City of Windsor's ROSE: Report On the State of our Environment

2023

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 stated in the 2017 Environmental Master Plan:

Goal A	**Improve Our Air Quality**
Goal B	**Improve Our Water Quality**
Goal C	**Responsible Land Use**
Goal D	**Increase Resource Efficiency**
Goal E	**Promote Awareness**

A Report on the State of our Environment (ROSE) was recommended to be completed every four to five years in the EMP to report on environmental indicators. In this report, a trend analysis of each indicator has been completed; along with a list of key City of Windsor projects that support improvement of environmental indicators; and recommendations of initiatives and next steps to further implementation of the EMP and achieve the City's five goals.

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 counter to 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	Flagged
Goal A – Improve Our Air Quality				
Good Air Quality Days				
Smog Days				
Ground Level Ozone				
Commuting				
Community Fuel Sales				
Trails				
Transit				
Goal B – Improve Our Water Quality				
Lou Romano Reclamation Plant				
Little River Pollution Control Plant				
Detroit River Quality				
Pesticide Use				
Tributary Surface Water (Phosphorous Concentration)				
Amount of Wastewater Treated				
Wastewater Treatment Plant Bypass				
Water Consumption				
Goal C – Responsible Land Use				
Natural Heritage				
City Owned Trees Planted and Removed				
Amount of Maintained and Natural Parkland				
Brownfield Conversion				
Community Gardens				
Population Density				
Sustainable Construction				
Goal D - Increase Resource Efficiency				
Energy Consumption				
Buildings – Electricity				
Buildings – Natural Gas				
District Energy				
Sewage Treatment – Electricity				
Sewage Treatment – Natural Gas				
Streetlights & Traffic Signals				
Solid Waste Management				
Total Waste Sent to Landfill				
Diversion Rate				
Fuel Use				
Corporate Fuel Consumption				
Greenhouse Gas Emissions				
Corporate				
Community				
Goal E - Promote Awareness				
Web-based Outreach				
Attitudes Toward the Environment		Subjective		
Awareness of Environmentally Related Programs				

Executive Summary

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 2023 ROSE are moving in the right direction or staying neutral.

The COVID Pandemic was very disruptive for many City services including community tree plantings, public transportation, and data collection. However, recent data from 2022 and 2023 shows that some of these services have rebounded.

Only a few trends are moving away from the goal. These include corporate natural gas generated energy consumption and sewage treatment plant natural gas consumption and corporate emissions.

According to the 2021 Census, Windsor had a population of 229,660 and a population percent change of 5.7% from 2016 to 2021. The current population increase has not been seen for decades. With a growing population there are opportunities for sustainable development but also many challenges. The number of brownfield redevelopments have increased sharply, indicating that the City is in-filling and prioritising the development of these lands over greenspace, although there have been minor decreases in the amount of Maintained Natural Parkland and Natural Heritage. With intelligent development it is possible to accommodate a growing population while maintaining, and even improving the quality of our environment.

Increased development could show an increase in waste generation, energy and water consumption, and place strain on current services. However, the data shows that many trends are continuing to improve or are staying stable, signaling that resources are being used more efficiently. These include: water consumption, community greenhouse gas emissions, and total waste sent to landfill.

Included in the ROSE are the results from the Environmental Attitudes Survey. This survey has been conducted in 2005, 2011, 2017 and 2023 to help the City better understand and assess residents' current attitudes and opinions about Windsor's environment. In the 2023 results, 317 people responded to the survey, of which, 80% rated Windsor's overall quality of the environment as fair or poor. Only 5 respondents answered that it was excellent.

More needs to be done to convey our successes to Windsor residents and across the country. The City of Windsor is already being acknowledged for their leadership on climate change issues through the Carbon Disclosure Project reporting as part of the Global Covenant of Mayors for Climate and Energy. Health Canada and the Institute for Catastrophic Loss Reduction (ICLR) have published a number of case studies highlighting work on extreme heat and the urban heat island undertaken by the City of Windsor. The City of Windsor has also received accolades for the innovative Retention Treatment Basin that reduces combined sewer overflows into the Detroit River.

There are dozens of commendable plans, initiatives, studies and events mentioned in this report such as the adoption of an electric bike and scooter sharing program, major active transportation upgrades, disaster and flood mitigation programs, and many renewable energy projects.

Executive Summary

Each section of the report also includes a list of areas to move forward.

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/Corporate Climate Mitigation 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, and a third in 2017. 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.

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 provided 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.

This 2023 ROSE report reflects the realignment of goals set out in the 2017 Environmental Master Plan, which separated Air and Water Quality into two separate goals to allow a specific focus on each element. This report provides trends in data collected from 2007 through 2022 and will continue to be updated approximately every four years.

The indicators included in the ROSE have been grouped and presented in alignment with the updated five goals in the 2017 EMP:

Goal A	**Improve Our Air Quality**
Goal B	**Improve Our Water Quality**
Goal C	**Responsible Land Use**
Goal D	**Increase Resource Efficiency**
Goal E	**Promote Awareness**

The indicators chosen focus on the priorities set by Council in 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

Legend

An upward goal or trend

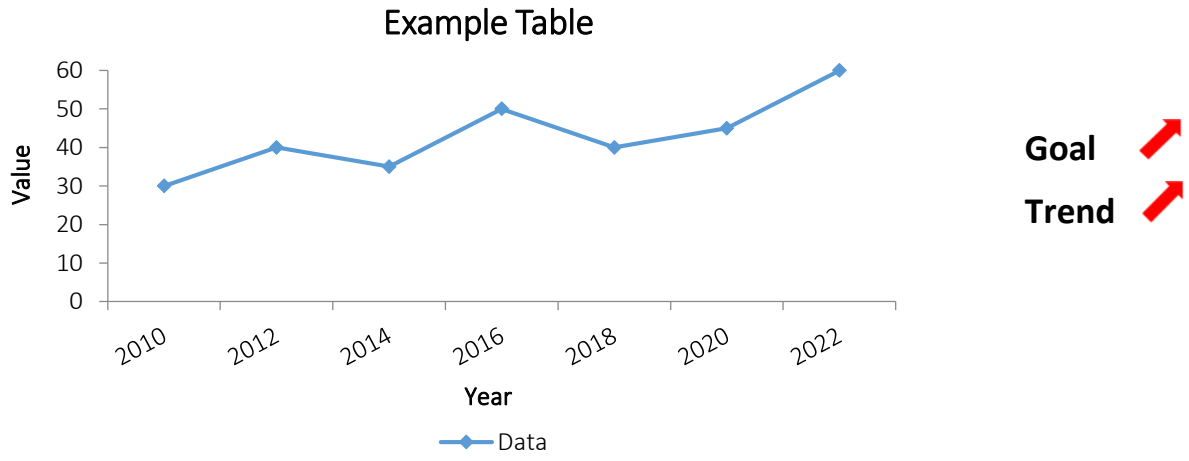
A downward goal or trend

A trend that is unchanged

To determine if the indicator, or the gauge of the situation, is improving or declining over time, two trend arrows will be included with most figures. The first arrow indicates the goal (either up or down), and the second arrow indicates the trend (either up, down, or flat line).

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.

In the graph below the slope is measurably moving in an upward direction other the timeframe. In this case the goal and the trend arrows point in the same direction, therefore, it is a positive outcome.



Green and Orange Flags – several of the charts in this report have been marked with flags

Green flags are used to signify that recent data are trending strongly in the right direction.

Orange flags signify that recent data are trending away from the goal. They are a warning that without action, it is likely that the indicator will be performing worse in coming years.

Plans and Policies

A few of the most significant events to share in the 2023 ROSE Report include new plans, updated plans, and the declaration of a Climate Change emergency. These actions impact all goals set out in the Environmental Master plan and aim to address and tackle environmental sustainability and climate change, and help make progress toward a healthy, sustainable future for Windsor.

Community Energy Plan

The Community Energy Plan was approved by City Council in 2017. This plan will result in actions to improve energy efficiency; modify land use planning; reduce energy consumption and greenhouse gas emissions; and foster green energy solutions throughout Windsor while supporting local economic development. Following extensive analysis of energy use in the city, community consultation and engagement, the City of Windsor's CEP outlines strategies to reduce greenhouse gas emissions, reduce energy use and create economic advantage.

Environmental Master Plan Update

The 2017 Environmental Master Plan (EMP) reflects the City's commitment to enhancing environmental performance and facilitating social well-being and economic prosperity. The updated EMP further considers the impacts of climate change and the health of the Windsor community.

Climate Change Emergency Declaration

On Monday, November 18, 2019, City Council unanimously agreed to join over 400 communities across Canada in declaring a climate change emergency in Windsor. City administration was directed to prepare reports containing recommendations for priority action items, implementation measures and cost requirements to accelerate and urgently work toward the reduction of emissions and preparing for our climate future, this report titled "Acceleration of Climate Change Actions in response to the Climate Change Emergency Declaration" was presented and approved by City Council in 2020.

Plans and Policies

Active Transportation Master Plan

The Active Transportation Master Plan (Walk Wheel Windsor) was completed in 2019 and partially funded by FCM's Municipalities for Climate Innovation Program. The plan was informed through four discussion papers, three engagement summaries and the Windsor Bike Share Report, as well as thousands of comments and suggestions received from Windsor residents. The plan is committed to improving walking, biking, transit and other mobility options and developing well-connected, attractive active transportation networks that are safe, convenient and user-friendly for all modes of transportation, as well as help decrease GHG emissions and improve public health.

2020 Climate Change Adaptation Plan Update

The update to the Climate Change Adaptation Plan was completed to identify actions to reduce the impacts of climate change both for the Corporation as well as the Community. Vulnerabilities and risks were identified and adaptation actions were developed. The final actions presented in the plan were proposed by both City of Windsor administration and the community.

More Than Transit

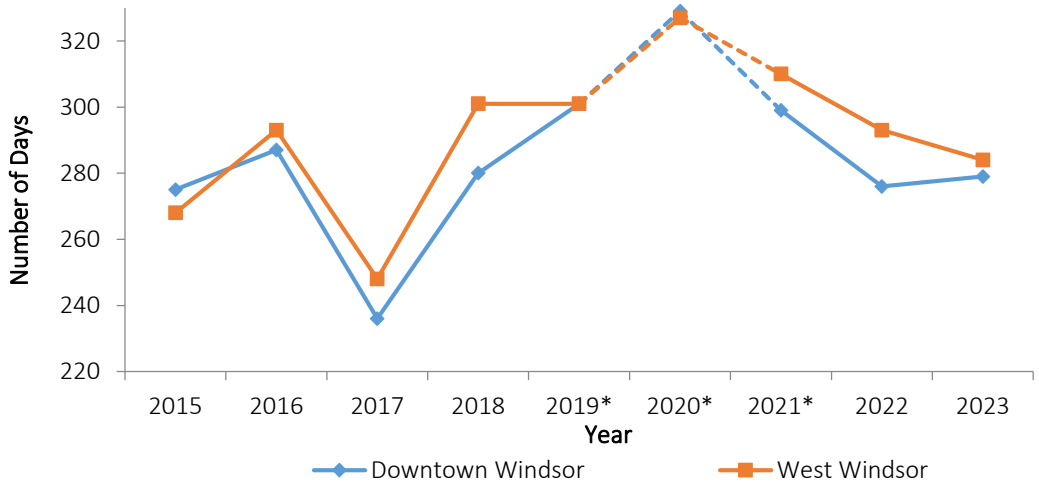
After a lengthy public consultation period Council approved the Transit Windsor Master Plan in 2020. The updated plan replaces the previous version published more than 10 years ago in 2006 and contains short-to-long-term actions and recommendations for Transit Windsor over the following decade. The Plan contains both the service's directions going forward and an implementation plan and schedule setting more ambitious targets which can be reached with today's technology and evidence-backed best practices.

Goal A: Improve Our Air 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.



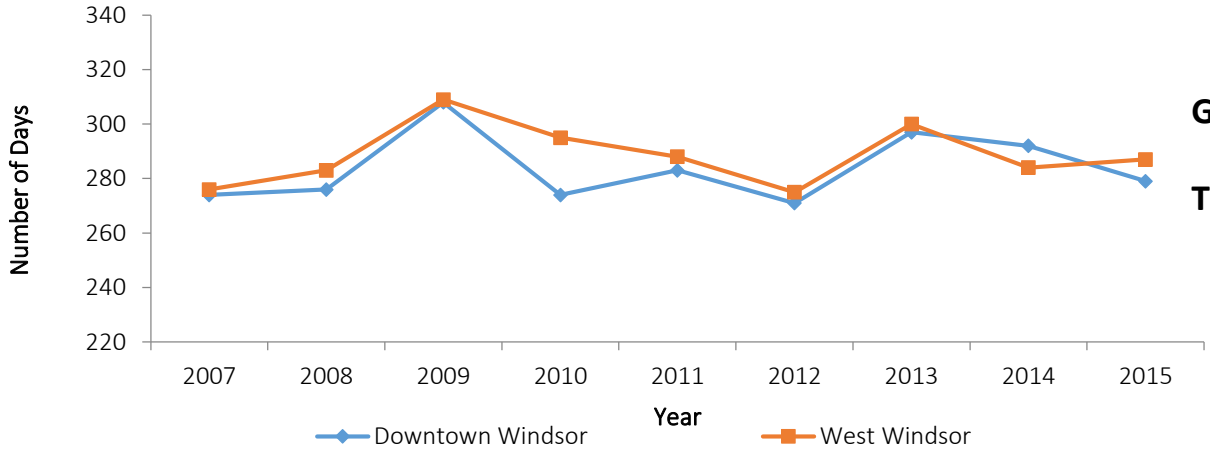
Goal

Trend*

It is probable that the AQHI will be trending downwards in the coming years primarily due to severe climate change related forest fires.

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

*The COVID pandemic dramatically altered driving habits in the years 2019, 2020 and 2021. If the influence of the pandemic is taken out of consideration the trend would be flatline.



Goal

Trend

Figure 1.2 - Number of Good or Very Good Air Quality Index Days prior to AQHI Reporting

Goal A: Improve Our Air Quality

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.

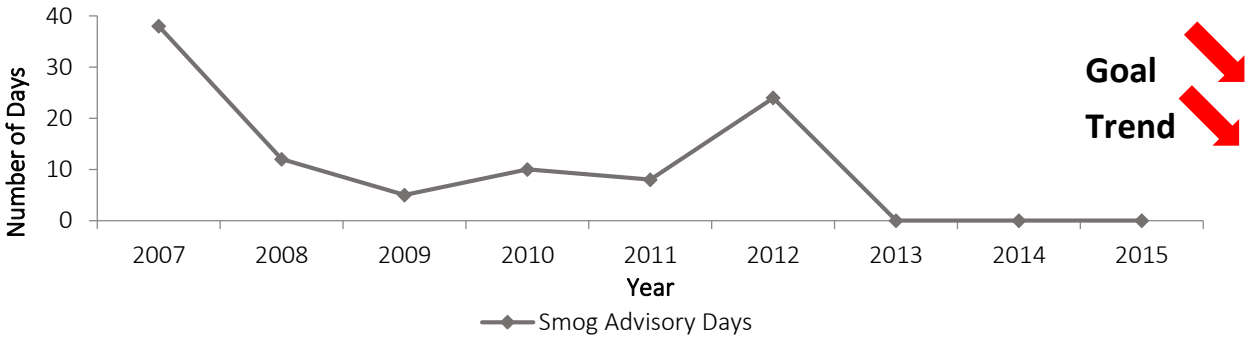


Figure 1.3 - Number of Smog Advisory Days prior to AQHI Reporting

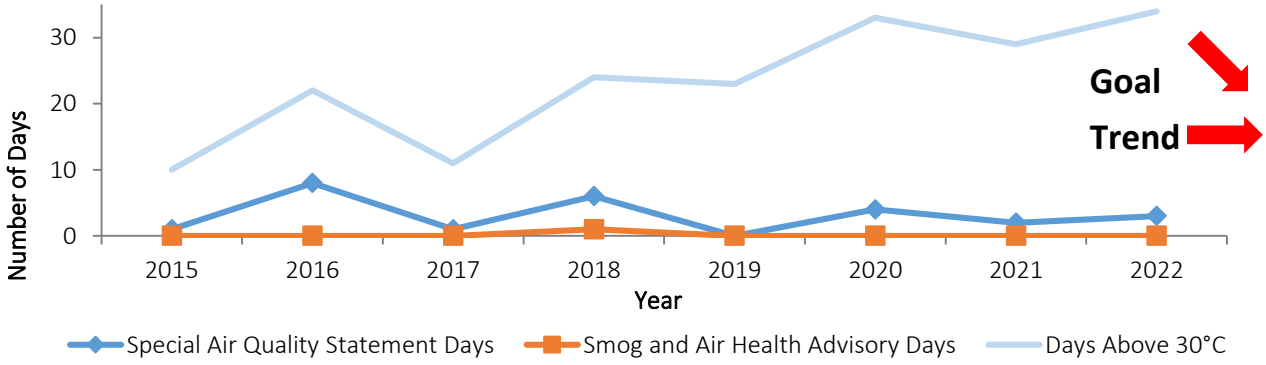


Figure 1.4 - Number of Special Air Quality Statement Days and Smog and Air Health Advisory Days since AQHI

* Peak years coincide with hotter summers and increased days above 30°C.

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.

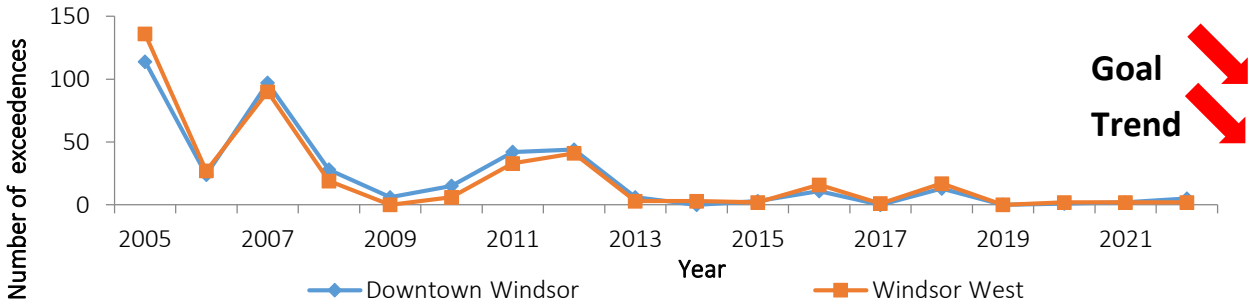


Figure 1.5 - Number of One-hour Exceedances of acceptable Ground Level Ozone Concentrations (as set by the MECP)

Goal A: Improve Our Air Quality

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.

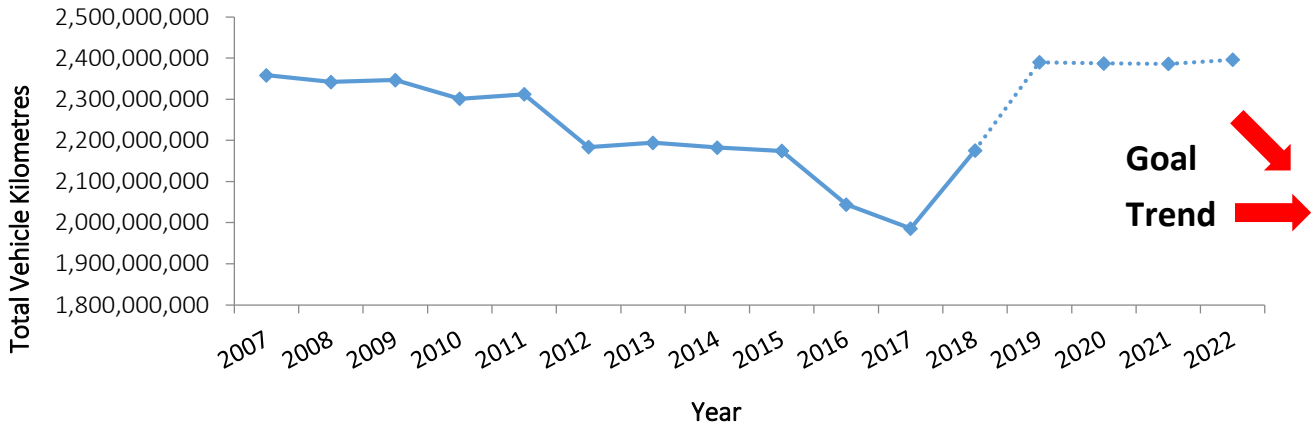


*Figure 1.6 - Total Vehicle Kilometres Travelled**

*NOTE: 2019-2022 data may not accurately reflect actual vehicle kilometers travelled. The Traffic Division did not complete the majority of Traffic counts during this time due to the pandemic and as a result the annual traffic count reports were not issued. Technical Support-IMS updates the Hansen database based on the annual report and only street segments that change from the annual report. With few counts being completed during this timeframe, previous counts remain in the database which could affect results.

Moving forward - measuring the impact of combustion engines on air pollution

As the number of electric vehicles on the road increases, the association with commuting and air pollution decreases. To better capture the impact of combustion engines on air pollution, a new indicator is being tracked – Community Fuel Sales.

