

Environment, Transportation & Public Safety Meeting

Date: Wednesday, March 27, 2024

Time: 4:30 o'clock p.m.

Location: Council Chambers, 1st Floor, Windsor City Hall

All members will have the option of participating in person in Council Chambers or electronically and will be counted towards quorum in accordance with Procedure By-law 98-2011 as amended, which allows for electronic meetings. The minutes will reflect this accordingly. Any delegations have the option to participate in person or electronically.

MEMBERS:

Ward 2 – Councillor Fabio Costante (Chairperson)

Ward 3 – Councillor Renaldo Agostino

Ward 4 – Councillor Mark McKenzie

Ward 8 – Councillor Gary Kaschak

Ward 9 – Councillor Kieran McKenzie

ORDER OF BUSINESS

Item #	Item Description
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1.	CALL TO ORDER
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READING OF LAND ACKNOWLEDGMENT

We [] would like to begin by acknowledging that the land on which we gather is the traditional territory of the Three Fires Confederacy of First Nations, which includes the Ojibwa, the Odawa, and the Potawatomi. The City of Windsor honours all First Nations, Inuit and Métis peoples and their valuable past and present contributions to this land.

2.	DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF
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3.	ADOPTION OF THE MINUTES OF THE ETPS STANDING COMMITTEE
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| 3.1. | Adoption of the Environment, Transportation & Public Safety Standing Committee minutes of its meeting held January 31, 2024. (SCM 24/2024) |
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4.	REQUEST FOR DEFERRALS, REFERRALS OR WITHDRAWALS
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5.	COMMUNICATIONS
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6.	PRESENTATIONS AND DELEGATIONS
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7.	COMMITTEE MATTERS
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| 7.1. | Adoption of the Essex-Windsor Solid Waste Authority (EWSA) Regular Board of its meeting held December 5, 2023 (SCM 37/2024) |
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8.	ADMINISTRATIVE ITEMS
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| 8.1. | Community and Corporate Greenhouse Gas Emissions and Energy Monitoring Report – 2022 - City Wide (S 169/2023) |
| 8.2 | Windsor's 2023 Report On the State of the Environment (S 33/2024) |

8.3 Response to CQ 36-2023 – Repurposing Lot 16 - City Wide (**S 35/2024**)

9. TRANSIT BOARD ITEMS

10. ADOPTION OF TRANSIT BOARD MINUTES

11. QUESTION PERIOD

12. ADJOURNMENT



Committee Matters: SCM 24/2024

Subject: Adoption of the Environment, Transportation & Public Safety Standing Committee minutes of its meeting held January 31, 2024.

Environment, Transportation & Public Safety Standing Committee Meeting

Date: Wednesday, January 31, 2024

Time: 4:30 PM

Members Present:

Councillors

Ward 2 - Councillor Fabio Costante (Chairperson)

Ward 3 - Councillor Renaldo Agostino

Ward 4 - Councillor Mark McKenzie

Ward 8 - Councillor Gary Kaschak

Ward 9 - Councillor Kieran McKenzie

PARTICIPATING VIA VIDEO CONFERENCE ARE THE FOLLOWING FROM ADMINISTRATION:

Sandra Gebauer, Council Assistant

Rob Martini, Council Assistant

ALSO PARTICIPATING IN COUNCIL CHAMBERS ARE THE FOLLOWING FROM ADMINISTRATION:

Mark Winterton, Commissioner, Infrastructure Services & City Engineer (Interim)

Jelena Payne, Commissioner, Economic Development

Shawna Boakes, Executive Director of Operations / Deputy City Engineer

Stacey McGuire, Executive Director of Engineering / Deputy City Engineer

Matthew Johnson, Executive Director, Economic Development

Ian Day, Senior Manager Traffic Operations & Parking

Mark Spizzirri, Manager Performance Measurement & Bus Case Development

Alex Vucinic, Purchasing / Risk Management

Karina Richters, Supervisor Environmental Sustainability & Climate Change

Jim Leether, Administrator Waste Collection Control

Michelle Moxley-Peltier, Energy Plan Administrator

Anna Ciacelli, Deputy City Clerk

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1. CALL TO ORDER

The Chairperson calls the meeting of the Environment, Transportation & Public Safety Standing Committee to order at 4:30 o'clock p.m.

2. DISCLOSURE OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

None disclosed.

3. ADOPTION OF THE MINUTES OF THE ETPS STANDING COMMITTEE

3.1. Adoption of the Environment, Transportation & Public Safety Standing Committee minutes (Excluding Transit matter items) of its meeting held November 29, 2023

Moved by: Councillor Renaldo Agostino
Seconded by: Councillor Kieran McKenzie

THAT the minutes of the Environment, Transportation & Public Safety Standing Committee (Excluding Transit matter items) meeting held November 29, 2023 **BE ADOPTED** as presented.
Carried.

Report Number: SCM 321/2023

3.2 Adoption of the Environment, Transportation & Public Safety Standing Committee minutes (Transit matter items only) of its meeting held November 29, 2023

Moved by: Councillor Mark McKenzie
Seconded by: Councillor Renaldo Agostino

THAT the minutes of the Environment, Transportation & Public Safety Standing Committee (Transit matter items only) meeting held November 29, 2023 **BE ADOPTED** as presented.
Carried.

Report Number: SCM 321/2023

4. REQUEST FOR DEFERRALS, REFERRALS OR WITHDRAWALS

See Item 8.4

5. COMMUNICATIONS

None presented.

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7. COMMITTEE MATTERS

None presented.

7.1. Minutes of the Windsor Licensing Commission of its meeting held December 7, 2023

Moved by: Councillor Renaldo Agostino

Seconded by: Councillor Gary Kaschak

Decision Number: **ETPS 981**

THAT the minutes of the Windsor Licensing Commission meeting held December 7, 2023 **BE RECEIVED** as presented.

Carried.

Report Number: SCM 340/2023

7.2. Essex Windsor Solid Waste Authority (EWSWA) Board Meeting Minutes from November 7, 2023

Moved by: Councillor Renaldo Agostino

Seconded by: Councillor Gary Kaschak

Decision Number: **ETPS 982**

THAT the minutes of the Essex Windsor Solid Waste Authority (EWSA) board meeting held November 7, 2023 **BE RECEIVED** as presented.

Carried.

Report Number: SCM 322/2023

8. ADMINISTRATIVE ITEMS

8.1. Energy Access and Poverty Pillar (EAPP) Report Requirement - Global Covenant of Mayors for Climate and Energy - City Wide

Councillor Kieran McKenzie inquires whether the City is at the implementation stage in the process. Karina Richters, Supervisor Environmental Sustainability and Climate Change appears before the Environment, Transportation and Public Safety Standing Committee regarding the administrative report entitled "Energy Access and Poverty Pillar (EAPP) Report Requirement - Global Covenant of Mayors for Climate and Energy - City Wide" and indicates that the implementation has begun and that new requirements have been added to the EAPP and will continue to be added to continue to raise the bar on reporting in order to ensure that we are making progress towards implementation of our plans.

Councillor Kieran McKenzie requests that Administration characterize the process in terms of reductions versus our targets. Ms. Richters provides details of the process.

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Councillor Kieran McKenzie requests an outline of the process for creating the plan and implementation. Ms. Richters indicates that data for the mandatory criteria is already being collected, and a fulsome report back is going to be required, but not yet available. Ms. Richters adds that they will still be looking to some partners and service providers such as, Enwin and Hydro One to see what the effects of the Energy Poverty piece on Windsor residents is. Windsor has been selected to participate in the 2024 GCom International Cities Initiative, funded by the European Union. This is one option to pursue in order to get a fulsome report back.

Councillor Kieran McKenzie inquires whether the plan will come back to council for review and approval or if it will go through the administrative process and come forward next year. Ms. Richters indicates that the Energy Access and target setting should be completed in 2024 and information will come back to council as a report. Once that is complete administration will review the plan to determine how it will hit the targets set forth and there may be further recommendations thereafter.

Moved by: Councillor Kieran McKenzie
Seconded by: Councillor Gary Kaschak

Decision Number: **ETPS 983**

THAT the report of the Community Energy Plan Administrator dated December 19, 2023 regarding the Energy and Poverty Pillar (EAPP) Report Requirement from the Global Covenant of Mayors for Climate and Energy **BE RECEIVED** for information; and,

THAT Council **RECEIVE** Windsor's Carbon Disclosure Project (CDP) 2023 Report Card as included in Appendix A for information; and,

THAT Council **ENDORSE** the development of the Energy Access and Poverty Badge requirements; and,

THAT Administration **BE DIRECTED** to report back to Council with the finalized Energy Access and Poverty Assessment, Targets, and Plan.
Carried.

Report Number: S 168/2023
Clerk's File: EI/14519

8.2. Results of Test Pilot of Garbage Relocation in Ward 3 – City Wide

Councillor Renaldo Agostino inquires as to the number of homes that participated in the study. Jim Leather, Administrator Waste Collection and Contract Operations appears before the Environment, Transportation & Public Safety Committee regarding the administrative report entitled "Results of Test Pilot of Garbage Relocation in Ward 3 – City Wide" and indicates that 178 homes participated and only 8 homes in the first week were non-compliant or forgot. Letters were delivered to the residents that were non-compliant.

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Councillor Renaldo Agostino inquires about the percentage of residents that always left their containers in the alley. Mr. Leether indicates that 76% of respondents stored their garbage in or near the alley with 41% who stored their material in the alley all the time.

Councillor Mark McKenzie inquires as to how Administration is going to determine affected areas come 2025. Shawna Boakes, Executive Director Operations appears before the Environment, Transportation & Public Safety Committee regarding the administrative report entitled "Results of Test Pilot of Garbage Relocation in Ward 3 – City Wide" and indicates that the majority of the alleys identified as mandatory to retain garbage pick up in the alleys are in the BIA areas where there is limited room for the trucks and affected by right of ways.

Councillor Mark McKenzie inquires how administration will address issues such as narrow streets and traffic congestion with a switch to street garbage collection. Mr. Leether indicates that scheduling and timing during off-peak periods on the roads where parking and traffic are reduced help to alleviate the issue. Mr. Leether adds that automated collection trucks are more efficient than manual collection and will help to reduce the amount of time on the streets.

Councillor Mark McKenzie inquires whether community consultation has taken place with affected residents. Ms. Boakes indicates not specifically, but a resident education program will be implemented to make sure that the affected residents will be prepared for the 2025 contract.

Councillor Renaldo Agostino inquires whether there is any data related to the length of time the containers were left out in front of homes near the street. Mr. Leether indicates that supervisors were deployed to the areas after the collection, no complaints were received through 311 or in the conclusion survey conducted.

Councillor Gary Kaschak requests clarification related to the break down of the cost savings as a result of this pilot project. Administration provides financial details related to garbage collection in the maximum and minimum amount of alleys.

Councillor Fabio Costante requests clarification regarding the administrative recommendation and whether it is specifically related to the pilot area. Ms. Boakes indicates that in order to proceed with the official contract for 2025 with the supplier, they need direction regarding alley collection or no alley collection.

Moved by: Councillor Renaldo Agostino
Seconded by: Councillor Gary Kaschak

Decision Number: **ETPS 984**

THAT the report from the City Engineer dated January 4, 2024 entitled "Results of Test Pilot of Garbage Relocation in Ward 3 – City Wide" **BE RECEIVED** for information; and,

THAT administration **BE DIRECTED** to move residential garbage and yard waste collection from alley to curbside, wherever possible, effective April 1, 2025.

Carried.

Councillors Mark McKenzie and Fabio Costante voting nay.

Report Number: S 6/2024
Clerk's File: SW2024

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8.3. Relocation of Garbage Collection in the Alleys Bounded by Hall/Moy/Riverside Dr E/Assumption – City Wide

Moved by: Councillor Mark McKenzie

Seconded by: Councillor Gary Kaschak

Decision Number: **ETPS 985**

THAT Council **APPROVE** the permanent relocation of garbage collection from the alley to curbside in the area bounded by Hall, Moy, Riverside Dr E and Assumption, effective immediately. Carried.

Report Number: S 3/2024

Clerk's File: SW2024

8.4. Response to CQ 35-2023 – Out of Town Buses – City Wide

Councillor Renaldo Agostino inquires about the process related to the permit that was issued to FlixBus. Ms. Boakes indicates that the permit was to allow a sign to be placed at that location. The by-law that allows them to stop on city streets is the standard parking by-law that allows busses to actively load and unload at any point in the city where we do not have any no stopping rules in place. This location is conveniently located near the city owned facilities that allows customers to park in order to catch their bus.

Councillor Renaldo Agostino inquires about the possibility of redirecting the FlixBus to the bus station. Ms. Boakes indicates that they would have to put up a no stopping zone in that section and pull the permit for their current signage. Ms. Boakes adds that the concern from Transit Windsor is the potential conflict with scheduling of regular transit. The permit was only issued to FlixBus, but others are also stopping.

Councillor Renaldo Agostino expresses concern related to the negative impact to surrounding businesses related to the busses stopping on the street and inquires whether there are enough bays at the bus station to accommodate the out of town busses. Ms. Boakes indicates that there are enough bays at the transit station to accommodate the busses and there have been discussions with the bus companies to encourage the busses to go there. Ms. Boakes adds that the business model for the out of town bus companies is low cost, if fees were imposed, there is a potential for the companies to make a deal with local businesses to utilize their parking lots.

Councillor Renaldo Agostino inquires whether there is an opportunity to have a discussion with the bus companies to push them towards using the bus station or to require that they construct a shelter in order to continue stopping there. Ms. Boakes indicates that would require investigation related to policy/by-laws.

Councillor Gary Kaschak inquires whether they are able to negotiate a \$5000 to \$10000 yearly agreement to use the transit terminal. Mark Winterton, Commissioner, Infrastructure Services & City Engineer, appears before the Environment, Transportation and Public Safety Standing Committee regarding the administrative report entitled "Response to CQ 35-2023-Out of Town Buses-City Wide" and indicates that the transit fare schedule dictates the value, but there is

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room for discussion to see if we are able to force their hand, although their stop is permitted and is compliant with existing by-laws, so it is a challenging spot to be in.

Councillor Gary Kaschak inquires whether the stop location could be moved onto Chatham Street, near where the old Greyhound terminal was, where there is more space, a parking garage and is a more direct route to the 401. Ms. Boakes indicates that FlixBus was interested in discussing relocation and we can reach out to the other companies that are choosing to stop there to discuss relocation as well.

Councillor Mark McKenzie inquires whether there are any legal implications to pulling the permit. Mr. Winterton indicates that the permit was granted at the agreed upon location, and within the parameters of the current by-laws, the City doesn't have the ability to deny a permit, and as long as they are complying with the *Highway Traffic Act*.

Councillor Mark McKenzie inquires whether there was a reason for the Chatham street location that was selected. Ms. Boakes indicates that the close proximity to Windsor Police was a safe area for customers to wait and to gain revenue from the city-owned garage.

Councillor Mark McKenzie inquires whether Devonshire Mall may be a possible alternative location. Ms. Boakes indicates that they can have a conversation with the companies to encourage them to go to a specified location, but having the stop where it is, brings people into the downtown core.

Councillor Renaldo Agostino inquires whether other cities have created a by-law in regards to this issue. Ms. Boakes indicates that they didn't consult other municipalities specifically related to by-law changes for those using parking lots.

Moved by: Councillor Renaldo Agostino

Seconded by: Councillor Mark McKenzie

THAT the report of the Commissioner, Infrastructure Services & City Engineer dated January 11, 2024 entitled "Response to CQ 35-2023 – Out of Town Buses – City Wide" **BE REFERRED** back to administration; and,

THAT administration **BE DIRECTED** to report back to a future Environment, Transportation and Public Safety Standing Committee and explore options regarding negotiating with the current bus companies that are providing the bus service in the area and encouraging them to park in more favourable locations such as the transit terminal or the Devonshire Mall; and that the information **INCLUDE** an explanation of legal options related to enforcement and/or possible by-law amendments, and **TO CONSULT** with other municipalities to determine what strategies they may be utilizing to curb this type of behaviour.

Carried.

Report Number: S 5/2024

Clerk's File: MT2024

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8.5. Response to CQ 32-2023 – Oversight and Authority to Limit Freight Train Traffic Impediments – City Wide

Councillor Gary Kaschak and inquires as to what options are available to address the issue based on the guidelines within the administrative report. Ms. Boakes indicates that the Transport Canada wording is very specific related to a safety issue or concern, and proving to them that there is a safety concern may be very difficult.

Councillor Mark McKenzie inquires whether there has been a grant funding application submitted related to the rail safety grant. Mr. Winterton indicates that there have always been small rail safety grants available, but nothing that would allow funding for a project of a grade separation.

Moved by: Councillor Gary Kaschak
Seconded by: Councillor Mark McKenzie

Decision Number: **ETPS 986**

THAT the report of the Policy Analyst dated January 10, 2024 entitled “Response to CQ 32-2023 – Oversight and Authority to Limit Freight Train Traffic Impediments – City Wide”, **BE RECEIVED** for information.

Carried.

Report Number: S 2/2024
Clerk’s File: MTR2024

8.6. Traffic Signal at Tecumseh Road E and Robinet Road – Ward 7

Councillor Mark McKenzie inquires whether there are any anticipated road closures at Banwell Road. Ms. Boakes indicates that there are expected one-day closures in order to complete tie-ins, but there are no long-term closures anticipated. She adds that lane shifts and tie-ins at the roundabout should be able to accommodate the construction.

Councillor Mark McKenzie inquires whether there have been temporary traffic lights implemented. Ms. Boakes indicates that they have been implemented on residential roads or smaller roads, but are not typical for multiple leg intersections. Public Works has used overhead spans on wood poles in construction zones where existing signals have been disturbed.

Councillor Fabio Costante leaves the meeting at 5:22 o’clock p.m. and Councillor Kieran McKenzie assumes the chair.

Councillor Fabio Costante returns to the meeting at 5:24 o’clock p.m. and Councillor Kieran McKenzie returns to his seat at the Council Table.

Councillor Mark McKenzie inquires whether it is possible to implement these temporary traffic signals as a trial without incurring a large cost. Ms. Boakes indicates that a full install would be needed based on the Ontario Transportation Manual standards, which would still be costly. Ms. Boakes adds that a temporary solution should only be used for short periods of 24 hours in

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emergency situations and could also cause a big problem once removed from a legal liability standpoint. Ms. Boakes indicates that the Environmental Assessment for that area recommends that the configuration of Tecumseh Road be increased to 3 lanes in each direction with a center left turn lane onto Robinet. Without the turn lane, you create an extremely dangerous situation.

Councillor Mark McKenzie inquires about the possibility of implementing a no left turn rule at that intersection between certain hours. Ms. Boakes indicates that could be a potential option, but not necessarily warranted given the data from that particular intersection without the signal.

Councillor Kieran McKenzie requests that administration provide the data requested from Councillor Marignani's original Council Question in the report that comes back. Ms. Boakes indicates that the data can be included in the report back if it is helpful.

Councillor Gary Kaschak inquires if future data is considered in the decision to implement a traffic signal given the projected economic growth in the surrounding area of this particular intersection. Mr. Winterton indicates that an EA has been completed and the current recommendation is that it is not warranted. Future growth is considered and acknowledged by this report, but it is not warranted at this intersection at this time.

Councillor Gary Kaschak inquires about the costs associated with putting a temporary signal at that intersection. Stacey McGuire, Executive Director Engineering, appears before the Environment, Transportation & Public Safety Standing Committee regarding the administrative report "Traffic Signal at Tecumseh Road E and Robinet Road-Ward 7" and indicates that in order to do it properly according to the EA, the cost would be about \$5M, which will potentially amount to throw away costs as the project would need to be redone when completing it at a later date.

Councillor Gary Kaschak inquires about the possibility of implementing a no left turn from Robinet Road onto Tecumseh Road. Ms. Boakes indicates that is an option if directed, it will impact the residents in that area, but if administration feels it is a safety concern, they can assess that.

Councillor Gary Kaschak inquires whether there will be an updated EA needed when the project is funded and ready to go. Mr. Winterton indicates that a review of the EA should be included at the time of construction.

Councillor Gary Kaschak inquires if there have been any instances of adding and subsequently removing temporary traffic lights. Ms. Boakes indicates that 4 of 8 intersections were recommended for removal and have been or are being removed at council's direction.

Moved by: Councillor Kieran McKenzie

Seconded by: Councillor Renaldo Agostino

Decision Number: **ETPS 987**

THAT the report of the Senior Manager, Traffic Operations & Parking, dated January 12, 2024 entitled "Traffic Signal at Tecumseh Road E and Robinet Road-Ward 7" **BE RECEIVED** for information; and,

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THAT administration **BE DIRECTED** to provide an additional information memo which includes the data requested in the original Council Question; and that the information **ALSO INCLUDE** the potential of a no left turn at Robinet Road onto Tecumseh Road; and,

THAT this information **BE PROVIDED** to Council when the committee report comes forward to a future Council Meeting for Council's consideration.

Carried.

Report Number: S 7/2024

Clerk's File: ST2024

8.7. Windsor's Sustainable Procurement Guide - City Wide

Councillor Kieran McKenzie inquires whether there are any legal risks associated with creating preferences for local suppliers. Alex Vucinic, Manager Purchasing and Risk Management appears before the Environment, Transportation & Public Safety Committee regarding the administrative report entitled "Windsor's Sustainable Procurement Guide – City Wide" and indicates that the guide is complementary to existing policy and by-laws and external legislation guidelines. Administration is not permitted to be biased towards local competition and administration is suggesting looking at all facets of sustainable procurement.

Councillor Kieran McKenzie inquires how this guide will be implemented on any particular item. Mr. Vucinic indicates that procurements under \$100,000 are able to go through a closed procurement process, allowing the City to select vendors internally who we want to bid. Any procurements over \$100,000 they can go to market through a prequalification and a tender. Administration would imbed these types of sustainable criteria in the prequalification period. Mr. Vucinic adds that it is up to the purchasing and legal departments and those involved to determine the weight of the guide upon the prequalification process. When the City selects a vendor, they can evaluate them through the policy to then consider them for future contracts.

Councillor Kieran McKenzie inquires within all of the different factors, whether there is a role for council to play to direct the analysis in terms of the thresholds that they would like to be able to achieve. Mr. Vucinic indicates that administration would not recommend that as this only applies to where appropriate and applicable.

Moved by: Councillor Kieran McKenzie

Seconded by: Councillor Renaldo Agostino

Decision Number: **ETPS 988**

1. THAT the report from the Environmental Sustainability Coordinator dated December 5, 2023 regarding Windsor's Sustainable Procurement Guide – City Wide **BE RECEIVED** for information; and,
2. THAT City Council **SUPPORT** efforts to encourage purchasing decisions to consider environmental criteria and sustainability; and,
3. THAT City Council **APPROVE** the updated version of the City of Windsor's Sustainable Procurement Guide; and,

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4. THAT City Council **APPROVE** the updated version of the City of Windsor's Sustainable Procurement Policy.

Carried.

Report Number: S 163/2023

Clerk's File: SW/8523

9. TRANSIT BOARD ITEMS

None presented.

10. ADOPTION OF TRANSIT BOARD MINUTES

None presented.

11. QUESTION PERIOD

Councillor Kieran McKenzie requests information related to Transit. Administration will be able to respond to this during the next Council meeting or at the upcoming Environment, Transportation, & Public Safety meeting.

12. ADJOURNMENT

There being no further business, the Environment, Transportation & Public Safety Standing Committee is adjourned at 6:01 o'clock p.m. The next meeting of the Environment, Transportation & Public Safety Standing Committee will be held February 28, 2024.

Carried.

Ward 2 – Councillor Costante
(Chairperson)

Deputy City Clerk / Supervisor of Council
Services



Committee Matters: SCM 37/2024

Subject: Adoption of the Essex-Windsor Solid Waste Authority (EWSA) Regular Board of its meeting held December 5, 2023



Essex-Windsor Solid Waste Authority Regular Board Meeting MINUTES

Meeting Date: Tuesday, December 5, 2023

Time: 4:00 PM

Location: Essex County Civic Centre
Council Chambers, 2nd Floor
360 Fairview Avenue West
Essex, Ontario N8M 1Y6

Attendance

Board Members:

Gary McNamara - Chair	County of Essex
Michael Akpata	County of Essex
Rob Shepley	County of Essex
Kirk Walstedt	County of Essex
Gary Kaschak – Vice Chair	City of Windsor
Kieran McKenzie	City of Windsor
Jim Morrison	City of Windsor

EWSWA Staff:

Michelle Bishop	General Manager
Steffan Brisebois	Manager of Finance & Administration
Cathy Copot-Nepszy	Manager of Waste Diversion
Tom Marentette	Manager of Waste Disposal
Madison Mantha	Project Lead
Teresa Policella	Executive Assistant

City of Windsor Staff:

Shawna Boakes	Executive Director of Operations
Jim Leather	Waste Collection Contracts & Operations Administrator
Mark Spizzirri	Manager of Performance Management and Business Case Development

County of Essex Staff:

Mary Birch	Director of Council & Community Services/Clerk
Melissa Ryan	Director of Financial Services/Treasurer

Absent:

Hilda MacDonald	County of Essex
Mark McKenzie	City of Windsor
Anne-Marie Albidone	Manager of Environmental Services
Tony Ardovini	Deputy Treasurer Financial Planning

Drew Dilkens

City of Windsor (Ex-Officio)

1. Closed Meeting

A Closed meeting was held at 4:00PM

Moved by Kieran McKenzie

Seconded by Gary Kaschak

THAT the Board moved into a closed meeting pursuant to Section 239 (2) (k) of the Municipal Act, 2001, as amended for the following reason:

- (k) A position, plan, procedure, criteria, or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipally or local board.

**80-2023
Carried**

Moved by Gary Kaschak

Seconded by Kirk Walstedt

THAT the EWSWA Board rise from the Closed Meeting at 4:41PM.

**83-2023
Carried**

2. Call to Order

Chair McNamara called the Regular meeting to order at 4:41 PM.

The Chair thanked Mr. Walstedt for his membership on the Board in 2023. Mr. Walstedt will return to the Board in 2025. The Chair noted that Fred Francis, City of Windsor Councillor, is the alternate member for 2024.

3. Declaration of Pecuniary Interest

The Chair called for any declarations of pecuniary interest and none were noted. He further expressed that should a conflict of a pecuniary nature or other arise at any time during the course of the meeting that it would be noted at that time.

4. Approval of the Minutes

Moved by Gary Kaschak

Seconded by Jim Morrison

THAT the minutes from the Essex-Windsor Solid Waste Authority Regular Meeting, dated December 5, 2023, be approved and adopted.

**84-2023
Carried**

5. Business Arising from the Minutes

There were no items raised for discussion.

6. Correspondence

- A. News Release from Ministry of the Environment, Conservation and Parks: Ontario Strengthening Penalties for Landfill Facilities that Contravene Environmental Laws

The General Manager stated that the Manager of Waste Disposal will be attending a stakeholder meeting on December 14, 2023, conducted by the Ministry of Environment, Conservation and Parks (MECP) to gain more information on the document.

Mr. McKenzie asked if there were any risks to the Authority based on this change.

The Manager of Waste Disposal stated not at this time. The Authority has regular dialogue with its MECP representative who is also a member of the Landfill Liaison Committee (LLC). He noted that other than the odd odour complaint, the Authority has not had any significant issues. The Authority engages with the public regarding their concerns and the issue is documented.

Moved by Kieran McKenzie
Seconded by Kirk Walstedt

THAT the Board receive the verbal report as information.

**85-2023
Carried**

7. Waste Diversion

- A. FoodCycler Organics Pilot Program Update

The Manager of Waste Diversion provided an update on the Waste Diversion pilot program that was launched in May 2023. The Authority partnered with Food Cycle Science (FCS) to launch a FoodCycler Organics Pilot Program (FOPP). The pilot program was launched to provide residents with another way to divert food waste from the Regional Landfill (RL).

The FOPP allowed the Authority to sell 250 units. She noted that 1,800 residents registered for the pilot program. As part of the pilot program, participants were asked to track how often they used their FoodCycler unit over a 12-week period and provide feedback. She also provided a summary of the key findings of the pilot program

She noted that Administration will continue to build awareness on how to reduce food waste and the knowledge of its residents so residents are prepared for the launch of the Regional Food and Organic Waste Management Program.

Administration has also worked with FCS to be able to offer additional units at a subsidized rate. As a result, an additional 121 units have been sold. The Authority and FCS will conduct a follow-up survey in six months.

The 2023 Operational Plan and Budget included \$25,000 for the Authority's subsidy portion of the pilot program funded through the Waste Diversion Reserve. She noted that existing Authority resources were allocated to assist with this initiative.

Moved by Jim Morrison

Seconded by Michael Akpata

THAT the Board receive the verbal report as information.

**86-2023
Carried**

8. Waste Disposal

A. Regional Landfill Request for Expressions of Interest (REOI) – Landfill Gas Management Update

The Manager of Waste Disposal provided an update regarding the Request for Expressions of Interest (REOI) for Landfill Gas Management at the Regional Landfill (RL).

He provided the history of how the RL has managed landfill gas since 2000 including the details of the Authority's agreement with Integrated Gas Recovery Services Inc. (IGRS) related to the recovery of methane gas at the RL.

The primary objective of the REOI is to gauge the interest of qualified parties with extensive Renewable Natural Gas (RNG) experience in the following:

- Forming a partnership with the Authority;
- Entering into a lease agreement with the Authority;
- Upgrading, expanding, operating, or maintaining the LFG system;
- Revenue sharing the LFG system with the Authority;
- Electrical power generation utilizing LFG for onsite consumption or grid;
- Processing Landfill leachate using LFG as the energy source; and/or
- A combination of the above or as proposed in the submitted EOI.

He explained that the Authority would like to evaluate gas management options in a proactive manner.

The REOI will close on December 7, 2023 at 5:00PM.

After evaluations of the REOI, the next step would be to issue a formal Request for Proposals (RFP) to provide the Authority with a basis to evaluate a sustainable long-term waste-to-energy partner with the greatest economic benefit.

There are no financial implications at this time. He noted that the 2023 budget included a capital expenditure figure of \$500,000 for the expansion of the existing gas collection wellfield as well as the replacement of the blower. The Authority has not utilized these funds with the hopes that the REOI will identify a potential funding partner. These funds have been reallocated to the 2024 budget.

The Chair asked if there were any questions.

Mr. Akpata asked what is the long-term plan.

The Manager of Waste Disposal stated that as a result of the REOI, the Authority hopes to expand the footprint as much as possible and utilize the gas collected in a more sustainable manner besides just flaring.

Kieran McKenzie asked if there is a potential that the Authority could net revenue depending on the option.

The Manager of Waste Disposal stated that hopefully a partnership could be formed to share in the costs.

Mr. Walstedt asked if methane is flared at closed Landfill 3 (LF3).

The Manager of Waste Disposal stated that methane is not flared at LF3.

Moved by Kieran McKenzie

Seconded by Kirk Walstedt

THAT the Board receive the report as information.

**87-2023
Carried**

9. Finance & Administration

A. Approval Status of the EWSWA 2024 Budget

The Manager of Finance and Administration provided an update of the EWSWA 2024 Operational Plan and Budget approval process.

On November 7, 2023, the Authority Board approved the 2024 recommendations.

As part of the budget approval process, the Budget is referred to the County of Essex (County) and the City of Windsor (City) and their Councils for their consideration.

Authority Administration is scheduled to attend Essex County Council on December 20, 2023.

At this time, the City has not provided a specific date but anticipates it will be scheduled in January 2024.

The Chair asked if there were any questions.

Discussion took place regarding the timing of the City of Windsor's 2024 budget process.

Moved by Gary Kaschak

Seconded by Jim Morrison

THAT the Board receive the verbal report as information.

**88-2023
Carried**

B. 2024 EWSWA Board Schedule

The General Manager provided a summary of the 2024 schedule.

Moved by Jim Morrison

Seconded by Kieran McKenzie

THAT the Board approve the 2024 Essex-Windsor Solid Waste Authority Regular Meeting Schedule.

**89-2023
Carried**

10. New Business

No items were raised for discussion.

11. Other Items

No items were raised for discussion.

12. By-Laws

A. By-Law 15-2023

Moved by Kirk Walstedt

Seconded by Michael Akpata

THAT By-Law 15-2023, being a By-law to Confirm the Proceedings of the Board of the Essex-Windsor Solid Waste Authority be given three readings and be adopted this 5th day of December, 2023.

**90-2023
Carried**

13. Next Meeting Dates

January – TBD and scheduled if required

Tuesday, February 6, 2024

Tuesday, March 5, 2024

Wednesday, April 10, 2024

Tuesday, May 7, 2024

Tuesday, June 4, 2024

Wednesday, July 10, 2024

Wednesday August 14, 2024 – Note: This meeting will start at 3:00PM

Wednesday, September 11, 2024

Wednesday, October 9, 2024

Tuesday, November 5, 2024

Tuesday, December 3, 2024

14. Adjournment

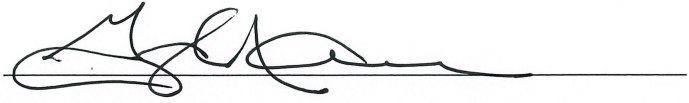
Moved by Jim Morrison

Seconded by Gary Kaschak


THAT the Board stand adjourned at 5:21PM.

**91-2023
Carried**

All of which is respectfully submitted.



