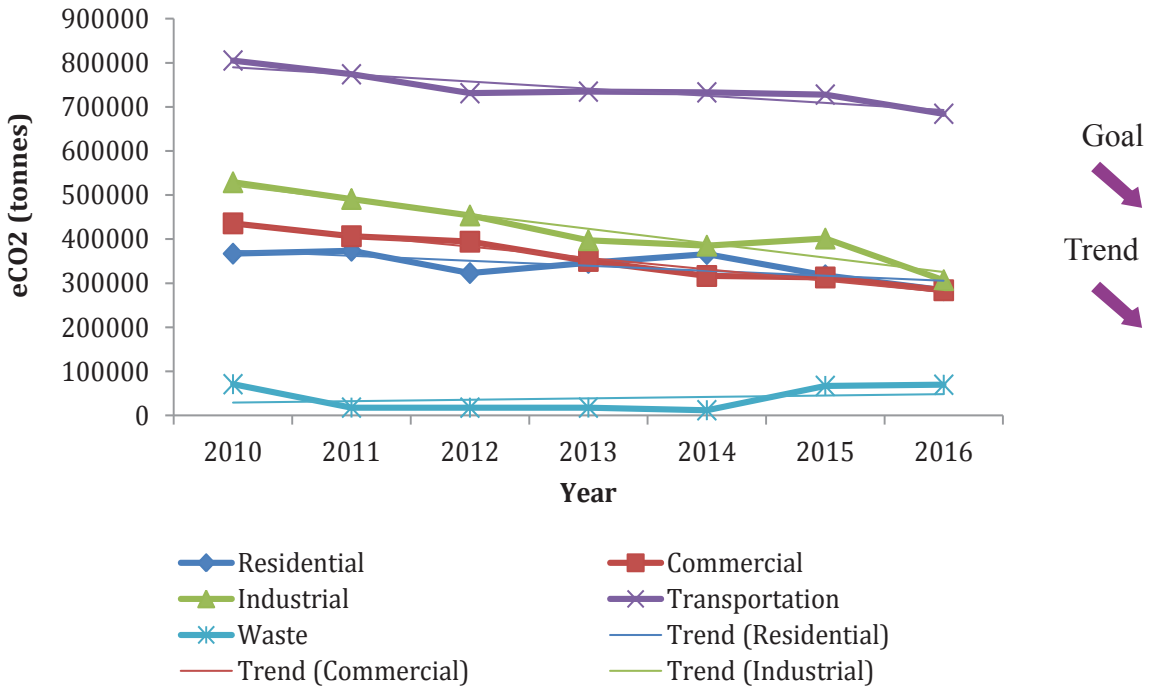


Figure 4.8a - Community Greenhouse Gas Emissions.

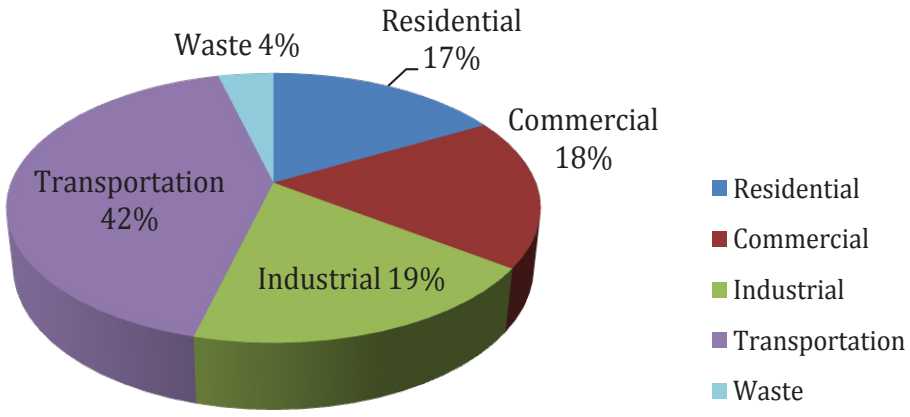


Figure 4.8b - 2016 Community Greenhouse Gas Emissions by Sector.