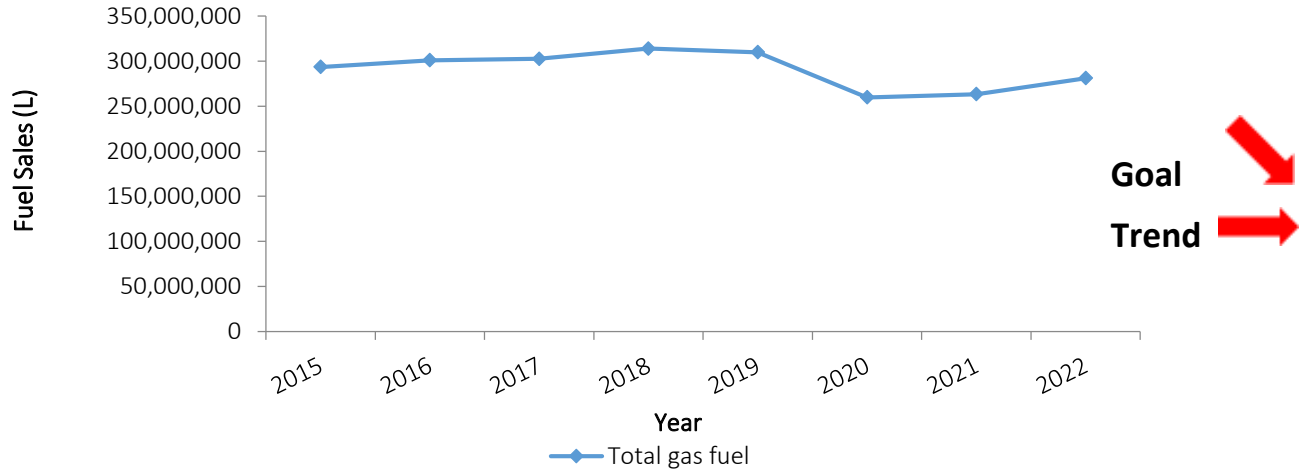


Figure 1.7 - Community Fuel Sales (E10, Pure Gas, Diesel)

Goal A: Improve Our Air Quality

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. Biking and walking are emissions free options for mobility.

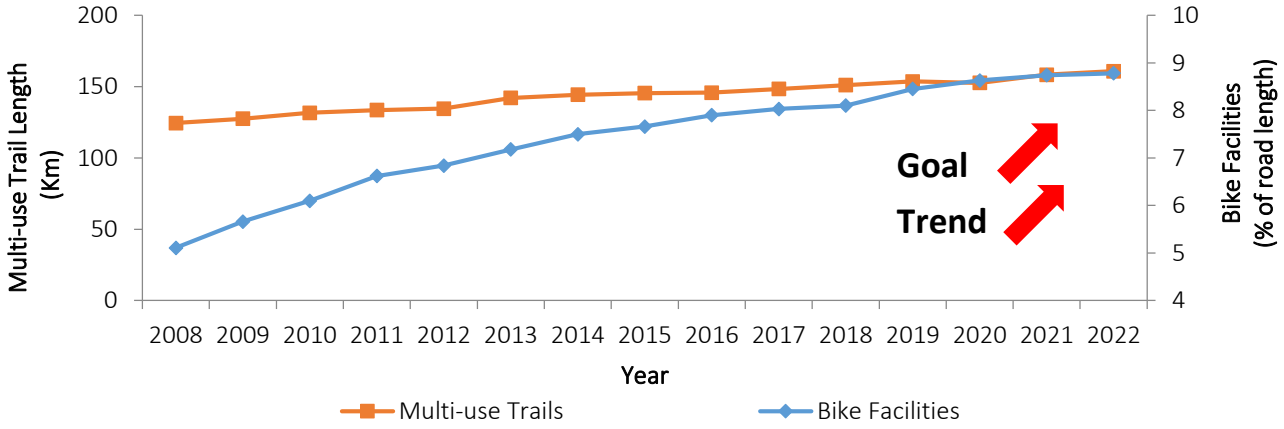


Figure 1.8 - Amount of Bicycling Facilities and Multi-Use Trails

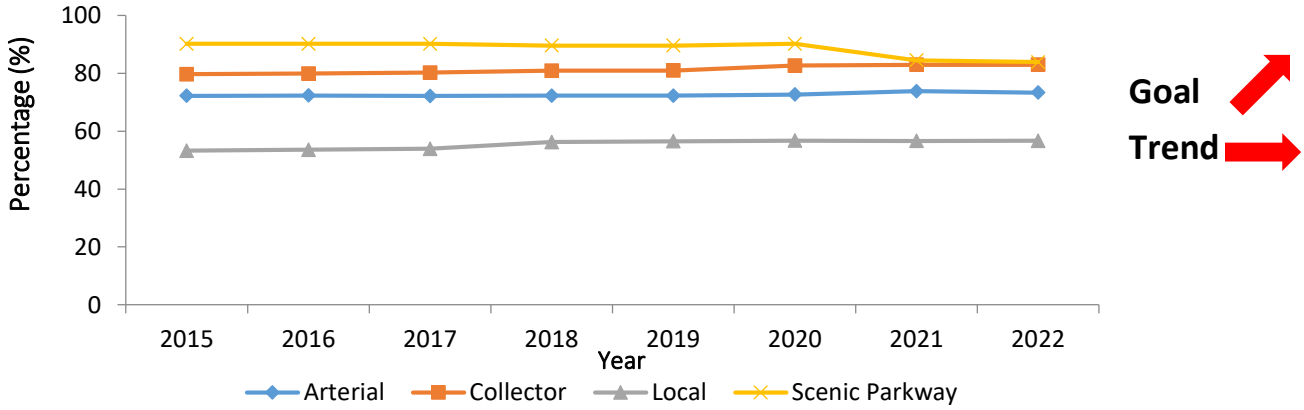


Figure 1.9 - Percentage of roads with one or more sidewalk

*17 completed sidewalk projects (2.7 km) in 2020 as per MappMyCity.

Goal A: Improve Our Air Quality

Transit Windsor Ridership

Ridership showed a steady incline before the COVID-19 pandemic impacted services. During the pandemic, Transit Windsor continuously reviewed and adapted service delivery in response to safety regulations and operational demands to continue to provide safe and reliable service to the community. Recent data shows that ridership is returning to levels seen before the pandemic.

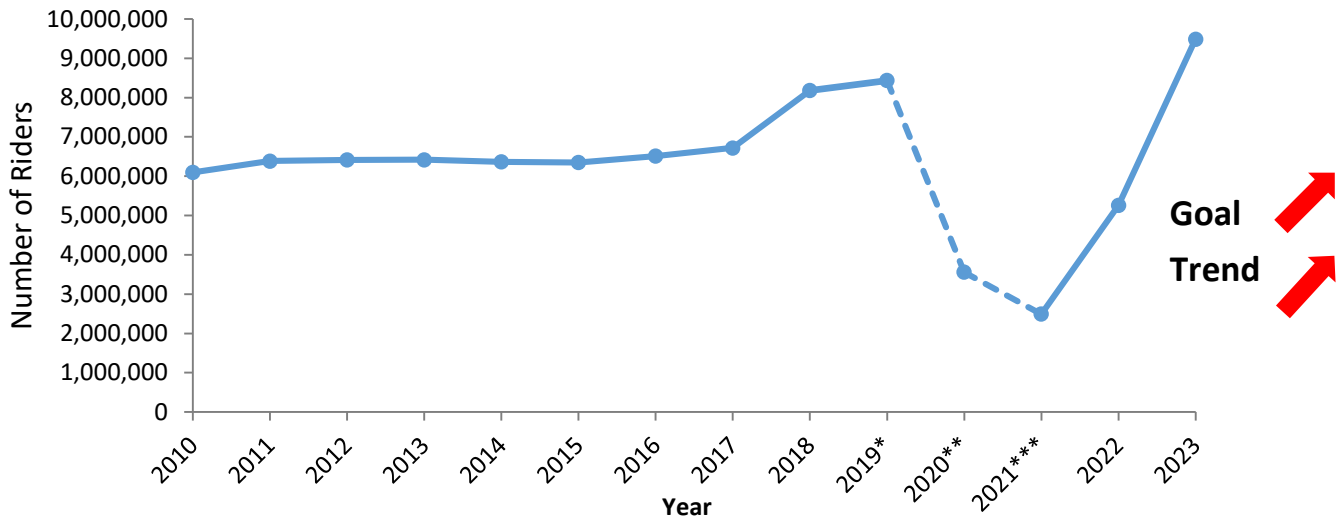


Figure 1.10 Transit Windsor Ridership

* NOTE: 2020 drop a direct result of reduced service, suspended service, and capacity limitations during the COVID-19 pandemic.

** There was no transit service from March 30 to May 4, 2020. An enhanced Sunday schedule was implemented until September of 2020, with some routes not running.

*** Enhanced Saturday schedule from September 2020 until September 7, 2021. Regular service resumed on September 7, 2021, until November 22 2021 when the enhanced Saturday schedule started again due to staffing shortages.

**** 2020/2021 data not reflective of ridership trends.

Although the COVID-19 Pandemic majorly impacted ridership, 2023 data shows that dependence on public transit is increasing. Population growth and densification are further intensifying this trend.

Goal A: Improve Our Air Quality

City of Windsor Initiatives

Idle-Free Campaign

Following the 2016 update to the Anti-Idling by-law that limited idling time to 3 minutes, the City of Windsor with support from the Clean Air Partnership (CAP) conducted outreach to school boards, individual students, staff, and parents to develop and implement a targeted enforcement plan at idling hotspots. CAP's Idle-Free Campaign Kit included a sample letter to parents as well as the bus company, student observer's instructions for baseline data collection, a bus idling observation form, a general idling observation form, sample dialogues with drivers, and commitment to reduce vehicle idling.

The Greater Essex County District School Board in partnership with the City has installed no-idling signs at all public schools. Large vinyl no-idling banners can be borrowed by schools to further draw attention to limit idling.

Vision Zero

City Council approved the Vision Zero Policy, which endorses the goal of zero fatal and serious injury collisions. To achieve this goal, an action plan is currently being developed in collaboration with a Vision Zero Task Force, which is made up of staff across City departments and emergency services, and a Vision Zero Stakeholder Group consisting of community stakeholders and members of the public. Using a data-driven, equity-focused approach, the Vision Zero Action Plan will identify strategic priorities, recommended initiatives, and interim goals. Progress reports will be presented to the Environment, Transportation and Public Safety Standing Committee as the Vision Zero Action Plan is developed.

Streetscaping

The City of Windsor has initiated a study to review the existing roadway elements along the University Avenue and Victoria Street corridors and consider opportunities within the right-of-way to achieve safe, efficient, comfortable, and convenient travel for roadway users of all ages, abilities, and modes over a 20-year study horizon.

The City also initiated a Municipal Class Environmental Assessment to evaluate the extension of Wyandotte Street East to Jarvis Avenue to serve neighbourhood transportation and infrastructure needs over a 20-year period. The study will consider the Wyandotte Street East extension for vehicular, pedestrian, transit, and bikeway connections; traffic calming; drainage; and sanitary and storm water sewage.

Cycling Network

In 2023, a total of 192.49 kilometers of Bike facilities were reported, which includes Bike lanes, Buffered Lanes, Sharrows, and Signed Routes. Over 60 percent of roads have one or more sidewalks to accommodate accessible alternative transit modes, help reduce emissions, and promote healthy lifestyle options.

Over 1.213 km were designated as "Cycle Tracks" and are for cyclists only.

Goal A: Improve Our Air Quality

Traffic Calming Studies

Traffic calming is intended to improve safety, enjoyment, and pedestrian use by reducing traffic speed and volume on a group of streets within a specific geographical area and by implementing proven methods to reduce identified problems. Six Traffic Calming Studies are currently in progress, with 16 more studies upcoming.

Open Streets

Open Streets was designed to help reduce emissions by promoting alternative methods of transportation while connecting people and communities. Since 2016, thousands have attended this free event, which encompasses an eight-kilometre route spanning numerous neighbourhoods from the west end of the city to the east. During the event, streets are temporarily closed to cars, providing a unique opportunity to connect our diverse neighbourhoods, local businesses and people while encouraging healthy and active lifestyles. In light of the Covid-19 pandemic the event was canceled in 2020, but city staff and community partners worked hard to design a route and event that was safe, accessible and memorable for all who participated when Open Streets returned in 2021.

Dougall Avenue Pedestrian Underpass and Multi-Use Trail

2020 saw the opening of the Dougall Avenue pedestrian underpass. This 32-metre passage allows non-vehicle traffic to pass under the CN Railway tracks and connects the multi-use trails south of the CN Railway along South Cameron Boulevard and the multi-use trail to the north along Dougall Avenue, as part of the City's intersection, roadway, and multi-use trail improvement project. This project transformed a once dangerous section of roadway into a safe pathway for active transportation users.

Active Transportation

2021 saw the completion of a $2-million project to rebuild a section of Matchett Road using a cost-effective and environmentally-friendly engineering process called full-depth reclamation, and adding a new multi-use trail and pedestrian crossover. The trail links with Transit Windsor’s South Windsor 7 route and was funded in part by the Public Transit Infrastructure stream of the Investing in Canada infrastructure plan to stretch the multi-use trail on Matchet Road from the E.C. Row Expressway to Broadway Street. By 2024, this trail is expected to provide a vital link for cyclists and pedestrians connecting from the new Gordie Howe International Bridge to the Herb Gray Parkway. This latest addition of a multi-use trail on Matchett Road will provide a vital link to the Ojibway Prairie Complex from Malden and Mic Mac parks.

Bike and Scooter Sharing Pilot

In 2021, the micromobility share program was implemented to aligned with the goals of Windsor Works to improve urban mobility and Walk Wheel Windsor to investigate bike share and new technologies. The pilot program, stated in 2021 and extended into 2022, had more than 29,000 total rides by roughly 8,000 unique riders. After City Council reviewed the pilot results it was decided to extend the program for another three years, with the service area expanded to the City limits.

Goal A: Improve Our Air Quality

Active and Safe Routes to School Developments

The City supports the Windsor-Essex County Health Unit and local school boards to map out safe routes to school in order to promote and support the use of active transportation modes like walking or cycling. A grant from the Ontario Active School Travel Fund was secured to help support active school travel from January 2021 until June 2022. Six pilot schools across the region will receive a variety of supports to develop and promote school travel plans. Students are encouraged to take active transportation to school using the MappMySchoolNeighbourhood app.

EV Charging Stations

The Corporation has installed 11 electric vehicle charging stations for public use at municipal properties throughout the City. These dual-connector stations provide designated charging spaces for 22 vehicles at various parks, community centres, and business districts, making it more convenient for drivers of electric and hybrid vehicles to charge up. Charging was made available to the public free of charge during the first year of service, allowing administration to collect data and determine the future needs of Windsor's electric vehicle charging infrastructure.

Transit Improvements and Fare Restructuring

In addition to updating the fleet, service improvements include extra amenities and new technology which will provide better service to the community, as well as aid in reducing emissions and Transit Windsor's carbon footprint. Some of these enhancements include:

- In 2022, the initiative to install 180 new bus shelters at stops around the City was completed
- 147 new concrete pads for greater accessibility
- The Transit App to reduce the amount of rider guides and provide up to date information and directions
- Reloadable Smart Ride cards to eliminate the need for paper tickets
- Real time data with Intelligent Transportation Systems (ITS) and the Prediction Portal
- New wayfinding signs at the west end terminal
- 418X route offers expedited service along the Tecumseh-College-Sandwich corridor
- The LTW route between St. Clair College and the Leamington Kinsmen Recreation Complex
- The new 518X route to St. Clair College via Devonshire Mall to reduce travel times by over an hour
- A partnership with the University and St. Clair College to implement U-Pass to promote ridership among students
- A re-alignment of Route 1C on Tecumseh Road East to improve service and eliminate duplication
- Children 12 years of age and under are free with a full paying passenger.

Goal A: Improve Our Air Quality

Transit Replacement Schedule

In 2021 Council approved a resolution to procure 24 new buses as part of addressing the ongoing need to reduce the overall age of city buses, help improve efficiency and air quality, and reduce emissions. According to a report by Transit Windsor, the accepted public transportation industry standard for heavy-duty buses is a useful lifespan of 12 years. Currently 43 Transit Windsor buses, more than a third of the fleet, are older than 12 years, with many approaching 20 years of use. Transit Windsor expects the latest round of bus funding will cover fleet replacement needs until 2024.

Green the Fleet Update

The City continues to electrify our fleet and now owns 7 full EVs and 7 plug in hybrids.

Facilitating the Transition to Electric Vehicles

A City Council report *Facilitating the Transition to Electric Vehicles* was accepted in January, 2021. Windsor's efforts along with stakeholders and partners will strengthen the local automotive industry and help transition toward becoming Canada's Automotive Capital while working to meet Greenhouse Gas Reduction targets.

First Large-Scale Electric Vehicle Battery Plant in Canada

Windsor was proud to welcome dignitaries from the federal and provincial governments along with industry leaders from Stellantis and LG Energy Solution (LGES) to share news that the first large-scale electric vehicle (EV) battery manufacturing facility in Canada will be built right here in Windsor.

Further to this announcement, automaker Stellantis announced in early 2022 that it will spend $3.6 billion to update its Brampton and Windsor plants with the aid of provincial and federal funding. These improvements will help expand and build new research and development centres with a focus on electric vehicles and battery technology, and create a new, flexible, vehicle assembly line at the Windsor plant.

Goal A: Improve Our Air Quality

Areas to Move Forward

- Update the City's Greening the City Fleet Manual;
- Research opportunities to electrify City fuel-burning equipment including fleet, off-road vehicles, small equipment;
- Develop an electrification strategy for municipal fleet vehicles;
- Continue to participate in Open Streets Windsor to promote alternative methods of transportation;
- Develop a Complete Streets Policy;
- Identify priority areas for connectivity among the City's walking facilities;
- Develop an electrification strategy for Transit Windsor Fleet;
- Design commercial and residential land use to maximize access to public transit;
- Develop a bike parking policy;
- Public engagement to encourage the transition to electric vehicles and small equipment (e.g. lawnmowers);
- Work towards achieving a modal split of 25% by 2041

Goal B: Improve Our Water Quality

Indicators

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. Total ammonia removed has been tracked since 2008 and was newly added in this report.

Note that while amount of contaminant removal fluctuates, the effluent objectives set by the province have been achieved in every year and for every pollutant.

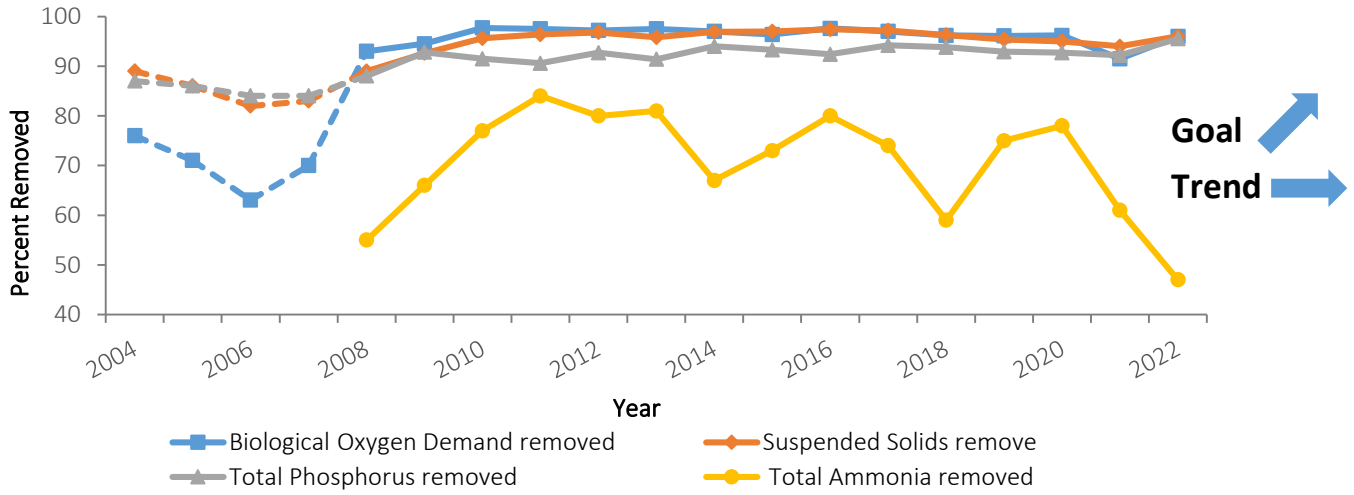


Figure 2.1.a - Contaminant removal at Lou Romano Water Reclamation Plant

* 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.