Gary McNamara
Chair



Michelle Bishop
General Manager



Subject: Community and Corporate Greenhouse Gas Emissions and Energy Monitoring Report – 2022 - City Wide

Reference:

Date to Council: March 27, 2024
 Author: Michelle Moxley-Peltier
 Community Energy Plan Administrator
 Environmental Sustainability and Climate Change
 519-255-6100 ext. 6109
 mmoxleypeltier@citywindsor.ca
 Economic Development & Innovation
 Report Date: February 19, 2024
 Clerk's File #: E/14519

To: Mayor and Members of City Council

Recommendation:

THAT the report of the Community Energy Plan Administrator dated February 19, 2024 entitled 2022 Community and Corporate Greenhouse Gas Emissions and Energy Monitoring Report **BE RECEIVED** for information

Executive Summary:

N/A

Background:

In 2010, the City of Windsor undertook the development of the City's first greenhouse gas (GHG) inventory as outlined in Federation of Canadian Municipalities' (FCM') Partners for Climate Change (PCP) program (Milestone 1). Upon completion of this first inventory, City Council committed to completing a Climate Change Mitigation Plan.

In 2015, the City of Windsor began the process of developing a long-term comprehensive plan to address energy and GHG emissions through the completion of a Community Energy Plan (CEP) and associated Corporate Climate Action Plan (CCAP). These plans were approved by City Council in July 2017 (CR426/2017).

The CEP aims to create economic advantage, mitigate climate change, and improve energy performance. It strives to position Windsor as an energy center of excellence that boasts efficient, innovative, and reliable energy systems that contribute to the quality of life of the residents and businesses.

The CEP includes ambitious and transformative targets to support global efforts to keep global temperature increases within 1.5 degrees Celsius, and a community-wide goal to reduce greenhouse gas (GHG) emissions by 40% of 2014 levels and to reduce per-capita energy consumption by 40% by 2041. The CCAP also includes a corporate-wide goal to reduce GHG emissions by 40% of 2014 levels and to reduce corporate energy usage by 40% of 2014 levels by 2041.

In addition to the targets outlined in the CEP and CCAP, the City has also committed to participating in the Carbon Disclosure Project (CDP) administered through the Global Covenant of Mayors for Climate and Energy (GCoM). This commitment includes reporting GHG emissions inventories, mitigation actions, as well as energy and emissions targets on a yearly basis through the CDP website.

On November 19, 2019, City Council approved the Windsor Essex County Environment Committee's motion that the City of Windsor pass a Climate Change Emergency Declaration (CR570/2019). Included as an outcome of this report is the recommendation to update the City's GHG emission targets to reflect the commitment to achieve a reduction of 45% of 2005 levels by 2030 and reaching Net-Zero emissions by 2050, aligning with the Government of Canada's GHG Reduction Targets.

In an effort to achieve these reduction targets, a number of interim targets are required to accelerate the implementation of emission reduction activities and track progress. The Acceleration of Climate Change Actions (CR187/2020 ETPS 738) report was received by City Council on May 4, 2020 in response to the Climate Change Emergency Declaration.

In November of 2020, Council requested (CR558/2020) administration to report annually on GHG emissions and energy usage. The Community and Corporate Greenhouse Gas Emissions and Energy Monitoring Report – 2021 (CR410/2023 ETPS 956) report was received by City Council on October 16, 2023.

The 2022 Community and Corporate Greenhouse Gas and Energy Monitoring Report details the progress made within the City of Windsor towards GHG Emission and Energy Consumption targets.

Discussion:

The attached Community and Corporate Greenhouse Gas and Energy Monitoring Report for 2022 provides in-depth details on our Community and Corporate GHG Inventories. This report highlights the changes in energy consumption and GHG emissions resulting from actions taken at the federal, provincial, community, and corporate levels. A summary of key performance metrics is found below.

Community Energy and Emissions Inventory

As part of the CEP implementation, an inventory of GHG Emissions and energy consumption is completed each year such that trends can be recognized and progress towards the CEP emissions and energy reduction goals can be evaluated. These inventories serve to help evaluate the effectiveness of emissions reduction strategies and policies.

Since 2014, community-wide emissions and energy consumption have generally followed a downward trend, with significant reductions in 2020 and 2021, attributed to impacts from COVID-19 restrictions. Due to lingering impacts of COVID in 2022, the 2022 emissions may be moderately impacted. In 2022 a total of 1.487 Megatonnes of Carbon Dioxide equivalent (MTCO_{2e}) was emitted to the atmosphere compared to the 1.869 MTCO_{2e} from the 2014 inventory¹. These emissions totals result in per-capita emissions of 6.47 tCO_{2e} for 2022 compared to 8.86 tCO_{2e} in the 2014 CEP baseline. The goal of the CEP is to reduce per-capita emissions to 5 tCO_{2e} by 2041.

Figure 1 presents the breakdown of emissions by sector for 2022. In 2022, building sector emissions accounted for 53% of overall community-wide emissions (buildings 35%, industry 18%), with most of those emissions attributable to natural gas used for space and water heating. Transportation emissions accounted for 42% of overall community-wide emissions, with most of those emissions coming from gasoline used in passenger cars and trucks. Waste sector emissions including emissions from waste to landfill, were 5% of overall community-wide emissions.

Figure 1: Windsor’s percentage breakdown of Community-wide GHG emissions by sector (2022)

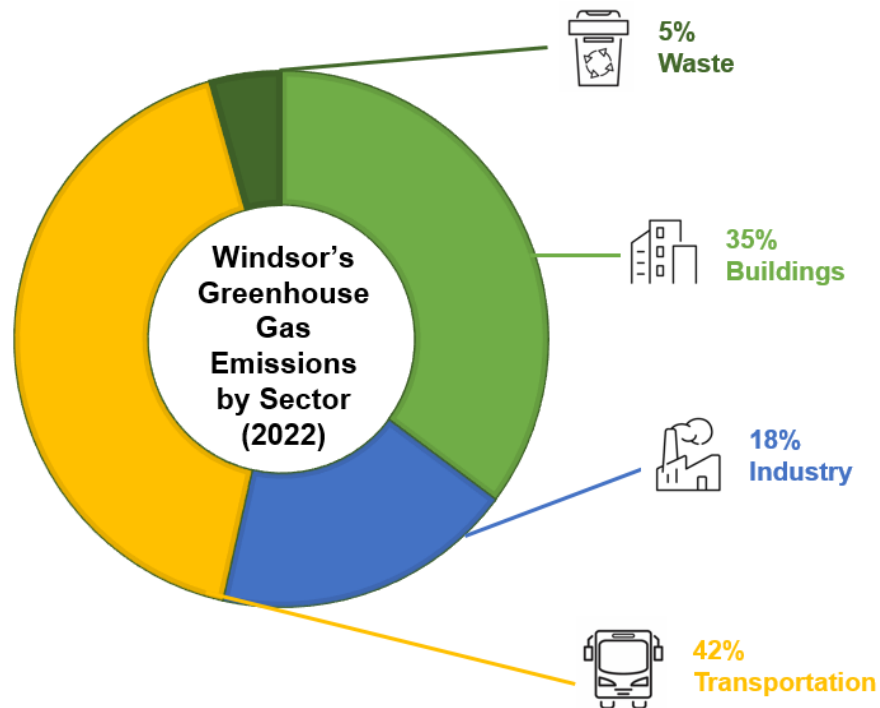


Table 1 provides an overview of status of the CEP primary performance indicators, comparing 2022 results to the 2014 baseline.

¹ 2014 Baseline emissions were adjusted in 2021 to include emissions from solid waste. Adjustment resulted in a corresponding increase to per-capita emissions.

Table 1: Primary Performance Indicators vs. CEP Baseline 2014

Primary Performance Indicators	CEP Baseline 2014	2022	% Change to Baseline
Total Emission (MTCO ₂ e)	1.869	1.487	-20.4
Total Energy (GJ)	39,016,987	31,742,704	-18.6
Population	211,000 ²	229,660 ³	+8.8
Emissions per Capita (tCO ₂ e/capita)	8.86	6.47	-27.0
Energy per Capita	184.91	138.04	-5.6

Table 2 identifies the changes in emissions broken out by the various sectors, and compares 2022 results with the 2014 baseline.

Table 2: Percent change in GHG emissions between 2014 and 2022

Community Emissions (MTCO ₂ e)	2014 GHG emissions (MTCO ₂ e)	2022 GHG emissions (MTCO ₂ e)	% Change to Baseline
Residential	0.366	0.305	-16.7
Commercial / Institutional	0.316	0.219	-30.7
Industrial	0.385	0.273	-29.1
On Road Transportation	0.733	0.626	-14.6
Waste	0.068	0.065	-4.4

To put the Community emissions into context, approximately 1.9 million acres of forest or 26 million seedlings planted and grown for ten years would be required to sequester the carbon emitted by the Windsor Community in 2022.

Since the approval of the CEP, the City of Windsor has been working towards implementation of many of the key strategies outlined in the plan. Some of the key initiatives include:

- 1) **Deep Energy Efficiency Retrofit program for homes**— A Program Design Study is currently being developed by Administration to create a path to retrofitting 80% of existing homes and businesses by 2041. This project was funded through a Community Efficiency Fund grant from the Federation of Canadian Municipalities (FCM).

² Population data used for 2014 Baseline

³ Statistics Canada 2021 Census population

- 2) **Sustainable Neighbourhood Action Plan** – In response to CQ12/2020 (CR544/2020) administration submitted a successful application to FCM for grant funding to complete a sustainable neighbourhood action plan.
- 3) **Encourage a Modal Shift towards Public Transportation and Active Transportation** – This plan for expanding and improving the active transportation network of Windsor was approved in June 2019. The plan has set a target to increase the mode share to 25% by 2041.

Corporate Energy and Emissions Inventory

A CCAP was concurrently developed as a subset of the CEP. This plan outlines strategies at a corporate level to reduce energy and emissions from municipal operations and fleets.

Corporate emissions account for only two percent of the overall community emissions. Figure 2 presents the breakdown of corporate emissions by sector for 2022. In 2022, buildings accounted for 42% of overall corporate emissions, with most of those emissions attributable to natural gas used for space and water heating. Fleet emissions accounted for 34% of overall emissions, with the majority of emissions attributed to Transit Windsor. Water and wastewater accounted for 23% of emissions, and streetlights accounting for roughly 1% of overall corporate emissions.

Figure 2: Windsor’s percentage breakdown of Corporate GHG emissions by sector (2022)

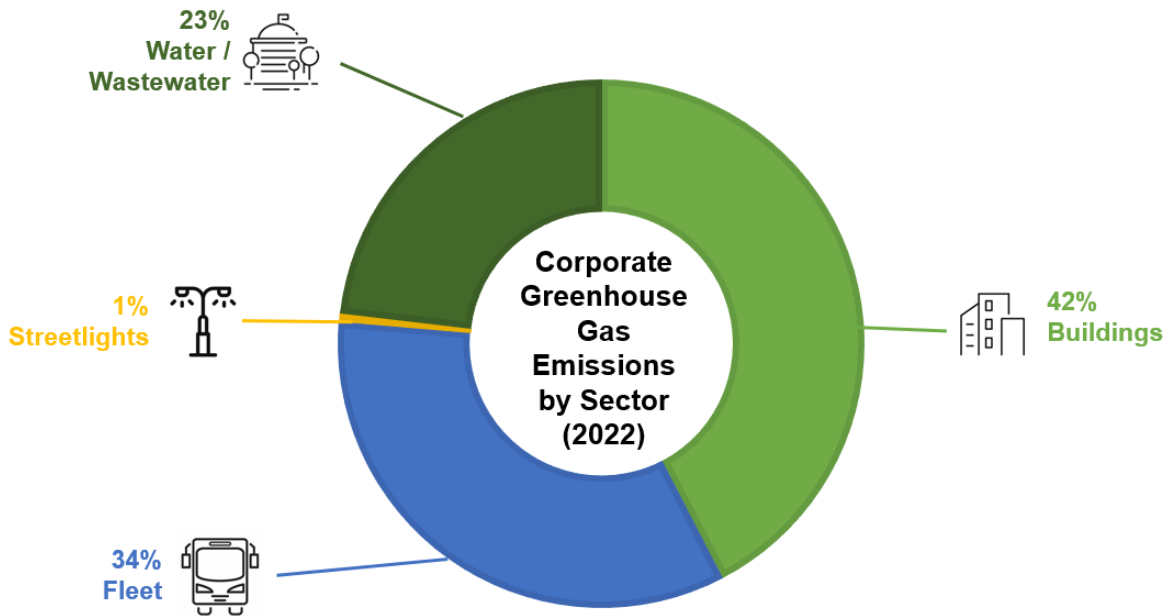


Table 3 highlights primary indicators as outlined in the CCAP. Overall, corporate emissions and energy usage have increased 5.9% and 9.5% respectively since 2014 and can be attributed to changes in corporate assets.

Table 3: Primary Performance Indicators vs. CCAP Baseline 2014

Primary Performance Indicators	CCAP Baseline 2014	2022	% Change to Baseline
Total Emission (kTCO₂e)	34.538	36.569	+5.9
Total Energy (GJ)	812,782	890,135	+9.5

Table 4 highlights the changes in corporate emissions by sector as compared to the CCAP Baseline of 2014. The most significant reductions occurred for the streetlights segment, which was reduced by 86.6% as a result of the completion of an LED conversion project. The water and wastewater segment increased 125.5% mainly due to the addition of the pelletizing plant in mid 2019, and the building segment decreased 9.1% due to reduced service hours of buildings and CHP units. Vehicular emissions remained similar to 2014 levels.

Table 4: Corporate Emissions by Sector vs. CCAP Baseline 2014

CORPORATE EMISSIONS (kTCO ₂ e)	CCAP Baseline 2014	2022	% Change to Baseline
Building	17.054	15.500	-9.1
Vehicle	12.247	12.407	+1.3
Streetlights	1.484	0.199	-86.6
Water & Wastewater	3.753	8.462	+125.5

Similar to the Community, a number of Corporate initiatives are underway to support the CCAP including, but not limited to:

- 1) **Integrated Site Energy Masterplan** – This study was conducted to evaluate the energy and emissions from wastewater treatment at Lou Romano Water Reclamation Plant and Little River Pollution Control Plant. The study presented recommendations for advancing these facilities to carbon neutral operation. This study was funded through FCM’s Municipal Climate Innovation Program and completed in 2020.
- 2) **Corporate Energy Management Plan (2019-2023)** This plan is a flexible document that sets goals, strategies, and initiatives to reduce the Corporation’s energy consumption and GHG emissions from Corporate facilities. The Corporate Energy Management is actively implementing strategies in this plan, including solar photovoltaic systems at a number of City facilities. Plans are underway to develop the 2024-2028 Corporate Energy Management Plan.
- 3) **Greenhouse Gas Reduction Pathway Feasibility Studies** These studies will outline an actionable path to reduce emissions to near net-zero for seven corporate facilities, encompassing five community centres/libraries and two twin-pad arena and pool facilities.

- 4) **Greening the Fleet** – The greening the fleet manual outlines strategies for improving local air quality by improving the fuel efficiency of the city vehicle fleet. The city fleet currently consists of fifteen hybrid or electric vehicles as of 2021.
- 5) **Transit Windsor Electrification Roadmap** – This roadmap will be developed to guide Transit Windsor to better plan for zero emission buses and infrastructure.

The above-described actions alone will not allow the City of Windsor to meet the approved 2017 CEP and CCAP targets. Significant work on actions in the CEP and CCAP will be an ongoing requirement to effect a drop in emissions and/or energy consumption to align with these targets.

Partnerships and Collaboration for 2023

The Environmental Sustainability and Climate Change office collaborates and engages with numerous municipalities and stakeholders on a continuous basis. This allows for the sharing of knowledge, best-practices and lessons learned in the effort to streamline and coordinate efforts across many geographical and organizational jurisdictions. It is recognized that climate change is a challenge that transverses municipal, provincial and federal borders and as such partnerships and collaboration are necessary to effectively address this challenge. It should be noted that the use of the term “partnerships” in this context does not constitute a legal arrangement, but an informal one designed to share information and reduce duplication of efforts across municipalities.

Municipal Partnerships

City of Burlington, City of Guelph, City of Kingston, City of London, City of Markham, City of Oakville, City of Ottawa, City of Toronto, City of Vaughn, County of Essex, Region of Durham, Region of Waterloo, Town of Newmarket. Other municipalities are consulted when similar priorities are identified.

Organizational Partnerships

Federation of Canadian Municipalities’ Partners for Climate Protection, Global Covenant of Mayors for Climate & Energy and the Carbon Disclosure Project, Clean Air Partnership, QUEST Canada (Ontario Community Energy and Climate ON-CEC working group, Low-Carbon Thermal Network, Deep Energy Retrofit working group), University of Windsor, St. Clair College

Annual Greenhouse Gas Inventories

Administration will commence working on the 2023 GHG inventory report in March 2024. Moving forward, Council should anticipate annual inventory reports in Q4 of the following year. This is due to timing in receiving data from third parties, some of which is not received until August of the following year.

Risk Analysis:

There are no significant risks associated with this information report.

Climate Change Risks

Climate Change Mitigation:

The information outlined in this inventory report is challenging from a climate change mitigation risk perspective. Data reveals that neither the Windsor community nor the Corporation is progressing towards its environmental goals at the pace required to meet our targets. This is logical as GHG-reduction strategies from the CEP or CCAP are only beginning to be implemented at this point. Until such time that major CEP/CCAP Strategies (ex. Deep Energy Efficiency Retrofits or District Energy expansion) are implemented, the city has little to no control over the community emissions within its jurisdiction and as such, the monitoring and validation of these emissions represent a first key step towards reduction. Understanding the quantity and distribution of emissions among the various sectors is paramount in determining the low-carbon pathway moving forward.

Major investment is required to affect emissions in a meaningful way. To determine the scale of these investments and the impact that inaction would have on the cities future, one can consider the future 2030 carbon cost of \$170/tonne CO₂ applied to the total community emissions of 1.5 MT. This corresponds in a total of \$253,000,000 dollars spent annually on carbon cost. This is a reoccurring cost and it would be fiscally prudent to invest in technologies to reduce this liability. This point is further emphasized when considering that a carbon cost is merely a symptom of the impacts of climate change, and the true cost is associated with the actual impacts to society due to a changing climate such as flooding, extreme heat, vector borne diseases and increased severity and frequency of intense storms. The majority of studies on the topic have determined that mitigation of climate change is less costly than adaptation to climate change impacts. A recent report from the Federal Emergency Management Agency in the US states that for every dollar spent on mitigation, six dollars are saved on adaptation. As such, investment into mitigation now will be less expensive than adaptation in the future.

Climate Change Adaptation:

Over a 50-year planning horizon, a certain level of climate change adaptation will be required regardless of mitigation efforts. This is due to a concept known as “climate inertia” which can be viewed as the time delay between the instance of emission and occurrence of the impacts caused by such emission. There is the opportunity however to prevent impacts above and beyond the inertia-based climate impacts by reducing and eventually eliminating emissions.

The GHG inventory outlined herein indicates that an environmentally relevant reduction of emissions has yet to occur. Emissions from this time period will continue to contribute to future climate change impacts as addressed in the City’s Degree of Change, Climate Change Adaptation Plan.

Financial Matters:

This report is for informational purposes, and highlights the changes in energy consumption and GHG emissions resulting from actions taken at the federal, provincial, community, and corporate levels. Although the Community and Corporate Greenhouse Gas Emissions and Energy Monitoring report does not require an outlay of funds, its

generation is the accountability of the Community Energy Plan Administrator and is funded under the existing Environmental Sustainability and Climate Change (ESCC) operations budget.

As part of the 2024 Budget process, the Community Energy Plan Administrator role was approved as a permanent-full time position, recognizing that the successful implementation of CEP strategies and the development of the Net-Zero Transition Plan required permanent resourcing.

The Climate Change Reserve fund has been exhausted as remaining funds were used to match grant funding for Residential Deep Energy Efficiency Retrofit Program Study and Sustainable Neighbourhood Action Plan Feasibility Study. As part of the 2025 budget process, ESCC will be assessing the need for additional funding and will bring forward a request that will allow for continued funding for adaptation and mitigation efforts. Global commitments to GHG reductions are required to reduce or limit the worst impacts of climate change.

Consultations:

- Asset Planning – Natasha Gabbana – Senior Manager Asset Planning
- Asset Planning – Corporate Energy Initiatives – Sokol Aliko, Manager Energy Initiatives, Cole Nadalin, Supervisor Energy Contracts, and Anastasios Stavropoulos, Supervisor Energy Contracts
- Environmental Services – Anne Marie Albidone – Manager Environmental Services
- Fleet – Angela Marazita, Manager Fleet
- Transit Windsor – Tyson Cragg Executive Director, and Jason Scott, Supervisor, Planning
- Transportation Planning – Kathleen Quenneville – Active Transportation Coordinator

Conclusion:

Community efforts to reduce energy consumption and GHG emissions are starting to show positive results. Windsor is exceeding the interim targets set out in the CEP, due mainly in part by actions taken in our community by businesses, institutions, and residents. The implementation of measures identified in corporate energy plans / Net-Zero plans, coupled with residential participation in home retrofit programs offered by the federal government and Enbridge, plus the adoption of EVs are responsible for observed results.

At the corporate level, the City has undertaken several initiatives resulting in GHG reductions, including the conversion of traffic signals and streetlights to LED lighting; building retrofits; and transitioning the fleet (including Transit Windsor) to include hybrid and EVs. While several improvements to municipal buildings and operations have been made, overall, City emissions overall are rising, mainly due to the addition of equipment and facilities that significantly increase the consumption of fossil fuels. Corporately, the City is tracking above target and is at risk of not reaching the 2041 targets set out in the CCAP.

Moving forward, the City faces challenges in implementing climate action plans that target community and corporate emission levels, some of which are within the City's sphere of influence (e.g., investment level, development planning, policy) while others are not (e.g., technological advancements, macro trends, federal and provincial funding). As municipalities across the county directly or indirectly influence roughly 50% of national GHG emissions, this issue is not unique to Windsor.

In 2022, City Council approved in principal Science-Based targets and a Net-Zero 2050, administration continues to work on developing Windsor's Net-Zero Transition Plan using the 2017 Community Energy Plan strategies as a base. In order to meet Net-Zero targets, the City must continue to integrate climate change action into projects, plans and budgets. The recently approved Sustainable Procurement guide, is one tool, that may help guide Administration towards considering climate change mitigation during procurement of goods and services. The ESCC Office and the Corporate Energy team should also be used as resources during the development of projects and policies to ensure climate action is not overlooked.

Planning Act Matters:

N/A

Approvals:

Name	Title
Karina Richters	Supervisor, Environmental Sustainability and Climate Change
Josie Gualtieri	Financial Planning Administrator
Matthew Johnson	Executive Director, Economic Development & Climate Change
Jelena Payne	Commissioner of Economic Development and Innovation
Janice Guthrie	Commissioner of Finance and City Treasurer
Joe Mancina	Chief Administrative Officer

Notifications:

Name	Address	Email

Appendices:

01 – 2022 Community and Corporate Greenhouse Gas and Energy Monitoring Report

Windsor's
COMMUNITY ENERGY PLAN

A powerful plan for the future



Community and Corporate
Greenhouse Gas and Energy
Monitoring Report

2022 Results

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Glossary

BAU: Business as Usual

BBGS: Brighton Beach Generation Station

CCAP: Corporate Climate Action Plan

CDP: Carbon Disclosure Project

CEP: Community Energy Plan

CEMP: Corporate Energy Management Plan

CHP: Combined Heat and Power

CO_{2e}: Carbon Dioxide Equivalent

CR: Council Resolution

ECCC: Environment and Climate Change Canada

E-LT1: Expedited Long Term 1

EMP: Environmental Master Plan

EVs: Electric Vehicles

EWCC: East Windsor Cogeneration Centre

EWSWA: Essex Windsor Solid Waste Authority

FIT: Feed-in Tariff

GCoM: Global Covenant of Mayors for Climate and Energy

GDP: Gross Domestic Product

GHG: Greenhouse Gas

GWh: GigaWatt Hours (measurement of electricity)

IESO: Independent Electricity System Operator

IPCC: Intergovernmental Panel on Climate Change

kT: Kilotonne (1,000 Tonnes)

LT1: Long Term 1

m³: Cubic metre (measurement of natural gas volume)

MT: Megatonne (1,000,000 Tonnes)

NIR: National Inventory Report

OBC: Ontario Building Code

PCP: Partners for Climate Protection

R-DEER: Residential Deep Energy Efficiency Retrofits








RFP: Request for Proposal

SNAP: Sustainable Neighbourhood Action Plan

t: Tonne

WECHC: Windsor-Essex Community Housing Corporation

Key Findings

	<p>In 2022, Windsor's community-wide greenhouse gas (GHG) emissions were 1.487 Megatonnes (MT) of carbon dioxide equivalent (CO₂e), which is 21% lower than in 2014. Community-wide emissions decreased by nearly 16% compared to 2019 when Windsor emitted 1.765 MT CO₂e.</p>
	<p>Global GHG emissions increased by roughly 0.7 billion tonnes in 2022, a 2% increase from 2019, reversing the decline triggered by worldwide COVID-19 restrictions¹. As COVID-19 economic recovery efforts gain momentum, GHG emissions are expected to approach pre-pandemic levels in subsequent years.</p>
	<p>Windsor exceeded its 2022 target of a 12% reduction in GHG emissions from a 2014 baseline. In 2022, Windsor's emissions were 21% lower than in 2014 but since this is an anomaly year due to the COVID-19 pandemic, emissions are expected to approach pre-pandemic levels in subsequent years. Ambitious climate actions and programs are still required from the City to stay on track if its next interim target of 24% GHG emissions reduction by 2030, from 2014 levels, is to be achieved.</p>
	<p>Transportation sector emissions were the primary source of GHG emissions in Windsor, totaling 42% of community-wide emissions (42% in 2019).</p>
	<p>Buildings sector emissions were the second largest source of GHG emissions in Windsor, accounting for 35% of community-wide emissions in 2022. Community-wide, emissions from natural gas (space and water heating), continued to be the largest source of building and industrial sector emissions in Windsor, accounting for 50% of total emissions in 2022.</p>
	<p>Waste sector emissions, primarily from landfills, comprised roughly 5% of community-wide emissions in 2022.</p>
	<p>The City of Windsor's corporate emissions, increased by roughly 6% compared to 2014 and continued to account for about 2% of community-wide emissions.</p>

¹

https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fedgar.jrc.ec.europa.eu%2Fbooklet%2FEDGARv8.0_FT2022_GHG_booklet_2023.xlsx&wdOrigin=BROWSELINK

1. Executive Summary



The City of Windsor’s (City) 2022 Community and Corporate Greenhouse Gas (GHG) and Energy Monitoring Report tracks the City’s progress towards meeting its GHG emission reduction targets. These inventories serve to help evaluate the effectiveness of emissions reduction strategies and policies laid out in the [Community Energy Plan \(CEP\) \(2017\)](#) and [Corporate Climate Action Plan \(CCAP\) \(2017\)](#). It also helps to inform the success of City-led climate programs and initiatives. The CEP and CCAP use a baseline inventory 2014 with a target end date of 2041.

The City relies on utility and fuel sales data as its primary source of consumption data. Please refer to Appendix A: Methodology for more information on how emissions are calculated.

The City does not have full control over all GHG emissions generated within its municipal boundary; however it can influence community-wide emissions through the prioritization of strategies and initiatives that are actionable at the municipal level. Some examples include:

- Residential Deep Energy Retrofit Study (R-DEER)
- Sustainable Neighbourhood Action Plan (SNAP)
- Green Economy Hub

Since 2014, emissions and energy consumption for the Windsor community have generally followed a downward trend, with significant reductions observed in 2020 and 2021 (attributed to impacts from restrictions and shutdowns from COVID-19) maintained in 2022. In 2022, a total of 1.487 Megatonnes of Carbon Dioxide equivalent (MTCO_{2e}) was emitted to the atmosphere compared to the 1.869 MTCO_{2e} emitted in 2014 inventory². These emissions totals result in per-capita emissions of 6.47 tonnes of Carbon Dioxide equivalent (tCO_{2e}) for 2022 compared to 8.86 tCO_{2e} in the 2014 CEP baseline. The goals of the CEP are:

² 2014 Baseline emissions were adjusted in 2021 to include emissions from solid waste. Adjustment resulted in a corresponding increase to per-capita emissions.

- 40% reduction in per capita energy usage from 2014 baseline by 2041 to 107 GJ/capita.
- 40% reduction in per capita CO₂ emissions from 2014 baseline by 2041 to 5 tCO₂e/capita.

Did you know?

For 2022, the total yearly community emissions is equivalent to the carbon sequestered by 1.9 million acres of forest, or 26 million seedlings planted and grown for ten years.



Over the same timeframe, Corporate emissions saw an increase of 5.9% over the CCAP baseline. The goals of the CCAP are:

- 40% reduction in energy usage from 2014 baseline by 2041
- 40% reduction in emissions from 2014 baseline by 2041.

Tables 1A and 1B below indicate the trends observed for both Corporate and Community emissions.

**Table 1A: Community Emissions
Trend 2022 vs. 2014**

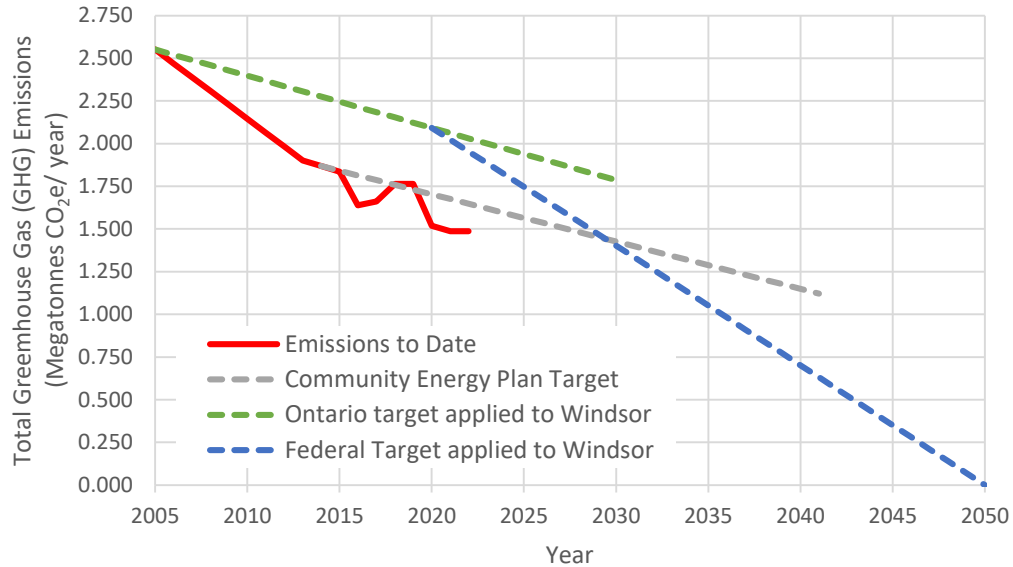
COMMUNITY		
Sector	Emissions Trend	
	2019	2022
Residential	↓	↓
Industrial	↑	↓
Commercial	↓	↓
On-Road Transport	↑	↓
Total Emissions	↓	↓

**Table 1B: Corporate Emissions
Trend 2022 vs. 2014**

CORPORATION		
Sector	Emissions Trend	
	2019	2022
Buildings	↑	↓
Street Lighting	↓	↓
On-Road Transport	↑	↑
Water/Wastewater	↑	↑
Total Emissions	↑	↑

As shown in Figure 2, community-wide emissions have decreased since 2005 and although the City exceeded its 2022 emissions reduction target, it is expected that emissions will approach pre-pandemic levels in subsequent and future years.

Figure 2: Windsor's Community-wide GHG emissions and GHG emissions targets³



In 2022, Windsor's community-wide emissions were 20.5% lower than 2014 but since this is a post-COVID-19 recovery year, ambitious climate actions and programs are still required for the community to stay on track of its 2041 target. Further, as detailed in Table 2 below, Windsor still needs to cut its emissions by roughly 0.061 MT to meet the City's 2030 CEP target of a 24% emissions reduction below 2014 levels.

³ 2020, and 2021, are anomaly years. As COVID-19 economic recovery efforts gain momentum, GHG emissions are expected to approach pre-pandemic levels in subsequent years.