Goal D: Use Resources Efficiently

City of Windsor Initiatives

Community Energy Plan

The Community Energy Plan (CEP) was approved in July 2017. The CEP fulfills the Partners for Climate Protection Program milestones 1, 2 and 3 which require a baseline Greenhouse Gas emissions inventory (2014) as well as greenhouse gas targets and a climate change mitigation plan to reach those targets. The CEP is centered on supporting local economic development while improving energy efficiency, modifying land use planning, reducing energy consumption and greenhouse gas emissions, and fostering green energy solutions. The CEP aims to contribute to a Windsor that is more economically competitive, energy secure, environmentally responsible and positions the City amongst leaders in smart energy planning. A copy of the CEP is available on our website: www.windsorenvironmentalmasterplan.ca

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Public Spaces Recycling

This project, in partnership with the Essex Windsor Solid Waste Authority, is now completed and results show that Windsor residents are using the recycling containers installed in our parks and using them properly. A motion made by Council in 2014 now requires twinning of garbage and recycling receptacles in new or redeveloped City of Windsor Parks.

Sustainable Purchasing Guide and Policy

This guide and policy was approved by Council in 2015. These tools will be resources for city staff as they make purchasing decisions. Environmental cleaning products and supplies are scheduled to be specified for in the upcoming RFP to be issued by the city facilities department.

Corporate Energy Management Plan

This plan has been approved by Council for 2014-2018 to guide energy reduction and improved efficiencies across the corporation.

Recent initiatives include:

- Installation of a 350 kW photo voltaic (solar) system at the Windsor International Aquatic Training Centre;
- Installation of a total of 1 MW photo voltaic (solar) system at the WFCU Arena and Transit Windsor facility (Transit Windsor portion to be completed in November 2017 due to tornado);
- Installation of a 800 kW combined heat and power unit at the WFCU Arena (to be completed December 2017) and a 400 kW combined heat and power unit at the Huron Lodge long term care facility (to be completed August 2017);
- Implementation of lighting and refrigeration upgrades at the WFCU Arena which will reduce energy consumption by 700,000 kWh of electricity and 144,000 m^3 of natural gas. This will result in savings of $120,000 annually.

Goal D: Use Resources Efficiently

City of Windsor Waste Audits

In order to gather baseline data for waste diversion (amount of waste being recycled) in our city facilities, waste audits were conducted in early 2015 of City Hall and the 400 building, 1266 McDougall, and the Aquatic Centre/Adventure Bay. Improvements to recycling education and availability of recycling containers will greatly increase our diversion rates. Regular waste audits are planned moving forward to track our progress.

Conversion of Street Lights to LED

The conversion of all City of Windsor street lights to LED light bulbs is complete. Electricity consumption from street lights has started to decrease substantially as a result of this change.

Leadership in Asset Management Framework

The City of Windsor approved the Asset Management Plan in 2013 and has expanded the Asset Planning department to define levels of service for all City of Windsor assets, work with departments to better manage their assets over time as well as review all capital budget requests. This department was also successful in obtaining grant funding to be part of a Leadership in Asset Management Framework project. The project looks to integrate sustainability goals with stronger asset management practices, through collaboration with other Canadian municipalities on developing policy, strategy and governance aspects of asset management.

EWSWA Truckload Sales

The Essex-Windsor Solid Waste Authority conducts Truckload Sales with the goal of providing environmental products to residents at a reasonable cost. The 2017 Truckload Sale was held in the parking lot of the City of Windsor Environmental Services Building. The sale was very well attended and in four hours the following items were sold:

- 293 Backyard Composters;
- 300 Recycling Roll Out Carts;
- 882 Recycle Boxes;
- 72 Green Cone Digesters;
- 3,698 bags of Garden Gold Compost.