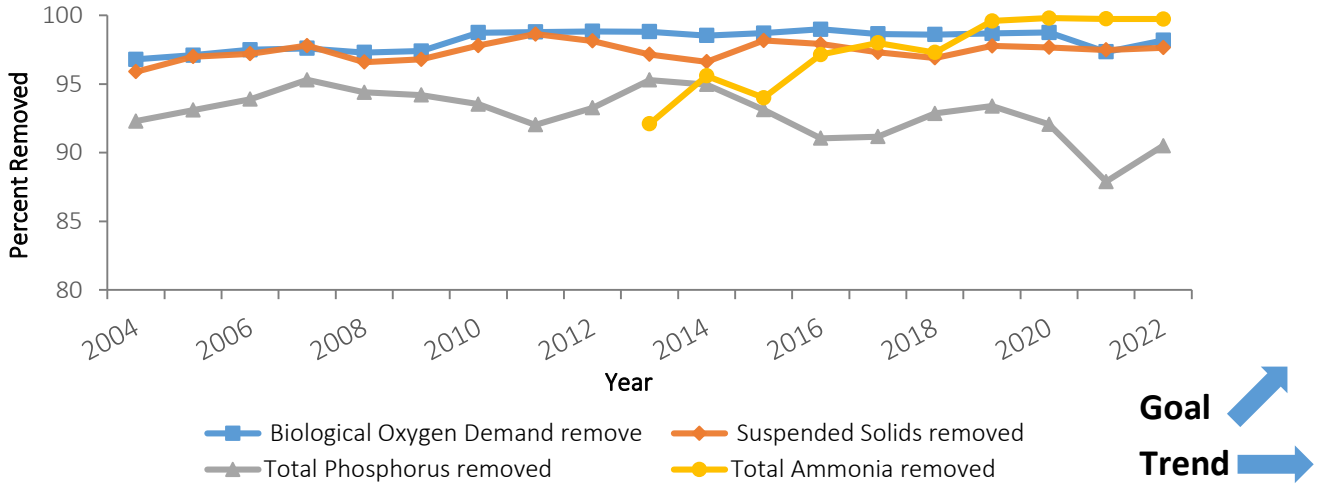


Figure 2.1.b - Contaminant removal at Little River Pollution Control Plant

Goal B: Improve Our 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 use impairments (BUIs) that indicate the health of different parts of the ecosystem. Progress is being made through restoration and monitoring.

In 2013 there were eight impaired BUIs, in 2022 there are four remaining.

Table 2.2 – The Status of Detroit River Beneficial Use Impairments.

	Beneficial Use Impairment	2013 ROSE	2016 Status	2018 Status	2019 Status	2020 Status	2021 Status	2022 Status
1	Restrictions on fish and wildlife consumption	Impaired (fish)	Impaired (fish)	Impaired (fish)	Impaired (fish)	Impaired (fish)	Impaired (fish)	Impaired (fish)
2	Tainting of fish and wildlife flavour	Proposed Not Impaired	Not Impaired	Not Impaired	Not impaired	Not impaired	Not Impaired	Not Impaired
3	Degradation of fish and wildlife populations	Impaired	Impaired	Impaired	Impaired	Impaired	Impaired	Impaired
4	Fish tumours or other deformities	Impaired	Impaired	Impaired	Proposed not impaired	Not impaired	Not Impaired	Not Impaired
5	Bird or animal deformities or reproductive problems	Impaired	Impaired	Impaired	Impaired	Impaired	Impaired	Impaired
6	Degradation of benthos	Impaired	Impaired	Impaired	Proposed not impaired	Not impaired	Not Impaired	Not Impaired
7	Restrictions on dredging activities	Impaired	Impaired	Impaired	Not impaired	Not impaired	Not Impaired	Not Impaired
8	Eutrophication or undesirable algae	Not impaired	Not impaired	Not impaired	Not impaired	Not impaired	Not Impaired	Not Impaired
9	Restrictions on drinking water consumption, or taste and odour problems	Not impaired	Not impaired	Not impaired	Not impaired	Not impaired	Not Impaired	Not Impaired
10	Beach closings	Proposed Not Impaired	Not Impaired	Not Impaired	Not impaired	Not impaired	Not Impaired	Not Impaired
11	Degradation of aesthetics	Impaired	Not Impaired	Not Impaired	Not impaired	Not impaired	Not Impaired	Not Impaired

12	Added costs to agriculture or industry	Not impaired	Not impaired	Not impaired	Not impaired	Not impaired	Not Impaired	Not Impaired
13	Degradation of phytoplankton and zooplankton populations	Proposed Not Impaired	Requires further assessment	Requires further assessment	Requires further assessment	Requires further assessment	Not Impaired	Not Impaired
14	Loss of fish and wildlife habitat	Impaired	Impaired	Impaired	Impaired	Impaired	Impaired	Impaired

Pesticide Use

Pesticides can be harmful to the environment and to human health if not used in a responsible manner. The City continues to maintain Integrated Pest Management (IPM) Certified applicators and follow best practices to mitigate pesticide use. In 2009 the Province of Ontario imposed a cosmetic pesticide ban limiting the list of allowable pesticide use. The City of Windsor uses pesticides to maintain infrastructure such as Roadways, sidewalks, and golf courses etc., that follow all regulations of the Ontario Pesticide Act and are approved by the Ministry of Environment. Where possible, the City uses less toxic pesticides (similar to Horticulture Vinegar) to maintain garden and landscape areas.

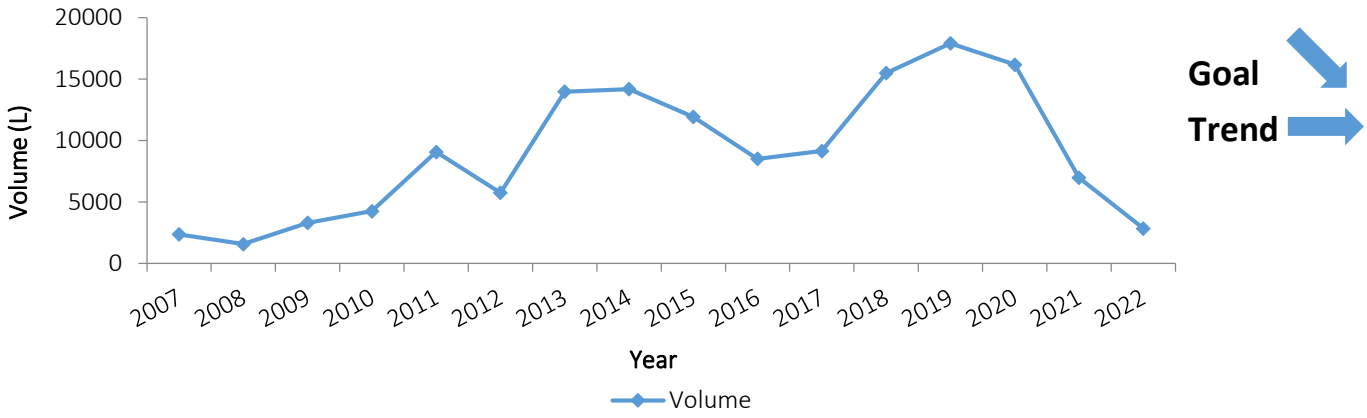


Figure 2.3 - Amount of Pesticide Used

* Pesticide volumes increasing because Parks are also spraying with their own trucks and sprayers, and forestry is now utilizing pesticides within their nursery operation.
* Significant decrease in pesticide use after switching products to AXXE Broad Spectrum Herbicide as a replacement for Horticulture Vinegar in 2020.
* Reporting uses total Liters of pesticide used (active ingredient only usually as a concentrate) as different seasons, applications types, and targeted pests make use of different mixture rates.

Pesticides are used as a means of chemical control for certain invasive plant species. As the number and variety of invasive species increases in the region, pesticide use may increase.

Goal B: Improve Our 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.

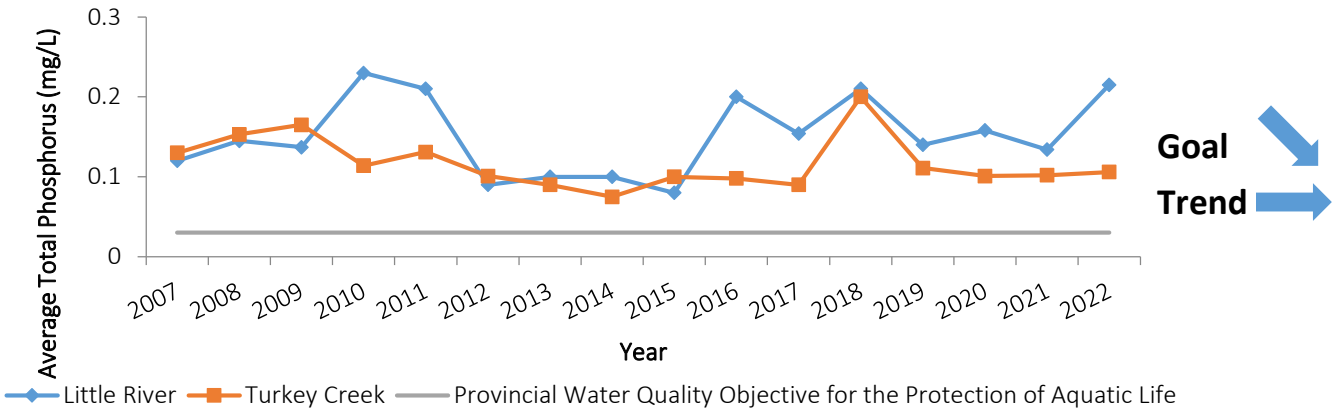


Figure 2.4 - Total Phosphorus in Windsor Tributaries

Water Quantity Control

Limiting the amount of stormwater runoff entering the City's sewer system can significantly decrease the risk of basement and surface flooding, especially in areas prone to flooding. Implementing innovative stormwater management strategies to store, infiltrate, and/or reuse storm runoff directly at the source can be effective in reducing stormwater from entering sanitary and combined sewer systems in areas prone to inflow and infiltration. This, in turn, will lessen the burden on the City's wastewater treatment plants during wet weather conditions and reduce wastewater treatment plant bypass and sewer overflows to the Detroit River.

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.

Goal B: Improve Our Water Quality

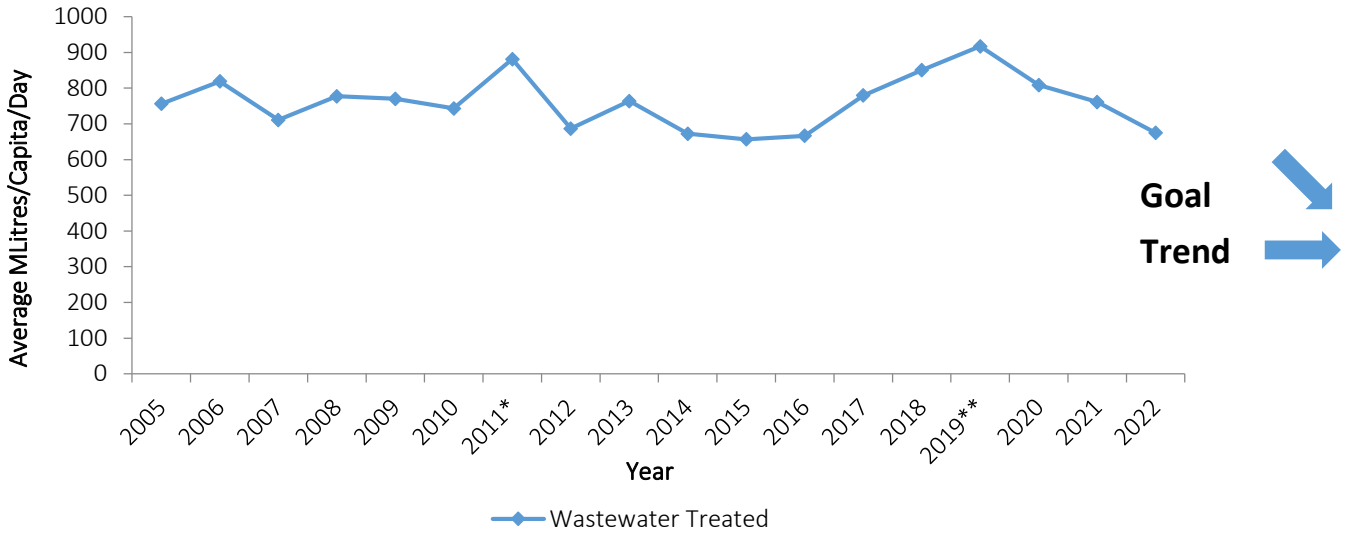


Figure 2.5 - Total Amount of Wastewater Treated

* 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.

** 2019 rise in total amount of wastewater treated coincides with historically high water levels causing inflow into the system.

Goal B: Improve Our 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.

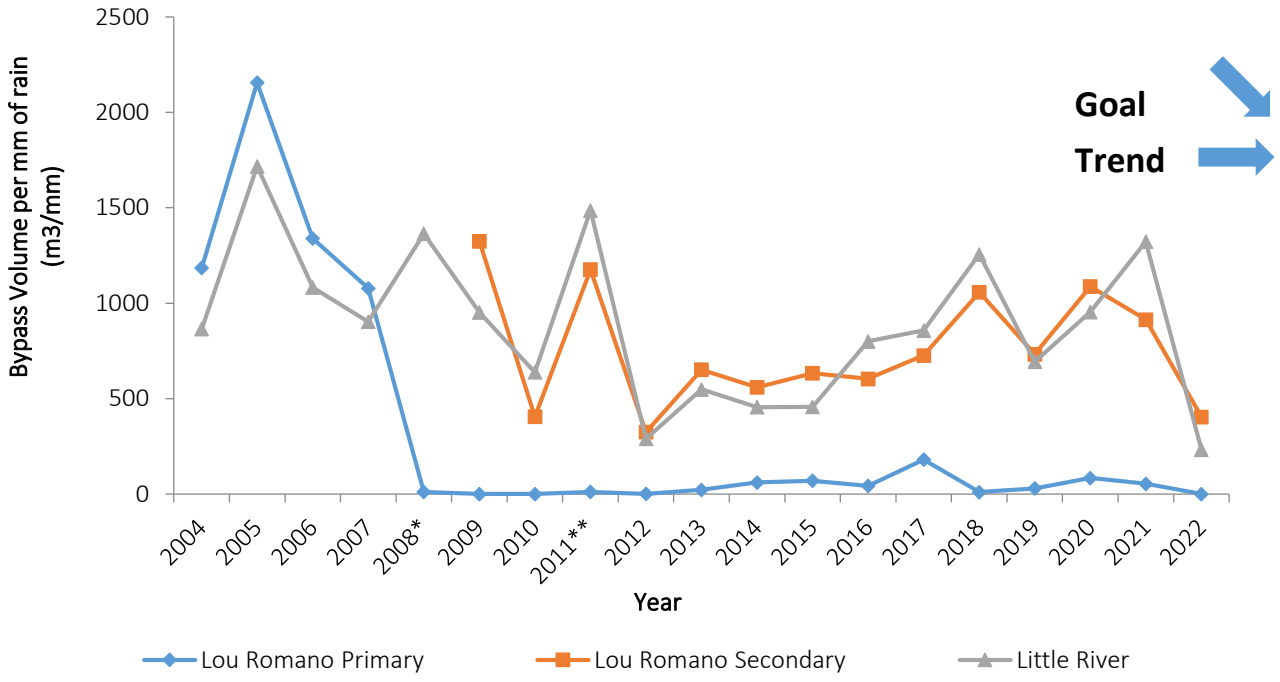


Figure 2.6 - Wastewater Treatment Plant Bypass Volumes Normalised for Amount of Rainfall

* The number previously reported for 2008 Lou Romano Secondary Bypass has been removed as it 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.

*** Rise in total amount of wastewater treatment plant bypass volumes post-2017 coincides with historically high great lakes and ground water levels which may have contributed to inflow into system.

Goal B: Improve Our Water Quality

Water Consumption

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

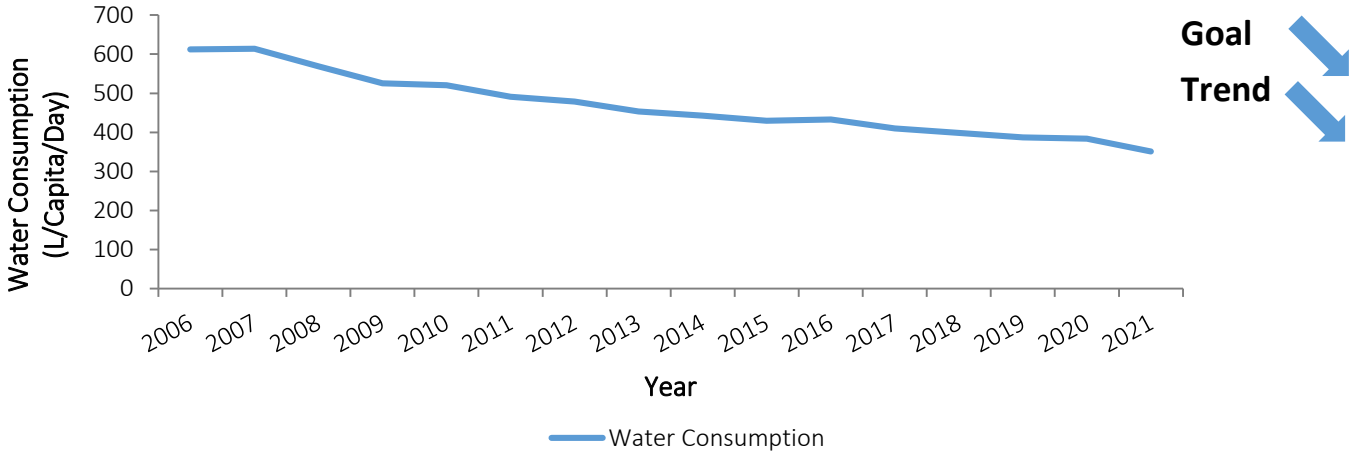


Figure 2.7 - Water Consumption in Litres per Capita per Day

City of Windsor Initiatives

Updated Intensity Duration Frequency Curves

On behalf of the City of Windsor and the municipalities of Essex County the Essex Region Conservation Authority worked with researchers to model and predict a range of future IDF curves under a variety of climate change scenarios. These updated curves were considered in the recently approved Windsor/Essex Region Stormwater Management Standards Manual and the Sewer and Coastal Flood Protection Master Plan.

Windsor/Essex Region Stormwater Management Standards Manual

In 2018, Windsor collaborated with ERCA and rural municipalities to create the Stormwater Management Standards Manual. It outlines standards for the Windsor/Essex Region and presents best practices based on current science. It is to be viewed as a living document, and reviewed, updated, as needed. An amendment to the Manual is currently underway and anticipated to be completed in 2024.

Partners for Action Flood Awareness Survey

In 2018, the City of Windsor collaborated with Partners for Action with support from the Canadian Red Cross to gain a better understanding of flood risk perception and preparation among Windsor residents. Understanding the risk of flooding in a community is the first step to being prepared for future flood events. The information from the survey and the follow-up focus group meetings were used to inform various City of Windsor initiatives, including the update to the Climate Change Adaptation Plan, completion of the Sewer Master Plan, and to support community engagement. In addition, the results

from the survey and the focus group meetings contributed to the development of a national FloodSmart Canada campaign to increase risk awareness and flood mitigation action for homeowners.

Windsor Riverfront West Combined Sewer Overflow Control Environmental Study

The City of Windsor, with funding assistance from the Ministry of the Environment, Conservation and Parks and the federal Great Lakes Sustainability Fund, has carried out a Class Environmental Assessment (E.A.) as the next step in implementing the last remaining initiative recommended in the 1999 Pollution Control Planning Study. The PCP study identified combined sewer overflows to the Detroit River as being a significant source of pollution and presented alternative control strategies while establishing the preferred pollution control plan and recommended initiatives. The Environmental Study Report documents the planning and decision-making process through to selection of the preferred design concept.

Rain Barrel Water Collection Program

The City continues to encourage the use of rainbarrels and currently sells rainbarrels at the Ojibway Nature Centre. In 2022 rainbarrels were installed at 2 new Community Gardens.

Stormwater Management

Hydraulic modelling, flow monitoring and video inspection programs using Zoom Camera and CCTV technology continue to improve the inventory of the mainline sewer ratings and help gather more information about the state of the City's sewer system.

Disaster Mitigation & Adaption Fund Projects

The City of Windsor has been hit hard by flooding in recent years, and in 2019 obtained funding from the Disaster Mitigation and Adaptation Fund (DMAF) to implement flood mitigation measures involving building and expanding roadways, sewers, pump stations and other storm water infrastructure to reduce the impacts of flooding on Windsor residents and the local economy. Some of the innovative DMAF projects are detailed below.

Tranby Park LID Innovation

The Tranby Park project marked the first low-impact development (LID) implemented by the City of Windsor in a City Park. Tranby Park has reopened after a renovation to add a number of features intended to mitigate flooding. This $4.75 million project was partially funded by the federal government, and is among the first of many that will incrementally reduce the risk of basement flooding across the city. LID projects store rainwater by allowing it to percolate into the ground rather than rush into the stormwater system. Drainage Improvements to Tranby Park include new stormwater detention features such as a dry pond, permeable parking lot, and bioswales. LID practices such as this one, build

community resiliency in order to reduce the economic impacts from increased precipitation trends, as well as help prepare for a changing climate.

Eastlawn Flood Mitigation

Another Low Impact Development project was included in the $4-million reconstruction of Eastlawn Avenue, which is part of the $1.6 billion the City will spend over 10 years to upgrade vital infrastructure like roads and sewers. The Eastlawn reconstruction will be one of a number of test sites for innovative flood mitigation strategies.

Collaborative Low-impact Development (LID) Research Study

In collaboration with the University of Windsor, the City will be initiating an LID research study to investigate areas in which future implementation of LID flood solutions may be feasible to reduce inflow into the existing sewer system. The outcome of this study is to include the following:

- Identify a range of permeability rates through the region's underlying clay soils.
- Assess the effectiveness of implementing LID measures within clay soil along roadways in older developed areas.
- Identify feasible LID measures for future development areas that can be used as a source of water quantity and quality control.
- Distinguish the restrictions of implementing LID's related to clay soil's capacity to absorb rainfall.
- Pinpoint potential advantages and localized hindrances associated with employing LID measures as a mean of stormwater management control.

This research study is anticipated to begin in 2024.