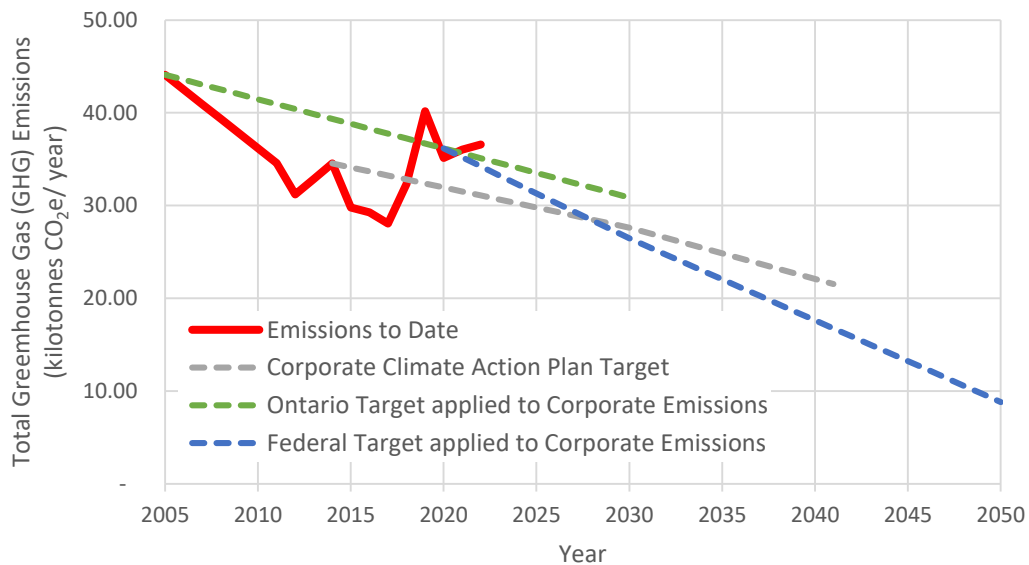
Table 2: Council-adopted Community-wide GHG emissions targets and status (per the CEP)

Year	GHG reduction target from 2014 baseline	GHG emissions target (MTCO _{2e}) ⁴	Progress as of 2022
2022	12%	1.648	The community exceeded its 2022 GHG reduction target. In 2022, Windsor's community-wide emissions were 1.487 MTCO _{2e} , which is 20.5% lower than in 2014.
2025	16%	1.565	As of 2022, Windsor has exceeded its 2025 GHG reduction target. While promising, additional progress is required to prevent a return to 2019 emission levels.
2030	24%	1.426	Windsor's community must reduce annual emissions by about 0.061 MTCO _{2e} to meet the 2030 target.
2041	40%	1.122	0.365 MTCO _{2e} must be eliminated to meet the 2041 target. The community must rapidly increase its current annual emissions reduction rate.

Figure 3 shows that overall, corporate emissions experienced a downward trend between 2005 and 2017, before transitioning to an upward trend starting in 2018. Changes in corporate emissions can be attributed to decisions made in relation to corporate assets (i.e. energy efficiency, fuel type, etc.). Since 2018, the city has not met its emissions targets.

⁴ Emissions target calculated relative to 2014 baseline emissions of 1.869 MTCO_{2e}.

Figure 3: Windsor's Corporate GHG emissions and GHG emissions targets



In 2022, Windsor's corporate emissions were 5.9% higher than 2014. Ambitious climate actions and programs will be required from the City to get back on track and meet its 2041 target. Further, as detailed in Table 3 below, Windsor still needs to cut its emissions by roughly 6.780 ktCO₂e to meet the City's 2025 CCAP target of a 16% emissions reduction below 2014 levels.

Table 3: Council-adopted Corporate GHG emissions targets and status (per CCAP)

Year	GHG reduction target from 2014 baseline	GHG emissions target (kTCO ₂ e) ⁵	Progress as of 2022
2022	12%	30.445	The City did not meet its 2022 GHG reduction target. In 2022, Windsor's corporate emissions were 36.569 kTCO ₂ e, which is 5.9% higher than in 2014.
2025	16%	29.789	The City must reduce its corporate emissions by about 6.780 kTCO ₂ e to meet the 2025 target.
2030	24%	27.630	Windsor must reduce annual emissions by about 8.939 kTCO ₂ e to meet the 2030 target.
2041	40%	20.723	15.846 kTCO ₂ e must be eliminated to meet the 2041 target. The City must rapidly increase its current annual emissions reduction rate.

⁵ Emissions target calculated relative to 2014 baseline emissions of 34.538 kTCO₂e

2. Background

In 2002, the City of Windsor joined the Federation of Canadian Municipalities (FCM) Partners for Climate Protection (PCP). In 2006 Council approved the City's first *Environmental Master Plan (EMP)*. The 2006 EMP prioritized the following five goals:

- Goal A: Improve Our Air and Water Quality
- Goal B: Create Healthy Communities
- Goal C: Green Windsor
- Goal D: Use Resources Efficiently
- Goal E: Promote Awareness

In 2010, the City of Windsor undertook the development of the City's first greenhouse gas (GHG) inventory as outlined in FCM's PCP program (Milestone 1). Upon completion of this first inventory, City Council committed to completing a Climate Change Mitigation Plan.

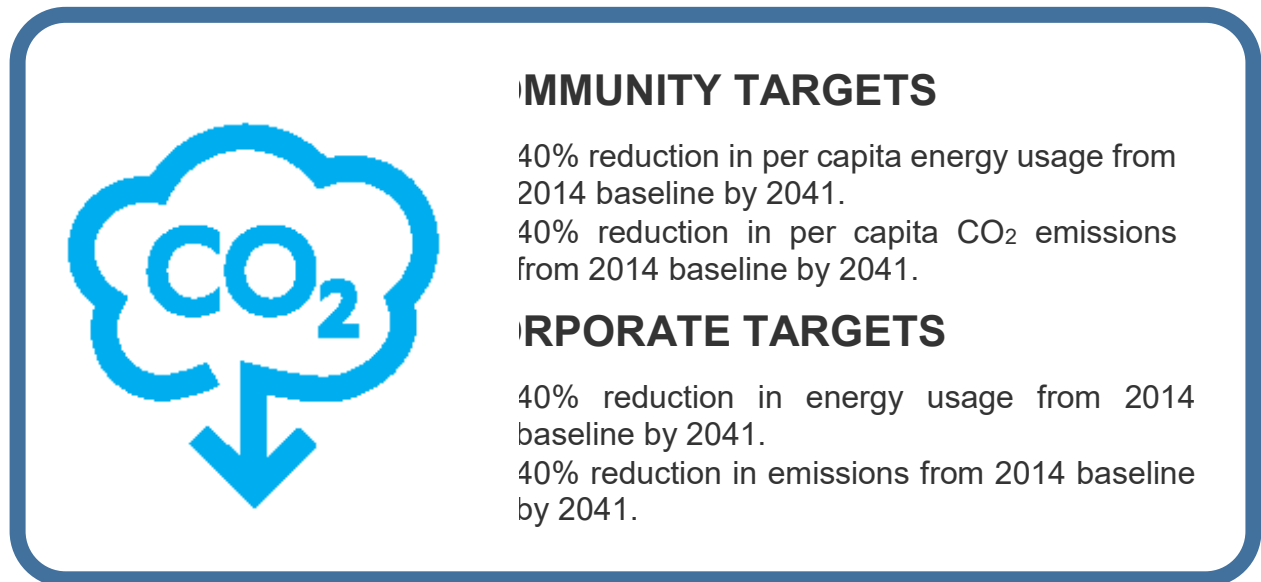
Building on the goals of the EMP and the information obtained through the original inventory, the City developed a long-term comprehensive plan to address energy and greenhouse gas emissions through the completion of a Community Energy Plan (CEP) and associated Corporate Climate Action Plan (CCAP). Both the CEP and CCAP were approved by Council in 2017 (CR426/17).

The CEP aims to create economic advantage, mitigate climate change, and improve energy performance. It strives to position Windsor as an energy center of excellence that boasts efficient, innovative, and reliable energy systems that contribute to the quality of life of the residents and businesses.

The CEP includes ambitious and transformative targets to support global efforts to keep global temperature increases within 1.5 degrees Celsius. By meeting CEP targets, it is anticipated that up to 2.2 billion dollars of energy expenditure can be saved community wide.

Figure 4 illustrates the Community and Corporate energy and emission targets as stated in the CEP and CCAP.

Figure 4: Community and Corporate Energy and Emission Targets



In addition to the targets outlined in the CEP and CCAP, the City has also committed to participating in the Carbon Disclosure Project (CDP) administered through the Global Covenant of Mayors for Climate and Energy (GCoM). This commitment includes reporting GHG emissions inventories, mitigation actions, as well as energy and emissions targets on a yearly basis through the CDP website.

On November 19, 2019, City Council approved the Windsor Essex County Environment Committee’s motion that the City of Windsor pass a Climate Change Emergency Declaration (CR570/2019). Included as an outcome of this report is the recommendation to update the City’s GHG emission targets to science-based targets and reflect the commitment to achieve a reduction of 45% of 2005 levels by 2030 and reaching Net-Zero emissions by 2050, aligning with the Government of Canada’s GHG Reduction Targets.

In an effort to achieve these reduction targets, a number of interim targets are required to accelerate the implementation of emission reduction activities and progress tracked. The Acceleration of Climate Change Actions (CR187/2020 ETPS 738) report was received by City Council on May 4, 2020, in response to the Climate Change Emergency Declaration.

In November of 2020, Council requested (CR558/2020) administration to report annually on greenhouse gas emissions and energy usage. The Community and Corporate Greenhouse Gas Emissions and Energy Monitoring Report – 2021 (CR410/2023 ETPS 956) report was received by City Council on October 16, 2023.

In March 2023, the Intergovernmental Panel on Climate Change (IPCC) released a Summary of its AR6 Synthesis Report Climate Change 2023, indicating that the window within which we can reduce GHG emissions and avoid overshooting the global warming limit of 1.5°C is rapidly closing.

“In this decade, accelerated action to adapt to climate change is essential to close the gap between existing adaptation and what is needed. Meanwhile, keeping warming to 1.5°C above pre-industrial levels requires deep, rapid and sustained greenhouse gas emissions reductions in all sectors. Emissions should be decreasing by now and will need to be cut by almost half by 2030, if warming is to be limited to 1.5°C.”⁶

The Community and Corporate Greenhouse Gas and Energy Monitoring Report details the progress made by the City of Windsor as we work towards our GHG Emission and Energy Consumption targets.

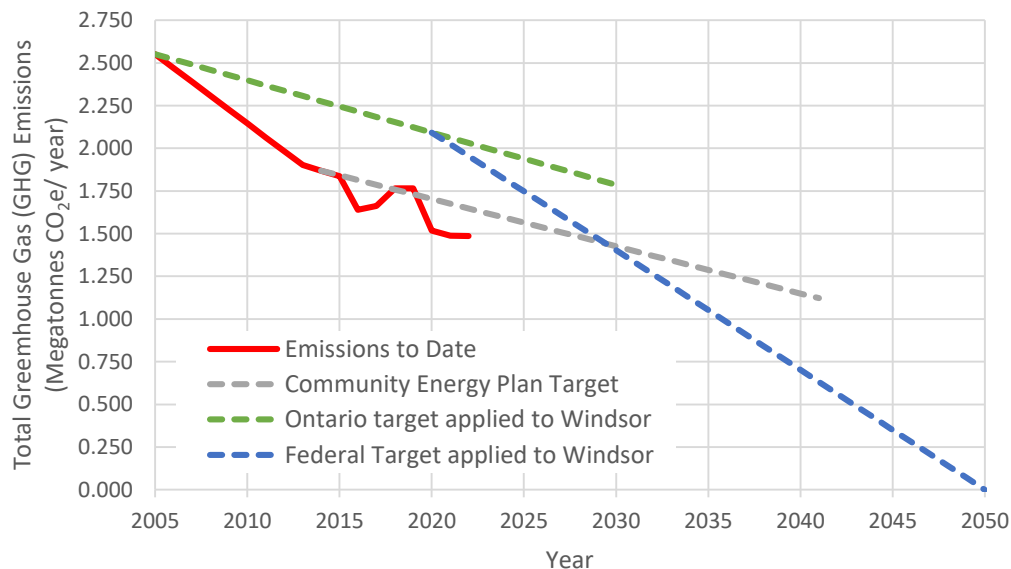
⁶ [IPCC AR6 SYR PressRelease en.pdf](#)

3. Community Greenhouse Emissions

The City's GHG inventory includes community-wide emissions that can currently be estimated or measured by the City. This section compares emissions to the CEP targets. Additional details regarding the methodology used and a comparison to Science Based Climate targets can be found in Appendix A and Appendix B, respectively. Refer to section 4 for the City's corporate emissions and further details on corporate emissions estimates.

Community GHG emissions are tracked against federal, provincial, and municipal (CEP) targets as highlighted in Figure 5. In general, community-wide emissions have decreased since 2005 and although the City exceeded its 2022 emissions reduction target, without a continued focus on ambitious climate actions and programs, it will be challenging for the community to meet its 2041.

Figure 5: Windsor's Community-wide GHG emissions and GHG emissions targets



Further, as detailed in Table 4 below, Windsor still needs to cut its emissions by roughly 0.061 MT to meet the City's 2030 CEP target of a 24% emissions reduction below 2014 levels, and 0.365 MT to meet the City's 2041 CEP target of 40% reduction. These reductions are the equivalent of removing approximately 17,000 and 100,000 gasoline passenger vehicles from the road respectively.

Table 4: Council-adopted Community-wide GHG emissions targets and status (per the CEP)

Year	GHG reduction target from 2014 baseline	GHG emissions target (MTCO _{2e}) ⁷	Progress as of 2022
2022	12%	1.648	The community exceeded its 2022 GHG reduction target. In 2022, Windsor's community-wide emissions were 1.487 MTCO _{2e} , which is 20.5% lower than in 2014.
2025	16%	1.565	As of 2022, Windsor has exceeded its 2025 GHG reduction target. While promising, additional progress is required to prevent a return to 2019 emission levels.
2030	24%	1.426	Windsor's community must reduce annual emissions by about 0.061 MTCO _{2e} to meet the 2030 target. ⁸
2041	40%	1.122	0.365 MTCO _{2e} must be eliminated to meet the 2041 target. ⁹ The community must rapidly increase its current annual emissions reduction rate.

Stationary energy sources are one of the largest contributors to a community's GHG emissions. These emissions originate primarily from the use of natural gas and electricity in residential, commercial, and institutional buildings, and manufacturing facilities. Stationary emissions within buildings include heating and cooling, lighting, and operational energy usage. Operational energy for residences includes electricity for appliances, and electronic devices such as televisions, computers, and cellular phones. Operational energy for commercial and institutional facilities generally includes the same scope as residences. Operational energy for industrial facilities includes electricity to operate machinery as well as natural gas used in industrial processes such as drying, casting, moulding, smelting, etc. Removed from the City's Community GHG emissions inventory are GHG emissions from natural gas power plants used to generate grid-supplied electricity. However, the electricity GHG equivalency factor is updated periodically to account for the increased use of natural gas to generate electricity.

Figure 6 shows the year-over-year changes in sectoral emissions from 2014 to 2022, while Figure 7 presents the breakdown of emissions by sector for 2022. In 2022, building sector emissions accounted for 53% of overall community-wide emissions (buildings 35%, industry 18%), with most of those emissions attributable to natural gas used for space and water heating. Transportation emissions accounted for 42% of overall community-wide emissions, with most of those emissions coming from gasoline

⁷ Emissions target calculated relative to 2014 baseline emissions of 1.869 MTCO_{2e}.

⁸ 0.061 MTCO_{2e} is the difference between the 2022 Community GHG Emissions and the 2030 Target as calculated from CEP.

⁹ 0.365 MTCO_{2e} is the difference between the 2022 Community GHG Emissions and the 2041 Target as calculated from CEP.

used in passenger cars and trucks. Waste sector emissions including emissions from waste to landfill, were 5% of overall community-wide emissions. More details on GHG emissions by sector are provided in Section 3.3.

Figure 6: Windsor’s year-over-year Community-wide GHG emissions by sector

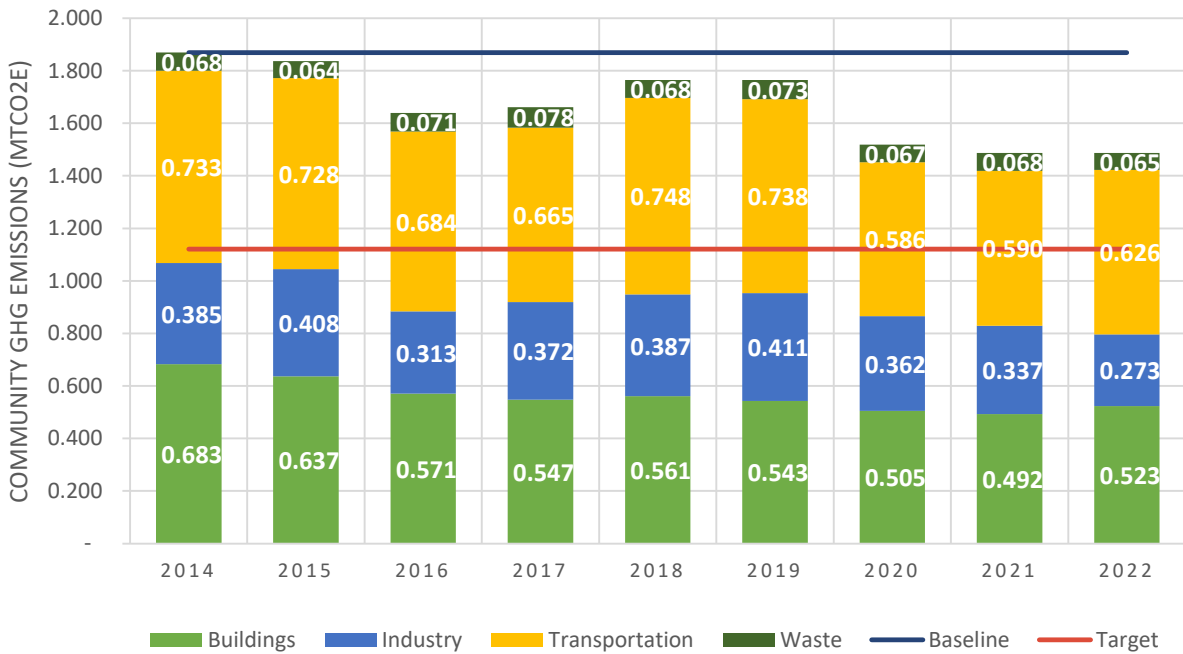
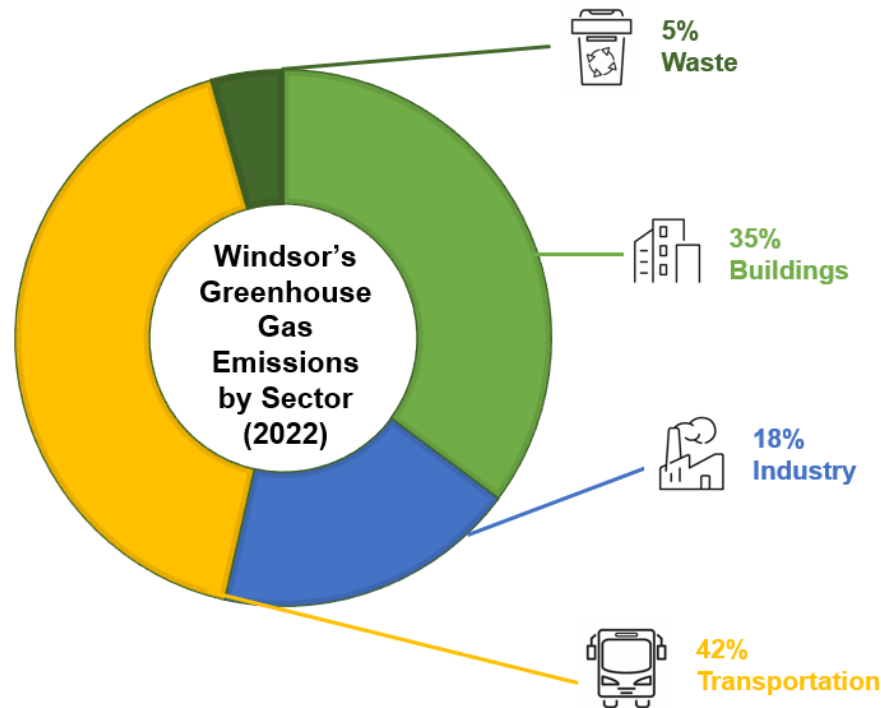


Figure 7: Windsor's percentage breakdown of Community-wide GHG emissions by sector (2022)



3.1 Key drivers of GHG emissions

Figure 8 provides a snapshot of key drivers of GHG emissions in Windsor, including:

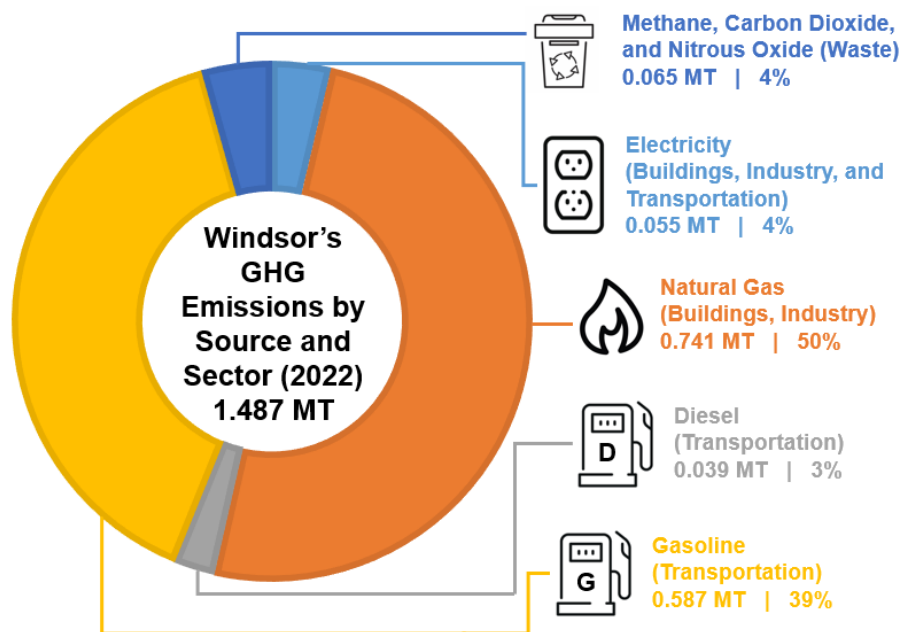
1. Electricity. Emissions from electricity were measured at approximately 0.055 MT, a decrease of 56.6% compared with 2014, corresponding to an overall decrease in Windsor's 2022 electricity emissions and an overall decrease in electricity consumption. It should be noted that residential electricity consumption decreased by roughly 3.4% between 2019 and 2022, which is at odds with the shift towards work- and learn-from-home setups resulting from COVID-19 restrictions between January and March 2022 (see Section 3.3.1 and Table 6 for more information).
2. Natural gas. Natural gas consumption to heat buildings and for industrial uses continued to be the largest source of community-wide GHG emissions in 2022 at approximately 0.741 MT, accounting for about 50% of all emissions. Most of this natural gas is used for space and water heating. Compared to 2014, emissions from natural gas decreased by about 21.3% due to warmer winter and autumn weather that reduced the demand for space heating. For more information on how weather affects fluctuations in natural gas consumption, refer to Appendix C: Heating and Cooling Degree Days.
3. Diesel. Diesel used to fuel passenger cars, trucks, and buses is the smallest source of community-wide GHG emissions at 0.039 MT or 3% of total emissions.

Community emissions were calculated using sales data for fuel sold in Windsor. Compared to 2014, emissions from diesel decreased by about 51.2% due to factors affecting fuel selection including vehicle types sold, price of fuel, and driving patterns.

4. Gasoline. Gasoline used for passenger cars and trucks accounted for almost 39 percent of community-wide GHG emissions in Windsor. It is the second largest emissions source at approximately 0.587 MT. Compared to 2014, emissions from gasoline decreased by about 10.2%.
5. Methane, carbon dioxide, and nitrous oxide from waste. Emissions from methane, carbon dioxide, and nitrous oxide were 0.065 MT in 2022 making up about 4% of total emissions. Most methane emissions not associated with natural gas consumption originate from community waste transported to the regional landfill. Waste emissions decreased by about 5.6% as compared to 2014.

Further details on key drivers of GHG emissions in Windsor are provided in Section 3.3.

Figure 8: Key drivers of Community-wide GHG emissions (2022) expressed in MT and percent of total emissions



3.2 Population Growth, Economic Growth, and GHG emissions

Understanding the relationship between factors such as population, economic growth, and GHG emissions is important as they are indicative of a city's well-being and resilience.

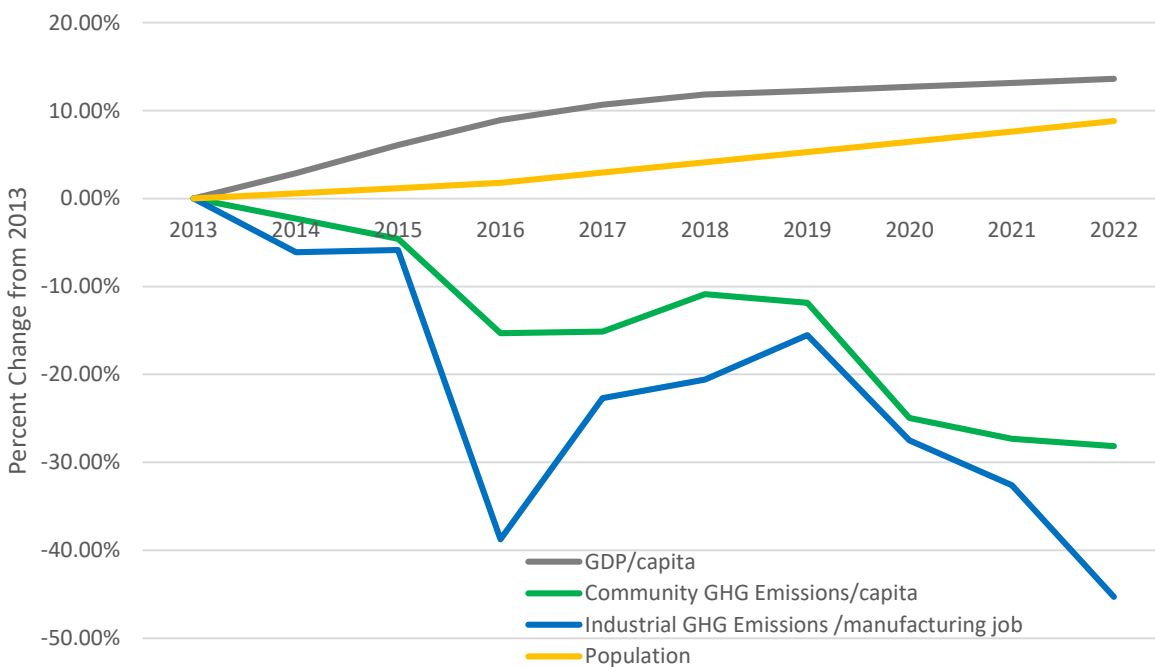
Invest Windsor-Essex released a Five-Year Strategic Plan (2018-2022) focusing on strategies to transition Windsor-Essex from a traditionally transaction-based economy to

a transformational, knowledge-based economy that recognizes continual innovation supported by open networks and complex systems as its foundational elements.

Historically, CO₂ emissions have been strongly tied to a Country/Region's GDP. But this relationship no longer holds true as many countries have managed to achieve economic growth while reducing emissions including the UK, France, Germany, Sweden, Finland, Denmark, Italy, Czechia, and Romania¹⁰.

Figure 9 highlights Windsor's efforts to decouple economic growth from CO₂ emissions. The figure shows the percent (%) change in GDP per capita, GHG emissions per capita, and industrial GHG emissions per manufacturing job since 2014. Windsor's economic growth indicator (GDP/capita) is increasing (growing), while the community GHG emissions /capita and industrial GHG emissions /manufacturing job are decreasing (reducing), indicating that emissions and GDP have been successfully decoupled.

Figure 9: per Capita GHG emissions and GDP (% change from 2013)



¹⁰ <https://ourworldindata.org/co2-gdp-decoupling>

3.3 Details on GHG emissions by sector

The COVID-19 pandemic played a significant role in reducing GHG emissions in 2020, 2021, and 2022. In Windsor, this translated to a 15.8% community-wide GHG emissions reduction from 2019 levels and industrial sector emissions saw the most dramatic decrease, where emissions were reduced by 33.7%. As post COVID-19 economic recovery efforts gain momentum, it is expected that the GHG emissions in Windsor will increase from 2022. The City will continue to track progress on GHG emissions reductions through annual sector-based inventories and continue to develop policies to drive down emissions going forward.

Table 5 highlights a number of primary indicators as outlined in the CEP.

Table 5: Primary Performance Indicators vs. CEP Baseline 2014

Primary Performance Indicators	CEP Baseline 2014	2022	% Change to Baseline
Total Emission (MTCO ₂ e)	1.869	1.487	-20.4
Total Energy (GJ)	39,016,987	31,742,704	-18.6
Population	211,000 ¹¹	229,660 ¹²	+8.8
Emissions per Capita (tCO ₂ e/capita)	8.86	6.47	-27.0
Energy per Capita	184.91	138.04	-5.6

3.3.1 Buildings

In 2022, emissions from residential and commercial buildings accounted for approximately 0.523 MT of the city's total inventory, and emissions from industrial buildings accounted for approximately 0.273 MT of the city's total inventory, making buildings the largest source of emissions at roughly 53.5% of community-wide emissions. Compared to 2014, overall building emissions decreased by about 25.4%.

Figure 10 breaks down the emissions contribution of each building type – residential, commercial/ institutional, and industrial¹³. Figure 11, on the other hand, shows the proportion of emissions coming from the two main energy forms – electricity and natural gas – by building type. Natural gas is primarily used for heating during the winter months. In 2022, the contribution of emissions from natural gas in buildings was approximately 13.5 times greater than emissions contributed from electricity.

¹¹ Population data used for 2014 Baseline

¹² Statistics Canada 2021 Census population

¹³ Industrial emissions include emissions from heating and cooling industrial buildings, as well as process emissions.

Figure 10: Percentage of buildings sector GHG emissions by building type (2022)

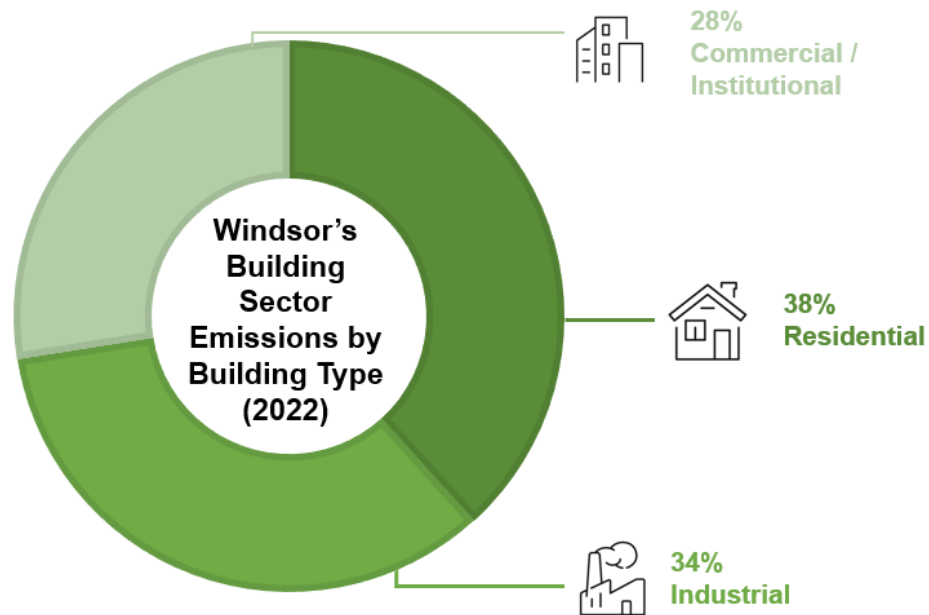
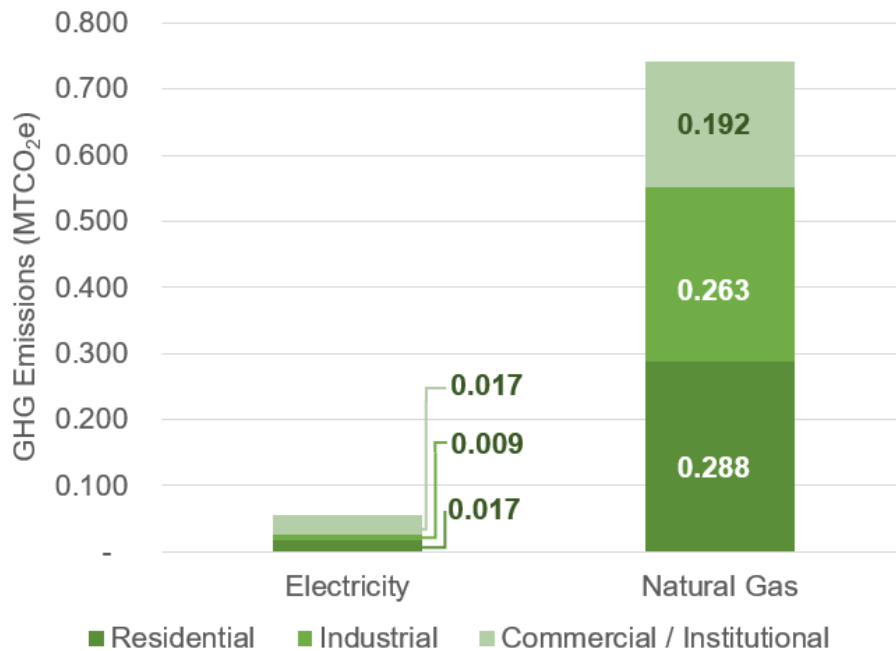


Figure 11: Buildings GHG emissions by energy form (2022)



Relative to 2014, 2022 natural gas consumption from residential buildings decreased by about 15.6%, 26.6% for commercial & institutional, and 25.1% for industrial buildings (Table 6). Fluctuations in natural gas consumption can be attributed to annual heating degree days, which influences the demand for space heating. For more information on how weather affects fluctuations in natural gas consumption, please refer to Appendix

C: Heating and cooling degree days. It must be noted that, aside from weather conditions, a decrease in natural gas consumption may have partly been driven by improved building efficiency, electrification of home heating and appliances (i.e. installation of heat pumps) or decreases in industrial loads due to inventory adjustments or energy efficiency initiatives. More data is needed to confirm whether measures to enhance building performance affected total natural gas use significantly in 2022.