EWSWA Gold Star Recycler Program

The Essex-Windsor Solid Waste Authority has implemented a new recycling initiative called the “Gold Star Recycler Program”. Register for this program and an EWSWA staff will visit your recycle boxes on your recycle collection day and see just how well you are doing – if you’re doing a fantastic job, they will award you with a special limited edition ‘gold’ recycle box. This encourages active participation and draws awareness to recycling. EWSWA constantly posts recycling tips and answers questions on their Facebook page.

Goal D: Use Resources Efficiently

Areas to Move Forward

- Continue to conduct waste audits at City facilities to measure progress;
- Investigate a corporate standard for recycling receptacles and education throughout the corporation as well as at public facilities;
- Work to implement the Community Energy Plan;
- Develop a municipal "heritage first" policy to reuse existing buildings (and materials) in core areas;
- Complete a Green/Cool Roof policy;
- Convert various Parks & Facilities equipment to solar, electric or battery power;
- Update the Corporate Energy Management Plan;
- Explore weekly recycling pick up to help increase waste diversion rates;
- Continue to increase recycling and composting education for residents and commercial businesses;
- Look into the use of recycled concrete and asphalt for municipal projects.

Goal E: Promote Awareness

Indicators

Web-Based Outreach

The internet is a network of users and an important and evolving form of communication. The number of people who visit the Environmental Master Plan section of the City of Windsor website is one indicator of the level of public interest in our programs and projects. It can also indicate how aware people are of the City's programs/initiatives.

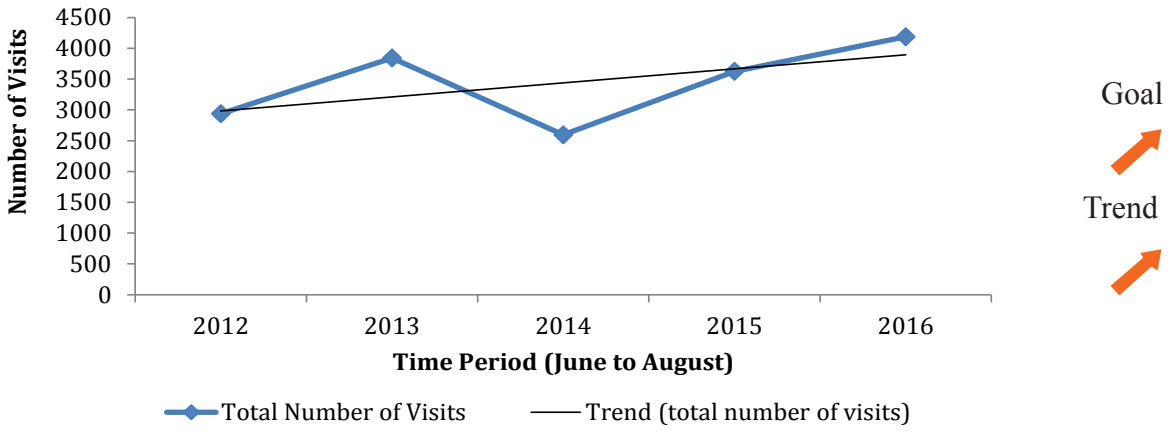

Figure 5.1 - Number of Visits to the Environmental Master Plan Website (www.windsorenvironmentalmasterplan.ca).

Attitudes towards the Environment

The first City of Windsor Environmental Attitudes Survey was completed in November 2005. A similar study was repeated in 2011, and the questions below were asked of Environmental Master Plan Survey respondents in 2017. Since the results from 2017 were from those Windsor residents who chose to take part in the Environmental Master Plan survey, they do not represent results from a true random sample of Windsor residents. The findings from the surveys are intended to help the City better understand and assess residents' current attitudes and opinions about Windsor's environment.