Climate Resilient Home

The City of Windsor retrofitted a City-owned home built in the City's core in the 1920s with the goal of reducing the risk of basement flooding. A series of changes were implemented to the inside and outside of the home to make it more climate resilient. This home was used to demonstrate the Basement Flooding Subsidy Program along with residential scale Low Impact Development opportunities. Videos documenting the implementation of the flood protection measures are up on the City's Youtube channel for educational purposes.

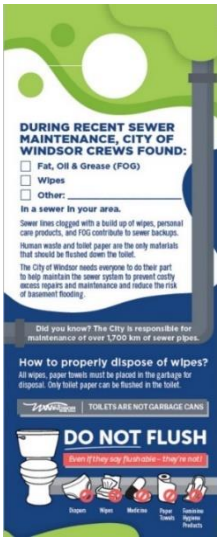
Goal B: Improve Our Water Quality

Public Education to Preserve Water Quality

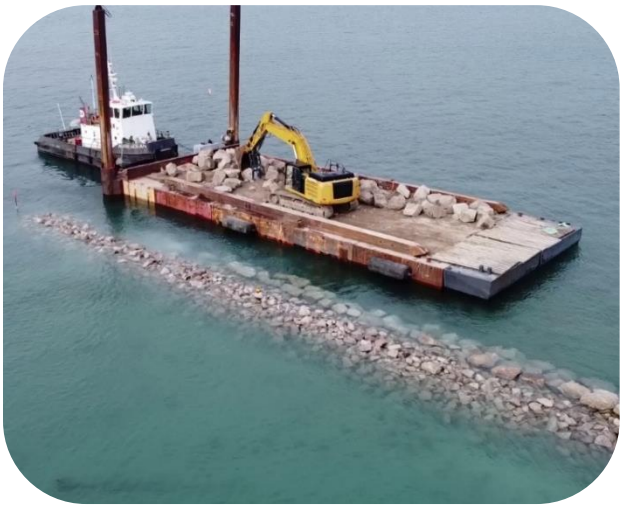
To remind residents of individual impacts to the sanitary and storm sewers, various tools have been developed including:

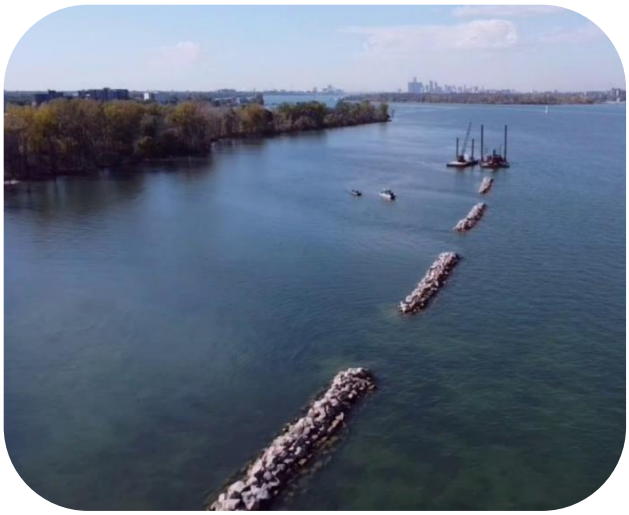
- Activity Guide advertisements for proper disposal of “flushables”
- Door Hangers to acknowledge how homeowners can protect the City’s Low Impact Development Features
- Door Hangers that can be dispatched into areas that have been identified as having issues with either “flushables” or Fats, Oils and Greases (FOG).

FOG cups are available to residents at community centres and libraries.



Peche Island Fish Habitat and Erosion Mitigation Project





In 2020 the City of Windsor began work on the Peche Island Fish Habitat and Erosion Mitigation Project in partnership with the Essex Region Conservation Authority; Detroit River Canadian Cleanup; Swim Drink Fish; Environment and Climate Change Canada, the Ontario Ministry of Natural Resources and the City’s Forestry department to create a series of offshore breakwaters in the Detroit River along the island’s north shore. By 2022, 9 sheltering islands had been constructed at the north end of the island. These long narrow islands protrude above the water and protect Peche Island from further erosion. The islands also act as a fish refuge and allow for an aquatic vegetation community to establish. Along the northeast shore, a 600-metre-long revetment wall was constructed to further provide erosion control.

Stormwater Financing Study

The City of Windsor possesses nearly $2 billion worth of stormwater sewer system assets, where funding for the management of these assets is currently done through a sewer surcharge which is based on user water consumption rates and does not differentiate between sanitary or stormwater sewer systems. In 2020, The City undertook a Stormwater Financing Study to assess the current stormwater management program and explore alternative funding models that more appropriately charges property

owners based on the amount of impervious surface area, which does not allow water to infiltrate into the ground, on their property and will be shown as a separate charge to the sanitary sewer charge on their water bill.

An Implementation Plan was developed in 2021 to identify the tasks, resources, timeline, and duration necessary to develop and implement a new stormwater financing model. The City is currently underway with executing this Implementation Plan, which allows for the transition to a user-fee based funding model that more appropriately and fairly charges property owners based on the amount of impervious surfaces they have on their property.

East Riverside Flood Risk Study

This study was funded through the Federation of Canadian Municipalities' (FCM)Municipalities for Climate Innovation Program (MCIP) and covered the area from St. Rose Beach to the municipal boundary with the Town of Tecumseh. The project was designed to look at current and future vulnerability with rising water levels and the existing barrier land form system. Future climate change projections for increasing Great Lakes levels (i.e. Lake St. Clair) were completed as part of the project. The findings of this study have been incorporated into the Sewer and Coastal Flood Protection Master Plan.

Sewer and Coastal Flood Protection Master Plan

Windsor has completed the Sewer and Coastal Flood Protection Master Plan to better understand flooding issues in the City. The plan sets standards for successful operation and maintenance of the city's storm and sanitary sewer systems, as well as identifies and prioritizes future upgrades and expansion requirements for long-term maintenance using a system-wide approach to identifying specific improvement projects that can be undertaken to improve efficiency and reduce the risk of flooding caused by wet weather. The development of the Master Plan included modeling of the sewer network and overland flow routes. A climate change stress test design storm events was used in the model to help understand the potential impacts of increased rain events. The final plan was approved in 2020 and includes a high level list of recommendations including:

- Mandatory Use of Sewage Ejector Pumps for New Residential Development
- Mandatory Downspout Disconnection for New Development
- Stormwater Surcharges and Green Infrastructure Credits
- Sanitary Rain Catchers and Manhole Sealing
- Enhanced Infrastructure Maintenance and Assessment
- Updated Sewer and Stormwater Management Standards
- Sewer Backflow Prevention Devices for High Water Levels and Select Sewer System Interconnections
- Mandatory Downspout Disconnection – Pilot Study
- Mandatory Foundation Drain Disconnection – Plot Study
- Improved Lot Grading
- Green Infrastructure/Low Impact Development (LID) Measures
- Subsidies to support Basement Flooding Protection, Downspout and Foundation Drain Disconnection

Goal B: Improve Our Water Quality

- Resident Education Programs for Flood Risk Awareness and Mitigation

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West Windsor Flood Risk Assessment

The City of Windsor undertook a flood risk assessment study to develop a flood risk profile for the West Windsor area under extreme Detroit River water levels and to identify recommended flood protection solutions. The Final Report was completed in January 2023. The study area is generally bounded by the Detroit River to the west, Huron Church Road and Ambassador Bridge to the north, the Essex Terminal Railway and College Street to the east, and the Town of LaSalle municipal boundary to the south.

Goal B: Improve Our Water Quality

Areas to Move Forward

- Continue downspout disconnection monitoring, assessment and reporting;
- Create and implement education and outreach initiatives related to Sewer and Coastal Flooding Master Plan in order to encourage awareness and participation in flood risk reduction and stormwater quality improvement initiatives;
- Continue to advance Lauzon Parkway Sewer and Road Rehabilitation project;
- Advance St. Rose Stormwater Pumping Station project;
- Construction of a retention treatment basin (RTB) on the west side of Windsor;
- Further delisting of Detroit River Beneficial Use Impairments including BUI #1 Restrictions on Fish and Wildlife Consumption, and BUI #5 Bird or Animal Deformities or Other Reproductive Problems;
- Continue with shoreline protection and erosion mitigation projects on Peche Island;
- Continue to research economical ways to introduce LID's throughout the municipality as a source of water quality and quantity control, and further develop pilot projects for future monitoring;
- Continue with executing the Stormwater Financing Implementation Plan;
- Development of a sanitary sewer inflow and infiltration work plan to improve water quality and reduce basement flooding risks;
- Promote green infrastructure for private property.

Goal C: Responsible Land Use

Indicators

Urban Tree Canopy Cover

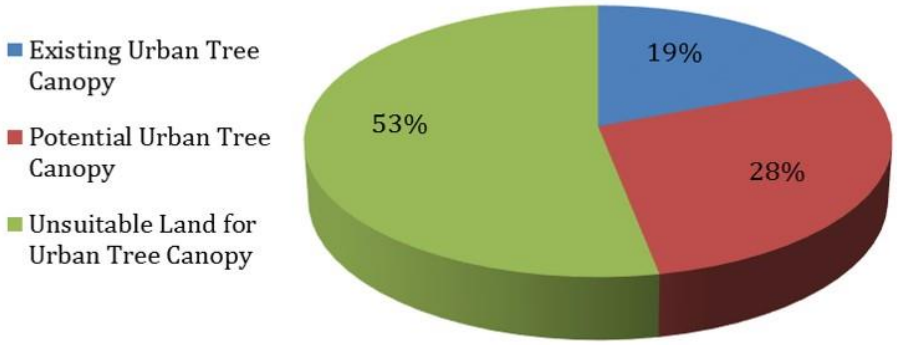
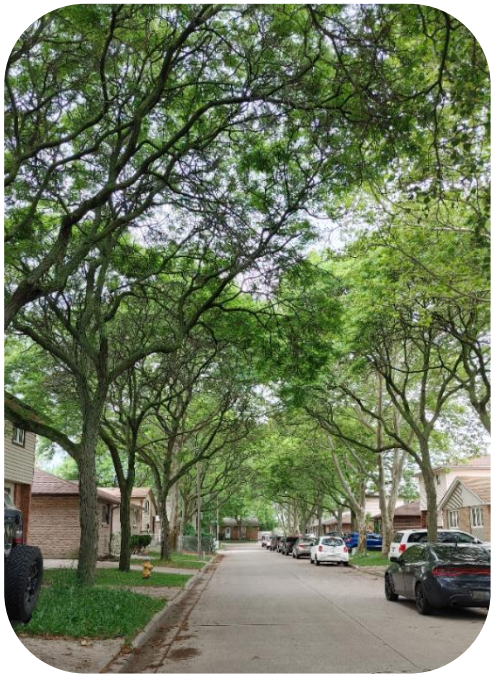


Figure 3.1b - Windsor's 2019 Urban Tree Canopy Assessment

Data collected during the City's first comprehensive canopy cover study, which used Lidar laser-scanning technology and aerial photography to determine definitively the percentage of tree canopy in the City. Results showed Windsor's canopy cover to be about 19 percent, which is the same as Mississauga's (2014) but less than Toronto's 28 percent (2018). Windsor's Urban Canopy has increased by 7 percent since 2002. For more information review the Urban Tree Canopy Study at https://www.citywindsor.ca/residents/parksandforestry/Urban-Forest/Documents/Windsor-ON-Tree-Canopy-Assessment-Report-2020.pdf



Goal C: Responsible Land Use

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 designated as such in the City of Windsor's Official Plan.

In 2022, Natural Heritage represents just over 4.88% of the total land area of Windsor, which is 14691 hectares.

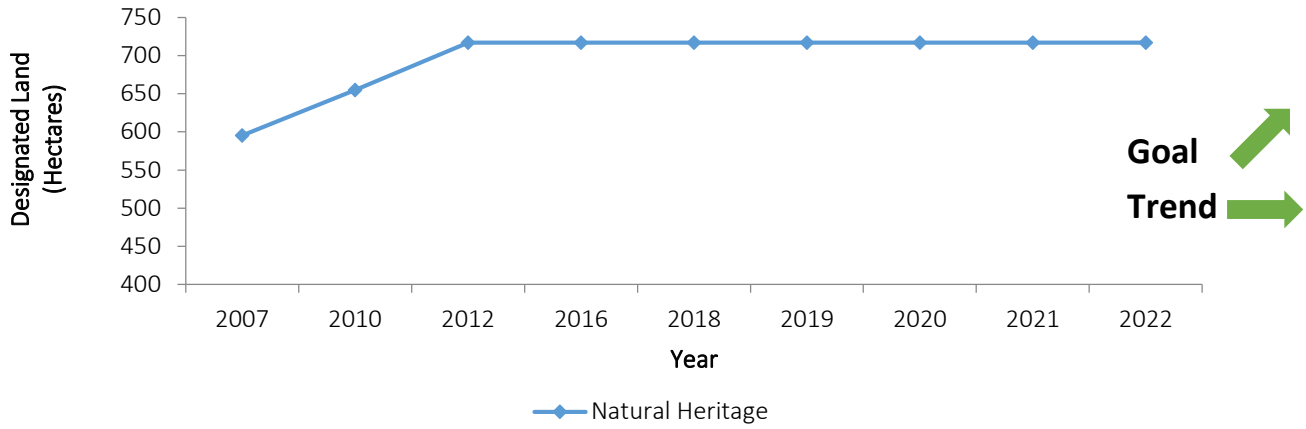


Figure 3.2 - Amount of Land Designated as Natural Heritage in Windsor's Official Plan

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.

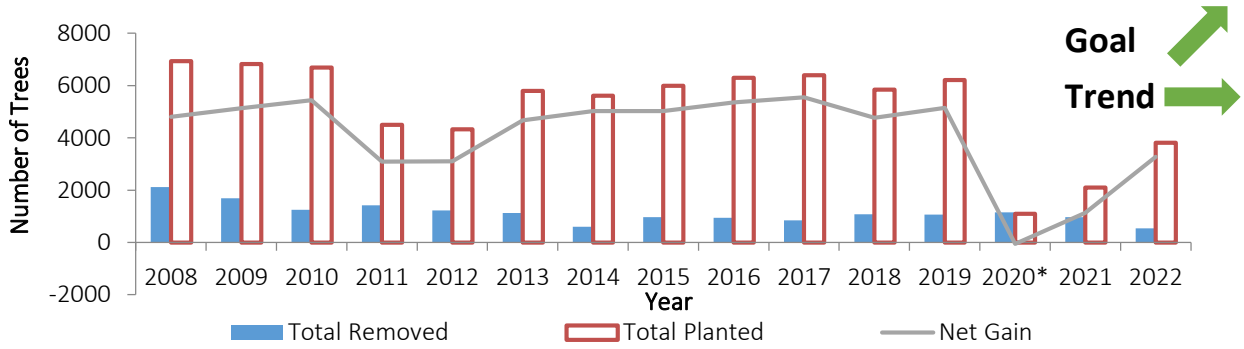


Figure 3.3 - Number of City-owned Street Trees Planted and Removed (by City and Community)

*Due to COVID there was no spring 2020 planting season. These City plantings or community planting events would have accounted for another 5,000 trees planted.

Note that the City's current strategy is to plant larger size trees that have a higher survival rate. Community plantings typically install smaller trees.

Goal C: Responsible Land Use

Amount of Maintained and Naturalized Parkland

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

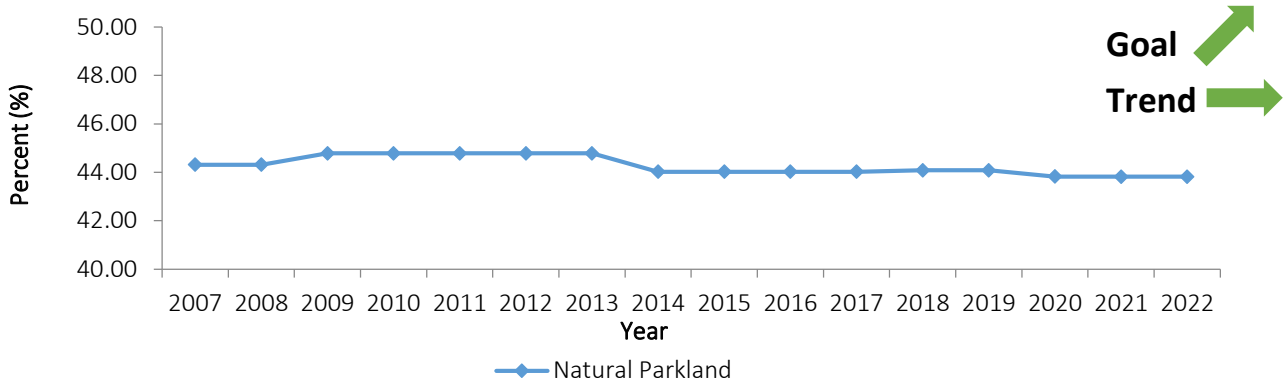


Figure 3.4 - Amount of Natural Parkland as a Percentage of Total Parkland

*2019: Decline due to high waters and subsequent erosion of Peche Island.

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.

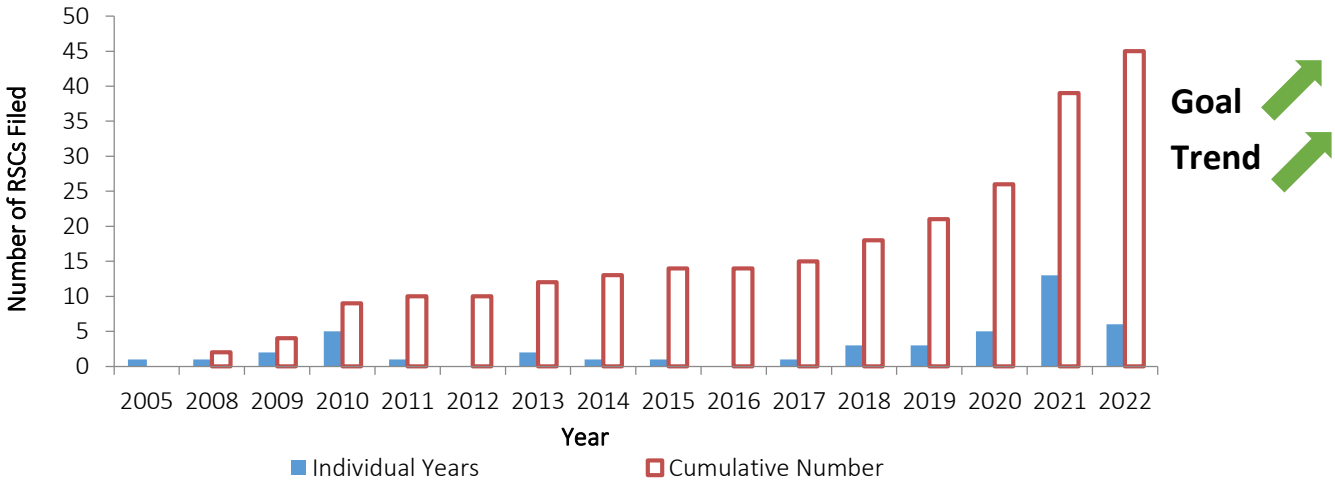


Figure 3.5 - Number of Records of Site Condition (RSCs) filed

* In 2009 the Planning Department identified 137 brownfield properties (226 hectares or 559 acres) that are candidates for redevelopment. Inventory does not include gas stations. To date Council has approved forty-two (42) grant applications under the Brownfield Redevelopment CIP.

Goal C: Responsible Land Use

Community Gardens

Community gardens growing vegetables and 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 underutilized part of a City park into a thriving neighbourhood gathering place.

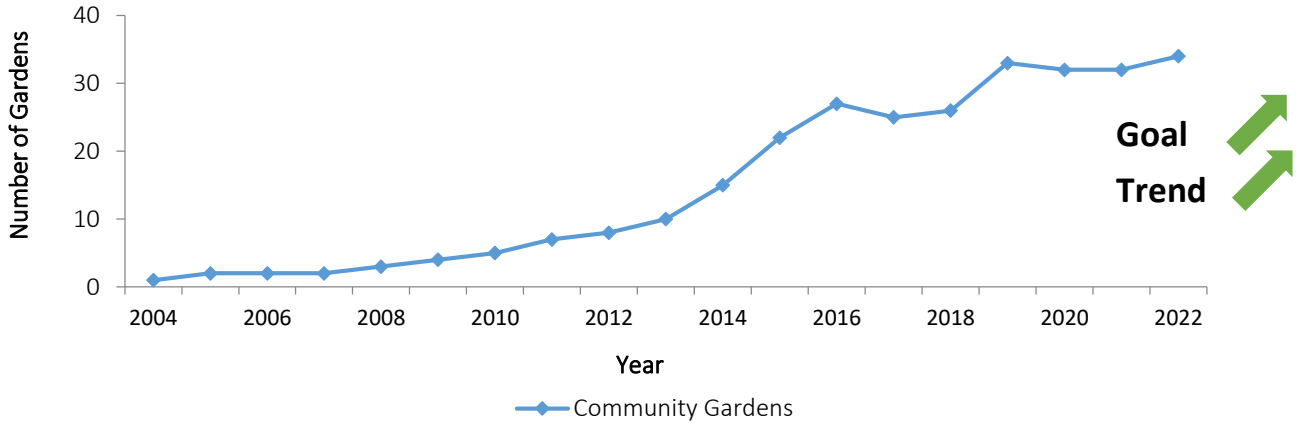


Figure 3.6 - Number of Community Gardens in Windsor

Population Density

Increasing population density creates opportunities to provide more sustainably funded services, as well as foster economic innovation, productivity, and growth as well as diverse cultural and artistic opportunities.