Table 6: Percent change in natural gas consumption between 2014 and 2022

Building Type	2014 Natural Gas use (millions m ³)	2022 Natural Gas use (millions m ³)	% Change to Baseline
Residential	176.4	148.8	-15.6
Commercial / Institutional	134.2	98.5	-26.6
Industrial	182.0	136.3	-25.1

Relative to 2014, 2022 electricity consumption from residential buildings increased approximately 6.7%, and decreased approximately 8.7% for commercial & institutional, and 45.8% for industrial buildings respectively (Table 7).

Table 7: Percent change in electricity consumption between 2014 and 2022

Building Type	2014 Electricity use (GWh)	2022 Electricity use (GWh)	% Change to Baseline
Residential	625	667	+6.7
Commercial / Institutional	1,229	1,122	-8.7
Industrial	668	362	-45.8

Relative to 2014, 2022 GHG emissions from residential buildings decreased approximately 16.7%, 30.7% for commercial & institutional, and 29.1% for industrial buildings (Table 8).

Table 8: Percent change in GHG emissions between 2014 and 2022

Building Type	2014 GHG emissions (MTCO ₂ e)	2022 GHG emissions (MTCO ₂ e)	% Change to Baseline
Residential	0.366	0.305	-16.7
Commercial / Institutional	0.316	0.219	-30.7
Industrial	0.385	0.273	-29.1

The decline in commercial / institutional emissions can be attributed to efforts of a number of Windsor institutions committed to aggressive greenhouse gas emission reduction targets including, but not limited to:

- University of Windsor – Committed to reducing 45% of their GHG emissions by 2030 and reaching net zero by 2050 from a 2019 baseline;

- Windsor Essex Catholic District School Board – committed to 22.5% reduction in energy consumption for the board by 2023-2024 from a 2018-2019 baseline; and
- Greater Essex County District School Board – committed to 10% cumulative reduction in annual energy intensity by 2022-2023 from a 2017-2018 baseline (i.e. 2% reduction per year).

3.3.2 Industry

In 2022, industrial emissions represent 18% of total emissions for the Windsor community (0.273 MT). Historic data reveals that industrial emissions and energy consumption in Windsor peaked in 2019 before undergoing a marked decline due to the impacts of COVID-19 and supply chain disruptions.

In part, the decline in community emissions and industrial emissions can be attributed to the number of Windsor employers committed to aggressive greenhouse gas emission reduction targets including, but not limited to:

- Pernod Richard – Committed to reducing 50% of their overall footprint by 2030 and reaching net zero by 2050, addressing scope 1, 2 and 3 emissions;
- Stellantis – Be the first auto maker to be carbon free by 2028;
- Caesars Windsor – Goal of reducing Scope 1 and 2 emissions by 35% by 2025 and by 100% by 2050 and reduce scope 3 emissions by 60% by 2023; and
- Ford Motor Company – Carbon neutrality by 2050 for vehicles, facilities, and suppliers and 76% reduction in Scope 1 and 2 emissions by 2035 from 2017 baseline and a 50% reduction in Scope 3 emissions by 2035 from 2019 baseline.

3.3.3 Transportation

Transportation emissions in 2022 were approximately 0.626 MT, accounting for 42% of the community-wide inventory, and continued to see a significant overall decrease in emissions in 2022, with emissions 15.2% below 2019 levels.

On-road emissions are calculated based on the reported fuel sales within the city using standard emissions factors for each of the transportation fuels (Table 9 and Figure 12). It is likely that on-road emissions are underestimated as this method does not account for cross border refueling and national/international trucking based out of the Windsor region.¹⁴

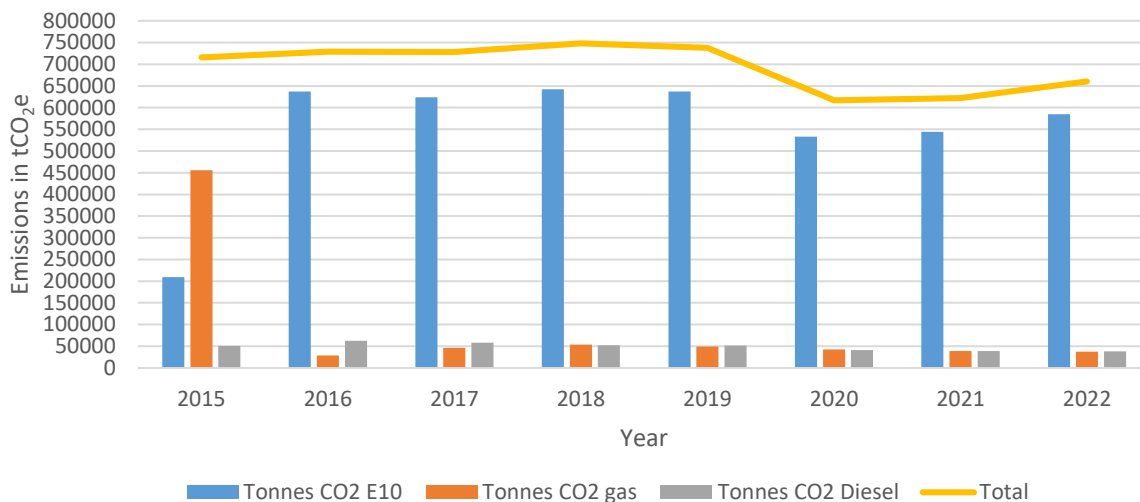
It is also of note that these fuel sale totals would include non-vehicular uses including lawn mowers and other yard maintenance equipment.

¹⁴ On-road emissions exclude logistical fleet fueling stations located on private company premises, and natural gas fueling.

Table 9: Yearly emissions from fuel components

Year	E10 (tCO ₂ e)	Gas (tCO ₂ e)	Diesel (tCO ₂ e)	Total (tCO ₂ e)
2015	208,994	455,637	50,937	715,568
2016	637,293	28,881	62,749	728,923
2017	623,866	46,503	58,119	728,488
2018	642,369	53,557	52,204	748,130
2019	637,343	49,190	51,538	738,071
2020	533,287	42,448	41,472	617,208
2021	544,576	38,885	39,009	622,470
2022	584,912	37,579	38,238	660,730

Figure 12: On-Road Community GHG emissions by fuel type¹⁵



In the years prior to COVID-19 (2015-2019), transportation emissions increased slightly, consistent with trends for Canadian nation-wide on-road emissions. This increase can be associated with the increase in passenger light trucks and SUVs, which have grown in popularity. Based on this national trend of citizens purchasing larger vehicles coupled with automotive manufacturers significantly reducing car-based platforms, it is expected that transportation emissions will continue to increase, as larger vehicles tend to have worse fuel economy as compared to smaller vehicles. This trend of increasing on-road emissions can be mitigated by:

- Improving the modal split of transport in favor of low/zero carbon transport methods including active transportation (walking/cycling) and public transit; and,

¹⁵ Ontario introduced a mandate to require suppliers to supply at least an annual average of 10% renewable content in gasoline sold in Ontario (i.e. E10). This significantly decreased the amount of non E10 gasoline sold after 2015.

- A transition towards electric vehicles (EVs).¹⁶

Reductions in transportation emissions between 2020 and 2022 can be contributed to decreased commuter and recreational travel due to COVID-19 restrictions experienced in Windsor-Essex.

The GHG emissions associated with Windsor residents' air travel to and from Windsor International Airport, or train travel from Windsor's VIA Rail station were not captured in this inventory due to constraints in acquiring data. Additional gaps resulting from data availability limitations include emissions from:

- Marine vessels associated with cargo transport and personal use,
- Cross border travel for personal and commercial vehicles,
- Electric vehicle charging (likely accounted for under buildings).

Please refer to Appendix D: D2 Core Strategies Underway for information on electric vehicle charging at municipal facilities and parking lots.

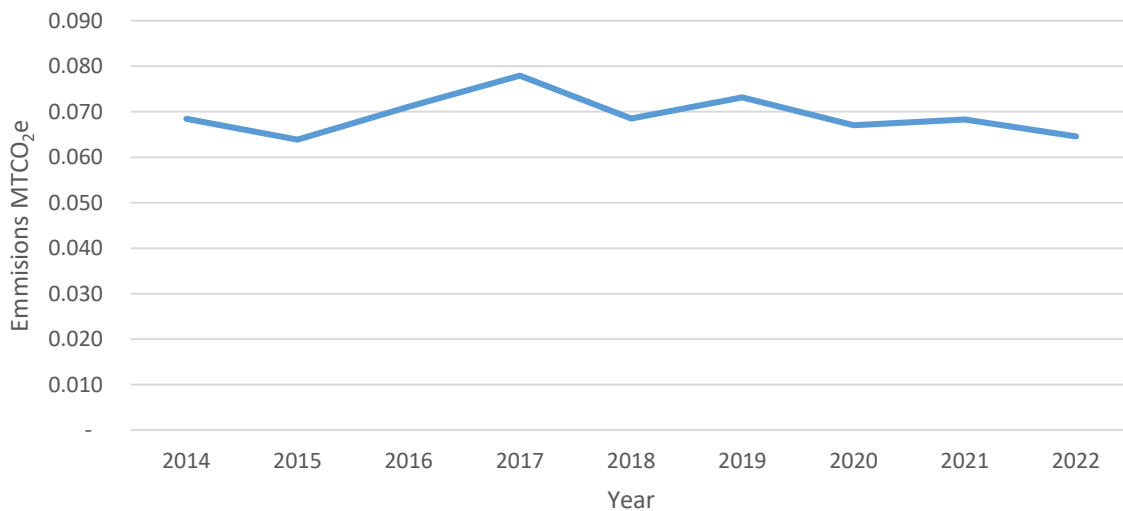
3.3.4 Waste

Waste emissions in 2022 were approximately 0.065 MT, accounting for about 4% of the community-wide inventory – far less than the contributions of the buildings and transportation sectors. This is a reduction of about 0.009 MT since 2019. Community-wide waste emissions in 2022 were 6 percent lower than in 2014.

The solid waste sector tracks methane (CH₄) emissions that enter the air directly as organic waste decomposes at landfills as well as nitrous oxide (N₂O) and non-biogenic carbon dioxide (CO₂) emissions. These chemical emissions are converted to tonnes of equivalent CO₂ using emissions equivalency coefficients. Figure 13 shows the estimated emissions from solid waste since 2015. The peak in 2017 is likely contributed by the increase in waste to landfill as a result of the 2017 flood event, with the smaller increase in 2019 as a result of a smaller flood event due to increased lake levels.

¹⁶ At the end of 2022, Windsor had 681 electric and plug in electric vehicles registered with the province of Ontario. [Electric Vehicles in Ontario – By Forward Sortation Area - Q4 2022 - Ontario Data Catalogue](#)

Figure 13: Emissions from Solid Waste 2014 – 2022



3.3.5 Renewable Energy Generation

The Community Energy Plan outlines a target for installed renewable energy capacity of 90 MW by the target year 2041. Presently, Windsor has one utility-scale solar farm in operation, namely the Windsor Solar project. Windsor Solar has a maximum capacity of 50 MW and is located at the Windsor International Airport. The project reached commercial operation in 2016.

Smaller scale solar installations are also in operation throughout the city representing a maximum installed capacity of 23.4 MW. Overall, the current total renewable energy generation in Windsor is 73.4 MW which equates to 82% of the CEP renewable energy generation goal. This includes 1.3 MW of solar capacity installed on City-owned buildings. Due to the accounting structure of currently installed solar capacity under Ontario's Feed-in Tariff (FIT) program¹⁷, the renewable energy is accounted for in the overall emissions from the grid and does not directly offset usage. This will change when the contracting of generation is switched to net-metering in the future.

Unfortunately, the legislative framework under which the existing solar capacity was installed was cancelled in 2018 by Ontario's provincial government. This cancellation eliminated the opportunity for such projects to provide electricity for the grid and generate revenue through a FIT program. The virtual net metering program was also cancelled, which allowed for large energy consumers to offset electricity usage at one site by generating it on another property under the same owner.

¹⁷ Ontario Feed-In Tariff program ran from 2009 to 2018 to encourage and promote renewable energy sources for electricity generation in Ontario. [Archived - 4.0 Feed-In Tariff Program | Renewable energy development in Ontario: A guide for municipalities | ontario.ca](#)

4. Corporate Greenhouse Emissions

The City of Windsor's corporate (or local government) emissions are calculated based on the energy used in all municipal buildings (offices, community recreation centres, libraries, police and fire stations, parks), vehicle fleets including Transit Windsor vehicles, waste, water supply (Windsor Utilities Commission treatment and pumping), and wastewater treatment, as well as streetlights.

In 2022, corporate emissions were 36.569 kT, which was about 2% of Windsor's community-wide emissions. The City's corporate emissions decreased by nearly 2% from 2019 but remained a stable share of community-wide emissions between 2019 and 2022.

Corporate energy and emissions include the following sections:

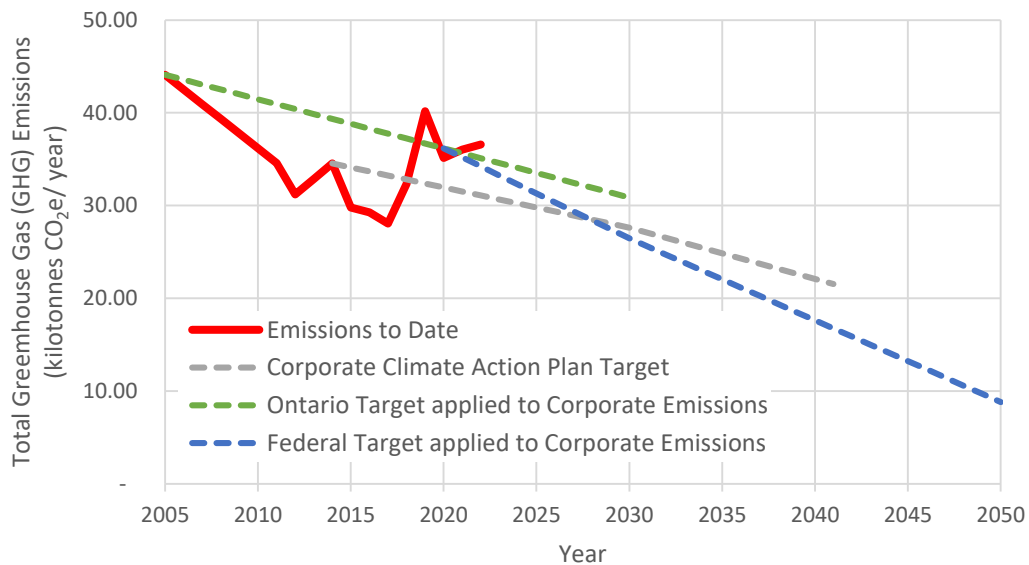
- Building
- Fleet
- Streetlights
- Water and Wastewater

Utility emissions from the following agencies, boards, and commissions associated with the city are included in the overall community-wide emissions.

- Windsor-Essex Community Housing Corporation (WECHC)
- Windsor International Airport
- Windsor-Detroit Tunnel
- Enwin/WUC Corporate Offices

Like with community GHG emissions, corporate GHG emissions are tracked against federal, provincial, and municipal (CCAP) targets as highlighted in Figure 14. Overall, corporate emissions experienced a downward trend between 2005 and 2017, before transitioning to an upward trend starting in 2018. Changes in corporate emissions can be attributed to decisions made in relation to corporate assets (i.e. energy efficiency, fuel type, ownership of certain assets etc.). Since 2018, the City has not met its emissions targets corporately. Through diligence and heightened awareness of GHG impacts when scoping projects and making purchasing decisions, the City can reverse its present trend and get back on track to meet its 2041 target.

Figure 14: Windsor's Corporate GHG emissions and GHG emissions targets



In 2022, Windsor's corporate emissions were 5.9% higher than 2014. Further, as detailed in Table 10 below, Windsor still needs to cut its emissions by roughly 6.780 kTCO₂e to meet the City's 2025 CCAP target of a 16% emissions reduction below 2014 levels.

Table 10: Council-adopted Corporate GHG emissions targets and status (per CCAP)

Year	GHG reduction target from 2014 baseline	GHG emissions target (kTCO ₂ e) ¹⁸	Progress as of 2022
2022	12%	30.445	The City did not meet its 2022 GHG reduction target. In 2022, Windsor's corporate emissions were 36.569 kTCO ₂ e, which is 5.9% higher than in 2014.
2025	16%	29.789	The City must reduce its corporate emissions by about 6.780 kTCO ₂ e to meet the 2025 target. ¹⁹
2030	24%	27.630	Windsor must reduce annual emissions by about 8.939 kTCO ₂ e to meet the 2030 target. ²⁰
2041	40%	20.723	15.846 kTCO ₂ e must be eliminated to meet the 2041 target. The City must rapidly increase its current annual emissions reduction rate. ²¹

Figure 15 shows the year-over-year changes in sectoral emissions from 2014 to 2022, while Figure 16 presents the breakdown of emissions by sector for 2022. In 2022, building emissions accounted for 42% of corporate emissions, with most of those emissions attributable to natural gas and district energy used for space and water heating. Fleet emissions accounted for 34% of corporate emissions, with 60% of the fleet emissions coming from Transit. Water/wastewater emissions were 23% of corporate emissions, with 1% of corporate emissions attributed to Streetlights (including traffic lights). More details on GHG emissions by sector are provided in Section 4.2.

¹⁸ Emissions target calculated relative to 2014 baseline emissions of 34.538 kTCO₂e

¹⁹ 6.780 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2025 Target as calculated from CCAP.

²⁰ 8.939 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2030 Target as calculated from CCAP.

²¹ 15.846 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2041 Target as calculated from CCAP.

Figure 15: Windsor's year-over-year Corporate GHG emissions by sector

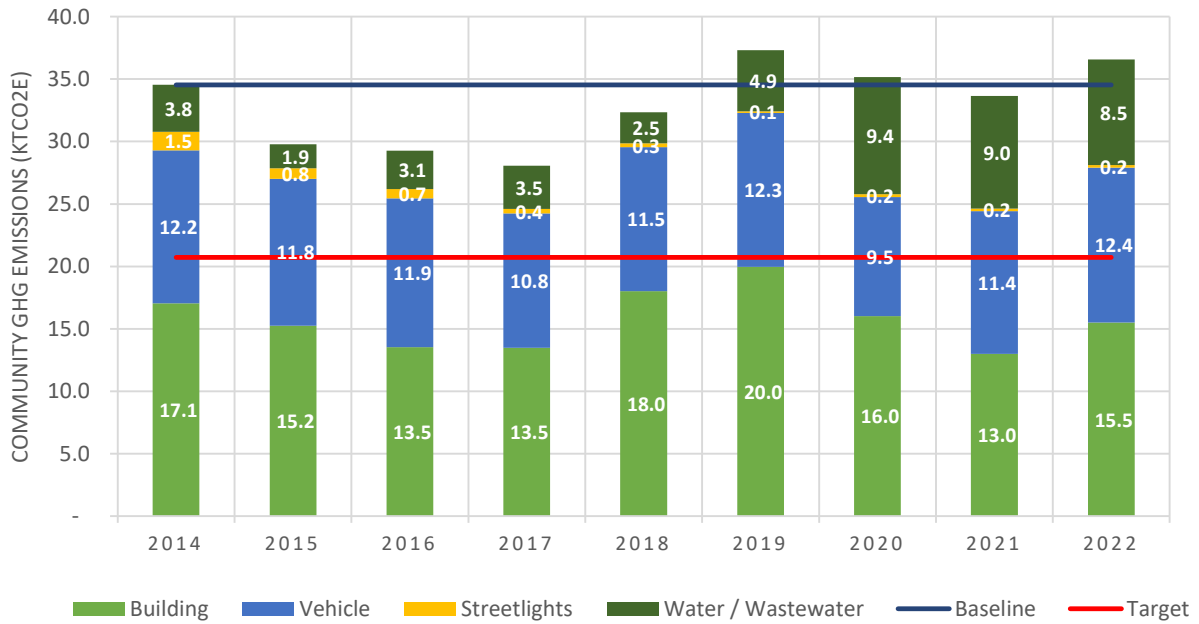
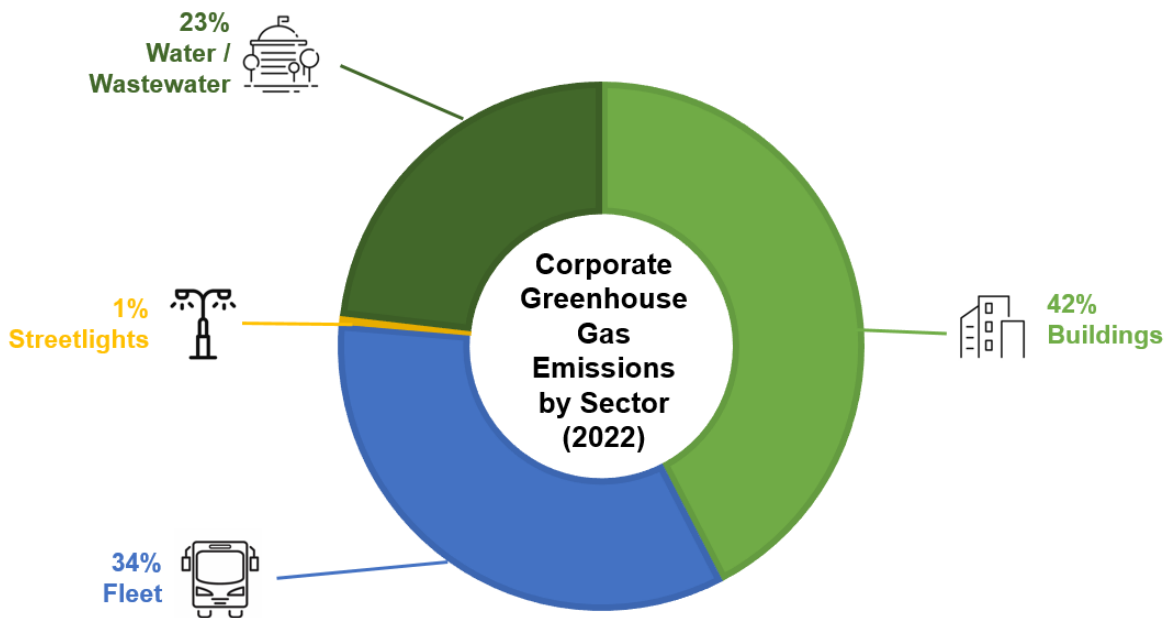


Figure 16: Windsor's percentage breakdown of Corporate GHG emissions by sector (2022)



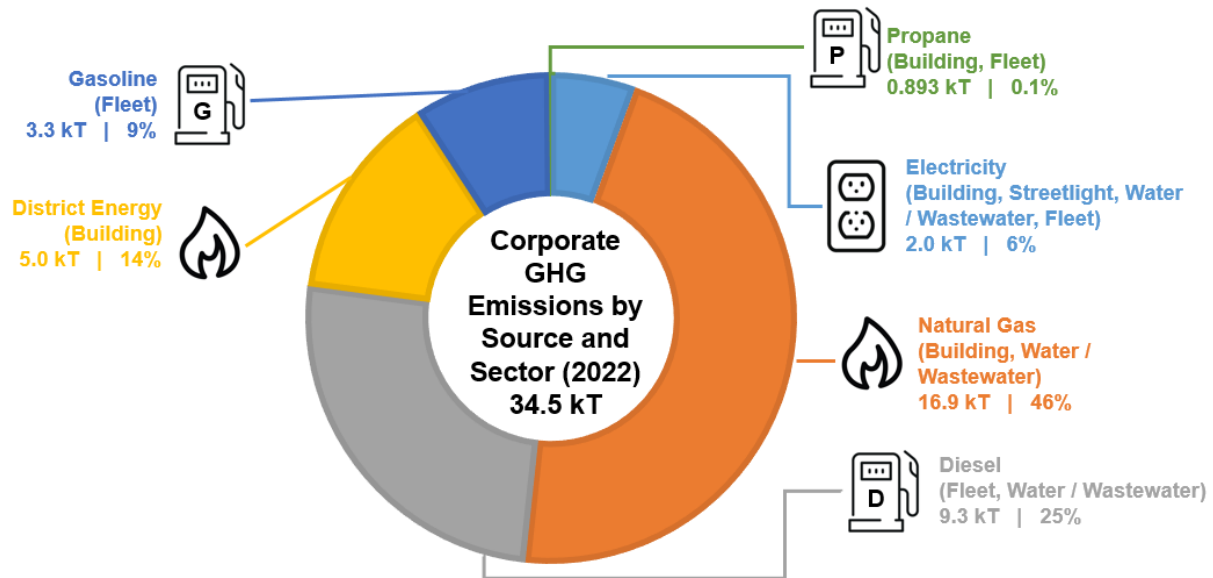
4.1 Key drivers of Corporate GHG emissions

Figure 17 provides a snapshot of key drivers of corporate GHG emissions in Windsor, including:

1. Electricity. Emissions from electricity were measured at approximately 2.0 kT, a decrease of 71.4% compared with 2014. Electricity consumption decreased by roughly 21.5% between 2019 and 2022, which was primarily due to COVID-19 restrictions imposed on City-related operations.
2. Natural gas. Natural gas consumption to heat buildings continued to be the largest source of corporate GHG emissions in 2022 at approximately 16.9 kT, accounting for about 46% of all emissions. Compared to 2014, emissions from natural gas increased by about 78.3% due to the addition of three CHP units and the pelletizing plant as corporate assets.
3. Diesel. Diesel fuels from the combined fleets (Transit Windsor, Fire, Police Services, and the City's corporate fleet) and from water and wastewater operations resulted in about 25% of corporate emissions. It is the second largest source of corporate GHG emissions at 9.3 kT or 25% of emissions. Compared to 2014, emissions from diesel decreased by about 3.8%.
4. Gasoline. Gasoline used for cars, vans, trucks, and buses accounted for almost 9% of corporate GHG emissions in Windsor. It is the second smallest emissions source at approximately 3.3 kT. Compared to 2014, emissions from gasoline increased by about 21.6%.
5. District Energy. Emissions from district energy were measured at approximately 5.0 kT, a decrease of 7.9% compared with 2014. District energy provides hot water and chilled water for heating and cooling of six corporate buildings.
6. Propane. Emissions from propane were 0.054 kT in 2022 making up about 0.1% of emissions. Propane is utilized as a fuel for Zambonis and lift trucks. Compared to 2014, emissions from propane decreased by about 32.2%.

Further details on key drivers of GHG emissions in Windsor are provided in Section 4.2.

Figure 17: Key drivers of Corporate GHG emissions (2022) expressed in kT and percent of total emissions



4.2 Details on Corporate GHG emissions by sector

The COVID-19 pandemic played a role in reducing corporate GHG emissions in 2020, and 2021, with buildings adopting virtual and remote services and Transit offering reduced service. In 2022, emissions rebounded and are roughly 2% less than 2019 levels. Emissions increases in water and wastewater due to the introduction of the pelletizer plant have been offset by emission reductions in buildings as community centres slowly returned to full operations. The City will continue to implement improvements aimed at reducing GHG emissions corporately, as identified in the CCAP and / or Corporate Energy Management Plan (CEMP).

Table 11 highlights several primary indicators as outlined in the CCAP. Corporate emissions have increased by 5.9% since 2014.

Table 11: Primary Performance Indicators vs. CCAP Baseline 2014

Primary Performance Indicators	CCAP Baseline 2014	2022	% Change to Baseline
Total Emission (kTCO ₂ e)	34.538	36.569	+5.9
Total Energy (GJ)	812,782	890,135	+9.5

Table 12 highlights the changes in corporate emissions by sector as compared to the CCAP Baseline of 2014. The most significant reductions occurred for the streetlights segment, which was reduced by 86.6% as a result of the completion of an LED conversion project. The water and wastewater segment increased 125.5% due to the addition of the pelletizing plant in mid 2019, and the building segment increased 9.1%

due to the addition of three CHP units. Vehicular emissions remained similar to 2014 levels.

Table 12: Corporate Emissions by Sector vs. CCAP Baseline 2014

CORPORATE EMISSIONS (kTCO ₂ e)	CCAP Baseline 2014	2022	% Change to Baseline
Building	17.054	15.500	+9.1
Vehicle	12.247	12.407	+1.3
Streetlights	1.484	0.199	-86.6
Water & Wastewater	3.753	8.462	+125.5

Refer to Appendix E: Corporate Assets Impacts for more information regarding the impact corporate assets have on corporate GHG emissions.

4.2.1 Corporate Building Emissions

Corporate building emissions account for 42.4% of total corporate emissions. These emissions are calculated using the PCP Milestone tool along with natural gas, district heating/cooling and electricity consumption data provided by the Asset Planning - Energy Initiatives division.

Figure 18 illustrates Corporate Building GHG emissions by building type, with Community Centres and Libraries accounting for the greatest portion of emissions with 54%.

Figure 18: Windsor’s percentage breakdown of Corporate Building GHG emissions by building type (2022)

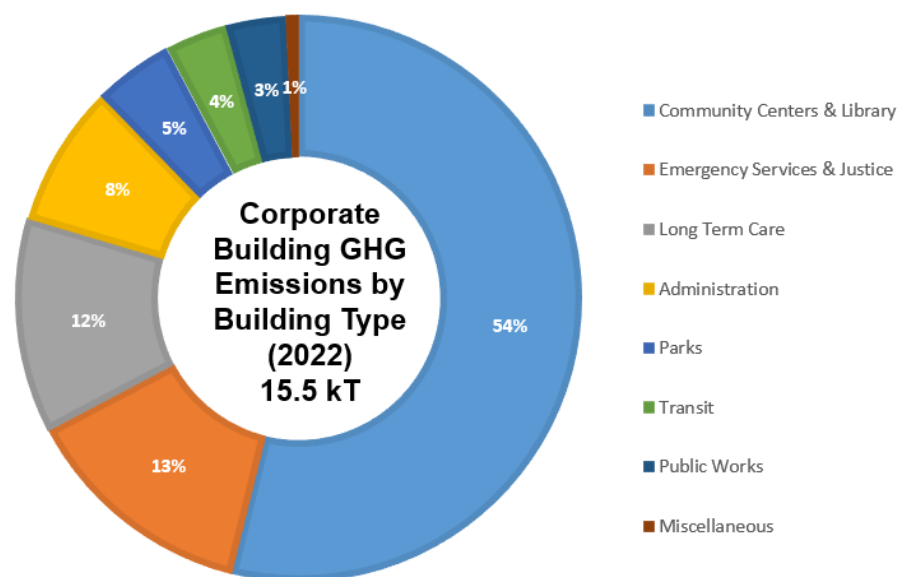


Table 13 highlights the changes in corporate building emissions by building type as compared to the CCAP Baseline of 2014.

Table 13: Corporate Building Emissions by Building Type vs. CCAP Baseline 2014

CORPORATE EMISSIONS (ktCO ₂ e)	CCAP Baseline 2014	2022	% Change to Baseline
Community Centers & Library	10.084	8.349	-17.2
Emergency Services & Justice	1.641	2.082	26.9
Long Term Care	1.296	1.903	46.8
Administration	1.018	1.259	23.7
Parks	1.189	0.705	-40.7
Transit	0.989	0.554	-44.0
Public Works	0.535	0.530	-0.9
Miscellaneous	0.300	0.117	-61.0

A large proportion of the overall increase in building emissions is due to the operation of Combined Heat Power (CHP) units, which are now operational at Huron Lodge (Long Term Care) and WFCU and WIATC (Community Centers & Library) facilities. CHP technology was approved for implementation by City Council at Huron Lodge & WFCU Center in 2015 (CR 144/2015) and was subsequently approved for the WIATC in 2016 (CR 641/2016). CHP is a technology that generates electricity and thermal energy through the combustion of natural gas. Heat generated is captured and utilized for space heating, cooling, and domestic hot water. The electricity produced by the CHP reduces the amount of electricity purchased from the provincial grid and as such reduces operational costs. However, generating electricity through natural gas increases corporate GHG emissions. It should also be noted that the financial benefit of CHPs will decrease depending on electricity and natural gas rates, and the future cost of carbon.

While the increase in GHG emissions appear to conflict with our reduction goals, it should be noted that decisions to implement the CHP's units was not solely based on reduction of costs for electricity and space heating. CHP systems generate the electricity needed at these three sites ensuring they are operationally viable in the event of electricity not being available from the grid. As Huron Lodge is a home for the aged and WFCU and WIATC both provide shelter in emergency situations, this additional benefit from these systems provides the City the ability to address other objectives and needs in the community.