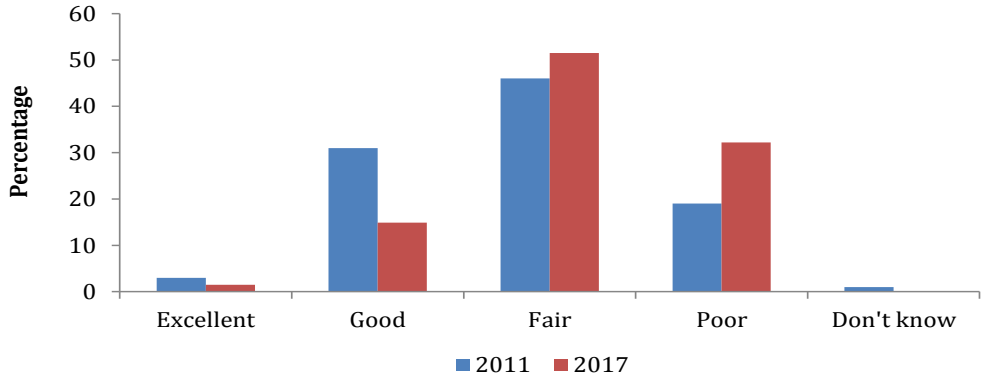

Figure 5.2 - How would you rate the overall quality of the environment in the City of Windsor today?

Goal E: Promote Awareness

Table 5.1 – Top Three Environmental Concerns Voiced by Windsor Residents

	Top 3 Concerns (2005)	Top 3 Concerns (2011)	Top 3 Concerns (2017)
1.	Air Quality (42%)	Air pollution/quality (28%)	Air Quality (24%)
2.	Water Quality (11%)	Pollution (23%)	Pollution (20%)
3.	Road Congestion (8%)	Water pollution/quality/water supply (19%)	Ojibway Nature Complex (15%)

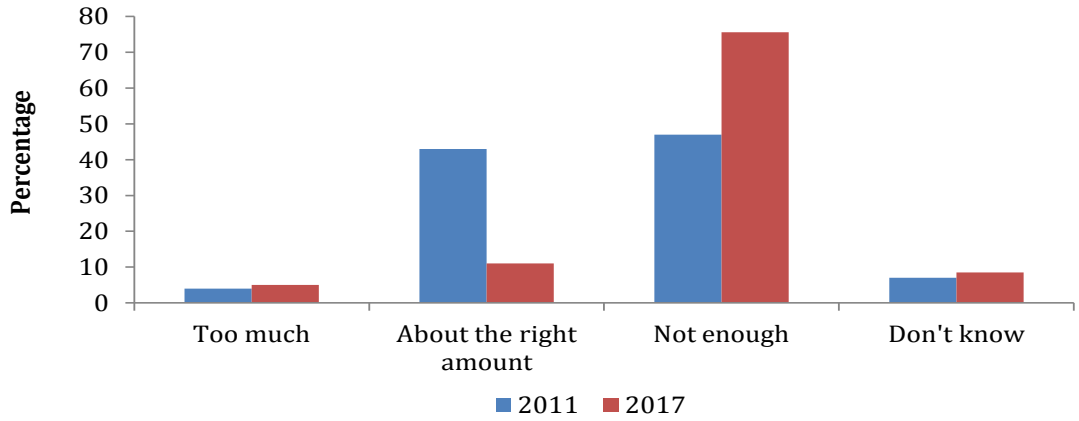

Figure 5.3 - How do you feel about the amount of time and resources the City of Windsor spends on activities related to preserving and protecting the local environment? Would you say they are doing too much, about the right amount, or not enough?