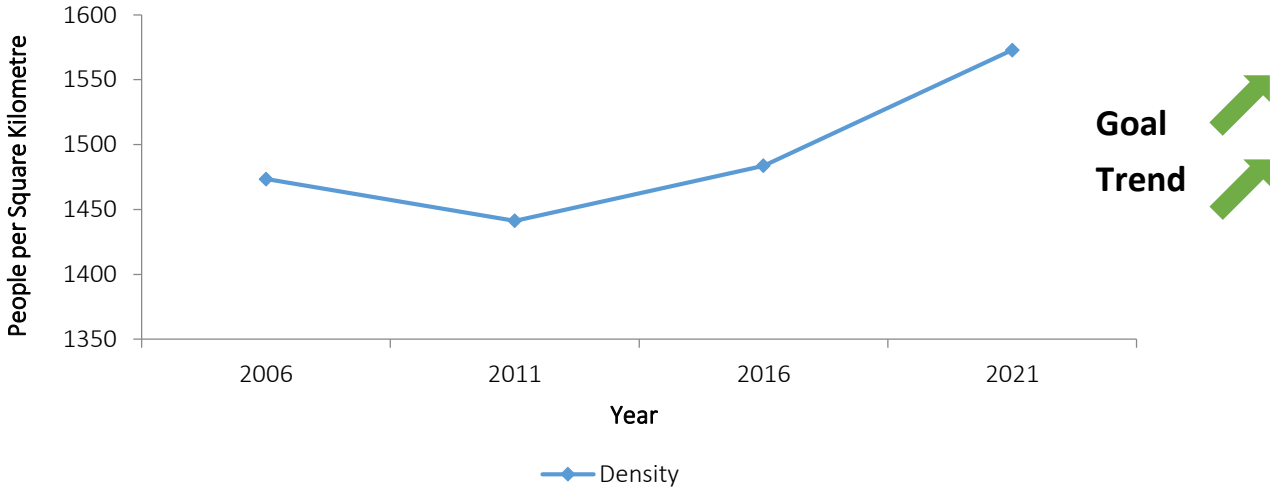


Figure 3.7 - Windsor's Population Density

* In 2021, Windsor's population was 229,660, which represents a change of 5.7% from 2016.

Goal C: Responsible Land Use

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.

Building	Registration Date	Certification Date	Certification Level
Toldo Medical Education Building	11/2/2006	2/18/2014	Silver
Ecole Secondaire de Windsor	3/26/2007	5/2/2013	Gold
Dr. David Suzuki Public School	6/4/2007	11/9/2011	Platinum
Union Gas Windsor District Office	1/3/2008	4/7/2011	Gold
Confidential Project	5/29/2009	8/25/2015	Silver
Ojibway Nature Centre	12/14/2009	10/11/2012	Silver
City of Windsor Fire Hall No. 7	1/4/2010	8/10/2013	Silver
Confidential Project	4/8/2010	7/27/2016	Gold
La Bella Strada	9/5/2011		
Confidential Project	2/11/2013	5/13/2013	Certified LEED Retail
University of Windsor (441 Univ Ave)	9/16/2016	10/26/2021	Gold
Devonshire Mall Common Area	10/27/2016	6/23/2022	Gold
Gordie Howe International Bridge - CAN POE	8/23/2018		
Rosewater Estates Building B	3/9/2021		
Rosewater Estates Building C	3/10/2021		
Rosewater Estates Building D	3/10/2021		
477 Pelissier	7/19/2021		

Goal C: Responsible Land Use

City of Windsor Initiatives

Community Food System Assessment

In the fall of 2018, the Windsor-Essex Food Policy Council and the Windsor-Essex County Health Unit, with support from the WindsorEssex Community Foundation, initiated a Comprehensive Food System Assessment for Windsor and Essex County. This project represents the culmination of many years of work and focus by a wide variety of individuals passionate about food in Windsor and Essex County. The purpose of the assessment was to build a foundation for sustained, ongoing, food system work to come over the next many years in this region. As a comprehensive assessment, it considered all aspects of the food system contained in the current food system framework – production, processing, distribution, access, consumption, and waste management. The time is right for food system work with recent Federal and Provincial food policy initiatives, as well as poverty reduction initiatives supporting food security.

Prescribed Burns

Prescribed burning is necessary to maintain healthy and diverse ecosystems within the Ojibway Prairie Complex, which contains one of the largest stands of original tallgrass prairie remaining in Ontario. Prescribed burns are part of a comprehensive restoration plan for this sensitive and endangered area.

Natural Areas

Natural areas such as the Ojibway Prairie Complex are managed to protect and preserve the incredible biodiversity found within these areas. Consideration for local Species at Risk, and projects to improve their status are undertaken on a citywide basis. Endangered habitats of tallgrass prairie and oak savannah are managed by controlling invasive species, woody species and undertaking prescribed burns. In 2020 Ojibway Nature Centre received a Champion for Education award from the Greater Essex County District School Board.

Goal C: Responsible Land Use

Invasive Species

Invasive Phragmites Control Centre was contracted to prepare a Phragmites Control Strategy for the City of Windsor. The Natural Areas program has ongoing efforts to control invasive species in natural areas including phragmites, garlic mustard, autumn olive, dog-strangling vine, Japanese knotweed, and others. The Invasive Species Centre was contracted to prepare the Invasive Species Strategy for the Ojibway Prairie Complex.

Ojibway Parkway Wildlife Crossing

In 2020, the City of Windsor has initiated a Municipal Class Environmental Assessment (Class EA) study for a Wildlife Crossing at Ojibway Parkway south of Broadway Boulevard. The purpose of this study is to identify opportunities to provide safe passage for area wildlife and species at risk and create landscape connectivity in the Ojibway Prairie Complex. After the public information session in 2021, a preferred design was identified that would cross Ojibway Parkway and Essex Terminal Railway (ETR) and would connect Ojibway Park with the natural areas associated with Black Oak Heritage Park. Public Information Centre #3 was conducted in early 2024.

Urban Tree Inventory

Council invested $3.8 million toward efforts to expand, protect and manage the urban tree canopy, which contributed to the City reaching a number of positive milestones in 2020-2021, including:

- Doubling the number of trees planted annually in the public right-of-way to 2,000 per year.
- Establishing a digital inventory of all 86,723 trees planted along streets and in public parks. This searchable database includes detailed information on each tree's GPS location, species, size, health, risk rating and management recommendations.
- Launching a new, seven-year tree-trimming program to prune about 10,000 street trees annually to help maintain the health and safety of the trees and surrounding environment, including local homes and businesses.

Windsor's urban forest represents millions of dollars saved in avoided infrastructure costs, pollution reduction, and stored carbon. Trees produce oxygen, lower air temperatures, and improve public health by reducing air pollutants. Trees and forests mitigate stormwater runoff which minimizes flood risk, stabilizes soil, reduces sedimentation in streams and riparian land, and absorbs pollutants to help improve water quality and habitats.

Community Gardens

Community Gardens are an important tool for the development of healthy communities and improve quality of life for residents by encouraging people to grow healthy and nutritious food while having a positive impact on the environment. In 2019 Council approved the relocation of the Bruce Park Community Garden to Caron Avenue Park to accommodate expansion and permit more growers to use the site. In 2021 City Council revised the Community Gardens Policy to enhance access to gardens, as well as encourage the establishment of native plants at the garden sites to promote pollinator habitat. In addition to the six community gardens that Windsor supports, two more were added in 2022 at Ernest Atkinson and Bridgeview Parks and in 2023, another garden was added at Lens ave. A pollinator garden was installed at Stodgell Park in 2023.

Goal C: Responsible Land Use

Urban Heat Island

The urban heat island effect results from temperature differences between urban and surrounding rural areas. This variance occurs as a result of differing land use surfaces that reflect and absorb solar radiation at different rates.

This is demonstrated in an image generated using ERCA's Interactive mapping tool to explore surface temperatures in Windsor. Urban areas are often warmer due to increased impervious areas (e.g. roof tops, pavements, and loss of vegetation, etc), properties of urban materials, and anthropogenic causes (e.g. vehicles, heating, ventilation, etc.). Areas of high urban temperatures are reflected gradation of yellow to red, with red indicating the areas of highest temperatures. By contrast, less developed and natural areas are often cooler and are displayed in green and blue.

National Urban Park at Ojibway Prairie Complex

In 2021, the Government of Canada announced a new program to create a network of national urban parks across Canada, with Windsor being shortlisted as one of six candidate sites. Urban parks play an important role in providing citizens quick access to nature, protect biodiversity, contribute to conservation goals, support climate mitigation, promote diversity and inclusion, and support health and mental wellbeing. In the summer of 2021, the City and federal government through Parks Canada Agency announced a collaboration to work towards designating the Ojibway Prairie Complex as a National Urban Park. The City is working closely with Parks Canada to define the study area, review environmental and natural research studies, review natural area connectivity and accessibility and develop operational planning. Consultations with community members, conservationists, institutions, indigenous groups, and all levels of government were undertaken in 2022 and 2023 and will help inform future planning of the park and establish a pathway towards national urban park designation.

Thermal Comfort Features

The City of Windsor has implemented shade structures at various parks, most recently at Rotary Centennial Plaza Riverfront Park, Bruce Avenue Park, South Windsor Recreation Complex, George Avenue Park, Remington Booster Park, and Garry Dugal Park. New shaded seating was installed at Miracle Park, and Mic Mac Park, a new Splash pad and water bottle fill station at Forest Glade Optimist Park, and drinking fountain/water fill/dog bowl station at Jackson Park. Trees have also been strategically planted at all 27 new playgrounds to provide future shade. Two water bottle fill stations have been installed along the Riverfront.

Goal C: Responsible Land Use

New Splash Pads

New splash pads have been installed at Jackson Park, Realtor Park, Garry Dugal Park, and Fontainebleau Park. These provide means of cooling during periods of extreme heat.

Brownfields

Brownfield properties are vacant or underutilized locations where past industrial or commercial activities may have left contamination behind. A clean-up is planned for a property at 1370 Argyle Road which is listed on the Municipal Heritage Register. This redevelopment will reuse the facade of the former building. In 2021 Council approved 11 applications under the Brownfield Redevelopment CIP, which includes:

- Redevelopment of 7.18 hectares (17.7 acres) of land that is located within the built up area of the City where infrastructure already exists
- 657 new residential units (if all projects are constructed as proposed)
- $640,178 in grant payments over the lifecycle of the grant programs
- Approximately $22M in private sector investment

Tranby Park

The Tranby Park Project was designed to improve community acceptance of naturalization programs as well as use the park for short-term rainwater storage. Features include pathways, landscaping, tree planting native planting area, as well as a new wetland-themed play structure that reflects the goal of integrating nature, infrastructure, and human use.

Tree Planting Events

- Earth Day Community Tree Plantings in 2017, 2018, 2019, and 2023
- Tree Planting at Tranby Park with ERCA, Little River Enhancement Group and Forest Ontario
- Native garden planting at Queen's Dock Park with the Windsor Port Authority, ERCA and DRCC, 2017
- Bush Park Planting in celebration of Canada150 with ERCA, DRCC, Little River Enhancement Group and Ahmadiyya Muslim Group, 2017
- TD Tree Day with ERCA, DRCC and Little River Enhancement Group, 2018
- Maryvale tree planting with ERCA, DRCC and IKEA, 2019
- College Avenue Bikeway Park community tree planting with Windsor Detroit Bridge Authority and ERCA, 2021

Cleanup Efforts

Between 2017 and 2021 the City worked with the following partners on three cleanup efforts, removing at total of 8.2 tonnes of trash from our natural areas.

The City worked on Little River Cleanups with Caesars Windsor CodeGreen, ERCA, DRCC and the Little River Enhancement Group in 2018 and 2019.

Sandwich Litter Cleanup with DRCC, ERCA, Windsor Detroit Bridge Authority in 2021 (2 occasions)

Goal C: Responsible Land Use

Stewardship

Riparian Rangers Tree Health Citizen Scientists Program training session with ERCA and the DRCC, 2018 and 2019. The City's Natural Areas' Team is increasing presence in natural areas in the City to remove litter, conduct ecological monitoring, and identify stewardship actions that will benefit the ecological condition of natural areas.

Bird Friendly City

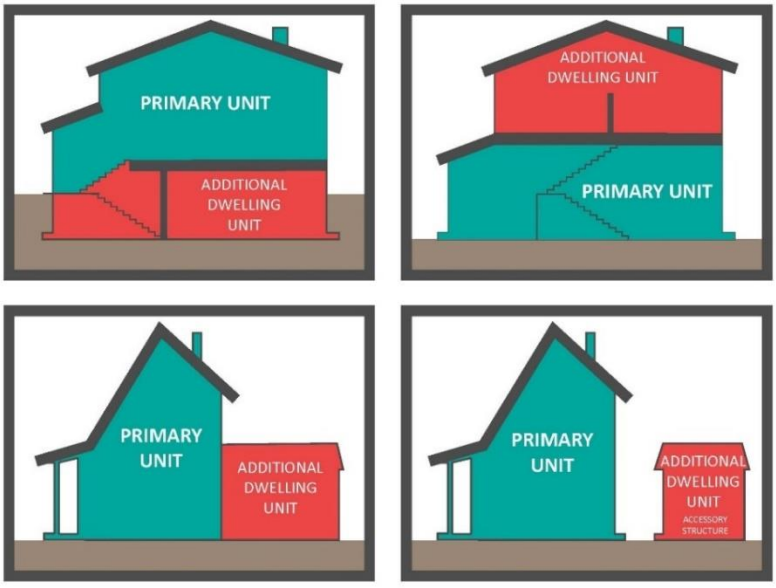
In June of 2022, Windsor was designated the 16th Bird Friendly City in Canada. This designation was developed by Nature Canada to ensure that urban environments are safe havens for birds rather than a source of threats. Windsor received the intermediate certification level, which reflects efforts to reduce threats, protect habitat, address climate change and attempt to reduce the population declines that have been happening in cities all over the world.

Sustainable Neighbourhood Action Plan (SNAP) Sandwich South

In 2022 the City received grant funding to develop a Sustainable Neighbourhood Action Plan for the Sandwich South area. The project is currently under development.

Alternative Housing Units

In 2023, the Planning Department updated the land use policies for Additional Dwelling Units (ADUs) with a goal to increase population density and provide affordable housing options for residents. These Additional Dwelling Units (ADUs), are defined as self-contained residential units with kitchen and bathroom facilities within dwellings or accessory structures. Alternative housing options have been gaining support in recent decades and may present a sustainable approach to help tackle some of the pressing housing issues facing municipalities such as affordable housing and environmental concerns.



Goal C: Responsible Land Use

Areas to Move Forward

- Develop stronger protections for trees and natural areas in locations that are part of new developments;
- Increase the number of community gardens and pollinator gardens on City property;
- Continue to work with the Windsor Essex County Health Unit on the Food Strategy;
- Support native plant/pollinator and community gardens through community partnerships;
- Complete a Natural Asset Management Plan including an inventory and valuation of the City's natural assets;
- Naturalize underutilized lands to the extent possible and continue to explore native plant/ pollinator gardens in city parks;
- Complete Phase 3 of the Ojibway Parkway Wildlife Crossing Municipal Class EA to develop and evaluate alternative concepts and identify preferred design;
- Complete the Urban Forest Management Plan;
- Continue to double the number of trees planted annually in the public right-of-way;
- Incorporate climate change and land use considerations into the City's Official Plan;
- Incorporate levels of service and infrastructure/asset cost land use implications into the City's Official Plan;
- Complete Landscape Manual;
- Update Brownfield Redevelopment Community Improvement Plan;
- Develop a coordinated approach to invasive species management, specifically phragmites;
- Conduct an assessment of the current state of Windsor's Greenway System Linkages by performing a Landscape Analysis;
- Set acquisition targets for the Greenway system;

Goal C: Responsible Land Use

- Prepare Management Plans for Greenway System components and individual sites;
- Complete Sustainable Neighbourhood Action Plan (SNAP) for Sandwich South area.

Goal D: Increase Resource Efficiency

Indicators

In 2014, the Windsor community spent over $842 million dollars on energy. Buildings use about half of the total energy in Windsor. Windsor's energy use per household was 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.

Energy Consumption - Corporate

Corporately, city buildings also use about half of the corporation's energy use, with heating and cooling requirements representing the largest sources of energy consumption. The figures below represent Corporate, City of Windsor energy consumption.

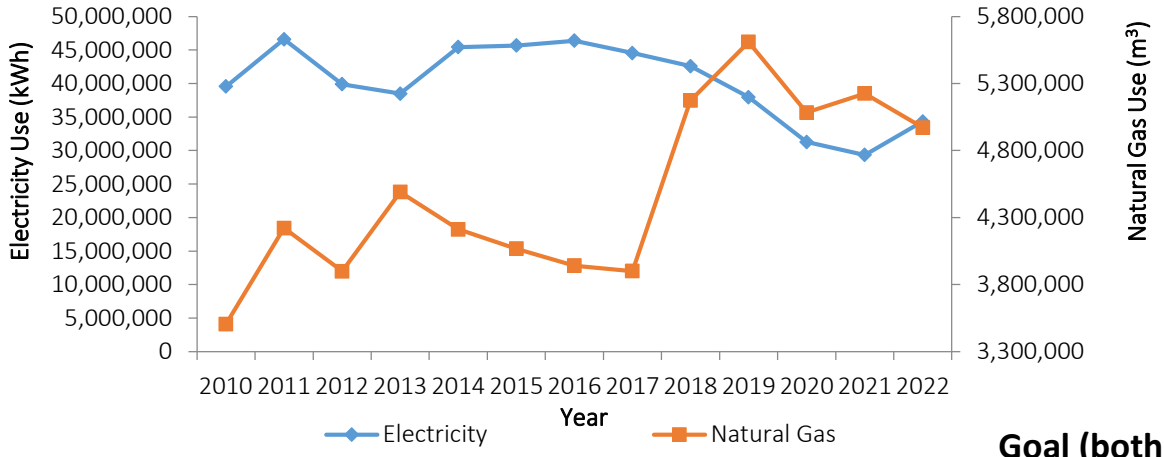


Figure 4.1a - Corporate Energy Consumed by Buildings - Electricity and Natural Gas

Goal (both) ↘

Electricity Trend ↘

Natural Gas Trend ↗

Note: Significant increase in natural gas consumption between 2017 and 2019 corelates to the Implementation of Combined Heat and Power (CHP) units at WFCU, Huron Lodge, and Aquatic Centre facilities, which resulted in decreases electricity consumption, while increasing natural gas consumption. When implemented, the provincial government provided incentives to support installation.

Note: 2020 Aquatic Centre and Chimczuk museum closed due to COVID-19 pandemic.

Chimczuk Museum, the Aquatic Centre, the Joint Justice Facility, 350 and 400 City Hall are connected to a District Energy System. Modern District Energy systems use a network of insulated pipes to deliver heating and cooling efficiently and reliably 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. The goal is to expand the district energy system to additional buildings as applicable.

While corporate electricity use is declining, natural gas use is increasing, primarily due to the acquisition of new assets. This trend is strongly tied to corporate emissions.

Goal D: Increase Resource Efficiency

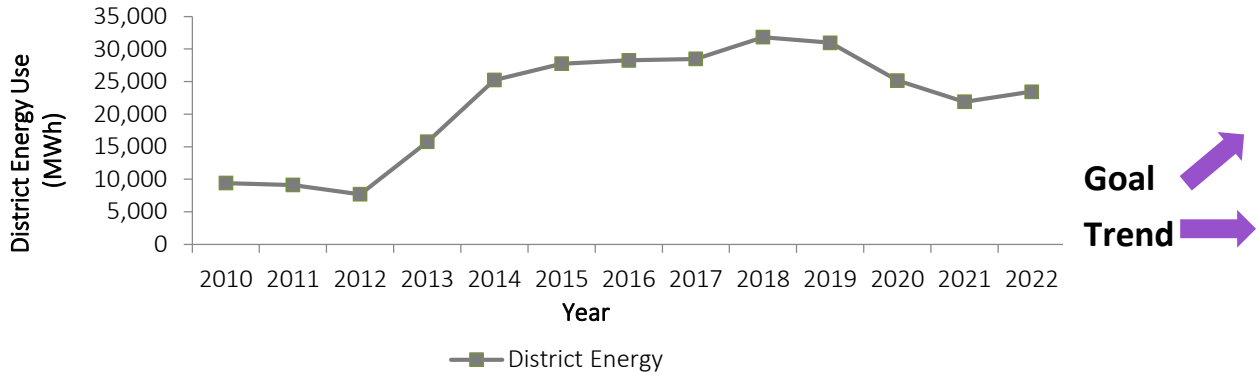


Figure 4.1b - Corporate Energy Consumed by Buildings - District Energy

Note: 2020 Aquatic Centre and Chimczuk museum closed due to COVID-19 pandemic.