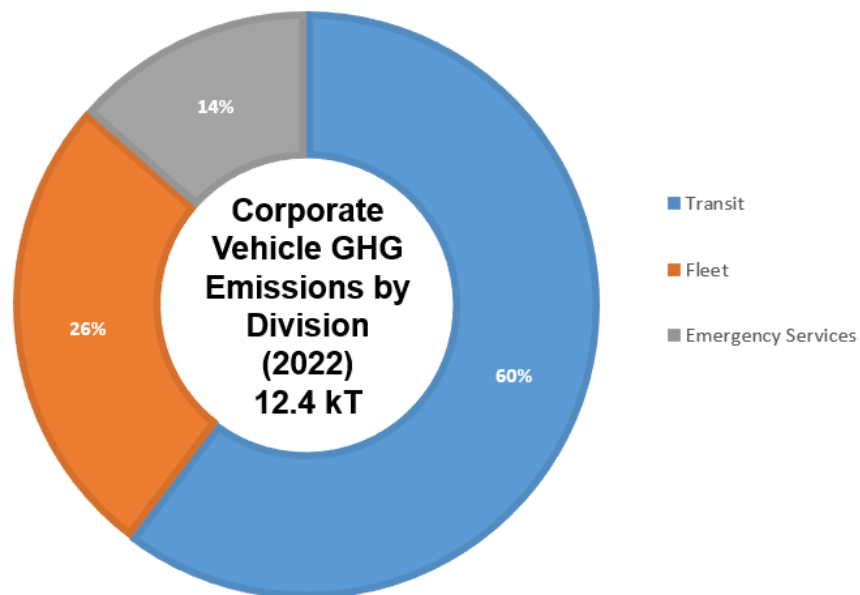
The City's Energy Initiatives division works to improve the performance of the building stock by implementing projects such as Net Metering, Battery Storage, Electric Vehicle Charging Stations, LED Lighting Retrofits, Sub-metering, and Enterprise-wide Smart Energy Management Systems. These projects play a vital role in increasing energy efficiency and aiding in the City's climate actions.

The Corporate Energy Management Plan (CEMP) (C 301/2019) is a living document that establishes a framework to better understand the Corporation's annual utility costs for its buildings and identifies opportunities to reduce energy usage. The CEMP will be updated in 2024.

4.2.2 Corporate Vehicle Emissions

Emissions from corporate vehicles account for 33.9% of total Corporate Emissions. These emissions are calculated using fuel consumption data provided by the Fleet department, Transit Windsor and Windsor Police. Figure 19 illustrates the breakdown of corporate vehicle emissions by division.

Figure 19: Windsor's percentage breakdown of Corporate Vehicle GHG emissions by division (2022)²²



²² Emergency Services include Police and Fire services and excludes Windsor-Essex EMS.

Table 14 highlights the changes in corporate vehicle emissions by division as compared to the CCAP Baseline of 2014.

Table 14: Corporate Vehicle Emissions by Division vs. CCAP Baseline 2014

CORPORATE EMISSIONS (ktCO₂e)	CCAP Baseline 2014	2022	% Change to Baseline
Transit	8.2	7.5	-8.5
Fleet	2.4	3.2	33.3
Emergency Services	1.7	1.7	N/A

Emissions from corporate vehicles can be reduced by increasing the fuel efficiency of fleet vehicles and transitioning to low-carbon fuel types and electric vehicles (EVs). Another method for reducing corporate vehicle emissions is through encouraging employees to use active transportation for short trips during their course of duty and encouraging smart driving habits including not idling during lay-overs. Strategies are outlined in the Greening the Fleet plan, and the 2019 Transit Master Plan. The Corporation currently has several EVs which are being used and tested by various departments.

4.2.3 Corporate Streetlight and Traffic Signal Emissions

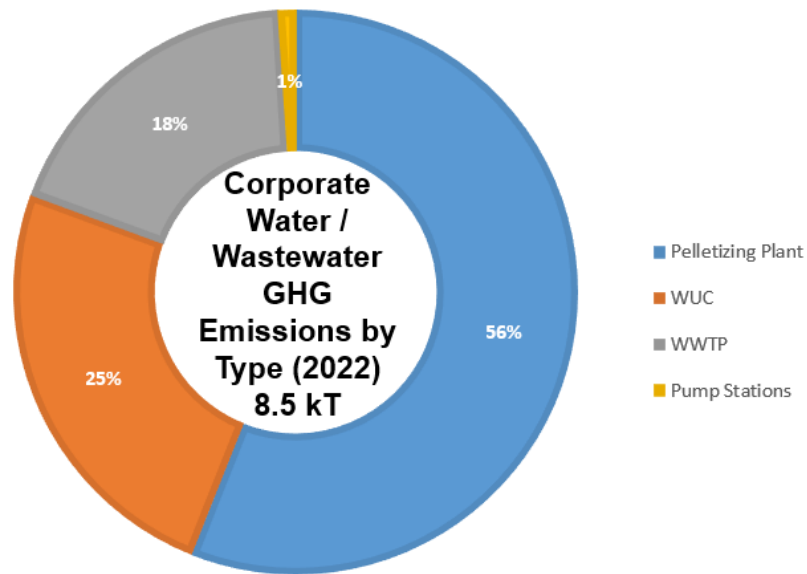
Emissions from Corporate Streetlighting accounts for 0.5% of total corporate emissions. Since 2014, streetlight and traffic signal²³ emissions have fallen by 86.6% as a result of the installation of high efficiency LED street lighting throughout the city which was completed in 2019. LED bulbs consume significantly less energy than incandescent bulbs, which had been previously used. Currently all standard streetlights are LED. There is the opportunity for further reduction in street lighting emissions through the conversion of ornamental lighting and parks lighting to LED bulbs.

4.2.4 Corporate Water and Wastewater Emissions

Emissions from Water and Wastewater account for 23.1% of total corporate emissions. These emissions are calculated from natural gas, electricity, and diesel fuel used to power back-up generators. This inventory includes the two city owned wastewater treatment plants (WWTP), the Retention Treatment Basin, the Windsor BioSolids (Pelletizer) facility, 49 pump stations and interceptor chambers as well as the Windsor Utilities Commission water treatment facility and associated pumping stations. A breakdown of water and wastewater emissions are shown in Figure 20.

²³ Traffic Signals were the first corporate lighting sector converted to LED bulbs. Conversion project was completed between 2004 and 2014.

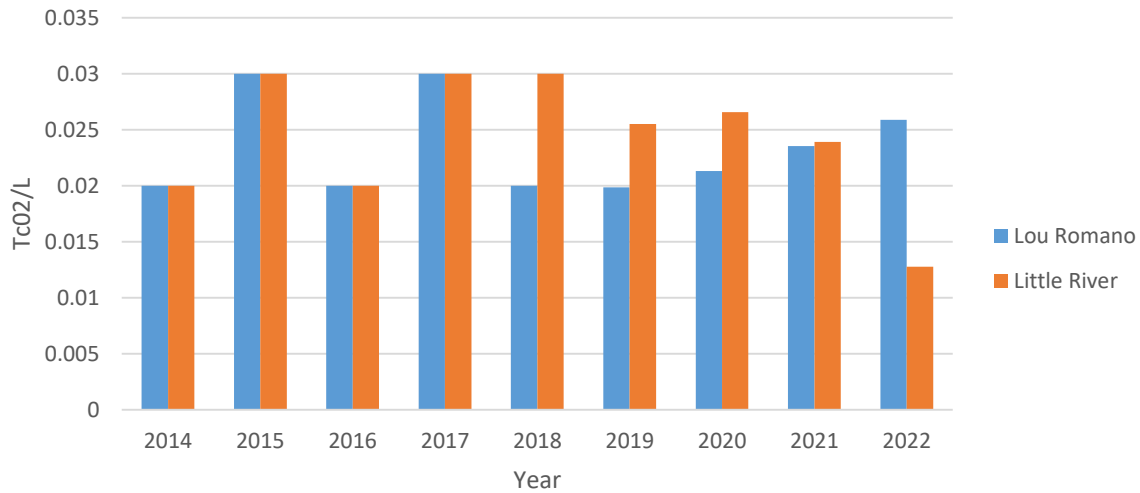
Figure 20: Windsor’s percentage breakdown of Corporate Water and Wastewater emissions by type (2022)



In 2019, The City of Windsor took over the Windsor Biosolids Processing (Pelletizer) Facility. This facility processes the wastewater sludge by-product from our wastewater treatment facilities into a land-applied fertilizer. Facility operations account for 4.7 kTCO₂e in 2022. The addition of this facility is a major contributor to the increase in emissions and represents 56% of total water and wastewater emissions.

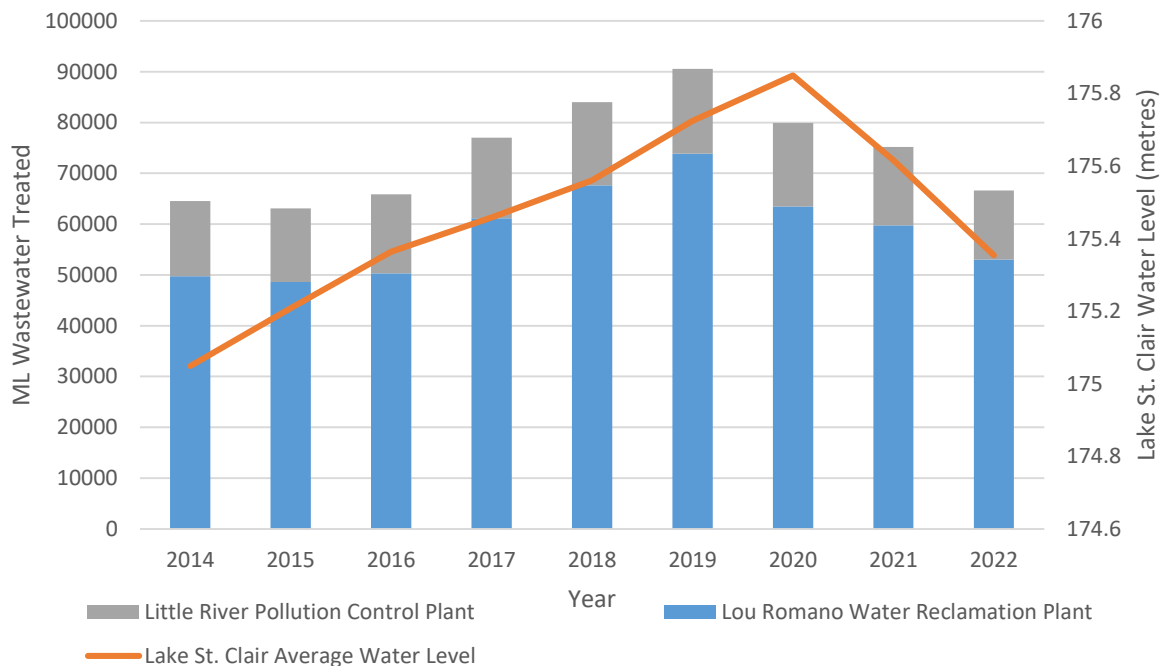
Analysis of historic emissions from wastewater facilities (excluding the Pelletizer) have indicated that emissions per litre of wastewater treatment have remained consistent at 0.02 Tonnes/Litre, so the increase is not due to a loss of efficiency within the wastewater treatment process. Emission increases have a positive correlation to the volume of wastewater treated. Figure 21 below displays the flow normalized emissions intensity of wastewater treatment. As can be seen from the Figure, the emissions per litre of water treated has remained relatively consistent since 2014.

Figure 21: Carbon emissions intensity of treated water



The volume of wastewater treated is affected by precipitation and great lakes levels. Historic Lake St. Clair water levels as well as wastewater treated at the Lou Romano Water Reclamation Plant and Little River Pollution Control Plant are presented below in Figure 22.

Figure 22: Wastewater Treated



The total quantity of emissions from wastewater treatment and pumping is highly dependant on the amount of precipitation entering the sewer system. In order to normalize this data such that carbon-intensities of water treatment can be evaluated, the total emissions per year can be divided by the total amount of water treated.

In addition to precipitation volumes, a significant driver may be the high-water levels recently experienced in the Lake St. Clair / Detroit River.

The trend of rising water levels since 2014 is clearly evident from the data shown. The rise in water level is consistent with the rise in treated wastewater volumes and this would suggest that there are new interactions occurring between the wastewater network and the water bodies. Under normal conditions, the storm water sewer system discharges into the river/lake at times of precipitation. Under the new high-water levels, several outlets are at or below lake level and as such may experience backflow of lake water into the sewer network, which may result in increases of water being treated at the plant. This was known to have occurred at a couple locations in 2019 and mitigation measures have been put in place. With a return to normal great lakes water levels, this impact has been reduced.

Another element to the interaction is the increase in ground water level resulting from increased lake level. Under higher ground water levels, the opportunities for increased infiltration into sump pumps, private drain connections, and sewer mains may be a contributing factor in the increased wastewater volumes.

5. Conclusion

Community efforts to reduce energy consumption and GHG emissions are starting to show positive results. Windsor is exceeding the interim targets set out in the CEP, due mainly in part by actions taken in our community by businesses, institutions, and residents. The implementation of measures identified in corporate energy plans / Net-Zero plans, coupled with residential participation in home retrofit programs offered by the federal government and Enbridge, plus the adoption of EVs are responsible for observed results.

At the corporate level, the City has undertaken several initiatives resulting in GHG reductions, including the conversion of traffic signals and streetlights to LED lighting; building retrofits; and transitioning the fleet (including Transit Windsor) to include hybrid and EVs. While several improvements to municipal buildings and operations have been made, overall, City emissions overall are rising, mainly due to the addition of equipment and facilities that significantly increase the consumption of fossil fuels. Corporately, the City is tracking above target and is at risk of not reaching the 2041 targets set out in the CCAP.

Moving forward, the City faces challenges in implementing climate action plans that target community and corporate emission levels, some of which are within the City's sphere of influence (e.g., investment level, policy) while others are not (e.g., technological advancements, macro trends, federal and provincial funding). This issue is not unique to Windsor, as other municipalities have identified similar challenges.

The climate journey is a long-term journey, and as we continue to strive to meet or exceed the goals set out in the Paris Agreement, emissions need to be reduced by 45% by 2030 and reach net zero by 2050. In order to meet this ambitious target, the City must continue to integrate climate change action into projects, plans and budgets. The recently approved Sustainable Procurement guide, is one tool, that may help guide Administration towards considering climate change mitigation during procurement of goods and services. The ESCC Office and the Corporate Energy team should also be used as resources during the development of projects and policies to ensure climate action is not overlooked.

In 2022, City Council approved in principal Science-Based targets and a Net-Zero 2050, administration continues to work on developing Windsor's Net-Zero Transition Plan using the 2017 Community Energy Plan strategies as a base.

Appendix A: Methodology

The purpose of Appendix A is to provide a high-level overview of the methodology followed by the City to estimate its annual GHG emissions, in alignment with the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories.

Annually, previous GHG inventories are reviewed and updated as applicable. Typically, emission factors or large emitter GHG emissions can be made public up to two years after the reporting year. As such the historical values reported as part of the 2022 GHG inventory may not exactly match those reported in previous inventories. Where possible, a footnote is included to inform the reader. The values reported here are the most up-to-date as of the publication of this 2022 GHG inventory.

A1. Global Protocol for Community-Scale GHG Emissions Inventories (GPC Protocol)

Windsor's community-wide emissions are calculated and reported as per the guidance in the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC), version 1.1²⁴. The GPC provides a robust framework for accounting and reporting community-wide GHG emissions to support climate action planning. Use of the GPC is also required to uphold Windsor's commitment as a signatory of the Global Covenant of Mayors for Climate and Energy²⁵.

Windsor's community-based GHG inventory consists of direct and indirect GHG emissions from three dominant sectors – buildings, transportation, and waste:

- Energy use of buildings is used to calculate the emissions produced from the consumption of natural gas and electricity.
- Transportation emissions represent emissions from on-road passenger vehicles, and heavy trucks. Freight rail emissions are not accounted for in this inventory, as reliable data for these emissions sources is currently not available. Identifying emissions sources from all transportation modes continues to be a methodological challenge. This section of the inventory presents the best data available at the time of collection.
- Waste emissions (primarily methane but also nitrous oxide and carbon dioxide) originating in landfills constitute most of Windsor's waste emissions.

The PCP Milestone Tool is a user-friendly, web-based resource that helps local governments create inventories and track, monitor, and report their greenhouse gas emissions. The PCP Milestone Tool is based on principles from the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) and the PCP protocol.

²⁴ <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>

²⁵ The Global Covenant of Mayors for Climate and Energy (GCoM) is a group of over 10,000 cities that share a long-term vision to combat climate change, and work towards a low-emission and climate-resilient future. More information can be found at: <https://www.globalcovenantofmayors.org/>

A2. Partners for Climate Protection (PCP) Protocol

When performing Climate Change Mitigation activities, it is best practise to utilize an internationally recognized protocol, which provides a methodology and framework for creating Greenhouse Gas (GHG) and Energy inventories. This includes mapping out strategies and actions for improving these inventories and setting requirements for monitoring and verification. The protocol used by the City of Windsor for climate change mitigation is the Partners for Climate Protection (PCP) supported by the Federation of Canadian Municipalities. This protocol includes 5 milestones.

Milestone 1 – Create a baseline emissions inventory and forecast

Milestone 2 – Set emissions reduction targets

Milestone 3 – Develop a local action plan

Milestone 4 – Implement the local action plan

Milestone 5 – Monitor progress and report results.

Milestones 1, 2 and 3 have been completed as part of the Community Energy Plan and Administration is currently in the process of completing Milestone 4 through the implementation of emissions reduction strategies outlined in the CEP. This report along with the associated yearly inventories represents Milestone 5. Milestones 2 through 5 are iterative as the City of Windsor transitions to a Net-Zero pathway.

The Community GHG inventory focuses on a much larger set of emissions-generating activities within the municipality. Key reporting sectors and subsectors include:

1) Stationary energy

- Residential buildings
- Commercial and institutional buildings and facilities
- Manufacturing industries and construction

2) Transportation

- On-road transportation

3) Waste

- Solid waste disposal

The annual GHG emissions and energy inventory is created using the Partners for Climate Protection - PCP Milestone Tool. The Milestone tool is a web-based resource designed to help local governments create inventories as well as track, monitor and report their greenhouse gas emissions and energy consumption.

A2.1 Activity and Emission Factors

The City uses the following equation, as prescribed by the GPC protocol, to estimate GHG emissions:

GHG emissions = Activity data x Emission factor

Activity data refers to the data associated with an activity that leads to GHG emissions. Examples of activity data are:

- Volume of natural gas consumption
- GWh of electricity consumption
- Volume of gasoline or diesel used
- Tonnes of solid waste sent to landfill

An emission factor is a measure of the mass of GHG emissions relative to a unit of activity. On an annual basis, Environment and Climate Change Canada (ECCC) prepares and submits Canada's National Inventory Report (NIR) to the United National Framework Convention on Climate Change. The City relies on the NIR as a primary source of its emission factors. ECCC posts results of the NIR on its website²⁶, typically two years after reporting (i.e. the 2021 emission factors were released in 2023). The City may update previously reported annual emissions when compiling the latest inventory as applicable.

A3. Community-Wide Buildings

Buildings sector emissions result primarily from natural gas and electricity use. For both energy sources, emissions are calculated by multiplying activity data (i.e. natural gas and electricity consumption data) by their corresponding emissions factors, and are broken down into the following building type categories (as shown in Figure 7 and Figure 8 of this inventory):

- Residential buildings (single-family and multi-unit residential buildings (MURBs))
- Commercial and institutional buildings
- Industrial buildings

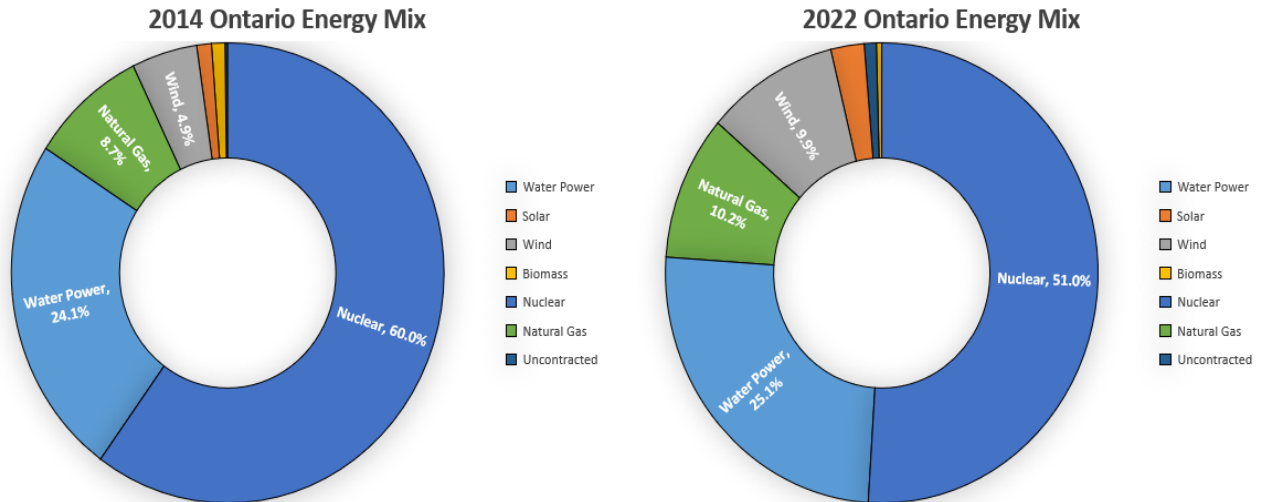
Natural gas consumption data is provided by Enbridge Gas, while electricity consumption data is provided by Enwin Utilities and Hydro One. Administration is unaware of the use of alternative fuel sources for home heating (i.e. propane, home heating oil) for businesses and residents within Windsor's boundaries.

A4. Power Generation

The Independent Electricity System Operator (IESO) is responsible for operating the electricity market and directing the operation of the bulk electrical system in the province of Ontario. Figure A.1 below illustrates the shift in Ontario's Energy Mix between 2014 and 2022.

²⁶ [Canada's official greenhouse gas inventory - Canada.ca](https://www.canada.ca/en/environment-climate-change/services/national-inventory-report.html)

Figure A.1: Shift in Ontario’s Energy Mix 2014-2022



Between 2014 and 2022, electricity generated from natural gas grew from 8.7% to 10.2%. Changes to Ontario’s energy mix is as a result of procurement decisions to establish or expand renewable resources (i.e. wind and solar) or to support maintenance, growth and refurbishment plans (i.e. nuclear and natural gas).

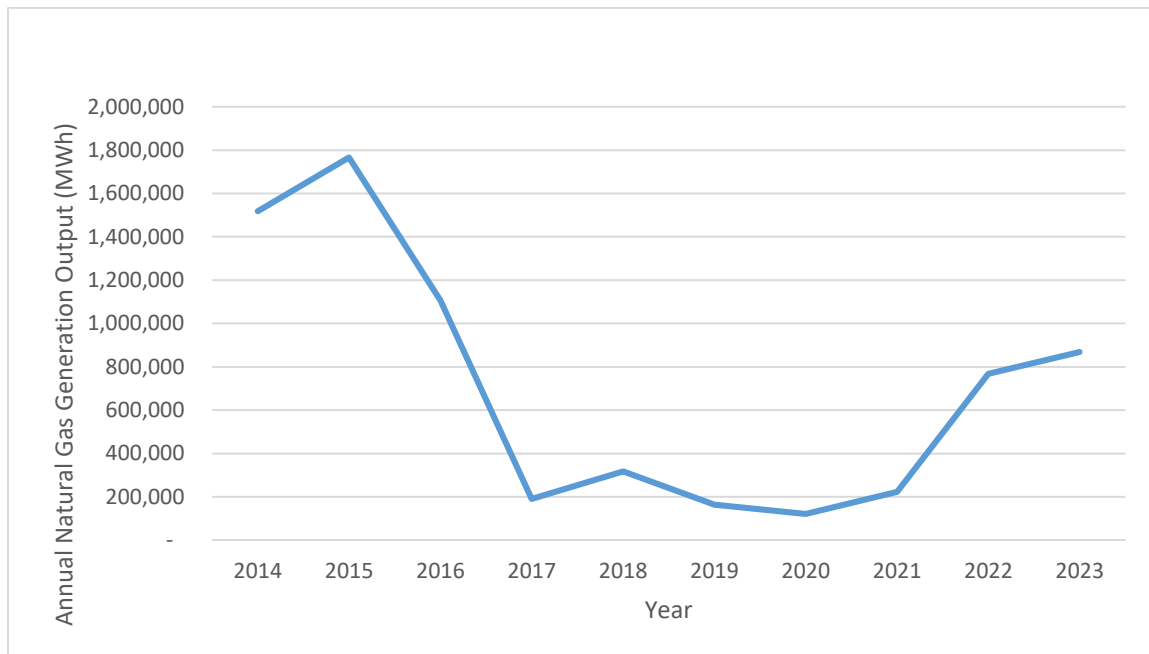
There are four (4) natural gas fired electricity generation stations located within Windsor’s boundaries: Brighton Beach Power, East Windsor Cogeneration Centre, Windsor Essex Cogeneration and West Windsor Power. These generation stations provide intermediate and peaking generation to meet fluctuating demands on the electricity system.

As electricity generation benefits residents, institutions, and companies in Windsor and beyond, City Administration has made the conscious decision to remove power generation emissions from the industrial and community total, and track it separately, to avoid double counting. Double counting refers to a situation where two parties claim the same emissions. The Government of Ontario, through the IESO, attributes the greenhouse gas emissions from natural gas plants to a CO₂ equivalency for Ontario’s electricity system.

The City of Windsor uses IESO’s Generator Output and Capability Reports.²⁷ to determine the annual power generation output from Windsor’s four (4) natural gas-fired generation stations, as shown in Figure A.2.

²⁷ Source: [Index of /public/GenOutputCapabilityMonth \(ieso.ca\)](https://www.ieso.ca/en/Generator-Output-and-Capability-Reports)

Figure A.2: Windsor’s Annual Natural Gas Generation Output 2014-2023



The City of Windsor accesses the Greenhouse Gas Emissions (PDGES-GHGRP) – Government of Canada (tCO₂e) report²⁸ to monitor the GHG emissions reported to the federal government for Windsor’s natural gas fired generation stations. Publishing of results lags reporting by approximately 2 years, and as such, the City of Windsor uses a three (3) year average emission factor (GHG Emissions (tCO₂e) per MW generated) to estimate power generation GHG emissions. The emission factor is applied to the IESO data, and then removed from community emissions.

Figure A.3 below illustrates the differences to industrial emissions with and without accounting for emissions from Windsor’s four (4) natural gas-fired power generation stations. Depending on the level of annual power generation, GHG emissions from natural gas fired electricity generation could have a significant impact on the community’s overall GHG emissions. Including emissions from electricity generation in the community GHG inventory would increase overall emissions by:

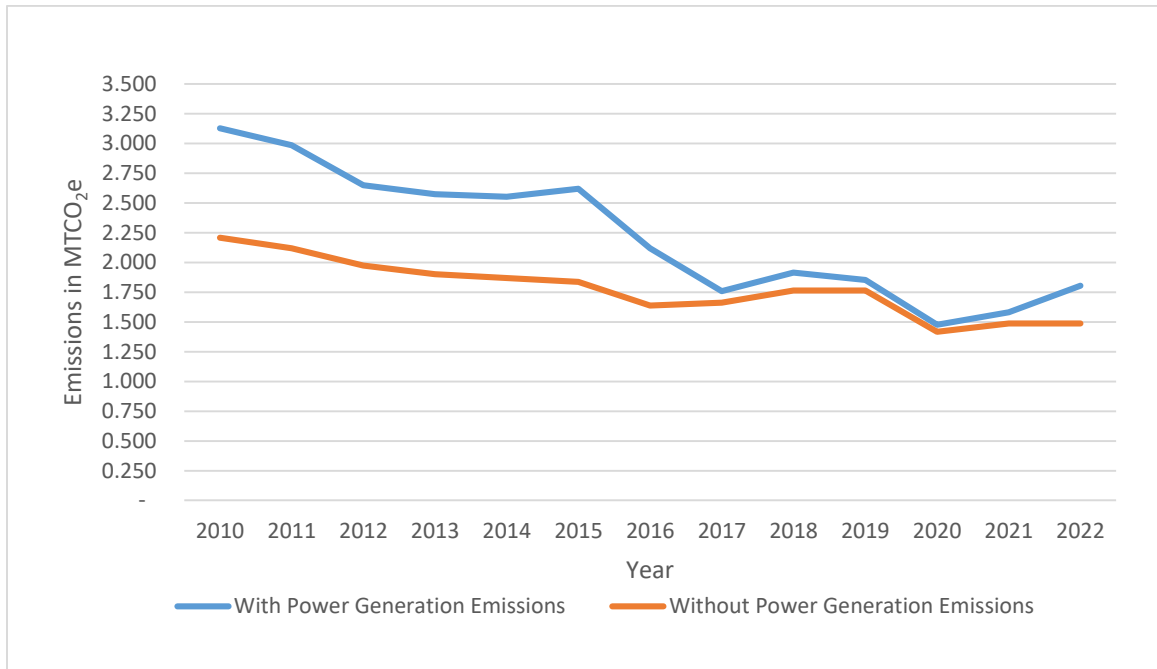
- 27% in 2014 to 2.551 MTCO₂e
- 8% in 2018 to 1.916 MTCO₂e
- 6% in 2021 to 1.583 MTCO₂e²⁹
- 18% in 2022 to 1.810 MTCO₂e³⁰

²⁸ <https://data-donnees.az.ec.gc.ca/data/substances/monitor/greenhouse-gas-reporting-program-ghgrp-facility-greenhouse-gas-ghg-data/PDGES-GHGRP-GHGEmissionsGES-2004-Present.csv>

²⁹ Most recent data available from Greenhouse Gas Emissions (PDGES-GHGRP) - Government of Canada (tCO₂e)

³⁰ Calculated using 3-year average emission factor (GHG Emissions (tCO₂e) per MW generated)

Figure A.3: Overall Emissions with and without Power Generation 2010-2022



A4.1 IESO Procurements

The IESO, through its procurements has increased natural gas generation in Windsor as follows:

- Brighton Beach Generation Station (BBGS) was awarded a 10-year contract extension from July 2024 to July 2034. Starting in July 2025, BBGS will bring online an additional 42.5 MW expansion, bringing the maximum hourly capacity to approximately 608 MW.
- East Windsor Cogeneration Centre (EWCC) was awarded a 100MW expansion as part of its Expedited Long Term 1 Procurement (E-LT1) with a contract term from May 1, 2025, to April 30, 2045. This will bring the maximum hourly capacity to approximately 192 MW.

A5. Community-Wide Transportation

On-road transportation emissions are calculated using the PCP Tool and fuel sales data from Kalibrate, and includes fuel sales from unleaded and E10 gasoline, and diesel at public gas stations within the city boundaries. Fuel sales from other sources (i.e. bulk sales to private companies) and fuel types (i.e. propane, natural gas, etc.) are not tracked.

A6. Community-Wide Waste

The waste sector accounts for emissions from waste generated inside Windsor's city boundaries.

Methane emissions from landfills continue for several decades (or sometimes even centuries) after waste disposal. Waste disposed of in a given year thereby contributes to GHG emissions in that year and subsequent years. Likewise, methane emissions released from an open landfill in any given year include emissions from waste disposed of that year, as well as from waste disposed of in prior years.

Windsor uses the “Methane commitment” approach from the PCP Milestone tool to calculate GHG emissions for waste. Essex Windsor Solid Waste Authority (EWSWA) tracks the amount of solid waste generated by the community on an annual basis, excluding waste that is diverted from landfill due to recycling or composting programs.

In 2013, A Residential Waste Audit and Participation Study was completed by EWSWA which identified the composition of waste going to landfill by percentage, including:

- Food waste;
- Paper and cardboard;
- Wood products; and
- Textiles.

The city enters the percentages of materials with degradable organic carbon into the PCP tool. Table A.1 shows the current percentages included in the PCP tool.

Table A.1: Composition of Solid Waste (as per PCP Tool)

Composition of Solid Waste (%) * (Degradable Organic Carbon Content)	
Food	51.19%
Paper & Cardboard	8.10%
Wood Products	6.00%
Textiles	4.00%

*: Percentages do not add to 100%

A7. Corporate Emissions

Generally, the City follows the same principle described previously in calculating community-wide emissions (as per the GPC Protocol), with some additional notes below:

- Most of the City's corporate activity data, specifically energy consumption, is managed by the Asset Planning Department – Energy Initiatives Division. Energy Initiatives monitors the utility bills of all City-owned buildings, facilities, yards, etc. through an energy management software called EnergyCAP.

- To calculate natural gas and electricity emissions, the City applies the same emission factors used in the community-wide inventory.
- The City's corporate off-road vehicles and equipment, and on-road transportation fuel consumption is gathered from a number of sources (Fleet Services, Windsor Police Services, Transit Windsor, and Parks and Recreation). These activity data are then multiplied by the corresponding appropriate NIR emission factors based on fuel type.

A8. District Energy

The utilization of district energy heating and cooling systems is a strategy for reduction of commercial/institutional emissions. The expansion of the existing Windsor district energy system should be a near-term priority as the existing system is at full capacity and does not have available capacity for including other buildings and operations in this system. As part of the CEP's Strategy 13: Designate and Plan District Energy Areas, administration and Enwave work together to identify opportunities to expand the district energy system in the downtown and beyond. ESCC provides recommendations to developers with proposed developments in the downtown core to consider district energy when sourcing heating and cooling systems as part of the planning process.

In 2020, Windsor Utilities Commission sold its interest in the district energy system to Enwave. Enwave currently provides a breakdown of municipal facilities on the district energy loop. It is assumed that electricity and natural gas used by Enwave to supply community customers are captured in the overall consumption volumes provided by Enwin and Enbridge Gas.

Appendix B: Science Based Climate Targets

B1. Introduction to Science Based Climate Targets

Science-based climate targets provide a clearly defined pathway for companies, financial institutions, and cities to reduce greenhouse gas (GHG) emissions, helping prevent the worst impacts of climate change.