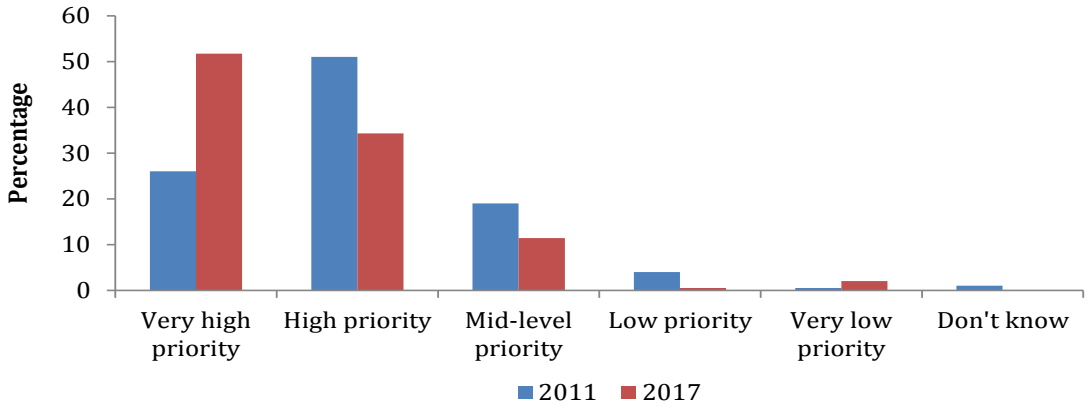

Figure 5.4 - Compared to all of the issues facing the City of Windsor today, how high a priority do you think local leaders should place on preserving and protecting the local environment? Do you think this should be a...?

Goal E: Promote Awareness

Awareness of Environmentally Related Programs

As part of the Environmental Attitudes Survey, a question was posed to each participant to gauge their knowledge of existing environmental programs and services offered by the City of Windsor. The success of any environmental program will be closely tied to the level of knowledge and understanding by the community.