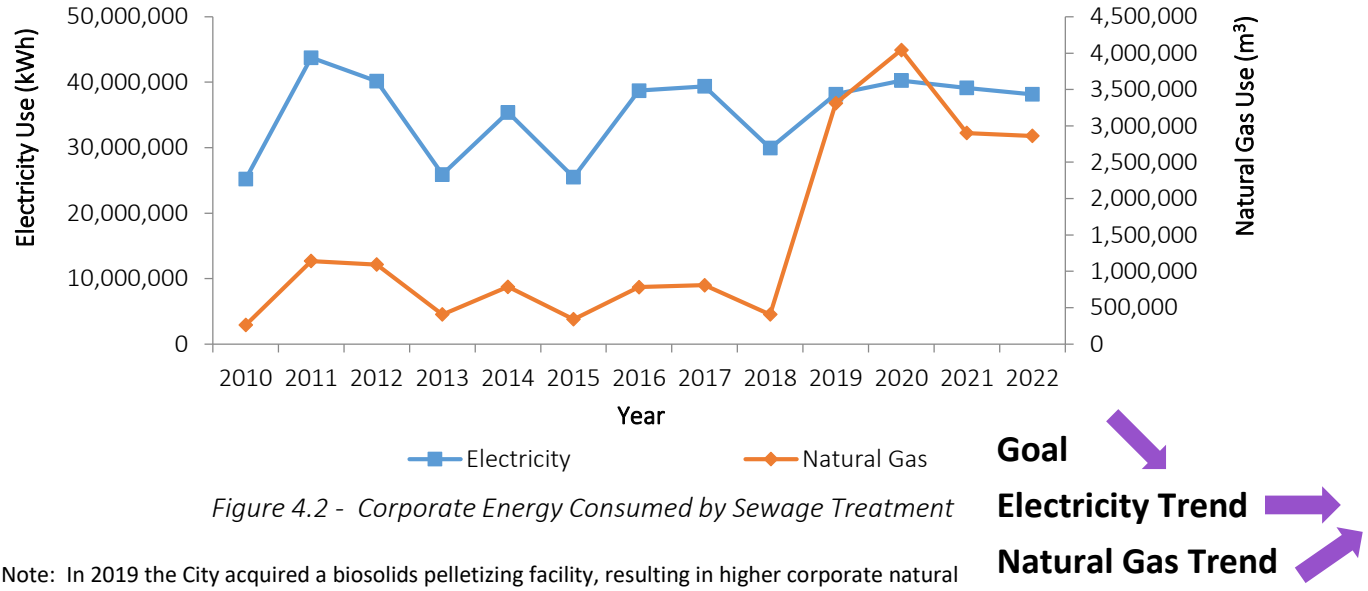


Figure 4.2 - Corporate Energy Consumed by Sewage Treatment

Note: In 2019 the City acquired a biosolids pelletizing facility, resulting in higher corporate natural gas consumption for drying processes. Also, in 2019 and 2020 high water levels in the great lakes resulted in higher amounts of wastewater due to high ground water levels and system infiltration.

Goal D: Increase Resource Efficiency

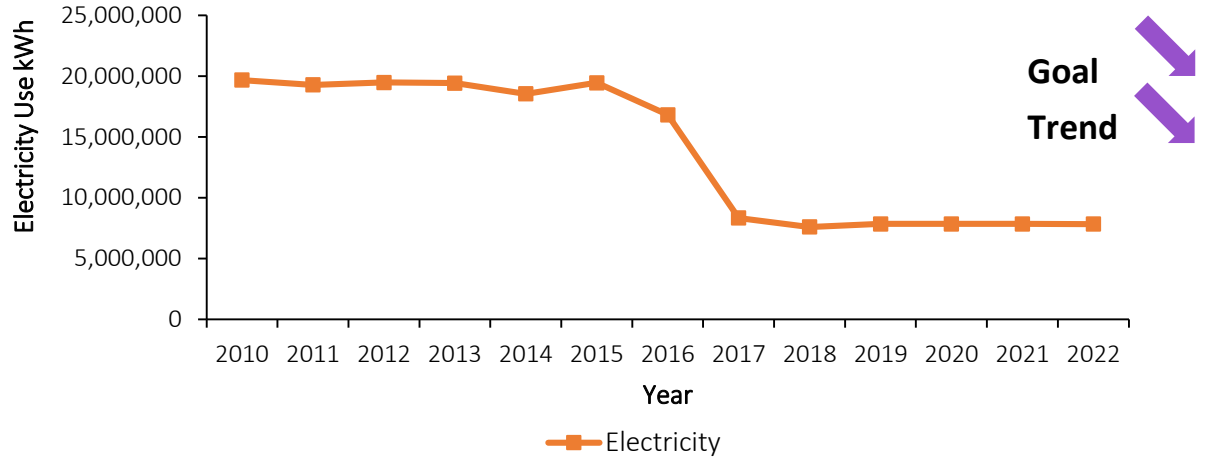


Figure 4.3 - Corporate Energy Consumed by Streetlights & Traffic Signals

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 extends the life of the landfill.

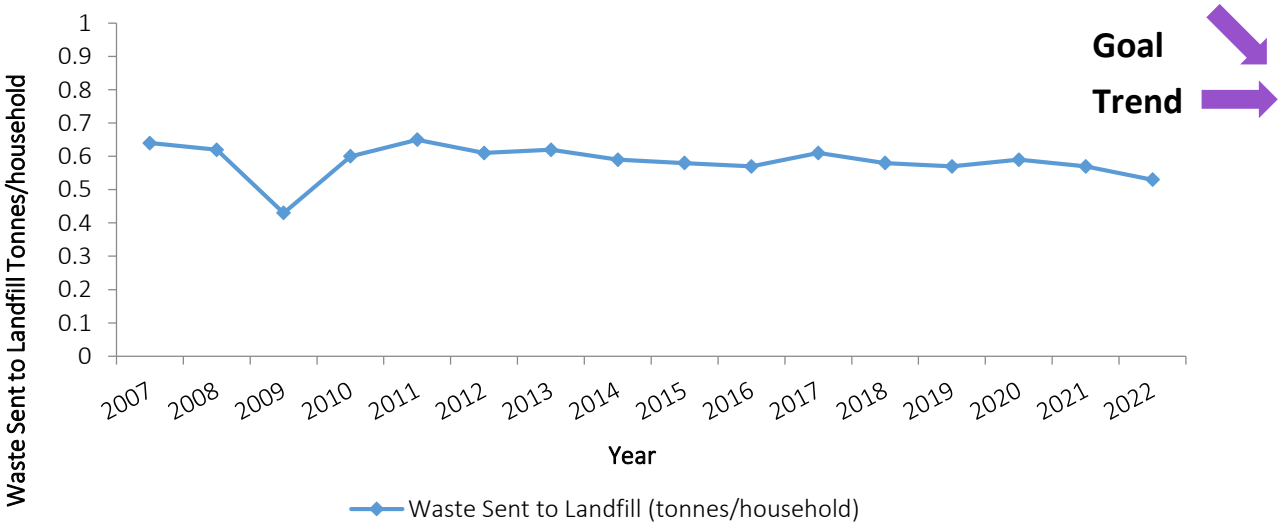


Figure 4.4 - Amount of Waste Sent to Landfill

Goal D: Increase Resource Efficiency

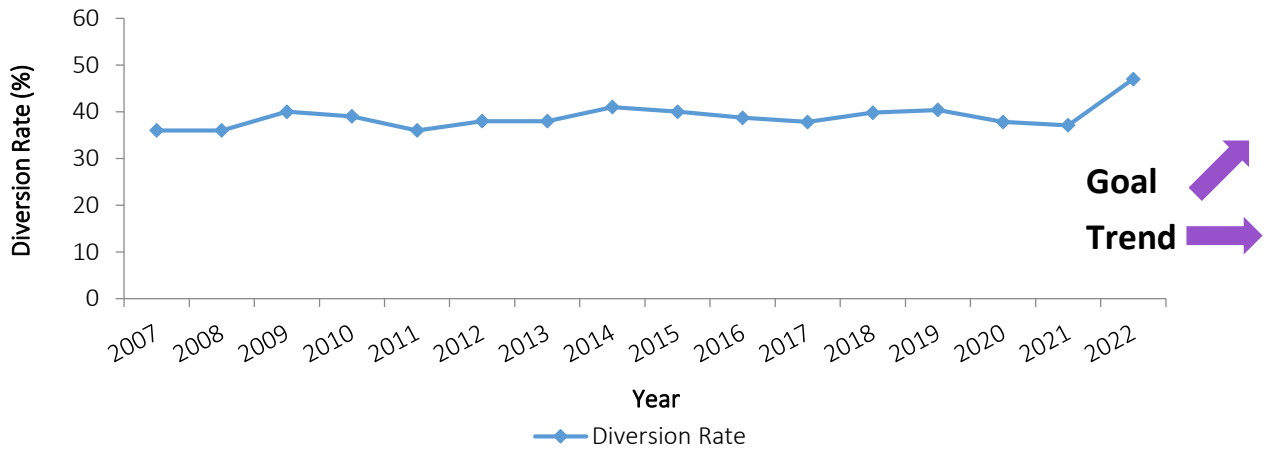


Figure 4.5 - Percentage of Solid Waste Diverted from Landfill

* In 2009 a unionized worker strike occurred and garbage pickup 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.

Corporate 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.

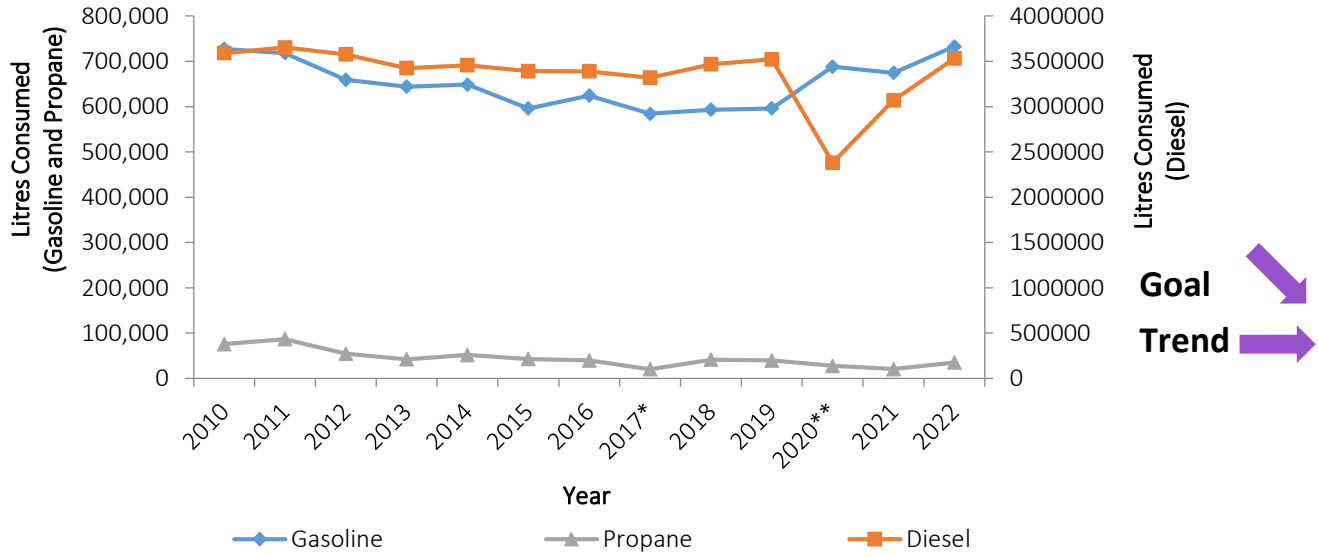


Figure 4.6 - Corporate Fuel Consumption by Type

No longer track long distance vehicle use.

* 2017: The City reduced the number of garbage packers due to contracting of garbage operations.

** 2020: buses at reduced service due to COVID-19 measures.

Goal D: Increase Resource Efficiency

Corporate 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 separately 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.

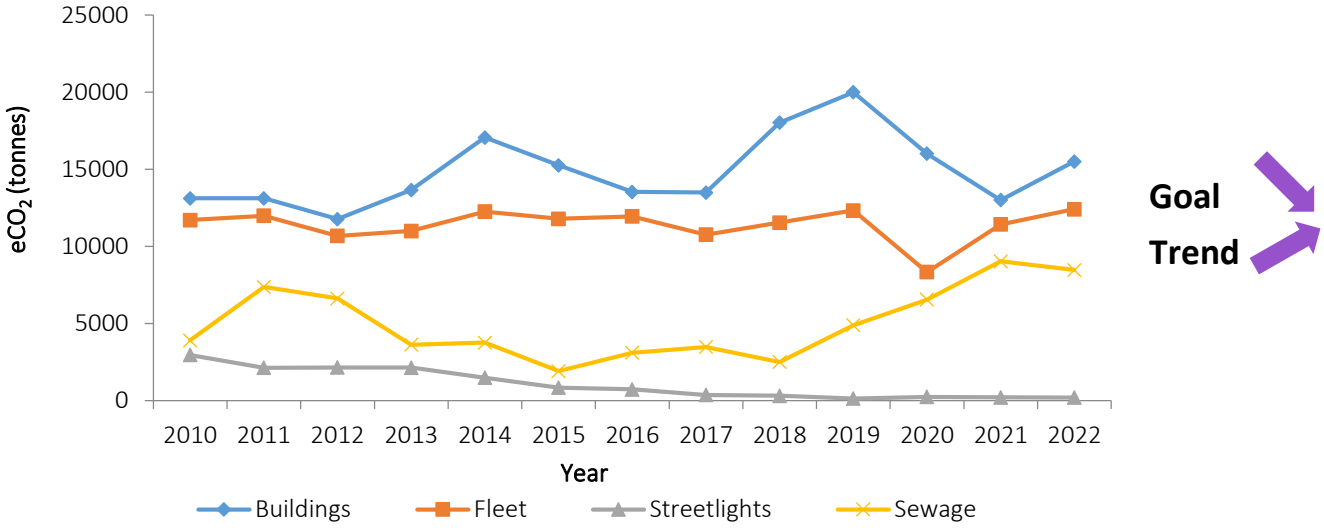


Figure 4.7a - Corporate Greenhouse Gas Emissions

* 2019-2020 values due to decreased activity during COVID-19 pandemic.

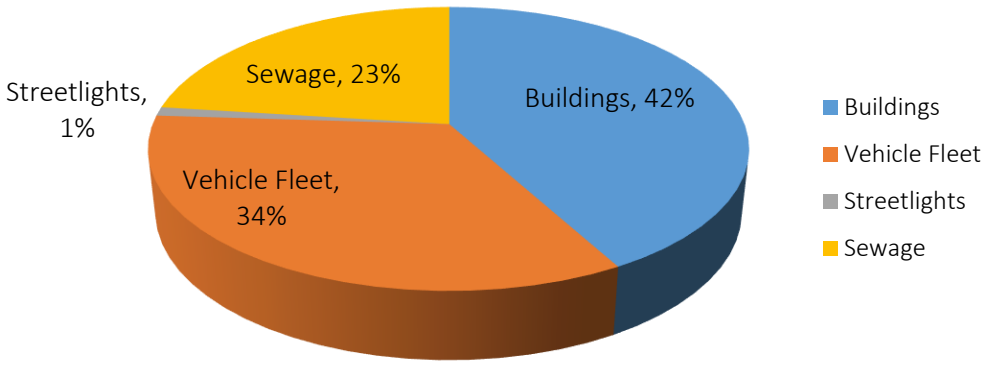


Figure 4.7b - 2022 Corporate Greenhouse Gas Emissions by Sector

Goal D: Increase Resource Efficiency

Community Greenhouse Gas Emissions

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 realized 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.

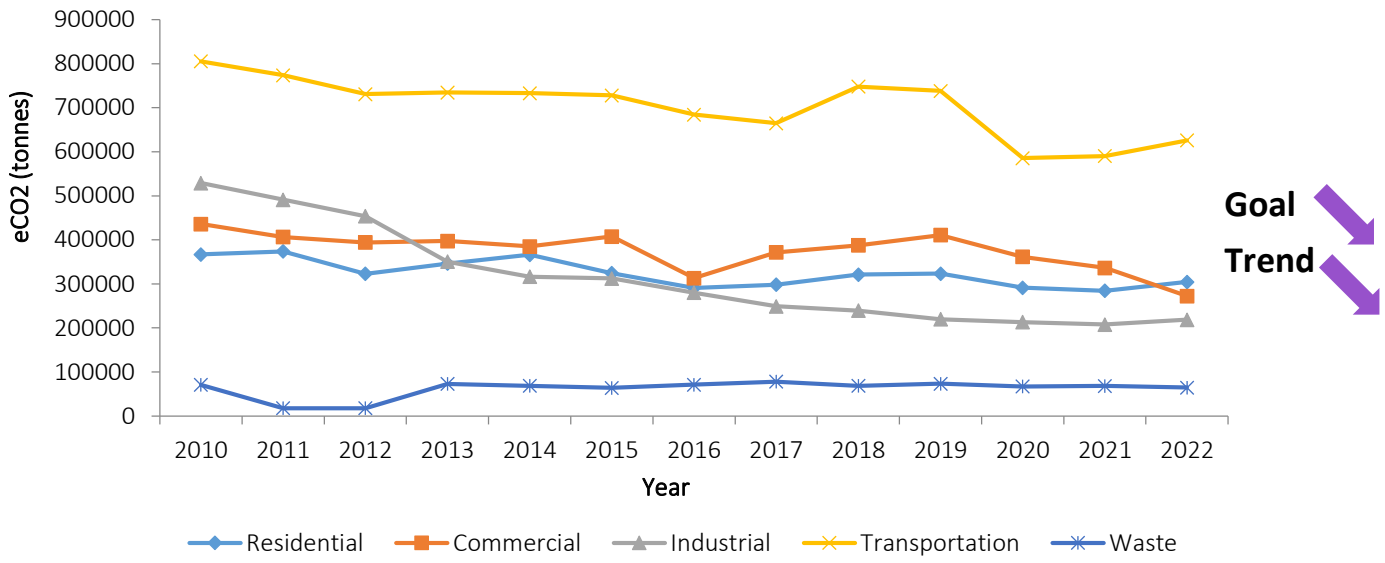


Figure 4.8a - Community Greenhouse Gas Emissions

* 2020: The industrial sector value was adjusted manually.

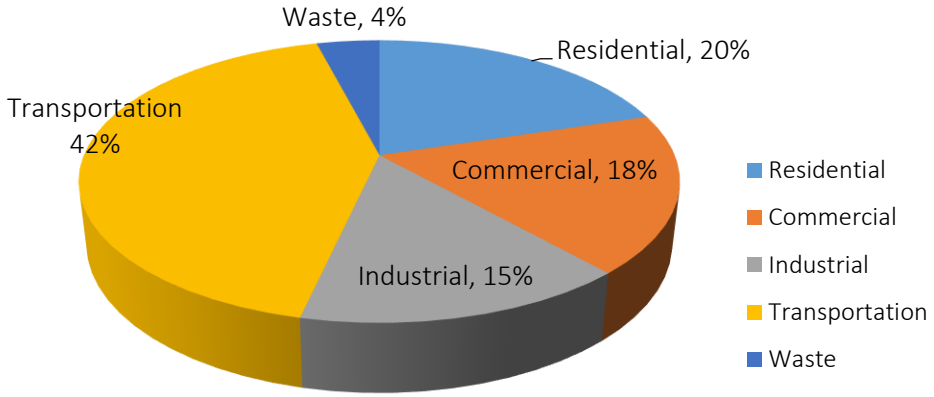


Figure 4.7b - 2022 Community Greenhouse Gas Emissions by Sector

Goal D: Increase Resource Efficiency

City of Windsor Initiatives

LED Building Conversion

City of Windsor is implementing an LED conversion project in 32 of its largest buildings. The implementation started in 2018 and is scheduled to be completed by early 2025. The project will reduce energy (electricity) consumption by approximately 3.8 million kWh resulting in operational saving of approximately $550,000/year, at an expected capital cost of $3.6 million.

WFCU Center Upgrades

The WFCU Center implemented a number of significant upgrades between 2015 – 2018, including: automated ice plant controls, LED lighting conversions in the main spectator bowl and community arenas, a new dehumidification system, and the installation of an 800 kW combined heat-and-power system (CHP). These projects reduced electricity consumption by approximately 5.1 million kWh at a net capital cost of $3.2 million, resulting in operational savings of over $510,000 per year.

In addition, a 500 kW PV solar array was installed in 2016. Annual revenues from the generation of renewable electricity amounts to approximately $240,000.

Asset Management

In 2017 the City of Windsor updated the City's Asset Management Policy and Framework to include climate change considerations. The 2019 Asset Management Plan notes that efforts are continually being made to include the information and recommendations of the Community Energy Plan, Corporate Climate Action Plan and Climate Change Adaptation Plan in the City's various asset management practices and strategies.

Integrated Site Energy Plan for Wastewater Facilities

The City received funding through the FCM Municipalities for Climate Innovation program to complete a feasibility study into carbon-neutral operation of Windsor's two wastewater treatment plants. Investigation focused on the use of wastewater sludge with an anaerobic digester for the generation of renewable natural gas.

Deep Energy Efficiency Retrofit Business Case

A detailed feasibility study has been completed to determine a strategy to proceed with a Deep Energy Retrofit Program for 80% of Windsor homes by 2041. This voluntary program was proposed to offer homeowners standardized home retrofit packages to address areas of high energy consumption in homes (water heaters, heating, insulation, windows, etc.) to achieve energy cost savings and fundamentally enhance building value. In 2021, the Deep Energy Retrofit Program (DEER) received Community Efficiency Financing funding to undertake a detailed program design, and progress is underway.