Targets adopted by cities are considered “science-based” if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement, which aims at limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C. Science-based climate targets must be science-driven, equitable and complete.

Science-Based Climate Targets: A Guide for Cities, November 2020 defines science-driven as being led by the latest climate science. Equitable means they take into account the different historical contributions to levels of carbon dioxide in the atmosphere and take into account social-economic development. Complete means that these targets are robust and comprehensive, taking into account all emissions from a variety of sources (scope 1 and 2 are mandatory with scope 3 optional) and Multiple GHGs (i.e. CO₂, HFCs, CH₄).

In addition, “science-based” targets should reflect a fair share of the 50 percent global reduction in greenhouse gas emissions by 2030 as identified in the United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°Celsius. The “fair share” principle reflects the responsibility of nations and cities with high income and high emissions to do more to reduce emissions compared to those with lower income and emissions. Cities in North America, Australia, Japan, and Germany are considered high-income and high-emissions per capita cities.³¹

Three components make up GHG Emissions are identified as scopes. Scope 1 and 2 emissions are mandatory to report, whereas scope 3 emissions are voluntary and the hardest to monitor.

Scope 1 emissions are direct emissions from owned and controlled resources. Scope 1 emissions are emissions released into the atmosphere as a direct result of a set of activities. All fuels that produce GHG emissions must be included in scope 1 (i.e. fuel burned by all vehicles owned or controlled, fugitive emissions from refrigeration and air conditioning, and process emissions released during industrial processes and on-site manufacturing).

Scope 2 emissions are indirect emissions from owned resources from the generation of purchased energy, from a utility provider. Scope 2 emissions include those released in the atmosphere, from the consumption of purchased electricity, steam, district heat and cooling.

³¹ Source: page 24: City of London’s Climate Emergency Action Plan – Draft February 2022

Scope 3 emissions are all indirect emissions that are not included in scopes 1 and 2. They occur in the value chain of the reporting entity (company or municipality), including both upstream and downstream emissions. Emissions are linked to operations and include actions like business travel, employee commuting, waste disposal, purchasing goods and services, and transportation and distribution between the reporting entity and suppliers and customers.

B2. Benefits of Science Based Targets

Unfortunately, the world is far from being on track to limit global warming. In fact, under the Paris Agreement, it is expected that the current reduction commitments of the 196 signing countries combined will result in increased global warming of between 2.9 °C and 3.4 °C by the end of the century. If action is not taken to mitigate, increases in warming will have huge implications for water and food security, living standards and human health, and will affect current and future generations.

To safeguard our future, cities must also play their part to reduce emissions. Together we can drive environmental action from all levels of government and all corners of the economy. Science-Based Climate Targets: A Guide for Cities, November 2020 states that cities setting science-based climate targets will benefit from clearly defined targets, which specify the scale and pace at which they need to reduce their GHG emissions. Setting science-based climate targets at the community level to reduce GHG emissions can:

- Demonstrate commitment on the importance of aligning climate action with science to support community and businesses climate-based priorities and direction;
- Provide transparency about where GHG emission reduction commitments need to be according to science, identify gaps, and prioritize actions based on ease of implementation and planning requirements;
- Create a pathway to realize a long-term target for 2050, and provide manageable steps that can be measured and reported annually;
- Build capacity in the community and with businesses to deal with budgets, resources, information, and other requirements to meet targets; and
- Signal to new businesses and investors that Windsor is committed to climate change action and environmentally sustainable practices.

B3. Why should Windsor Use Science-Based Targets?

Since 2017, actions at the local, national, and international levels have prompted Administration to recommend updating Windsor's CEP and CCAP targets and adopting the Science Based Target Network's methodology for setting Science Based Climate Targets, including:

- The City's Climate Change Emergency Declaration (CR570/2019);

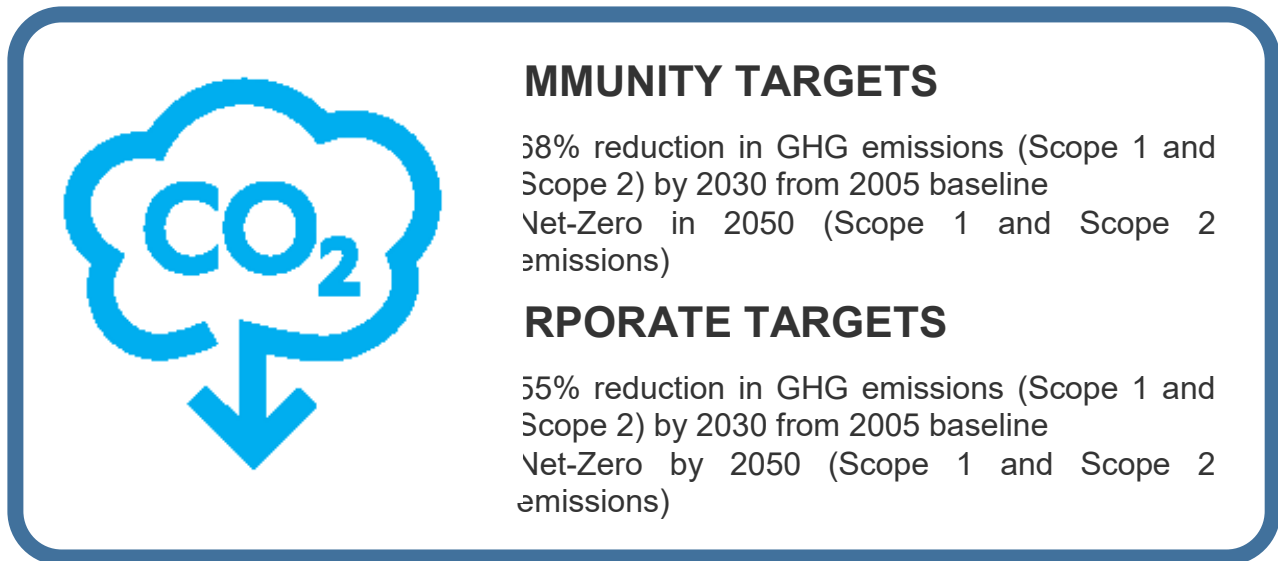
- Government of Canada’s updated GHG Reduction Targets (reduction of 40-45% below 2005 levels by 2030 and net zero by 2050); and
- The Intergovernmental Panel on Climate Change (IPCC) Special report “Global Warming of 1.5°C” recommending that emissions must decline by about 45% globally by 2030 and reach net zero by 2050.

An outcome of the City’s Climate Change Emergency Declaration (CR570/2019) is the recommendation to update the City’s GHG emission targets to reflect the commitment to achieve a reduction of 45% of 2010 levels by 2030 and reaching Net-Zero emissions by 2050. In order to achieve these reduction targets, a number of interim targets are required to ensure the implementation of emission reduction activities are accelerated and progress is tracked (Council Report S 18/2020 Acceleration of Climate Change Actions in response to the Climate Change Emergency Declaration).

B4. Windsor’s Science-Based Targets

On May 9, 2022, the Science Based Targets for GHG Reduction (CR209/2022 ETPS 893) report was presented to City Council, recommended updating Windsor’s Community and Corporate GHG Emission reduction targets and adopting the Science Based Target Network’s methodology for setting the following Science Based Climate Targets:

Figure B.1: Proposed Community and Corporate Energy and Emission Targets



The proposed Community and Corporate Science Based GHG Reduction targets are ambitious and aspirational. Administration acknowledges that reaching the proposed targets will not be easy. Strategies identified in the Community Energy Plan and Corporate Climate Action Plan will achieve a portion of the GHG reductions needed for Windsor to contribute its fair share but additional strategies will be required to realize the science-based targets.

B4.1 Community

Figure B.2: Proposed Community GHG Reduction Targets illustrates the pathway for Windsor’s science-based GHG emission target as compared to targets from the CEP, Government of Ontario and the Government of Canada. Science Based targets are more aggressive than government targets between 2022 and 2050.

Figure B.2: Proposed Community GHG Reduction Targets

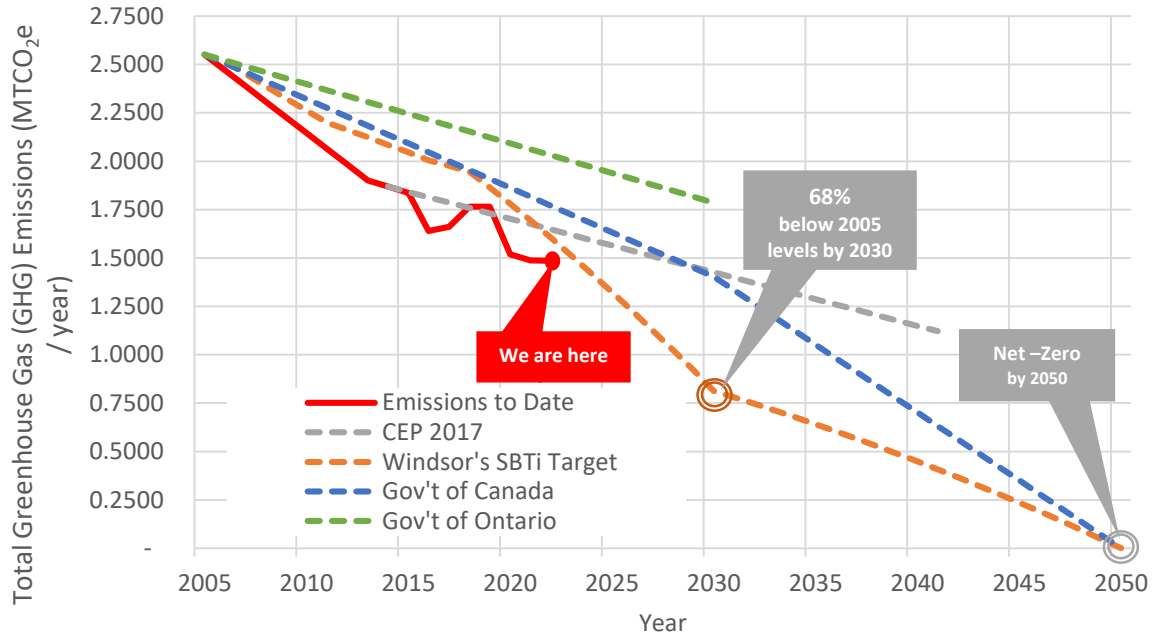


Table B.1 highlights a number of primary indicators as compared to the Science Based Climate Target Baseline of 2005.

Table B.1: Primary Performance Indicators vs. Science Based Climate Target Baseline 2005

Primary Performance Indicators	Science Based Climate Baseline 2005	2022	% Change to Baseline
Total Emission (MTCO ₂ e)	2.551	1.487	-41.7
Total Energy (GJ)	42,264,618	30,313,199	-28.3
Population	215,010	229,660	+6.8
Emissions per Capita (tCO ₂ e/capita)	11.87	6.47	-45.5
Energy per Capita	196.57	138.04	-29.8

Table B.2 highlights community emissions by sector as compared to the Science Based Climate Target Baseline of 2005.

Table B.2: Community Emissions by Sector vs. Science Based Climate Target Baseline 2005

COMMUNITY EMISSIONS (MTCO _{2e})	Science Based Climate Baseline 2005	2022	% Change to Baseline
Residential	0.355	0.305	-14.1
Commercial / Institutional	0.681	0.219	-67.8
Industrial	0.669	0.273	-59.2
On Road Transportation	0.767	0.626	-18.4
Waste	0.080	0.065	-18.8

In 2022, Windsor's community-wide emissions were 41.7% lower than 2005 but ambitious climate actions and programs are still required by the community in order to stay on track to meet its 2030 and 2050 science-based climate targets. Further, as detailed in Table B.3 below, as a community Windsor still needs to cut its emissions by roughly 0.164 MTCO_{2e} to meet the City's 2025 target of a 48% emissions reduction below 2005 levels or taking approximately 46,000 passenger vehicles fuelled by gasoline off the road.

Table B.3: Community-wide Science Based Climate Targets – GHG emissions targets and status

Year	GHG reduction target from 2005 baseline	GHG emissions target (MTCO _{2e}) ³²	Progress as of 2022
2022	37%	1.604	The City exceeded its 2022 GHG reduction target. In 2022, Windsor's community-wide emissions were 1.487 MTCO _{2e} , which is 41.7% lower than in 2005.
2025	48%	1.323	The City must reduce annual emissions by an additional 0.164 MTCO _{2e} to meet the 2025 ³³
2030	68%	0.813	Windsor must accelerate its efforts to reduce annual emissions by about 0.674 MTCO _{2e} to meet the 2030 target. ³⁴

³² Emissions target calculated relative to 2005 baseline emissions of 2.551 MTCO_{2e}.

³³ 0.163 MTCO_{2e} is the difference between the 2022 Community GHG Emissions and the 2025 Science Based Target.

³⁴ 0.673 MTCO_{2e} is the difference between the 2022 Community GHG Emissions and the 2030 Science Based Target.

Year	GHG reduction target from 2005 baseline	GHG emissions target (MTCO ₂ e)	Progress as of 2022
2035	75%	0.641	0.846 MTCO ₂ e must be eliminated to meet the 2041 target. ³⁵
2040	82%	0.449	1.038 MTCO ₂ e must be eliminated to meet the 2040 target. ³⁶
2045	91%	0.236	1.251 MTCO ₂ e must be eliminated to meet the 2045 target. ³⁷
2050	100%	0	1.487 MTCO ₂ e must be eliminated to meet the 2050 target. ³⁸

B4.2 Corporate

Figure B.3: Proposed Corporate GHG Reduction Targets for 2030, 2035, 2040, and 2045 illustrates the pathway for Windsor’s corporate science-based GHG emission target as compared to targets from the CCAP, Government of Ontario, and the operation target from the Government of Canada. Science Based targets are more aggressive than government targets between 2022 and 2050.

³⁵ 0.846 MTCO₂e is the difference between the 2022 Community GHG Emissions and the 2035 Science Based Target.

³⁶ 1.037 MTCO₂e is the difference between the 2022 Community GHG Emissions and the 2040 Science Based Target.

³⁷ 1.251 MTCO₂e is the difference between the 2022 Community GHG Emissions and the 2045 Science Based Target.

³⁸ 1.487 MTCO₂e is the difference between the 2022 Community GHG Emissions and the 2050 Science Based Target.

Figure B.3: Proposed Corporate GHG Reduction Targets

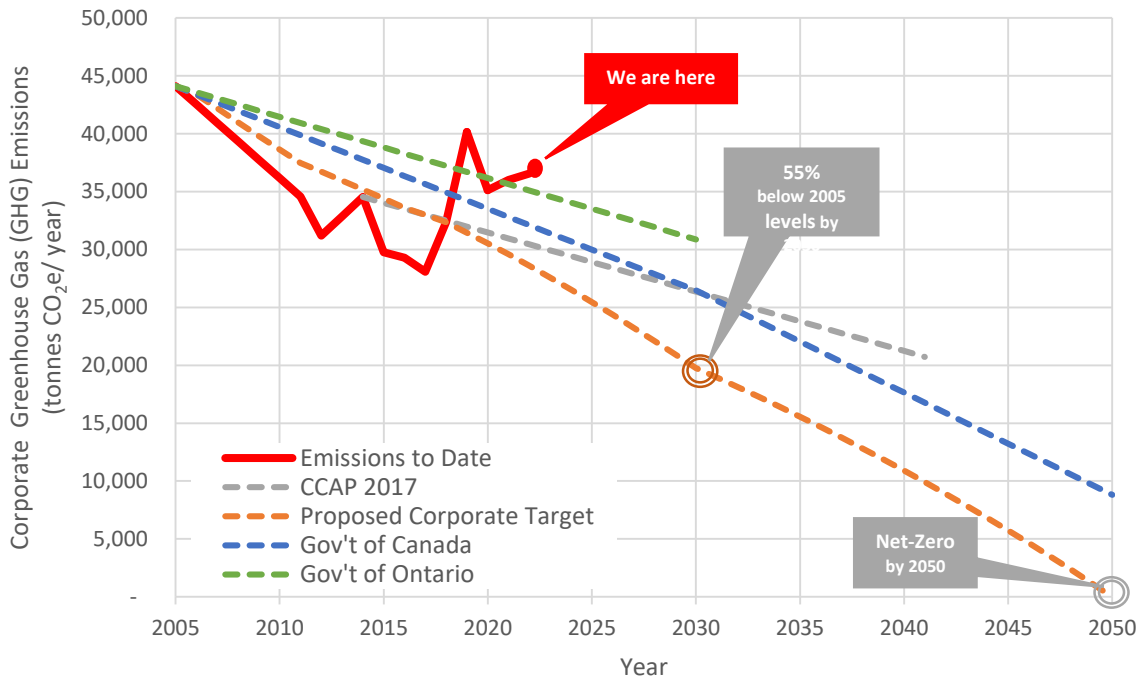


Table B.4 highlights the primary performance indicators as compared to the Science Based Climate Target Baseline of 2005.

Table B.4: Primary Corporate Performance Indicators vs. Science Based Climate Target Baseline 2005

Primary Corporate Performance Indicators	Science Based Climate Baseline 2005	2022	% Change to Baseline
Total Emission (kTCO ₂ e)	44,104	38,469	-12.8
Total Energy (GJ)	705,118	890,135	+26.2

Table B.5 highlights the changes in corporate emissions by sector as compared to the Science Based Climate Target Baseline of 2005 CCAP baseline.

Table B.5: Corporate Emissions by Sector vs. Science Based Climate Baseline 2005

CORPORATE EMISSIONS (kTCO ₂ e)	Science Based Climate Baseline 2005	2022	% Change to Baseline
Building	15.932	15.500	-2.7
Vehicle	13.557	12.406	-8.5
Streetlights	4.593	0.199	-95.7
Water & Wastewater	10.022	8.462	-15.6

In 2022, Windsor's corporate emissions were 17.1% lower than 2005, but corporately Windsor missed its 2022 science-based climate target by 27.9%. Significant progress on GHG reductions through climate actions and programs are required for the City to reverse its upward trajectory and get back on track to meet its 2030 and 2050 targets. Further, as detailed in Table B.6 below, Windsor needs to cut its emissions by roughly 11.112 kTCO₂e to meet the City's 2025 target of a 42% emissions reduction below 2005 levels. To meet the 2025 science-based climate target corporately, Windsor will need to improve its results by 30.3% as compared to 2022. Alternatively, the corporation would need to idle approximately 89.5% of its vehicle fleet to offset emissions.

Table B.6: Corporate Science Based Climate Targets – GHG emissions targets and status

Year	GHG reduction target from 2005 baseline	GHG emissions target (kTCO ₂ e) ³⁹	Progress as of 2022
2022	35%	28.591	The City did not meet its 2022 GHG reduction target. In 2022 ⁴⁰ , Windsor's corporate emissions were 36.569 kTCO ₂ e, which is 17.1% lower than in 2005.
2025	42%	25.457	The City must reduce its corporate emissions by about 11.112 kTCO ₂ e to meet the 2025 target. ⁴¹
2030	55%	19.749	Windsor must accelerate its efforts to reduce annual emissions by about 16.820 kTCO ₂ e to meet the 2030 target. ⁴²
2035	65%	15.567	21.002 tCO ₂ e must be eliminated to meet the 2035 target. The City must rapidly increase its current annual emissions reduction rate. ⁴³

³⁹ Emissions target calculated relative to a 2005 baseline emissions of 44,104 tCO₂e

⁴⁰ Although 2022 is an anomaly year due to the COVID-19 pandemic, it must be noted that the City's 2019 corporate GHG emissions were 8.9% lower than 2005 levels.

⁴¹ 11.112 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2025 Science Based Target.

⁴² 16.820 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2030 Science Based Target.

⁴³ 21.002 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2035 Science Based Target.

Year	GHG reduction target from 2005 baseline	GHG emissions target (kTCO ₂ e)	Progress as of 2022
2040	75%	10.907	25.662 kTO ₂ e must be eliminated to meet the 2040 target. The City must rapidly increase its current annual emissions reduction rate. ⁴⁴
2045	87%	5.732	30.837 tCO ₂ e must be eliminated to meet the 2045 target. ⁴⁵
2050	100%	0	36.569 tCO ₂ e must be eliminated to meet the 2050 target. ⁴⁶

⁴⁴ 25.662 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2040 Science Based Target.
⁴⁵ 30.837 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2025 Science Based Target.
⁴⁶ 36.569 kTCO₂e is the difference between the 2022 Corporate GHG Emissions and the 2025 Science Based Target.

Appendix C: Heating and Cooling Degree Days

Natural Gas and Electricity consumption used for space heating and cooling are sensitive to weather conditions and can be weather normalized in terms of Heating Degree Days (HDD) or Cooling Degree Days (CDD). HDD is a quantitative index used to estimate the energy demand needed to heat a home or business. Cooling CDD, on the other hand, is a quantitative index used to estimate the energy demand needed to cool a home or business.

HDD is equal to the number of degrees Celsius (°C) a given day's mean temperature is below 18°C. For example, if the daily mean temperature is 12°C, the HDD value for that day is equal to 6 HDD. If the daily mean temperature is above 18°C, the HDD value for that day is set to zero. When this exercise is performed every day of the year, it provides a total value of HDD for a given year.

CDD follows a similar calculation process as HDD, except it refers to the number of degrees Celsius a given day's mean temperature is above (instead of below) 18°C. At this temperature, people inside a building no longer want the building heated, but instead begin to consider cooling the building.

A high number of degree days (HDD and/or CDD) generally results in higher levels of energy use for space heating or cooling.

Table C.1⁴⁷ shows that Windsor's winter and summer in 2022 were warmer as compared to 2019. Figure C.1 further shows that Windsor's 2022 HDD was lower than the city's 25-year HDD average, which means building heating needs were lower. Windsor's 2022 CDD was similar to the city's 25-year CDD average, which means air conditioning needs were slightly higher in 2022. This implies that Windsor experienced a normal summer in 2022, similar to the historical average.

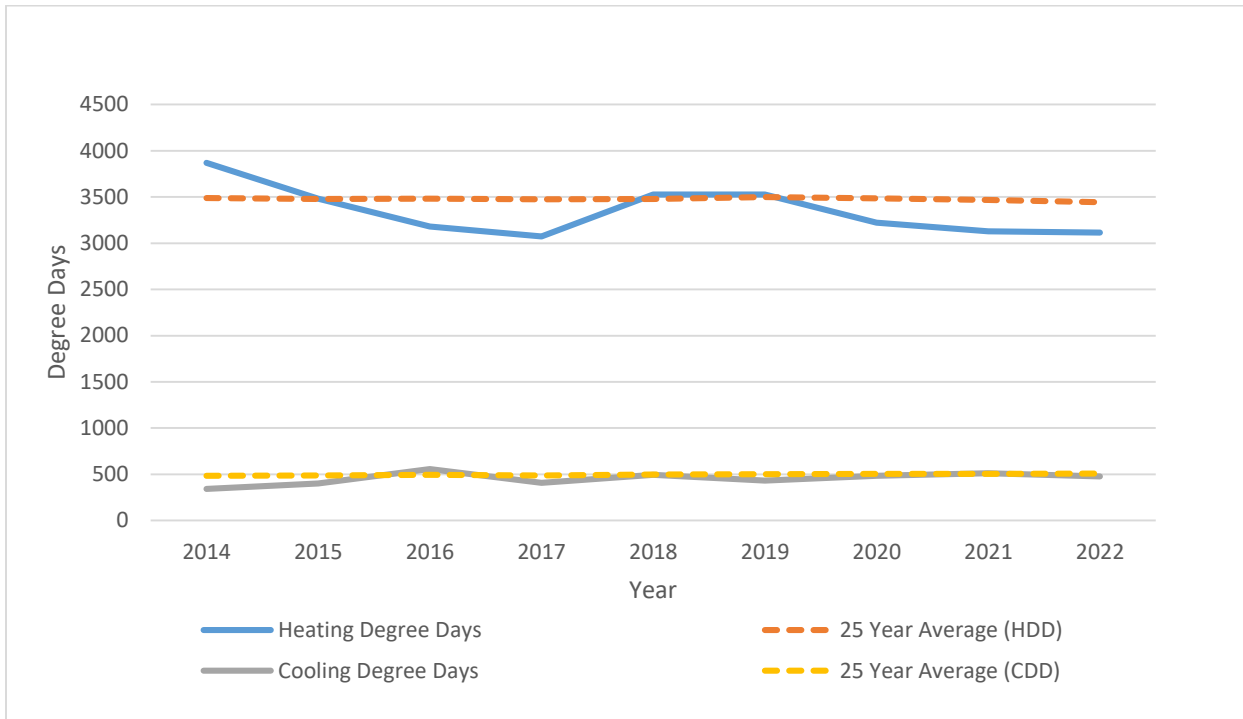
Table C.1: Windsor's HDD and CDD 2014 – 2022

Year	Heating Degree Days (HDD)	Cooling Degree Days (CDD)	Heating Difference from previous year	Cooling difference from previous year
2014	3868.7	342.3		
2015	3481.8	399.7	-10.00%	16.77%
2016	3181.1	557.4	-8.64%	39.45%
2017	3073.6	406.4	-3.38%	-27.09%
2018	3525.7	494.6	14.71%	21.70%
2019	3526.2	431.4	0.01%	-12.78%
2020	3222.6	484.5	8.61%	12.31%
2021	3129.6	513.4	-2.89%	5.96%
2022 ⁴⁸	3113.7	476.2	-0.51%	-7.25%

⁴⁷ Datasets were gathered from ECCC: [Daily Data Report for January 2024 - Climate - Environment and Climate Change Canada \(weather.gc.ca\)](#)

⁴⁸ Days with missing temperature recordings impact the accuracy of HDDs and CDDs

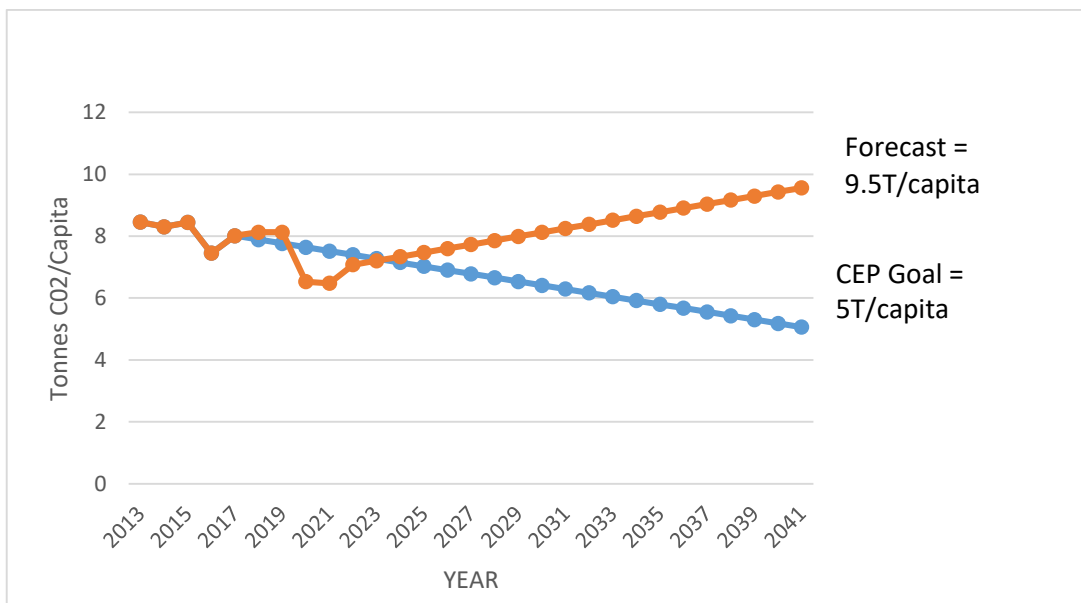
Figure C.2: Annual Heating Degree Days (HDD) and Cooling Degree Days (CDD) in Windsor



Appendix D: Community Progress Towards CEP Goals

The CEP projected GHG emissions increase of 20% under the baseline scenario. Without action, the community is on track to reach a per capita emissions of 9.5 Tonnes/year by 2041 (Figure 25). The CEP also predicts community-wide energy costs to grow from \$842 million in 2014 to \$1.8 to \$3.2 Billion by 2041 without action. These expected increases are being realized currently and highlights the need for a rigorous approach to the implementation of all CEP strategies.

Figure D.1: Projection for per capita emissions based on 2014-2019 trend



Although the CEP was approved in 2017, implementation of the major strategies and programs outlined in the CEP began in the later half of 2018 upon the recruitment of the Community Energy Plan Project Administrator. At this time, a number of the Strategies are under program development. It is anticipated that emissions will continue to rise until the Strategies are at the implementation stage. The following section outlines the status of the emissions reduction strategies outlined in the CEP.

D1. CEP Community Strategy Update

Table D.1: CEP Community Strategy Summary

Status updates provided for strategies listed below are as of November 2023.

Strategy #	Strategy Title	Lead Department	Status
1	Create a Deep Energy Retrofit Program for Existing Homes	Environmental Sustainability and Climate Change (ESCC)	FCM Green Municipal Fund (GMF) Grant received for Program Design Study. Administration led initiative. Full report to be presented to Council Q4 2024.
2	Continue to Ensure Compliance with the Ontario Building Code for New Residential Development	Building	Plan Examiners ensure compliance with energy code requirements outlined in the Ontario Building Code (OBC) prior to issuance of a building permit. Building systems are reviewed by Building Inspectors at various phases of construction.
3	Integrate Energy Performance Labelling for Homes and Buildings	ESCC	Select City facilities have been assessed using an online tool provided by Natural Resources Canada. The results are being used as tools for public engagement and education.
4	Create a Net Zero Neighbourhood as an Opportunity for Transformative Change at the Neighbourhood Scale	ESCC	FCM Green Municipal Fund (GMF) Grant received in 2022 to conduct a plan study. The SNAP is expected to be presented to City Council in Q4/2024.
5	Create a Deep Retrofit Program for Existing Businesses and Public Buildings	ESCC	The study being completed under Strategy 1 (residential) will form the basis for discussion for other buildings. Starting with Strategy 1 provides a context for this Strategy where the procedure is more complex as the building types vary more.
6	Continue to Ensure Compliance with the OBC for New Commercial and Institutional Development	Building	Plan Examiners ensure compliance with energy code requirements outlined in the OBC prior to issuance of a building permit. Building systems are reviewed by building inspectors at various phases of construction.

Strategy #	Strategy Title	Lead Department	Status
7	Continually Increase Industrial Efficiency Energy	ESCC	ENWIN has fulfilled their requirement under their energy conservation mandate. Energy efficiency programs are continuing through IESO but managed through Toronto. There are no local representatives. A number of local industry leaders have committed to sustainability targets including net-zero emissions. These leaders will assist in reaching the Community targets.
8	Reinforce a Windsor Network and Mentorship Program for Transfer of Best Practices	ESCC	In collaboration with Enwin and Enbridge (Union Gas) a Sustainable Buildings workshop was held in May 2019. Looking to reinstate in 2023.
9	Encourage a Modal Shift towards Public Transit	Transit Windsor	More Than Transit Plan Approved in 2020 Implementation underway <ul style="list-style-type: none"> • New routes underway with express route 518X implemented in 2021 and 418X implemented in 2023 • Work to expand existing garage to start in 2024 • Automatic Passenger Counters to be installed on fleet by end of 2024 Transit Windsor Route Infrastructure Planning and Design Guidelines were approved by Council in 2022.
10	Develop and Implement an Active Transportation Master Plan	Transportation Planning	The Active Transportation Master Plan was approved by City Council on July 22, 2019. The plan includes a target of 25% mode split by 2041 shifting from current 10%. ⁴⁹
11	Adoption of Electric Vehicles and Alternative Fuel Vehicles	ESCC / Asset Planning	Essex Powerlines received funding from NRCan to install EV chargers at sites across Windsor Essex. Program fully subscribed in 2022. <ul style="list-style-type: none"> • 12 level 2 chargers and 1 fast charger installed in Windsor • Additional 42 level 2 chargers and 14 fast chargers in Essex Powerline's queue for Windsor

⁴⁹ Mode Split is obtained using Census data and represents commuter transportation only.

Strategy #	Strategy Title	Lead Department	Status
12	Continue to Advance Smart Energy Systems through Effective Land Use Planning	Planning	ESCC staff completed an Energy Strategy Terms of Reference and incorporated into the development process.
13	Designate and Plan District Energy Areas	ESCC	Enwave Utilities purchased Windsor District Energy network in 2020. Through the CEP, the ESCC Office is collaborating with Enwave to address current challenges and identify how the City of Windsor can help to support the expansion of District Energy.
14	Create a Gordie Howe International Bridge Low-Energy Development Area	Planning	No progress to date, as bridge construction is ongoing.
15	Encourage the Installation of Solar Arrays	ESCC / Asset Planning	<p>The Province of Ontario no longer permits virtual net metering for solar installations. However, solar PV can still be net metered at buildings. Solar PV and wind are now the cheapest available source of new electricity generation.</p> <p>The IESO will be launching the LT2 procurement later in 2024. This procurement will be focused on renewable energy generation (e.g., wind, solar).</p>
16	Develop a Community Education and Communications Campaign	ESCC	Education and Engagement is ongoing. Public engagement was limited in 2020 and 2021 due to COVID restrictions. In 2023, engagement has returned with events at Devonshire and Tecumseh malls, the Windsor-Essex Home Show and Earth Day 2023.
17	Detailed Energy Mapping	ESCC	Completed as part of Strategy #1 in 2018. Detailed energy mapping allows Administration to review local energy needs and opportunities for generation. These maps should be recreated every 7 to 10 years to monitor the changing energy use patterns of the City.
18	Transition Community Energy Plan Administrator role from temporary full time to permanent full time	ESCC	Complete The Community Energy Plan Administrator position was approved as a permanent position in the 2024 budget.