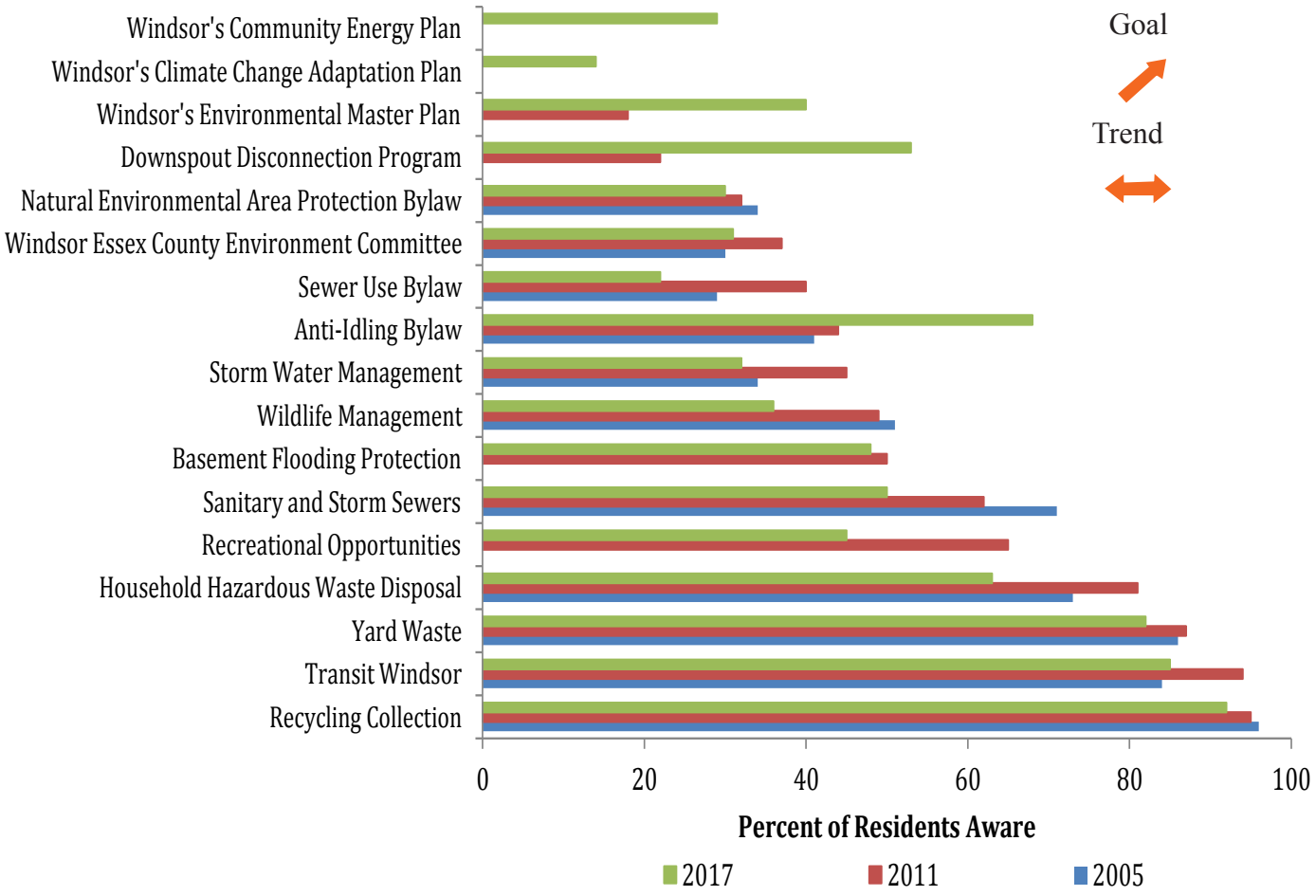

Figure 5.5 - Windsor Resident's Awareness of Environmental Programs.

Goal E: Promote Awareness

City of Windsor Initiatives

Earth Day

In 2015 the annual Earth Day celebration became a formalised City of Windsor event, still developed in partnership with the Essex Windsor Solid Waste Authority. Over 40 environmental groups and vendors come together at Malden Park to promote environmental awareness. The event is always a huge success that over 1,000 residents attended. Earth Day Windsor Essex usually takes place on the Sunday after Earth Day (April 22nd).

Community Plantings

The City of Windsor offers community planting events every year with various community groups. A diverse group of trees are planted in key locations throughout the city. The focus of these events is education for kids.

Your Toilet is Not a Garbage Can Campaign

The City of Windsor has developed many resources and educational materials to continue to promote the fact that a toilet is not a garbage can. Building on the "Wastewater: Where Does It Go?" video, brochures and advertisements have been developed and distributed to residents. Fat, Oil and Grease (FOG) disposal cups with messaging are available at community centres and public events, and a travelling toilet has been included in school demonstrations and public events to show that "flushable" wipes do not break down when flushed down the toilet.

First ever Earth Hour event

Every year the City of Windsor signs a proclamation declaring Earth Hour and encouraging Windsor residents to participate by turning off their lights and electronic devices for one hour. In 2016 in partnership with Caesars Windsor and EnWin, the City of Windsor hosted an outdoor event at Charles Clarke Square to celebrate Earth Hour. During the Hour, all power was shut off and participants were entertained with a drumming circle, candle dance, St. Mary's Youth Choir and The Diplomats Drum and Bugle Corps.

Essex Region Children's Water Festival

The City of Windsor has continued to partner with the Essex Region Children's Water Festival (CWF) which promotes water conservation, water attitude, water technology, water science and water protection. The Essex Region Children's Water Festival offers hands-on curriculum based activities, discussions and demonstrations. Over fifty interactive displays challenge students to consider the importance of groundwater and surface water not only to themselves as individuals but to society at large. The CWF educates approximately 3,500 children per year, as well as utilizing 100 high school students per day as volunteer educators to staff the activities daily during the 5 day festival.

Goal E: Promote Awareness

Wastewater Treatment Plant Open Houses

The City of Windsor has recently opened up both the Lou Romano Water Reclamation Plant and the Little River Pollution Control Plant for public open houses. Residents were invited to tour the facilities to gain a better understanding and appreciation for the wastewater treatment plant process. Both facilities offer tours throughout the year to interested organizations and school groups.