Recycling Building Materials

The demolition of City Hall in 2019 provided an opportunity to divert construction waste from landfill to be repurposed for other uses. The process was developed with an overall goal to divert no less than 85%

of the solid demolition materials from the landfill. Overall, approximately 97% of non-hazardous solid waste was diverted by means of reuse and recycling initiatives. This high diversion rate is directly related to the use of high weight concrete as fill material on site, as well as the recycling of brick, asphalt, steel and miscellaneous metals. The percentages and total weights of the nonhazardous solid waste reused, recycled, and landfilled for the project are as follows:

- 62.6% reused (5,100 tonnes)
- 34.5% recycled (2,814.19 tonnes)
- 2.9% landfill disposal (234.32 tonnes)

The shade structure at Jackson Park West provided another opportunity to reuse building materials. The City demolished the existing washroom but kept its steel structure, then hired a civil engineer to modify the footing to give the shelter more height before a design team created new facades and added paint. The roofing material was also reused from the old restroom.

Other smaller examples include the use of electrical panels or swipe card activators, which were removed and repurposed at other municipal locations. Some of the swipe card activators from the old City Hall are now are now installed at Willistead manor.

Using Solar PV to Power Windsor's Bus Stops

New Transit Windsor bus shelters have integrated solar PV panels for generation of energy required to provide lighting. The City currently has 196 shelters with solar power.

Climate Lens

In response to the Climate Change Emergency Declaration, administration was asked to identify actions to embed climate change into everyday decision making. One of the early wins was to add a climate lens section on City Council reports. This simple action allows administration to consider climate change risk and opportunity early in the project development process. City Council and the public are kept informed of climate risks and opportunities as projects are implemented.

Net Metering Photovoltaic Rooftop Project

In 2021 City Council approved the installation of net-metered Photovoltaic Rooftop Systems at 11 municipal facilities. Net-metered PV systems utilize electricity onsite and send surplus generation to the electrical grid to earn credit towards electricity costs at the same facility. The cost savings over the life of the project are estimated at $4.44 million, while contributing to the reduction of GHG emissions and helping the City of Windsor reach its emission targets.

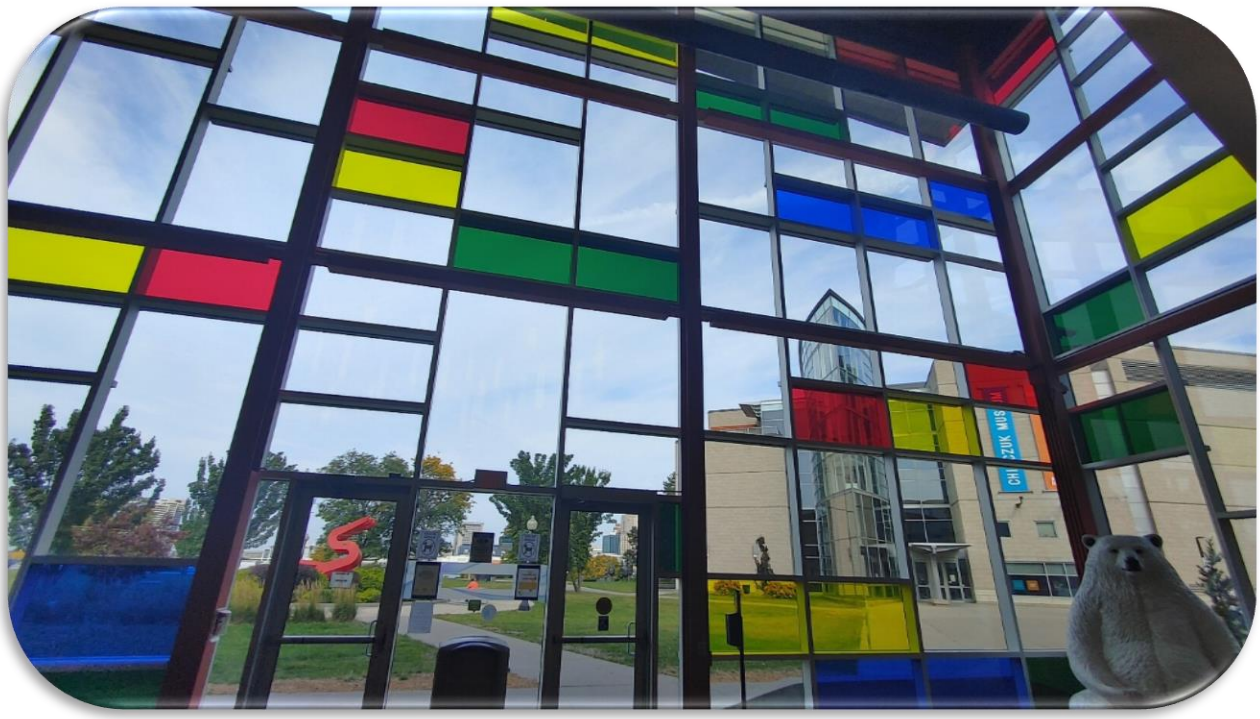
Large-scale Battery Storage

The City has recently completed a Battery Storage Feasibility Study to evaluate the potential for electricity savings and enhanced reliability at the Lou Romano Water Reclamation Plant and Little River Pollution Control Plant. 1 megawatt and 0.5 megawatt systems have been characterized to lower peak electricity demand, reduce electricity commodity charges, and participate in provincial programs for electricity demand response. Administration is currently evaluating technologies and vendors for these possible battery storage projects.

Goal D: Increase Resource Efficiency

Updated Sustainable Procurement Guide

The updated Sustainable Procurement Guide will be made available on the City website in 2024. This guide can be used by employees of the City and by the general public. Corporate Purchasing Bylaw Training will touch upon sustainable purchasing and copies of the guidebook will be distributed during the program. The guide aims to increase awareness of the costs and environmental consequences of various products throughout their lifecycle.



Goal D: Increase Resource Efficiency

Areas to Move Forward

- Implement the Community Energy Plan to reduce community energy and emissions;
- Implement the Corporate Energy Management Plan and Corporate Climate Action Plan to reduce corporate energy and emissions;
- Develop a municipal re-use policy to reuse existing buildings and materials in core areas;
- Develop green building standards for new development;
- Continue to develop the organics collection program for 2025 and advocate for a long-term organics management strategy such as anaerobic digestion, which can generate renewable natural gas;
- Continue to educate residents and business owners on best waste management practices (littering, recycling and composting);
- Investigate a corporate standard for recycling receptacles and education throughout the corporation as well as at public facilities;
- Update the Community Energy Plan to reflect new science-based targets and a net-zero 2050;
- Implement Economic Development opportunities to encourage Green Job creation and retention;
- Enhance Climate Lens guidance to better support departmental decisions;
- Include climate lens screening as part of the capital budget process;
- Further develop opportunities for Life-Cycle Costing analysis to include consideration of operational energy and carbon costs;
- Create opportunities to support the Low Carbon Economy transition;
- Institute a centralized recycling program for pens and batteries in City buildings.

Goal E: Promote Awareness

Indicators

Web-Based Outreach

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.

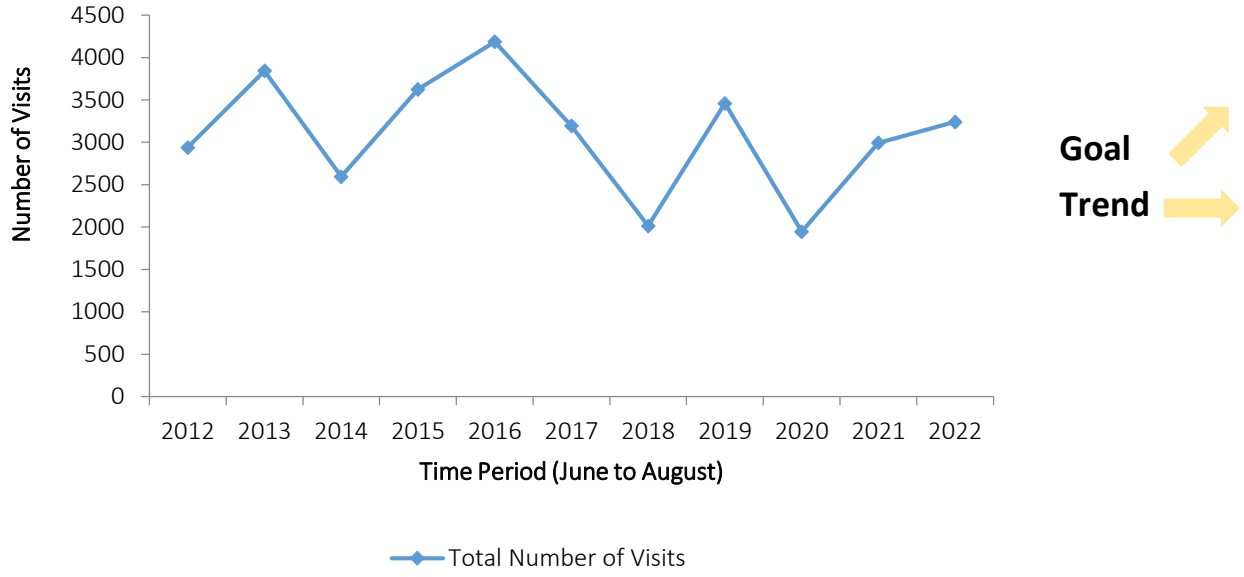


Figure 5.1 - Number of Visits to the Environmental Master Plan Website (Environment (citywindsor.ca))

Attitudes toward the Environment

A key component of the Environmental Master Plan is the accompanying public survey. The responses gathered help gauge the public's opinion on environmental issues, City initiatives, and the popularity of certain strategies among other things. Since 2005, the Environmental Attitudes Survey has helped the City better understand and assess residents' current attitudes and opinions about Windsor's environment.

Since participation is optional, the residents who choose to take part in the survey do not represent a truly random sample. To help understand potential biases, some of the survey questions ask about respondents' educational backgrounds, household incomes, ethnic background, and number of people in the household. The demographics of the survey participants can be summarized as follows:

- Over 80% of respondents do not identify as a member of a visible minority group.
- 55% of respondents only have 1 or 2 people in their household.
- 67% do not have any children under the age of 18 living in their household.
- Over 46% of respondents were a college or university graduate and 29% had a graduate degree. Together that totaled over three quarters of respondents.

- Almost 60% of respondents that answered had a gross annual household income of at least $75,000.
- Participation from each ward was achieved, with the lowest participation from Ward 8 (2.8% of respondents), while the highest participation was from Ward 4 (24.3%). 10.7% of the respondents were unsure as to which Ward they live in.

To encourage participation in the survey, Administration attended a number of venues and events, including: Earth Day, the Windsor Home Show, Devonshire and Tecumseh Malls, community centres and libraries.

A summary of the results can be found in the following table.

Table 5.2 – Top Three Environmental Concerns Voices by Windsor Residents

	Top 3 concerns (2005)	Top 3 concerns (2011)	Top 3 concerns (2017)	Top 3 concerns (2023)
1.	Air Quality	Air pollution/quality	Air Quality	Air Quality
2.	Water Quality	Pollution	Pollution	Land Use Planning
3.	Road Congestion	Water pollution/quality/water supply	Ojibway Nature Complex	Natural Areas

How high of a priority should environmental protection be?

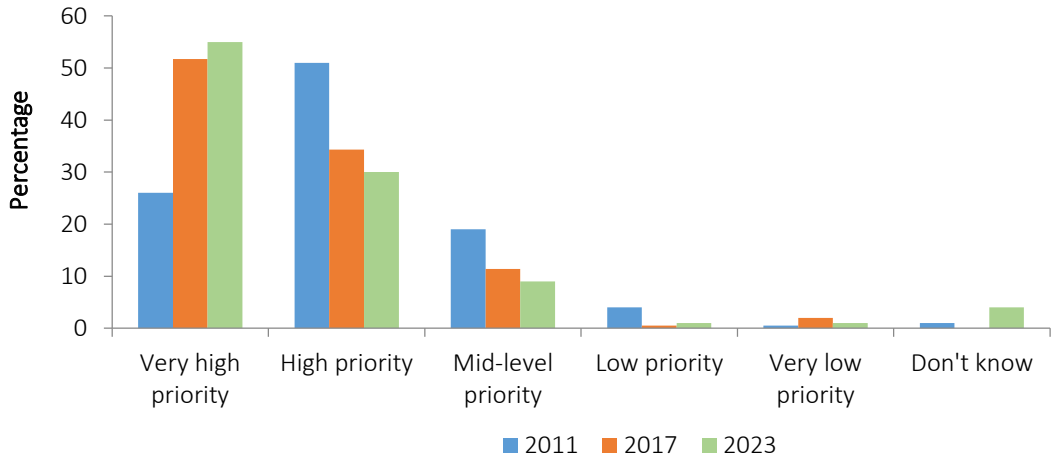


Figure 5.3 - Compared to all of the issues facing the City of Windsor today, how high a priority do you think local leaders should place on preserving and protecting the local environment?

85% of those surveyed answered that they think local leaders should place a high or very high priority on preserving and protecting the local environment.

Goal E: Promote Awareness

Overall perception of environmental quality

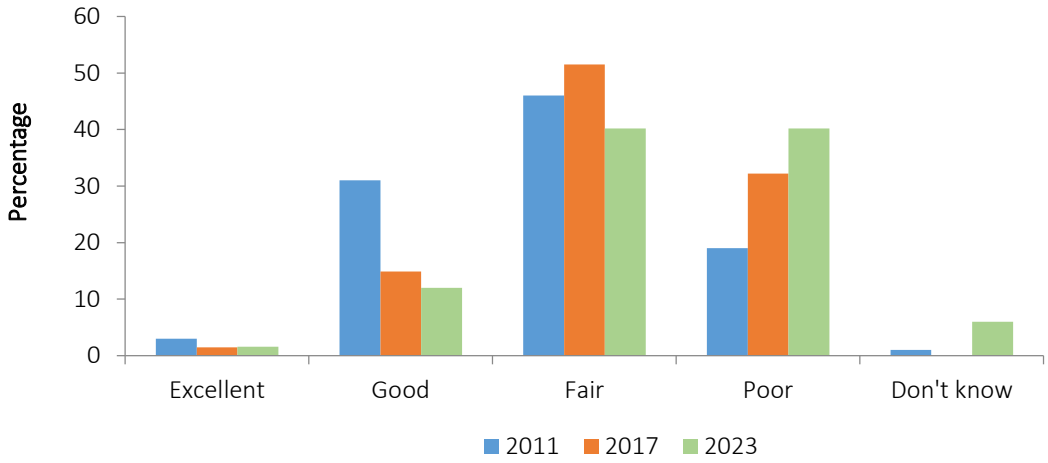
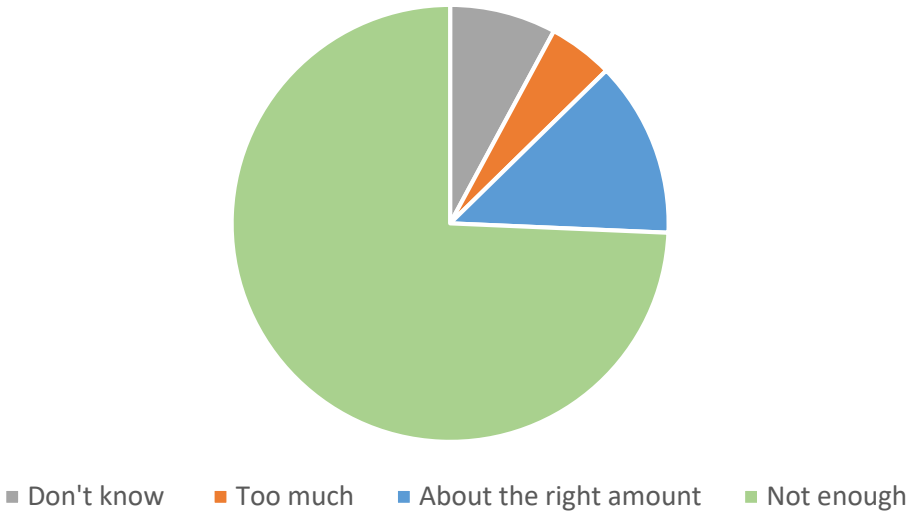


Figure 5.4 - How would you rate the overall quality of the environment in the City of Windsor today?

80% rated Windsor's overall quality of the environment as fair or poor. Only 5 respondents answered that was excellent.

Perception of the City of Windsor's allocation of resources for environmental preservation and protection

Figure 5.5 - 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:



Goal E: Promote Awareness

Open-ended Question:

What environmental changes or improvements would you like to see the City of Windsor focus on in the future?

Many respondents answered that they would like to see improvements in the public transportation system, with extra bus routes, more multi-use trails, and an emphasis on car-pooling. Bike lane buffers and wider sidewalks were also suggested.

Another popular answer was for the creation of an organic waste management system that would include a comprehensive composting program.

Air Quality is a growing concern for residents. Many request stronger regulations on industrial emissions and increased monitoring of pollution.

In summary, the citizens of Windsor envision a future where commuting is sustainable and efficient, public transit is accessible and well-developed, organic waste is properly managed through composting, traffic flow is reduced, renewable energy is embraced, land use is optimized, and green spaces are expanded. These collective aspirations reflect the community's commitment to building a greener and more livable city for the future.

Awareness of Environmentally Related Programs

As part of the Environmental Attitudes Survey, questions were included to gauge participants' knowledge of existing environmental plans and programs. The success of any environmental initiative is dependent on the knowledge and understanding of it by the community.

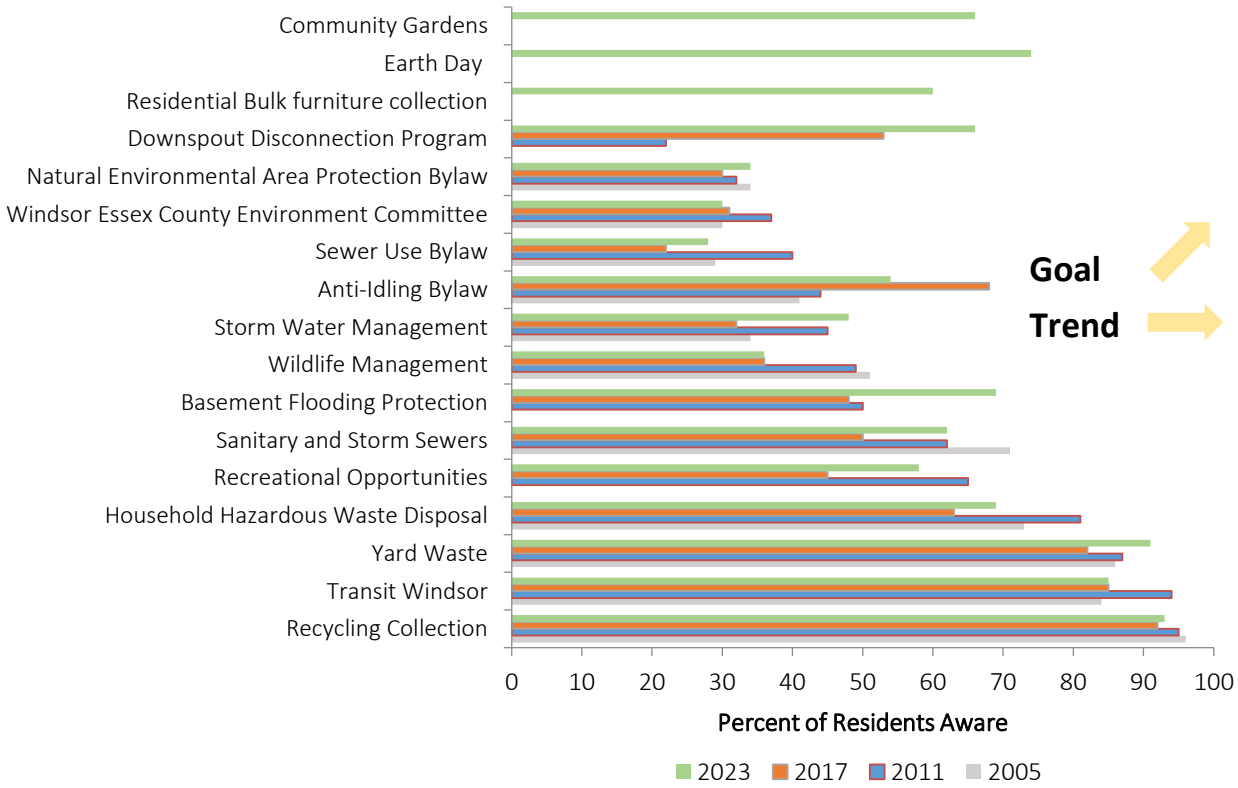


Figure 5.6 - Windsor Resident's Awareness of Environmental Programs

Goal E: Promote Awareness

Most respondents were aware of the City's Recycling collection, Yard Waste collection and Transit Windsor. The lowest levels of awareness where for the Windsor Essex County Environment Committee, the Sewer use bylaw, and the Natural environment protection bylaws.