Strategy #	Strategy Title	Lead Department	Status
19	Facilitate the Community Implementation Task Force	ESCC	Community Task Force has recommitted for the implementation of the CEP. Interest from the local business community to participate is continuing to increase.
20	Monitoring and Verification	ESCC	This report is the second full monitoring report completed for the CEP. A similar report is expected to City Council annually.

D2. Core Strategies Underway

Strategy #1: Deep Energy Retrofit Program for Existing Homes

In order to have a significant impact on the emissions and energy utilization trends for the Windsor residential sector, existing buildings require extensive energy efficiency retrofits. Homes in Windsor are significantly older than the Ontario average and as such, result in higher energy consumption and emissions than comparable homes in other areas of the province. The average build year for the construction of a Windsor home is 1960. At that time the Ontario Building Code did not have energy efficiency requirements or considerations therefore these buildings were constructed without effective wall, attic, or basement insulation. This lack of insulation drastically increases the amount of natural gas consumed to heat the home using a furnace. The average Windsor home uses 20% more energy per square meter than the average Ontario home.

CEP Strategy 1 calls for the creation of a Deep Energy Retrofit Program for Existing Homes with the aim to improve energy efficiency by 30-50 percent depending on age and size of the home. This program would have the potential of reducing residential GHG emissions by 133,000 tonnes or 34 percent by 2041.

This is the primary action required within the residential sector to meet the CEP goals and targets. In 2019, the City of Windsor retained a consultant to develop a business case for such a program. The purpose of the business case was to investigate the feasibility of establishing an Entity to deliver high quality, standardized residential energy efficiency retrofit packages to Windsor homes. The business case explored the following program elements:

1. Goal of retrofitting 80% of Windsor homes by 2041
2. Creation of a local entity for program delivery
3. Encourage public/private partnership
4. Offer quality controlled standardized retrofits with standardized pricing
5. Retrofits realize efficiency gains of 30 to 50%
6. Financing options include repayments using Local Improvement Charges (LIC)

Recommendations were presented to City Council in February 2020. In October 2020 Administration applied to the Federation of Canadian Municipalities' Community Efficiency Financing (CEF) program. Details of the intended study and grant opportunity are available in S107/2020. In August 2021, the City of Windsor received a grant from FCM to undertake a Program Design Study. The business plan is expected to be presented to City Council in Q4/2024. Figure 13 illustrates an example of eligible home energy retrofits.

Figure D.2: Example of exterior upgrades to existing home



Strategy #4: Sustainable Neighbourhood Action Plan – Sandwich South

CEP Strategy 4 calls for the creation of a Net-Zero neighbourhood as an opportunity for transformative change at the neighbourhood scale. In Q1 2021 administration submitted an application to FCM for grant funding to complete a sustainable neighbourhood action plan for Sandwich South. The Sandwich South lands represents the largest greenfield development area in the City. With a relatively blank slate, there is high potential and opportunity for development of Net-Zero (or near-zero) neighbourhoods. If the City of Windsor wishes to achieve its environmental and sustainability goals, it is important to develop greenfield areas in a manner consistent with those goals.

Goals include emissions reduction, low-carbon economic development, and climate change resilience. The SSPD represents a unique opportunity for Windsor due to its central location, size and greenfield nature. In practice, the sustainable neighbourhood action plan will focus on:

1. Minimizing energy consumption;
2. Maximizing efficiency of energy conversion; and
3. Maximizing use of low-carbon/renewable energy sources at both the building scale, as well as the block/district scale

This creates the policy framework necessary to create new, sustainable, mixed-use communities alongside the proposed Regional Hospital. Outlined in Council Report S 116/2020 are details of this study. Work is currently underway on the development of

the plan with a report due to Council in Q4, 2024. Figure D.3 illustrates an example of a sustainable neighbourhood development plan.

Figure D.3: Example of a Sustainable Neighbourhood Development Plan



Strategy #9: Encourage a Modal Shift towards Public Transportation and Active Transportation

Supporting the improved modal split towards low-carbon (public transit) and zero carbon transport are Strategies number 9 and 10 of the CEP.

The Active Transportation Master Plan was approved by City Council on July 22, 2019. This plan calls for a modal split of 25% by 2041. This means that 25% of all trips made in Windsor would be achieved through public transit or active transportation. According to the 2021 Census data, Windsor’s current modal split is approximately 7.4%⁵⁰. Achieving a modal split of 25% could result in an emissions reduction of 38,000 tonnes a year in 2041. If interim targets are met over the lifetime of the plan, 378,000 tonnes of CO₂e can be reduced.

Strategy # 11: Foster the Adoption of Electric Vehicles

Supporting the adoption of electric vehicles (EV) is Strategy 11 of the CEP. The City of Windsor received funding from the federal government under a program to develop supportive EV infrastructure. The City of Windsor installed and commissioned eleven (11) level two (2) charging stations in municipal parking lots, libraries, and recreation complexes in 2021. Table 8 shows the monthly vehicle charging in kWh and the corresponding GHG offset attributed to “fueling” vehicles using electricity vs. gasoline in 2022. As part of the pilot, vehicles could charge at City charging stations at no charge.

⁵⁰ 2021 Census data provided modal split for primary mode of transportation for commuting to work only.

Table D.2: 2022 Electric Vehicle Charging at City operated EV Charging Stations

Month	Charging (kWh)	GHG Offset (kgCO₂e)
April	252	286
May	2,367	2,689
June	3,913	4,445
July	4,407	5,006
August	3,889	4,418
September	5,549	6,304
October	6,674	7,582
November	7,024	7,979
December	6,906	7,845
Total	40,981	46,554

Figure D.4: Windsor Essex Electric Vehicle Association Earth Day Display



D3. Community Performance Indicators

Table D.3 – Community Performance Indicators

Community Performance Indicator	2014	2022
Total energy use	39,016,987 GJ/yr	31,742,704 GJ/yr
Total energy use per capita	184.91 GJ/yr	138.04 GJ/yr
Percent change in energy per capita from baseline	N/A	-24.8%
Total energy use per job	251.3 GJ/job	187.6 GJ/job
Percent change in energy use per full time job from baseline	N/A	-25.3%
Total GHG Emissions	1.869 MTCO _{2e}	1.486 MTCO _{2e}
Emissions per capita	8.86 tCO _{2e}	6.47 tCO _{2e}
Percent change in GHG emissions from CEP baseline	N/A	-27.0%
Total Energy Residential	9,029,158 GJ/yr	8,121,375 GJ/yr
Total Emissions Residential	0.366 MTCO _{2e} /yr	0.305 MTCO _{2e} /yr
Emissions Residential as percent of total	19.6%	20.5%
Total Energy Commercial and Institutional	9,583,784 GJ/yr	7,825,092 GJ/yr
Total Emissions Commercial and Institutional	0.316 MTCO _{2e} /yr	0.219 MTCO _{2e} /yr
Emissions Commercial and Institutional as percent of total	16.9%	14.7%
Total Energy Industrial	9,524,808 GJ/yr	6,542,325 GJ/yr
Total Emissions Industrial	0.385 MTCO _{2e} /yr	0.2736 MTCO _{2e} /yr
Emissions Industrial as percent of total	20.6%	18.3%
Total Energy On-Road	10,879,237 GJ/yr	9,253,912 GJ/yr
Total Emissions On-Road	0.733 MTCO _{2e} /yr	0.626 MTCO _{2e} /yr
Emissions On-Road as percent of total	39.2%	42.1%
Total Emissions solid waste	0.068 MTCO _{2e} /yr	0.065 MTCO _{2e} /yr
Total Installed distributed Solar PV	NA	73.4 MW

D4. CEP Next Steps

Benchmarking Best Practices

Administration is tracking best practices from municipalities and government agencies provincially and federally.

1. Benchmarking Deep Retrofit Programs in the market or under development across Ontario, Canada, North America, and Europe.
 - a. Developing comparisons of program features including program eligibility, financing options, and program steps;
 - b. Conducting interviews with a number of municipal program administrators regarding challenges and successes of program development and launch (focusing on lessons learned); and
 - c. Participating on working groups:
 - i. QUEST's Deep Retrofit working group;
 - ii. CAP webinars and stakeholder meetings highlighting programs from across Canada; and
 - iii. Community Efficiency Financing (CEF) learning opportunities.
2. Benchmarking of Sustainable Neighbourhood Action Plans
 - a. Clarington, Edmonton, Guelph, London, Ottawa, Victoria, West Vancouver, focusing on key elements:
 - i. Natural and Cultural;
 - ii. Energy Efficiency;
 - iii. Biodiversity; and
 - iv. Land Use Density, etc.
3. Benchmarking Community Energy Plans, Climate Action Plans, or Net-Zero Plans of Municipalities.
4. Benchmarking Net-Zero or Pathways to Net-Zero plans from government and utilities.
 - a. Government of Canada 2030 Emissions Reduction Plan;
 - b. Enbridge Gas Inc.'s Ontario Pathways to Net Zero; and
 - c. Independent Electricity System Operator's (IESO) Pathways to Decarbonization
5. Benchmarking government initiatives related to new technology and alternative fuels.
 - a. Ontario's Low-Carbon Hydrogen Strategy;
 - b. Hydrogen Strategy for Canada;
 - c. Government of Canada's Clean Electricity Standard Discussion Paper; and
 - d. Scenarios for a Net-Zero Electricity System in Ontario

Transition to Net-Zero Plan

In 2022, Administration reported to Council (S 42/2022 Science Based Targets for GHG Reduction) requesting approval in principle of an update to the Community and Corporate GHG Emissions Reduction Targets. As part of Council Decision (CR209/2022 ETPS 893):

- That the report of the Community Energy Plan Administrator dated April 8, 2022 entitled “Science Based Targets for GHG Reduction – City Wide” **BE RECEIVED** for information; and,
- That City Council **APPROVE IN PRINCIPLE** Windsor’s Science Based Targets of a 68% reduction in city-wide emissions (scope 1 and 2) and a 55% reduction in corporate-wide emissions (scope 1 and 2) below 2005 baseline by 2030; and,
- That City Council **APPROVE IN PRINCIPLE** a NET ZERO Target for 2050; and,
- That Administration **BE DIRECTED** to report back with an updated strategy to reach these targets by November 2023 that considers implementation timelines, resourcing and financial impacts of meeting science-based targets; and further,
- That Administration **BE DIRECTED** to send a letter to the County of Essex and City of Detroit requesting their support of Windsor’s Science Based Targets for GHG Reduction.

On May 31, 2022, administration sent letters to the County of Essex and City of Detroit, requesting their support of Windsor’s Science Based Targets for GHG Reduction. In response, administration did not receive feedback from either the County of Essex or the City of Detroit.

The current Community Energy and Corporate Climate Action Plans will form the foundation of the Transition to Net-Zero Plan, with information gathered from benchmarking activities analysed and incorporated as applicable.

Reporting on the Transition to Net-Zero Plan is overdue to Council. Plan development is being completed utilizing existing resources and operational budget. Work completed to date include:

- Community and corporate Business as Usual (BAU) forecasting;
- Gap analysis between the CEP / CCAP strategies and Net-Zero target;
- Incorporating anticipated community-wide reductions from community partners with published GHG reduction targets into forecast;
- Municipal best practice strategies have been shortlisted and are under review for reduction potential against current emissions gap.

Administration continues to collaborate with municipal and community stakeholders through networks like Community Task Force, Regional Climate Collaboration Network, Clean Air Partnership (CAP), and QUEST Canada.

Government Advocacy

Administration is expanding its responsibilities as it relates to regional energy supply and energy security. Administration is working to:

1. Support City Council decisions

2. Liaise between Energy proponents and the IESO for procurement RFPs
3. Collaborate with IESO, the Ontario Ministry of Energy, Northern Development and Mines, Enbridge Gas Inc., and local stakeholders as appropriate to support initiatives and actions that align with Pathways to Net-Zero.

Intergovernmental Panel on Climate Change (IPCC)

In March 2023, the IPCC released its sixth assessment report (AR6) which summarized the state of knowledge of climate change, its widespread impacts and risks, and climate change mitigation and adaptation, based on the peer-reviewed scientific, technical and socio-economic literature since the publication of the IPCC's Fifth Assessment Report (AR5) in 2014. Administration has identified a number of key findings to focus on and mitigate in the years leading up to 2030.⁵¹

⁵¹ [AR6 Synthesis Report: Summary for Policymakers Headline Statements \(ipcc.ch\)](https://www.ipcc.ch/synthesis-report)

Appendix E: Corporate Assets Impacts

The addition or removal of assets from the corporate inventory can have a significant impact on corporate GHG emissions. Table E.1 below highlights additions or removals of corporate assets that have had a significant⁵² impact on GHG emissions.

Table E.1: Corporate Asset Changes with Significant Impact to GHG Emissions

Facility Name	Category	Addition / Removal	Year	Impact to GHG Emissions (kTCO ₂ e) ⁵³
Huron Lodge (CHP Unit)	Buildings	Add	2018	1.177
WFCU Centre (CHP Unit)	Buildings	Add	2019	0.914
Pelletizing Plant	Wastewater	Add	2019	4.604 ⁵⁴
WIATC (CHP Unit)	Building	Add	2021	N/A ⁵⁵
Total				6.695

⁵² For the purpose of this Appendix, significant corresponds to net GHG emissions in excess of 0.400 kTCO₂e.

⁵³ Impact to GHG emissions is calculated for the year in which asset was added or removed from corporate inventory.

⁵⁴ Pelletizer Plant impact is calculated as of 2020, the first full year after acquisition.

⁵⁵ Impact of the addition of the CHP unit at WIATC is expected to be significant, but as it was added during COVID-19, it did not run at its expected capability due to reduced operating hours at the facility.

Appendix F: Corporate Strategy Update

Table 15 – Corporate Climate Action Plan Strategy Summary

Strategy #	Strategy Title	Lead Department	Status
P1	Create an Internal 'Energy First' Ethic	Asset Planning	<p>The 2019-2023 Corporate Energy Management Plan (CEMP) was presented to Council in 2019. The Energy Initiatives Unit continuously promotes energy conservation and GHG reduction throughout the Corporation by implementing projects and providing assistance for the implementation of energy efficient technologies and processes.</p> <p>An updated edition of the CEMP will be prepared by the end of 2024.</p> <p>Administration is working to establish an internal framework to that will reset the roles and accountabilities of the Corporate Task Force as it relates to the implementation of strategies contained within the CEP and CCAP in support of City Council's climate change emergency declaration</p>
P2	Integrate Energy Solutions into Land Use Policies	Planning	<p>Environmental Sustainability and Climate Change (ESCC) staff is working with Planning to incorporate an Energy Strategy component into the development process to fulfil PPS 2020, Section 1.8.1: Planning authorities shall support energy conservation and efficiency, improved air quality, reduced GHG emissions, and preparing for the impacts of a changing climate through land use and development patterns.</p>
P3	Ensure Sufficient Resources to Support Implementation	ESCC	<p>The Community Energy Plan Administrator position was approved as a permanent position in the 2024 budget.</p>
P4	Increase Staff Training, Education, and Awareness	ESCC	<p>The ESCC office is working to re-establish previous efforts for staff training and awareness that was limited during COVID. Examples of awareness training to date include:</p> <ul style="list-style-type: none"> • Education sessions hosted with supervisors and managers • Creation of a Green Team, this involves staff across the corporation that has an interest in promoting environmental sustainability at their worksites. • Training sessions on writing the Climate Lens section of Council reports <p>Engaged York University to present The Energy Conscious Community: An Energy Course for Planning Professionals to regional planners</p> <ul style="list-style-type: none"> • Updated Sustainable Procurement Guide

Strategy #	Strategy Title	Lead Department	Status
P5	Continue to Pursue Funding and Incentive Opportunities	ESCC	<p>The City of Windsor has been successful in obtaining numerous grants to support the strategies outlined in the CEP and CCAP including:</p> <ul style="list-style-type: none"> • FCM M Municipal Climate Innovation Program (3 grants) • FCM Community Efficiency Financing • FCM Green Municipal Fund (2) • Infrastructure Canada, Zero Emission Transit Fund • Natural Resources Canada Zero Emissions Vehicle Infrastructure Program <p>Note FCM has recently announced that many of their funding streams will require multi-benefits solutions moving forward, for example, project will support a net-zero emissions pathway along with resilience or sustainable materials management, or biodiversity enhancements, or potable water conservation, or socio-economic benefits.</p>
P6	Create a Corporate Energy Task Force	ESCC	The Corporate Task Force was established shortly after plan approval and continues to meet as required.
B1	Continue Existing Building Retrofits	Asset Planning	Underway. A new study (GHG Reduction Pathway) and the revised Corporate Energy Management Plan will assist the City on progressing toward a net-zero target.
B2	Increase Efficiency through New Building Design	ROW & Development	Energy assessments completed for full building when additions or expansions are planned.
B3	Continue to Improve Operations, Maintenance, and Monitoring	Asset Planning	Asset Planning will be undertaking a pilot project for sub-metering our 10 highest users in 2024. The project will include the monitoring of live data.
B4	Integrate Supportive Infrastructure for Existing and New Buildings	Asset Planning, Right of Way and Development	Asset Planning's Corporate Energy Team is available to support the project teams involved in building new or retrofitting Corporate facilities.
F1	Continue to Implement the Actions Prescribed in the Greening the City Fleet Manual	Fleet	Continuing to implement the Greening the City Fleet Manual. Six new EVs have been added in 2019 with an additional six new PHEVs in 2020. 27 charging stations for fleet use have been installed as of 2023.
F2	Review the Efficient Driver Training Program	Fleet	Need to identify further opportunities to educate drivers.
F3	Advance Anti-Idling Initiatives and Technologies	Fleet	Continue to investigate the auto start-stop and timed idle shut-down options of vehicles. GPS is installed on most corporate units which allows tracking of vehicle idling time
F4	Review Renewable Natural Gas Opportunities	Fleet	Outstanding.
F5	Explore Benchmarking Opportunities	Fleet	MBN Canada benchmarking currently underway. CAMFM benchmarking currently underway. E3 fleet review looking to get rated in the future.
T1	Advance Vehicle Replacement	Transit Windsor	Transit Windsor is working towards replacing buses to its fleet. Two grant proposals have been submitted to replace 18 and 24 buses with energy efficient buses.

Strategy #	Strategy Title	Lead Department	Status
T2	Join the Canadian Urban Transit Research and Innovation Consortium (CUTRIC)	Transit Windsor	Completed
T3	Explore Alternative Propulsion Vehicles	Transit Windsor	Cutric is exploring opportunities on behalf of member municipalities.
T4	Continue Efficient Driver Training	Transit Windsor	Ongoing
W1	Develop Long-Term Water Conservation and Sanitary and Stormwater Master Plans	Engineering	The Sewer Coastal Flood Protection Master Plan approved in December 2020, which includes a number of strategies to reduce inflow and infiltration into the sewer system. Pilot studies underway include: <ul style="list-style-type: none"> • Mandatory Downspout Disconnection • Mandatory Foundation Drain Disconnection
W2	Implement Water and Wastewater Treatment Plant Upgrades and Retrofits	Pollution Control	The City of Windsor is undertaking a Schedule 'C' Municipal Class Environmental Assessment for the Little River Pollution Control Plant. Public Information Centre #2 will present the evaluation of alternative solutions. This session is planned for Spring 2024.
W3	Develop an Integrated Site Energy Plan	Pollution Control	Report was completed in 2020. Implementation has not yet commenced. Class Environmental Assessment (EA) process is underway to develop a long-term Bio-solids Management Plan for the municipal wastewater treatment plants. Public engagement is ongoing until February 2024
W4	Review Renewable Natural Gas Generation	Pollution Control	Preliminary review will be conducted under Strategy W3.
S1	Complete Street Light and Intersection Light Conversion to LED	Engineering / Traffic	Streetlights and traffic signals completed. Decorative and Parks lighting not completed.
R1	Explore Net Metering	Asset Planning	The City is implementing net-metering PV projects in 12 facilities.
R2	Continue to Invest in Rooftop Solar Photovoltaic	Asset Planning	See R1. Will continue to investigate possible PV projects in other facilities including Solar Thermal.
R3	Explore Parking Lot Solar Photovoltaic	Asset Planning	Virtual net metering is no longer permitted in Ontario. Any parking lot solar project will need to be tied into a facility.
G1	Conduct a Solid Waste Audit Program	Environmental Services	Small waste audits have been completed at a couple of arenas (WFCU, Capri Arena and Adie Knox). Placed on hold due to competing priorities. Goal to revisit in 2025.
G2	Establish a Corporate Waste Diversion Target and Strategy	Environmental Services	Environmental Services is working towards developing a baseline from the results in Strategy G1. Placed on hold due to competing priorities. Goal to revisit in 2025.
G3	Collaborate with Neighbouring Communities to Establish an Organics Program	Environmental Services	A curbside food and organic waste program will launch in 2025.

B2: Continue Existing Building Retrofits

In May 2023, the City of Windsor engaged a consultant to complete a number of Net-Zero Pathway Feasibility Studies for arenas and community centres within the City's facilities.

The objective of these studies is to identify and analyze measures to reduce utility consumption and GHG emissions through GHG reduction pathways consisting of combinations of measures. Buildings include:

- Capri Pizza Recreation Sportsplex
- Forest Glade Arena, Community Centre and Library
- Gino A. Marcus Community Centre
- John Atkinson Community Centre
- Optimist Community Centre and Chisholm Library
- WFCU Centre

Recommendations from the above reports will be considered for implementation projects.

R2: Continue to Invest in Rooftop Solar Photovoltaic

In August 2022, the City of Windsor announced a renewable energy project, which would see the installation of new solar photovoltaic (PV) systems and net metering infrastructure to 12 city facilities. The new systems will add approximately 1.0MW of solar capacity. Facilities include:

- Optimist Community Centre and Library
- Forest Glade Community Centre and Library
- Constable John Atkinson Memorial Community Centre
- Fire Hall #2
- Fire Hall #5
- Fire Hall #6 and Emergency Operations Centre
- Fire Hall #7
- Fire Apparatus Building
- Parks & Recreation Facilities Storage
- Parks & Recreation Maintenance Yard
- South Windsor Library
- Fountainbleau Library

W1. Develop Long-Term Water Conservation and Sanitary and Stormwater Master Plans

The Sewer and Coastal Flood Protection Master Plan has already identified actions to reduce the impacts of high water levels on the City's east side. In addition, the City of Windsor recently completed the West Windsor Flood Risk Assessment that identified additional areas of concern under high water levels. A deeper analysis into the magnitude of backflow and infiltration as well as locations of where this may be occurring within the sewer network should be undertaken in the future.

W3. Integrated Site Energy Master Plan (ISEMP)

The City of Windsor retained a consultant to conduct an Integrated Site Energy Master Plan (ISEMP) for both City owned and operated waste water treatment plants in 2020.

An ISEMP is essentially a neighborhood community plan for each of these facilities. The plan not only looked at the individual equipment but also reviewed treatment plant processes to identify complimentary gains. The ISEP provided a list of actions for implementation that will move the plants towards a net zero energy (NZE) future and drastically reduce GHG emissions.

G3: Establishing an Organics Program

The Strategies for solid waste fall under the Corporate Climate Action Plan and include researching and developing an organics collection program.

The City of Windsor is on track for starting a curbside organics collection program in 2025. This organic collection and associated treatment of source-sorted organics has the potential to reduce emissions from solid waste if appropriate measures for capturing the methane from decomposing organics are put into place.

Until the region develops a municipal long-term solution for the treatment of organics, collected organics will be transported to Seaclyff Energy Corporation in Leamington for organic waste processing (i.e. anaerobic digestion). Anaerobic digestion assists with the biodegradation of organic material (organic food waste, sewage sludge). Anaerobic digestion results in the production of methane gas, a known greenhouse gas, however, in a controlled system the methane gas can be purified and used as a renewable natural gas. This system is used globally and can offset non-renewable natural gas with a renewable, biogenic natural gas.



Subject: Windsor's 2023 Report On the State of the Environment

Reference:

Date to Council: March 27, 2024
Author: Barbara Lamoure
Environmental Sustainability Coordinator
519-255-6100 ext. 6108
blamoure@citywindsor.ca
Economic Development & Innovation
Report Date: March 7, 2024
Clerk's File #: SW/8523

To: Mayor and Members of City Council

Recommendation:

1. THAT the report from the Environment Sustainability Coordinator dated 3/7/2024 regarding Windsor's Report On the State of our Environment (ROSE) **BE RECEIVED** for information.
2. THAT City Council **SUPPORT** efforts to monitor and track environmental metrics and continue advancing environmental initiatives.
3. THAT City Council **APPROVE** the updated version of the City of Windsor's Report On the State of our Environment.

Executive Summary:

N/A

Background:

The ROSE report helps identify how the City is influencing the local environment by tracking certain metrics related to air and water quality, land use and resource efficiency. Monitoring these metrics and understanding the trends can inform policy or operational procedures, as well as contribute to future updates to the Environmental Master Plan.

The first Environmental Master Plan (EMP) was adopted by City Council on July 24, 2006 (CR374/2006). The EMP is a guiding document for the Corporation of the City of

Windsor's environmentally related activities and encourages sound environmental practice in daily operations and decision-making.

The EMP recommends monitoring and tracking environmental performance over time. This is done by completing a Report on the State of our Environment (ROSE) every 4 to 5 years.

The first ROSE report was endorsed by City Council on March 23, 2009 (CR86/2009) and provided a snapshot in time of environmental conditions in the City of Windsor. The 2013 ROSE was the first report to track trends over time, and summarises data collected from 2007 to 2012. This ROSE was adopted by City Council on January 6th, 2014 (M25-2014). The last ROSE was completed in 2017 (CR643/2017) and tracked trends through to 2016. The COVID Pandemic delayed the release of the latest ROSE report as many of the metrics for 2020, 2021 were determined to be impacted by COVID restrictions.

The 2023 ROSE report continues to track trends through to 2022, giving us continuous monitoring since 2006 for several metrics.

As the ROSE reports are produced less frequently, Administration routinely updates indicator data on the City of Windsor's website (www.windsorenvironmentalmasterplan.ca) to allow residents to monitor as per their interest.

Discussion:

As part of the City of Windsor's EMP Implementation, a number of environmental indicators are tracked over time in the ROSE report. These indicators are categorized into the 5 Goals, of the EMP:

Goal A: Improve Air Quality – To be proactive with community groups, industry and other levels of governments to improve Windsor's air quality.

Goal B: Improve Water Quality – To be proactive in managing wastewater, stormwater and potable water to improve Windsor's water quality.

Goal C: Responsible Land Use – To enhance our community through naturalization, reforestation, park and urban planning, densification and community initiatives.

Goal D: Increase Resource Efficiency – To increase resource efficiency, conserve water and energy and reduce waste.

Goal E: Promote Awareness – To foster an engaged community and staff that appreciates and protects its local environment through active communication.

In the ROSE report a trend analysis of each indicator has been completed, various City of Windsor projects benefitting the environment have been summarised, and areas to advance implementation of the EMP have been identified.

The findings of the 2023 ROSE report indicate that many trends are moving the right direction or are staying neutral. However, a few trends are moving in unintended ways.

These recent trends could be attributed primarily to the COVID Pandemic which impacted many City services including: community tree plantings, public transportation, and data collection. It will take time to see if these trends get back on track.

Also of note, there has also been a minor decrease in the amount of Maintained Natural Parkland and Natural Heritage.

As the 2021 Census indicated, Windsor is seeing increases in development and population growth. However, the data shows that trends in waste generation, energy and water consumption, and community greenhouse emission are continuing to improve or are staying stable, signaling that resources are being used more efficiently.

Included in the ROSE report are the results from the recent Environmental Attitudes Survey. This survey has helped the City better understand and assess residents' current attitudes and opinions about Windsor's environment. In the 2023 results, 80% rated Windsor's overall quality of the environment as fair or poor. Only 5 respondents answered that it was excellent.

Dozens of commendable plans, initiatives, studies and events are 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 to name just a few. More needs to be done to convey these and other successes to Windsor residents.

Next Steps

The EMP's success is dependent on the activities of all City departments and agencies, the staff dedicated to its implementation and City Council support. There is still much work to be done to continue improving our environment. This includes monitoring these environmental indicators and reporting their results in future Reports on the State of our Environment.

New environmental indicators should be considered in the next ROSE report to continue providing an accurate snapshot of Windsor's environment and address new emerging environmental concerns, including: the amount of road salt applied and the number of public EV charging stations.

Risk Analysis:

There are no risks associated with producing the ROSE.

Reputational risks may occur if the City does not monitor and make publicly available corporate and community environmental trends.

Climate Change Risks

Climate Change Mitigation:

The EMP includes Goal D: increase resource efficiency. The report provides a high level overview of energy consumption (e.g. electricity, natural gas, gasoline, etc.), by corporate buildings, sewage treatment and the community at large. Each graph in the report is accompanied by goal and trend arrows, indicating which direction is desirable. Other data in the report focused on the City's climate change mitigation measures includes tracking commuting and length of multi-use trails, and brownfield conversion.

More detailed analysis of greenhouse gas emissions and climate change mitigation actions can be found in the annual greenhouse gas reports to Council.

Climate Change Adaptation:

The ROSE follows metrics that are sensitive to climate change impacts such as the number of smog and air quality health advisory days, the total amount of wastewater treated, and the status of Detroit River beneficial use impairments. Measuring these trends may improve our climate resiliency by indicating how often hazardous conditions occur and potentially improving our response to them.

The ROSE also shows trends in metrics that may help the City adapt to a more unstable climate, such as: water consumption, natural heritage land designation, number of community gardens and number of trees planted by the City.

Administration is currently developing a detailed monitoring and tracking report that will further outline the status of the City's 2020 Climate Change Adaptation Plan, The Degrees of Change.

Financial Matters:

There are no financial costs associated with producing the ROSE. Existing internal resources from the Environmental Sustainability and Climate Change Team will be sufficient to support the continued monitoring and tracking required to regularly update this report.

Consultations:

Asset Planning: Sokol Aliko – Manager Energy Initiatives, Cole Nadalin – Supervisor Energy Contracts

Planning: Frank Garardo – Planner III, Stefan Fediuk – Planner III, Derek Heinbuck – Planning Technician

Economic Development: Michelle Moxley-Peltier – Community Energy Plan Administrator

Engineering: Ian Wilson – Engineer II, Marc DiDomenico – Project Administrator

Forestry: Yemi Adeyeye – Manager Forestry & Natural Areas, Karen Alexander – City Naturalist

Operations: Anne Marie Albidone – Manager Environmental Services, Eric Bailey – Manager Technical Support, Kathleen Quenneville – Active Transportation Coordinator

Parks and Facilities: Wadah Al-Yassiri – Manager Parks Development, Mike Murphy – Supervisor Parks

Pollution Control: Kevin Web – Manager Environmental Quality

Transit Windsor: Jason Scott – Manager Transit Planning

Other consultations include: Detroit River Canadian Clean Up, Essex Region Conservation Authority, Essex Windsor Solid Waste Authority

Conclusion:

The results from the ROSE Survey indicate that more needs to be done to highlight the City's environmental programs and initiatives to the public.

Since the release of the 2017 Report on the State of Our Environment, the City's Environment, 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 continue to implement and track progress. Administration is working cross-departmentally and with other municipalities more and more to collaborate and exchange knowledge about various environmental programs and initiatives. This demonstrates a commitment from administration to improve the environment in Windsor through changes and innovations in the way the City of Windsor operates.

Moving forward, the City of Windsor will continue to implement the Environmental Master Plan and track progress. There is still much work to be done to improve the environment for our Community and visitors.

Planning Act Matters:

N/A

Approvals:

Name	Title
Karina Richters	Supervisor, Environmental Sustainability & Climate Change
Josie Gualtieri	Financial Planning Administrator
Matthew Johnson	Executive Director, Economic Development & Climate Change
Jelena Payne	Commissioner of Economic Development and Innovation
Janice Guthrie	Commissioner Finance & City Treasurer
Joe Mancina	Chief Administrative Officer

Notifications:

Name	Address	Email

Appendices:

Appendix A. The 2023 Report on the State of the Environment

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

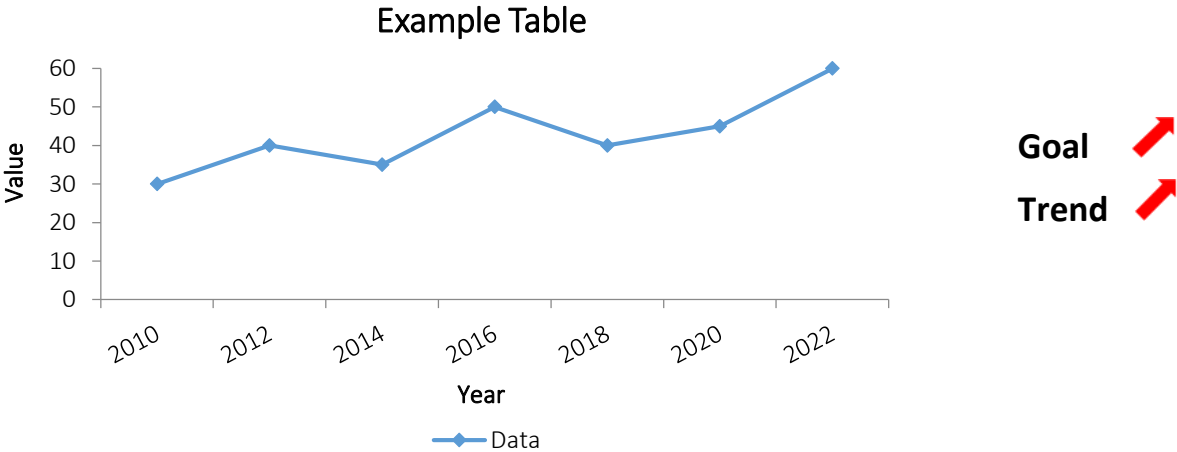
Legend

-  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.