Corporate Environmental Education Initiatives

The Environment, Sustainability and Climate Change team have coordinated workshops for internal staff to build knowledge and expertise around environmental issues. Engineers Canada lead a workshop about assessing the risks of current and future climate on our city's infrastructure, with a focus on stormwater and wastewater infrastructure. In addition, the Credit Valley Conservation Authority conducted a workshop to discuss low impact development project best practices. Environmental Lunch 'n' Learns have also been offered to staff as well as articles in the internal City Circuit monthly newsletter.

Environmental Master Plan Update Survey

An update to the Environmental Master Plan is currently being developed to be released in 2017. During development of this update, Environment, Sustainability and Climate Change Staff attended many public events as well as collected comments from the public through an online survey.

Community Energy Plan Public Consultation

The public was involved in various stages throughout the development of the Community Energy Plan (CEP). During Plan development, Environment, Sustainability and Climate Change staff attended and hosted many public information sessions and accepted public comments in person or through an online survey. The Draft Plan as tabled for public comment for 30 days upon approval from the Environment, Transportation and Public Safety Standing Committee. During this time the public was invited to speak to staff about the Plan at various events including the Home Show, Caesars Windsor's Code Green Expo, Earth Day and Devonshire Mall, as well as through another online survey. An informational video was made to further promote and explain the Plan to the public.

Yellow Fish Road Program

The City of Windsor continues to offer participation in the Yellow Fish Road program, created by Trout Unlimited Canada. Many Girl Guide, Boy Scout and school groups have participated in this program by painting yellow fish next to storm drains with non-toxic paint, to remind people that anything going into these drains runs untreated into the Detroit River.

Education in Schools

Upon request, staff will present to school groups about water and wastewater (grades 3-10), anti-idling and air quality, as well as climate change and community energy (grades 7-10). Resources are also available for teachers to download from our website (www.windsorenvironmentalmasterplan) and include our "Wastewater: Where Does It go?" video, an Idle Free Campaign to implement at their school, a presentation on anti-idling for grades 7 and 8, and a presentation on climate change and energy for grades 7-10.

Goal E: Promote Awareness

Areas to Move Forward

- Continue to report to Council every 2 years and to the community every 4 years through the Report on the State of the Environment, on the progress of Environmental Master Plan implementation;
- Continue to build upon environmental education resources for internal staff as well as for the community;
- Continue to maintain an Environmental Master Plan website with access to data, information and resources.

Conclusion

It is important to track and monitor indicators as a means to identify how we as a City are impacting the local environment. Results assessed can inform policy or operational procedures, as well as contribute to the update of the Environmental Master Plan to be completed by the end of 2017.

Many of the environmental indicators are moving towards their desired goal. Of the indicators that received a negative result, many were not moving away from their goal but were unchanged.

In fact, there are only 2 indicators that are trending in the opposite direction of our goals - Pesticide Use and the Energy Consumption of Buildings and there are external factors contributing to these indicators including an increase in invasive species requiring the use of pesticides as well as an overall increase in the number of buildings operated by the City. Pesticide use has been decreasing since 2013, however the trend line since 2007 shows an overall increase.

In addition, since the release of the 2013 Report on the State of Our Environment, the City's Environment, Sustainability & Climate Change staff have also produced a Climate Change Adaptation Plan as well as the recent Community Energy Plan and Corporate Climate Action Plan which they also must work to implement. Administration is working together more and more to collaborate and exchange knowledge about various environmental programs and initiatives.This demonstrates a commitment from administration to improve the environment in Windsor through changes and innovations in the way the City of Windsor operates.

Moving forward, the City of Windsor will continue to implement the Environmental Master Plan. There is still much work to be done to continue improving our environment. This includes monitoring these environmental indicators and reporting their results in further Reports on the State of our Environment. Tracking of indicators as well as other environmental information can be found on the City of Windsor website at www.windsorenvironmentalmasterplan.ca.