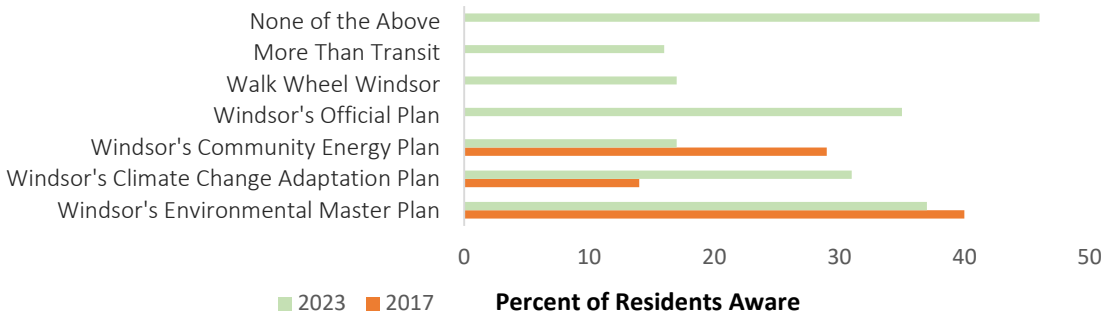
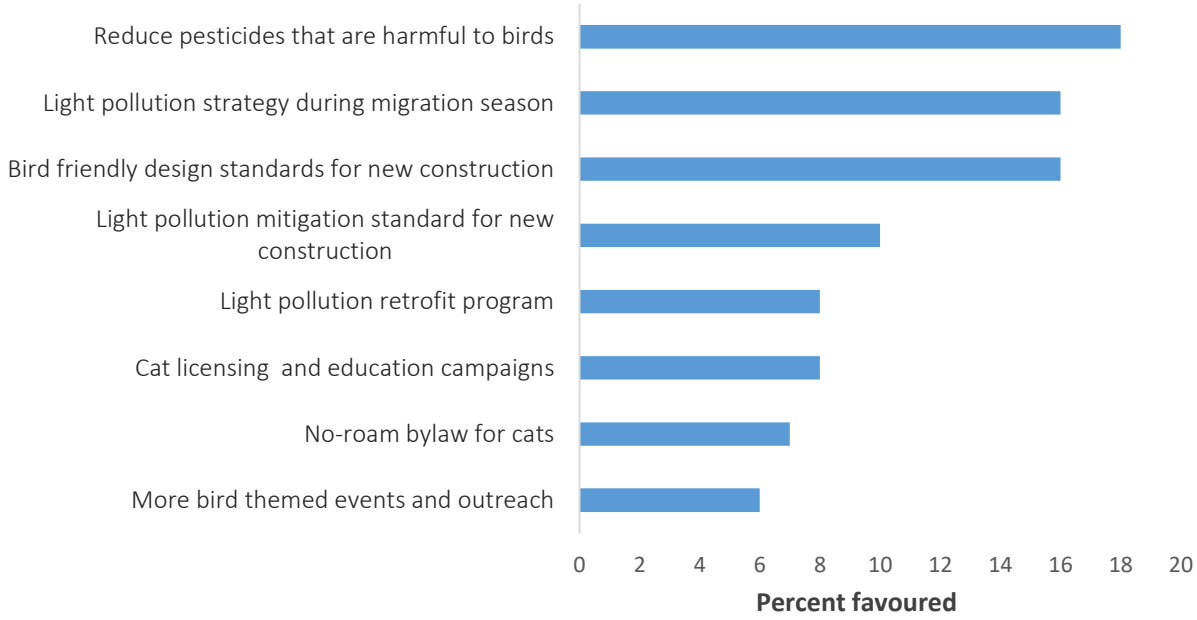


Figure 5.7 - Windsor Residents' Awareness of City's Plans

46% of respondents were not aware of any of the City Plans related to environmental protection.

Bird Friendly City Initiatives

In 2022, the City of Windsor became a Bird-Friendly City. The environmental attitude survey provided a good opportunity to determine resident's priority strategies as a Bird-Friendly City.



Firgure 5.8 Windsor Resident's Prioritization of Bird Friendly City Strategies

The most popular bird-friendly criteria that respondents would like to see the City focus on is bylaws that reduce or eliminate non-essential pesticide use that directly or indirectly harms birds.

Goal E: Promote Awareness

Climate Change planning strategies

When asked if the City of Windsor should make climate change planning a priority 76% of respondents believed that it should. The following identifies the strategies that residents feel should be prioritized when addressing climate change mitigation.

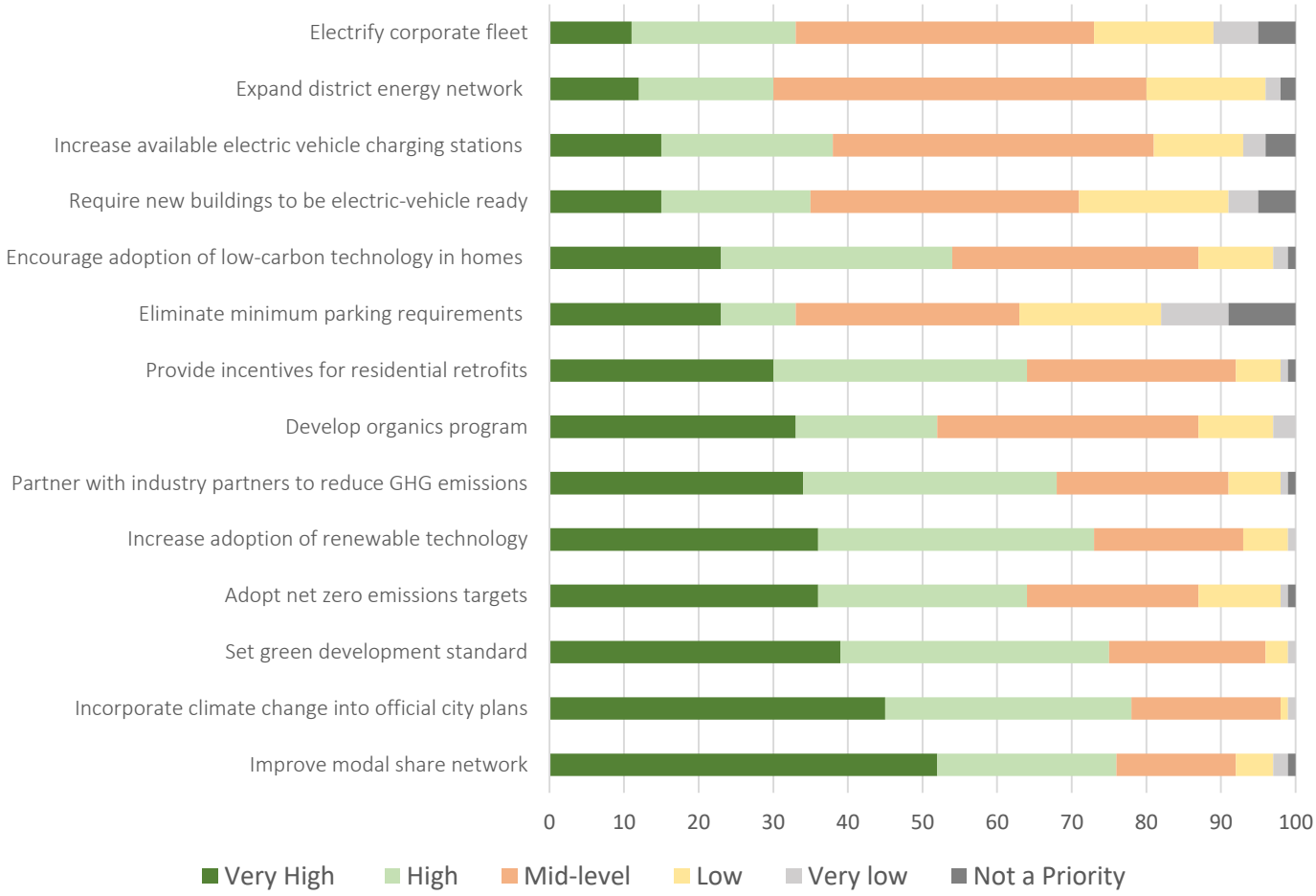


Figure 5.9 - Windsor Resident's Prioritization of Climate Change Planning Strategies

The most popular Climate Change Planning strategy was improving the model share network (i.e. transit, cycling, walking).

Goal E: Promote Awareness

Open-ended Question:

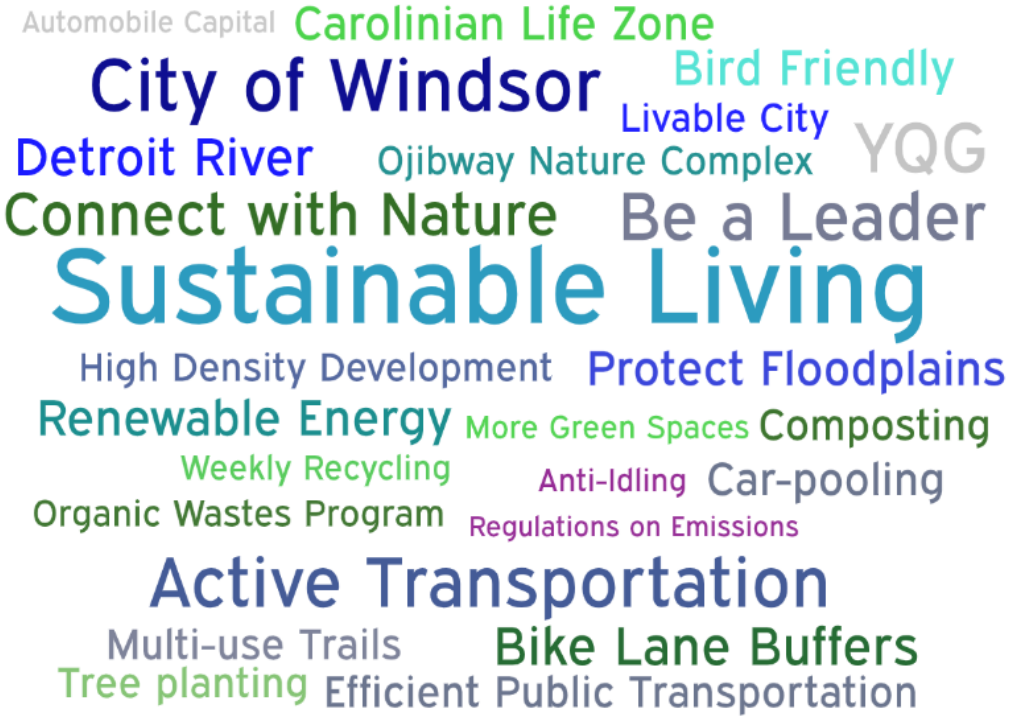
Are there any other comments or concerns you would like to share?

Here Windsor residents shared their concerns regarding the City's environmental plans. The lack of awareness of the City's efforts to combat climate change has many residents feeling disconnected. This has fostered frustration about the contradiction of striving to reduce emissions while investing in automobile infrastructure. Many residents strongly support a shift to more sustainable modes of transportation.

Many concerns centered on the lack of greenery. Additionally, many residents vocalized their apprehension and discontent with construction on floodplain land. A push for decreasing urban sprawl by establishing high density areas surrounding critical infrastructure, such as hospitals were among other concerns. Windsorites have expressed their disillusionment in City leadership due to the lack of tangible progress despite the existence of plans and initiatives. Protecting the land and improving air and water quality are common sentiments residents feel are impossible without an increase in staff and resources that rival other Ontario municipalities. The public would like to see improved community involvement and engagement initiatives that prioritize interaction with nature and build an emotional connection to environmental preservation.

Additional suggested strategies include maximizing the use of pollution-remediating plant life, bird friendly initiatives, park maintenance, sidewalk refurbishment, biweekly garbage collection, weekly recycling and compost pickup and ticketing idling vehicles. The concerns raised by Windsor residents highlight the importance of educational public outreach in a city where locals are enthusiastic about the shift to sustainable living.

The following word cloud illustrates the themes expressed by the respondents. The larger the word, the more often it was included in the responses.



Goal E: Promote Awareness

City of Windsor Initiatives

Global Covenant of Mayors Canada Showcase Cities

Windsor was one of Twenty-five Canadian municipalities selected to join the first Showcase Cities cohort led by the Global Covenant of Mayors for Climate and Energy Canada. Over the next year, these municipalities will receive intensive support to help reduce their greenhouse gas emissions and adapt to climate change. Municipalities are on the front lines of climate change, and through this pilot project which includes technical support, training, exclusive networking opportunities and access to tools and resources, each municipality will advance their ambitious climate action objectives.

Earth Day Events

First celebrated in the US in 1970. Earth Day now focuses on a different annual theme, and includes events in more than 193 countries. Since 1989, Windsor Essex has hosted an exciting Earth Day event full of activities for residents of all ages and interests. The following themes since 2018 include:

- **2018 End Plastic Pollution**

In addition to on-site displays and activities, the City held a "this" instead of "that" contest that asked participants to send a photo and short paragraph describing how they reduce single-use plastic waste for a chance to win a prize bundle consisting of reusable produce bags, reusable straws and beeswax wrap.

- **30 Year Celebration**

In 2019, the 30th anniversary of Windsor's Earth Day Event was celebrated. The theme was Species at Risk and our dependance on healthy ecosystems.

- **2020 Climate Action (cancelled due to COVID-19)**

In 2020, the annual Earth Day celebration at Malden Park had to be cancelled due to Covid-19 safety restrictions.

- **2021 Restore Our Earth (Virtual)**

This year, celebrations were hosted as a digital event due to current COVID-19 restrictions. A Virtual Earth Day Scavenger Hunt was offered in partnership with the Essex-Windsor Solid Waste Authority (EWSWA) and the Essex Region Conservation Authority (ERCA). The City teamed up with the GooseChase App to combine a scavenger hunt and the latest in smartphone technology to discover local actions that contribute to a healthy, sustainable Windsor-Essex all from the safety of your home, backyard, or neighbourhood. Participants learned through fun "missions" on environmental themes including waste diversion, biodiversity, climate change, active transportation, wastewater, and the Detroit River, to name a few.

- **2023 Protect Our Species**

Earth Day 2023 was held at Malden Park with over 1000 attendees able to visit and learn from more than 40 environmental exhibits on display. To celebrate the theme this year, Sciensational SSSnakes was on site to help bring attention to local at risk species, such as the Butler's Gartersnake, the Eastern Foxsnake, and the Massasauga Rattlesnake. This provided a wonderful opportunity for kids and adults

alike to dispel myths, learn about the important role that these animals play in our ecosystem, and what Windsor is doing to protect them. This event was Zero Waste, and volunteers sorted and diverted waste from the landfill.

A Residential Guide to Flood Prevention and Recovery

In conjunction with Emergency Management Windsor, a guide outlining flood prevention and recovery strategies for Windsor residents was produced and distributed. The guide lists common sources of basement flooding, how to reduce your risk of basement and overland flooding, provides awareness of city programs as well as what to do during and after a flooding event. The guide is available for download on the City's website.

Little River Pollution Control Plant Open House

In 2019 visitors were invited to take part in a guided tour to see how the water treatment facility serves the community, with City staff on hand to provide updates on the Sewer Master Plan and Climate Change Adaptation Planning. This free event offered the City of Windsor Hydration Station on site, along with a CUPE barbeque to raise funds for a local charity.

Lou Romano Pollution Control Plant Open House

Plant tours are offered at both pollution control plants. Though tours were unavailable due to COVID-19 safety regulations, they will continue to be offered for educational purposes and to the public.

Environmental Champion Award

This new award was created to recognize an individual in the Corporation that shows environmental leadership outside of their normal duties. This could be an individual that undertakes initiatives to make their area more environmentally sustainable, provides environmental education to team members, is conscious about resource use, or identifies opportunities to reduce environmental impacts in providing City services.

EMP Update Consultation

The 2017 Environmental Master Plan (EMP) aims to make the City of Windsor cleaner, greener, healthier, and more sustainable. The EMP reflects the City's commitment to enhancing environmental performance and facilitating social well-being and economic prosperity. The updated EMP further considers the impacts of climate change and the health of the Windsor community. The plan has an integrated approach to recognizing the connections between the environment, economy, and society. The EMP is implemented with other City of Windsor plans including our Climate Change Adaptation Plan and Community Energy Plan with the purpose of setting out a series of potential actions for the municipality to take, over the short and long term, to improve the city's environment. The EMP was developed to focus on the City's operations so that the City of Windsor may lead by example for residents, industry, and stakeholders.

Goal E: Promote Awareness

Environmental Attitudes Surveys

The Environmental Master Plan was informed by the Environmental Attitudes Survey and other surveys completed by the public. The update to the EMP took feedback from the public before the draft of the plan was released in early 2017 to ensure that the concerns of residents were included. In the fall of 2017, the Draft EMP was released for an extended engagement period ending January 1, 2018. A total of 8 informational booths were set up throughout the City for the public to provide feedback, as well as the completion of a survey.

Essex Children's Water Festival

Prior to 2020 the City participated in the Children's Water Festival at the Canadian Transportation Museum and Heritage Village. This water festival invited grade 3 to 5 students from across Windsor-Essex to participate in a fun, day-long event to learn all about water. The City of Windsor ran an obstacle course that had students being treated by a perceived wastewater reclamation plant. ERCA and EWSWA ran numerous activities to help students understand the implications of water pollution. Other booths tackled climate change and plastic pollution in our lakes and rivers. The Festival was cancelled in 2020 and 2021 due to Covid-19 safety regulations and unfortunately, has not be reinstituted.

Climate Lens Training

In response to the Climate Change Emergency Declaration, the City of Windsor investigated opportunities to embed climate change considerations into everyday decisions, which led to the adoption of a climate lens on City Council reports. This step allows us to consider climate considerations early on and keep City Council and the public informed of climate risk and opportunities. A guidance document and training opportunities have been developed to support report authors.

Paired City: Vitoria-Gasteiz, Spain

Windsor participated in the International Urban and Cooperation (IUC) Program and was paired with the city of Vitoria-Gasteiz, Spain to collaborate on themes including sustainable urban mobility and low-carbon transportation, including active transportation and public transit.

The exchange visits between Windsor and Vitoria-Gasteiz allowed delegates to discuss urban planning matters, exchange ideas and useful advice based on local context knowledge and individual past experience. Apart from a focus on the main objectives, the visits promoted knowledge sharing on aspects of sustainable urban development such as nature conservation strategy of both cities. Attending high-level conferences such as Ecocities was also paramount for getting to know other cities' successful experiences and developing new contacts.

Windsor Showcases Environmental Commitment by Hosting Sister City Mannheim, Germany

Building off the success of Windsor first pairing with Vitoria-Gasteiz, Spain, Windsor was subsequently partnered with sister city Mannheim, Germany to participate in the second International Urban and Regional Cooperation (IURC) North American City-to-City Partnership. This program, funded by the European Union was designed to facilitate and promote cooperation on sustainable urban development. Representatives from Windsor took part in learning exchanges and capacity building activities with Mannheim to develop actions that can produce transferable results on topics such as energy efficiency in buildings, nature-based solutions and sustainable agriculture.

Goal E: Promote Awareness

ICLEI Advancing Adaptation project

The Advancing Adaptation project was provided by ICLEI Canada with financial support from the Ontario Ministry of Environment, Conservation and Parks (MECP) and the Government of Canada through the Department of Environment and Climate Change Canada. This project saw the Environmental Sustainability and Climate Change team work closely with the City's Emergency Planning Officer to host an Emergency Preparedness Event called Ready, Set, Prepare. Through this funding, the City was able to put on a free event at the Children's Safety Village, including transportation costs for over 200 New Canadians. In addition, the funding supported the development of educational materials that highlight Emergency Preparedness in a Changing Climate that can be used for future events.

Outreach

- Education and outreach presented to local schools on climate change and wastewater
- City of Windsor Day Camp at Gino A. Marcus presentation on wastewater and the Detroit River (2017)
- EAU Canada National Anthem filmed at McKee Park, for Canada150 (2017)
- EAU Canada Paddling Event to Peche Island with ERCA, DRCC, Windsor Adventure Inc., as part of a national effort to recognize and celebrate Canada's Heritage River and celebrate Canada150 (2017)
- Peche Island Day in partnership with Citizens Environmental Alliance, ERCA and DRCC (2018)

Goal E: Promote Awareness

Areas to Move Forward

Due to the COVID-19 pandemic, safety guidelines allowed for limited community engagement. As opportunities return, the City plans to connect and educate residents through communication, outreach and events.

- Continue to report Environmental Master Plan implementation to Council every 2 years and to the community every 4-5 years through the Report on the State of the Environment;
- Continue to build upon environmental education resources for internal staff and the community;
- Continue to participate in annual Earth Day celebrations and create outreach opportunities to promote environmental and climate change initiatives;
- Continue to maintain an Environmental Master Plan website with access to data, information and resources;
- Continue to participate in emergency planning community engagement;
- Offer data sharing tools for climate projections to help businesses understand risk factors;
- Work to further administration's confidence and ability to complete climate lens assessments as part of Council Reports;
- Develop opportunities to engage with youth on climate action;
- Advance the Environment and Climate Change Advisory Committee along with its working groups.

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.

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.

However, three indicators are trending in the opposite direction of our goals – corporate natural gas consumption and sewage treatment plant natural gas consumption, and corporate emissions. In order to align these trends to the goals, energy efficiency measures should be considered along with further expansion of renewable energy sources.

The results from our Report on the State of the Environment Survey indicate that more needs to be done to highlight the City's environmental programs and initiative to the public.

In addition, since the release of the 2017 Report on the State of Our Environment, the City's Environmental Sustainability & Climate Change staff have also produced the Environmental Master Plan (2017), the Community Energy Plan/Corporate Climate Action Plan (2017) the Climate Change Adaptation Plan (2020), which they also must work to implement. Administration is working together 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.

Photo credits: Cultural Affairs Windsor, Jennifer Nantais, and Barbara Lamoure