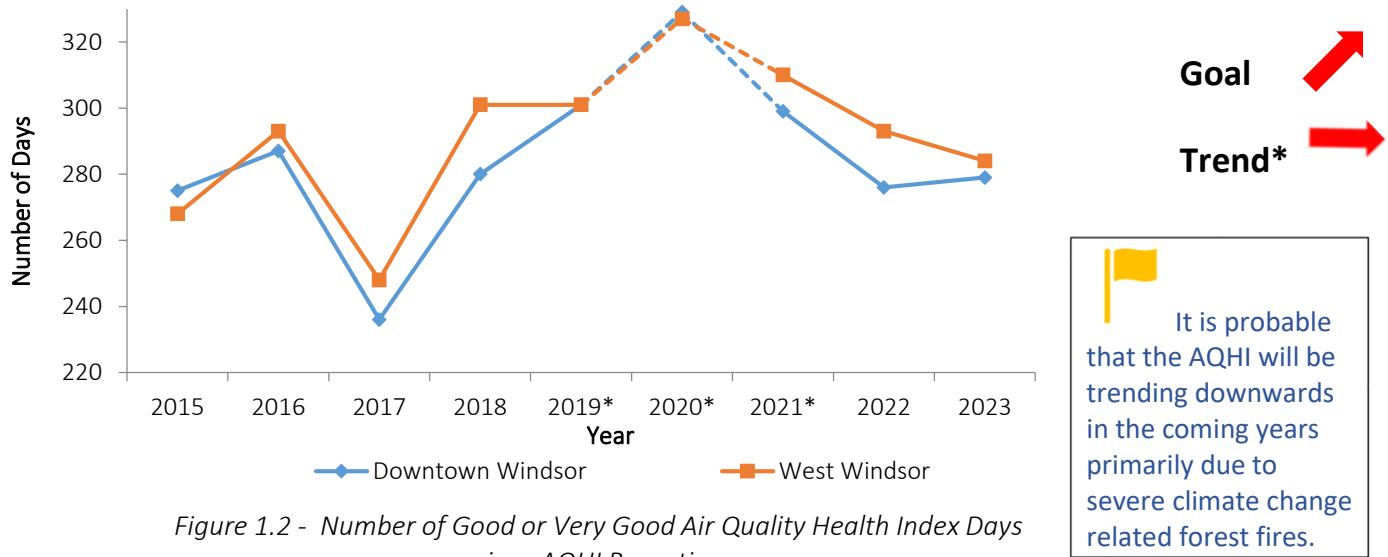


Figure 1.2 - Number of Good or Very Good Air Quality Health Index Days since AQHI Reporting

*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.

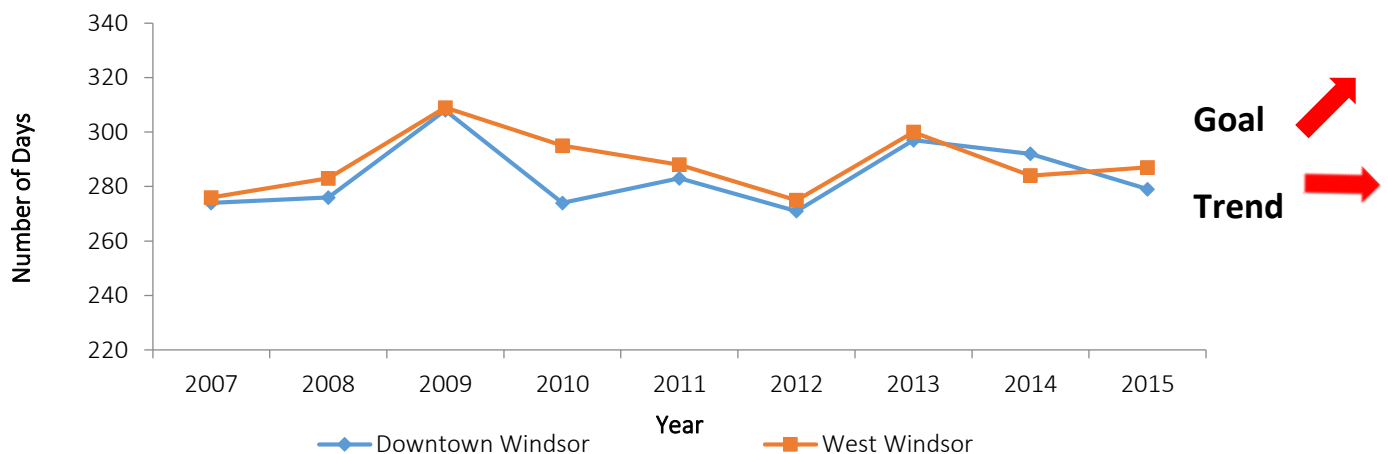


Figure 1.2 - Number of Good or Very Good Air Quality Index Days prior to AQHI Reporting

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.

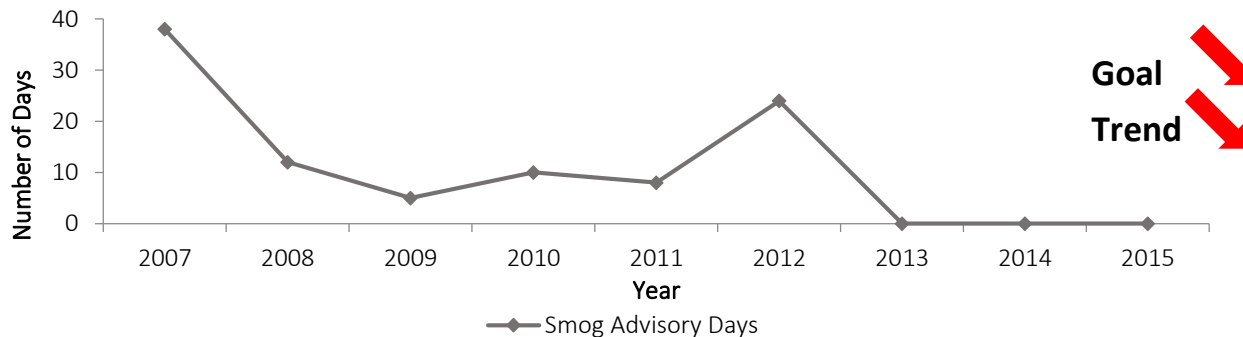


Figure 1.3 - Number of Smog Advisory Days prior to AQHI Reporting

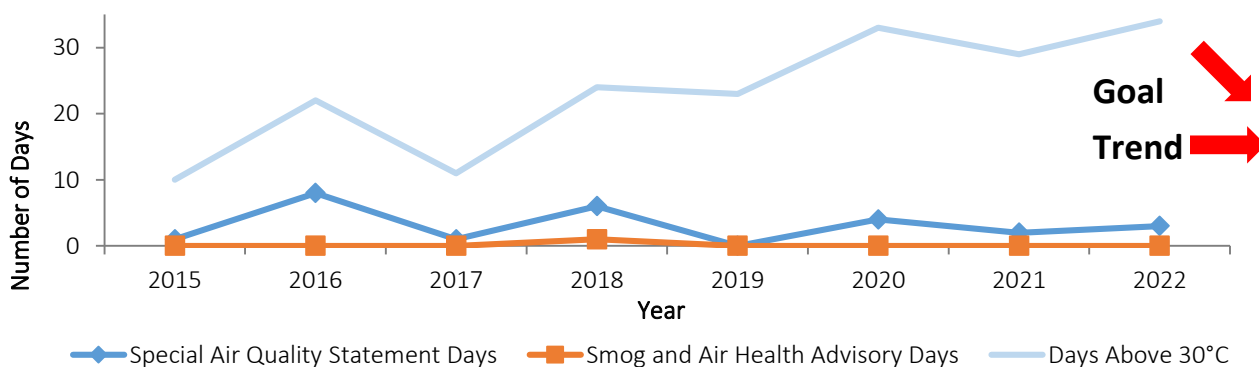


Figure 1.4 - Number of Special Air Quality Statement Days and Smog and Air Health Advisory Days since AQHI

* 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.

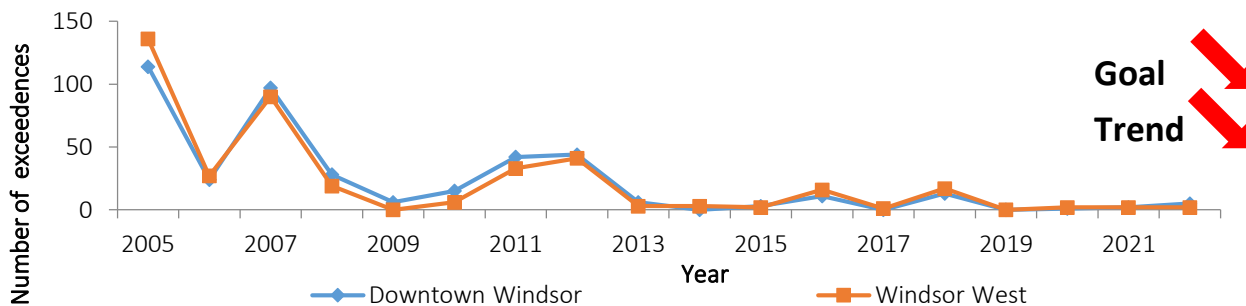


Figure 1.5 - Number of One-hour Exceedances of acceptable Ground Level Ozone Concentrations (as set by the MECP)

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.

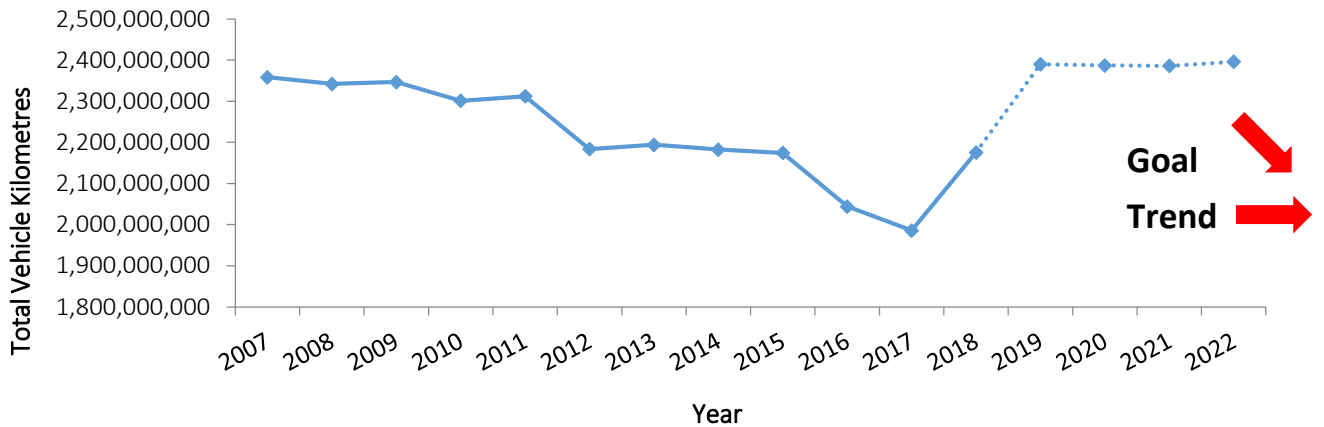


Figure 1.6 - Total Vehicle Kilometres Travelled*

*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.

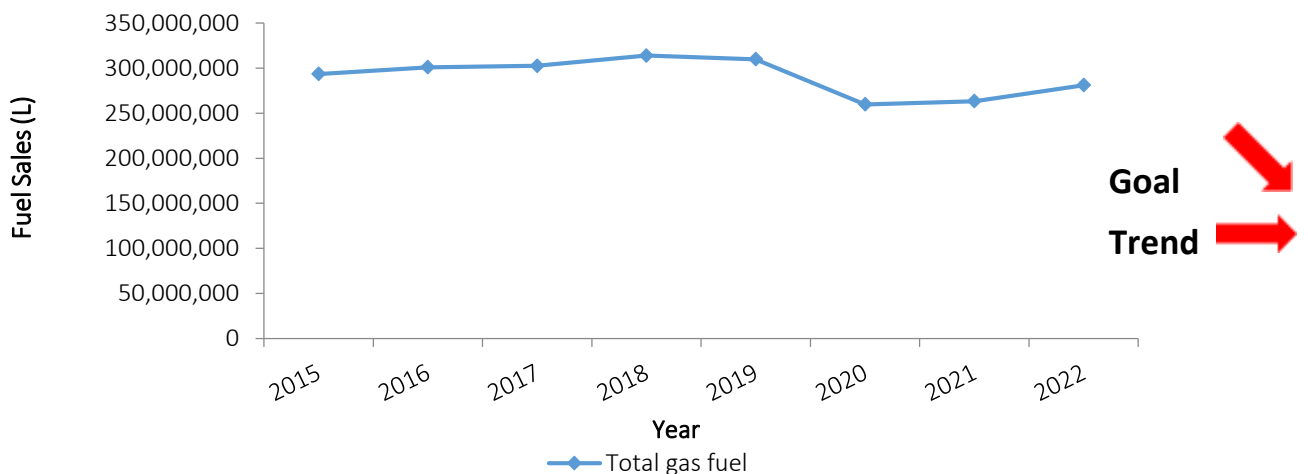


Figure 1.7 - Community Fuel Sales (E10, Pure Gas, Diesel)

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.

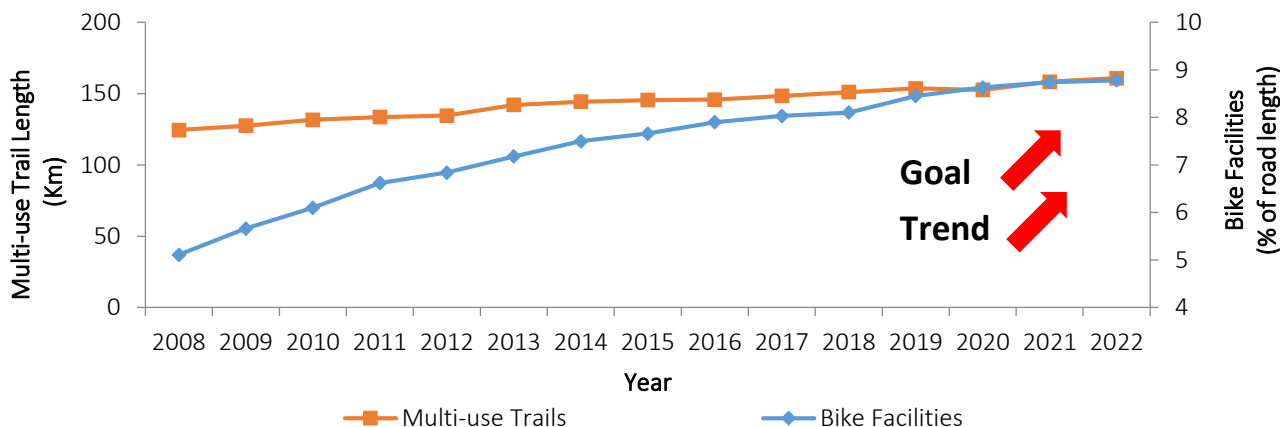


Figure 1.8 - Amount of Bicycling Facilities and Multi-Use Trails

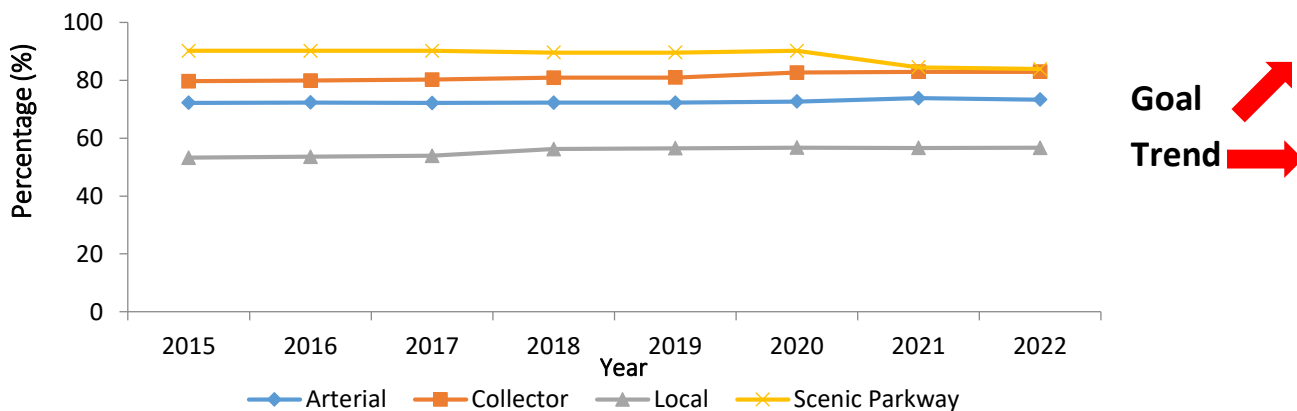


Figure 1.9 - Percentage of roads with one or more sidewalk

*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.

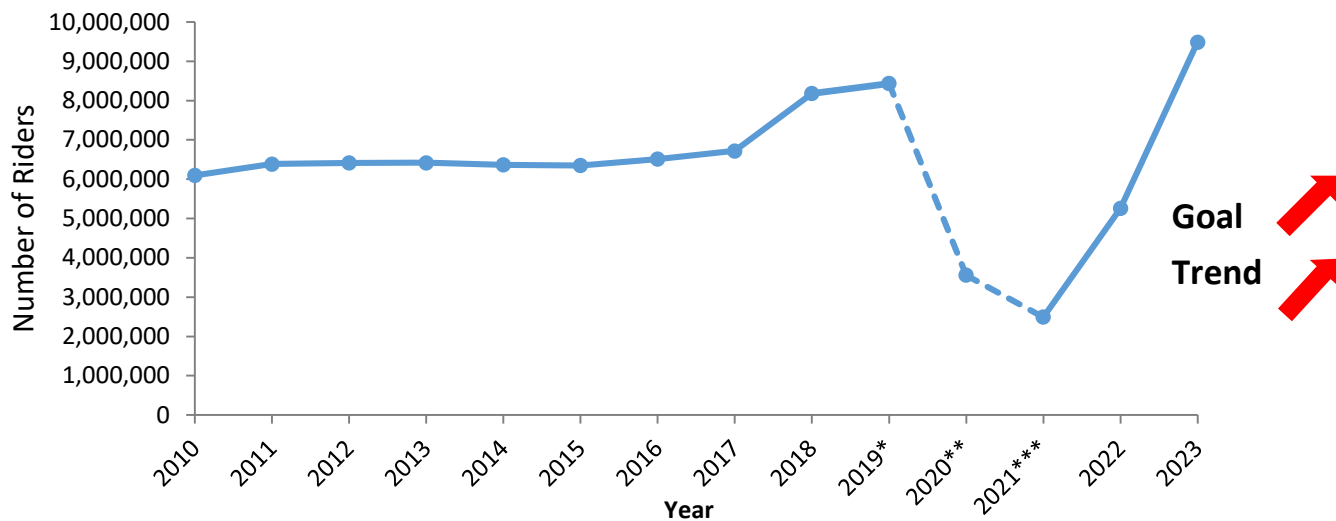


Figure 1.10 Transit Windsor Ridership

* 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 Matchett 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 align with the goals of Windsor Works to improve urban mobility and Walk Wheel Windsor to investigate bike share and new technologies. The pilot program, started 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.

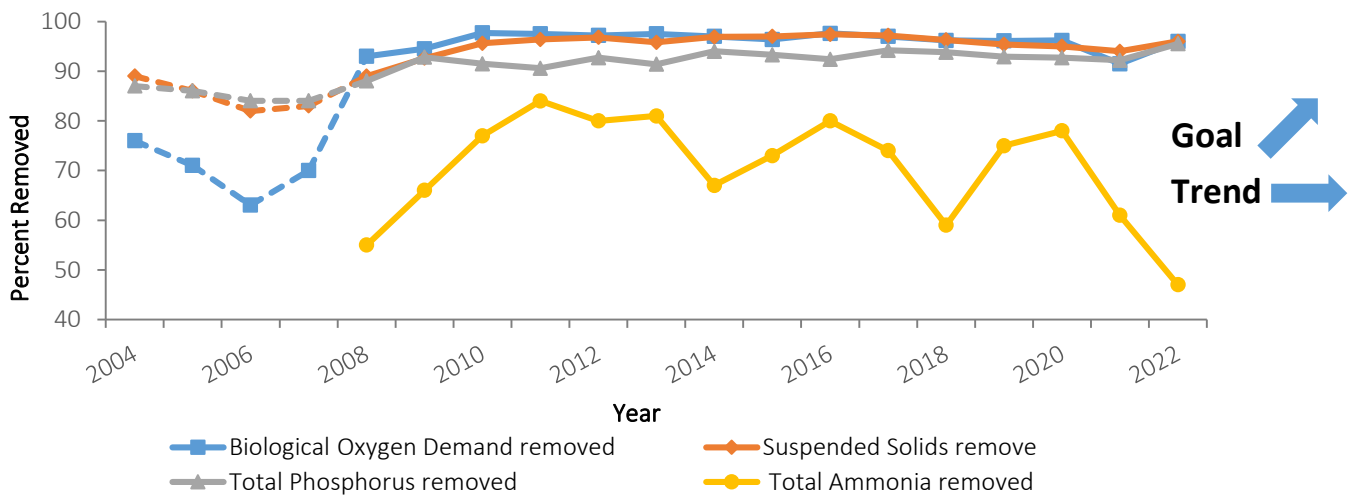


Figure 2.1.a - Contaminant removal at Lou Romano Water Reclamation Plant

* 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.

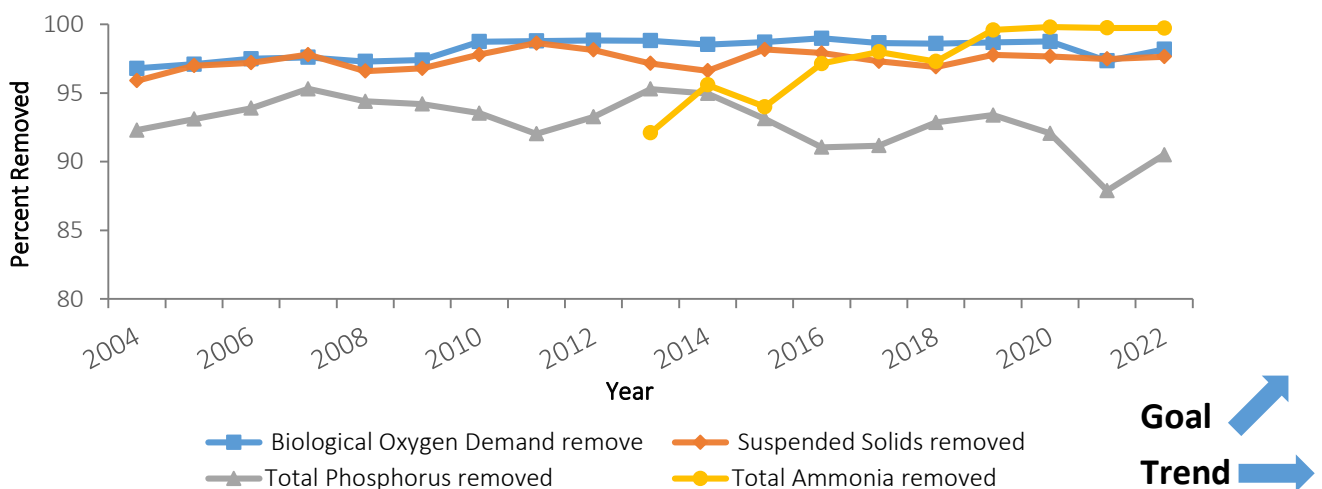


Figure 2.1.b - Contaminant removal at Little River Pollution Control Plant

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

Goal B: Improve Our Water Quality

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.

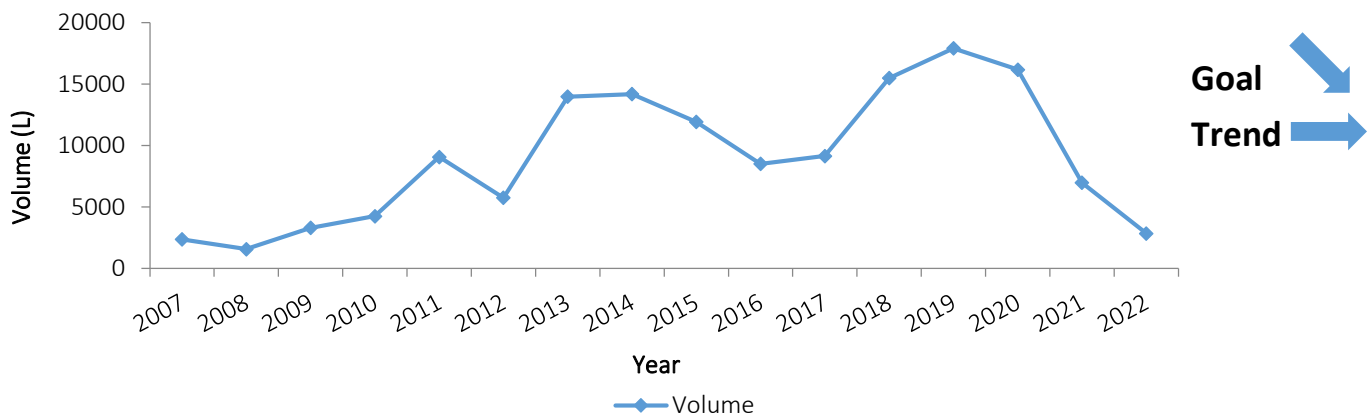



Figure 2.3 - Amount of Pesticide Used

- * 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.

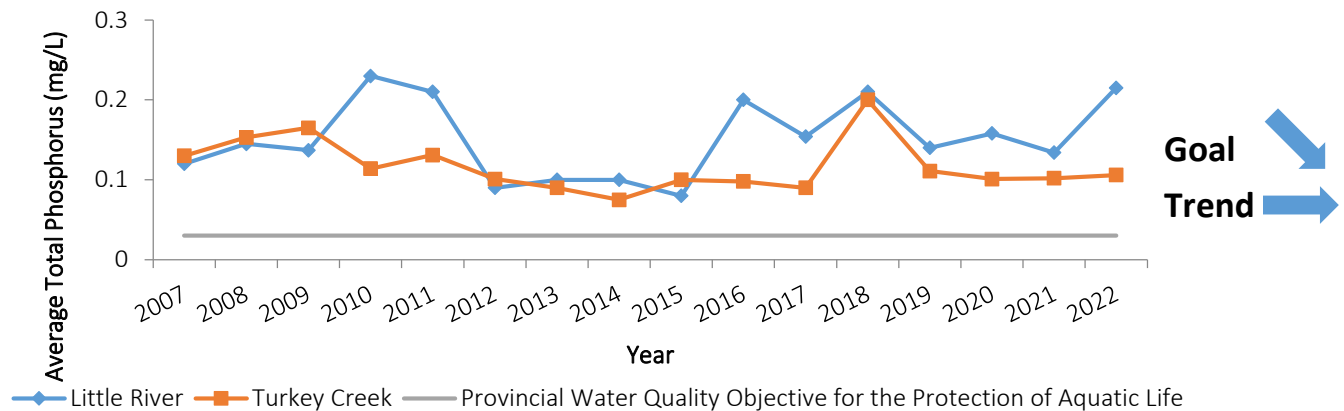


Figure 2.4 - Total Phosphorus in Windsor Tributaries

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

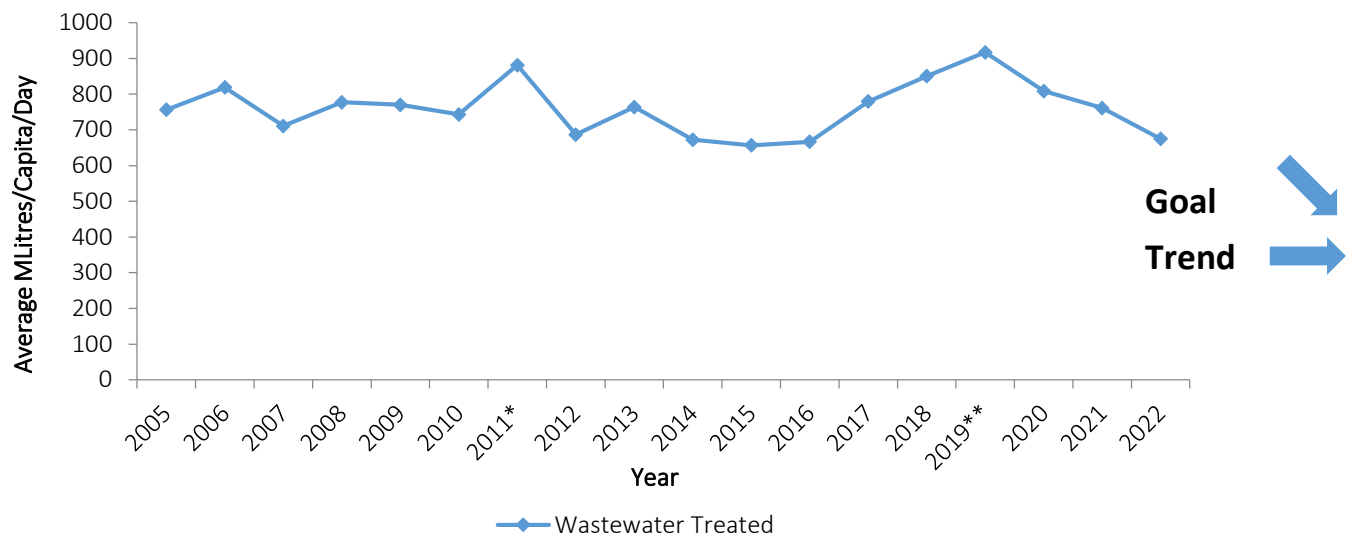


Figure 2.5 - Total Amount of Wastewater Treated

* 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.

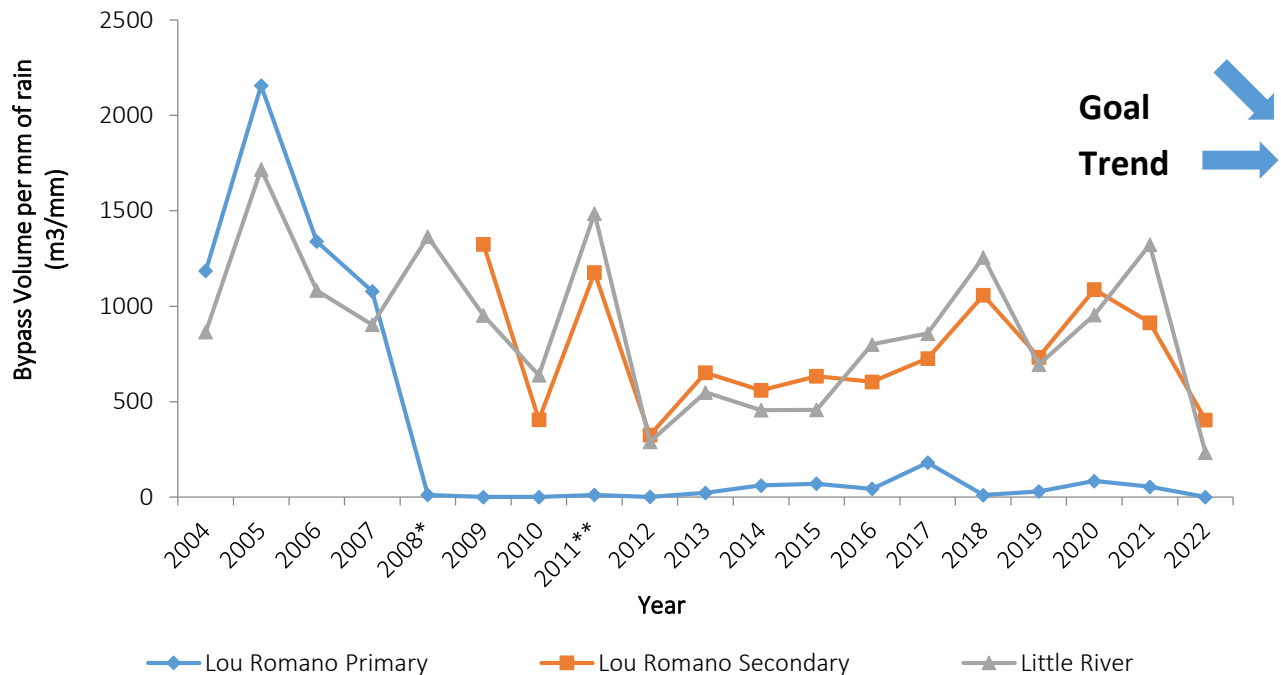


Figure 2.6 - Wastewater Treatment Plant Bypass Volumes Normalised for Amount of Rainfall

* 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.

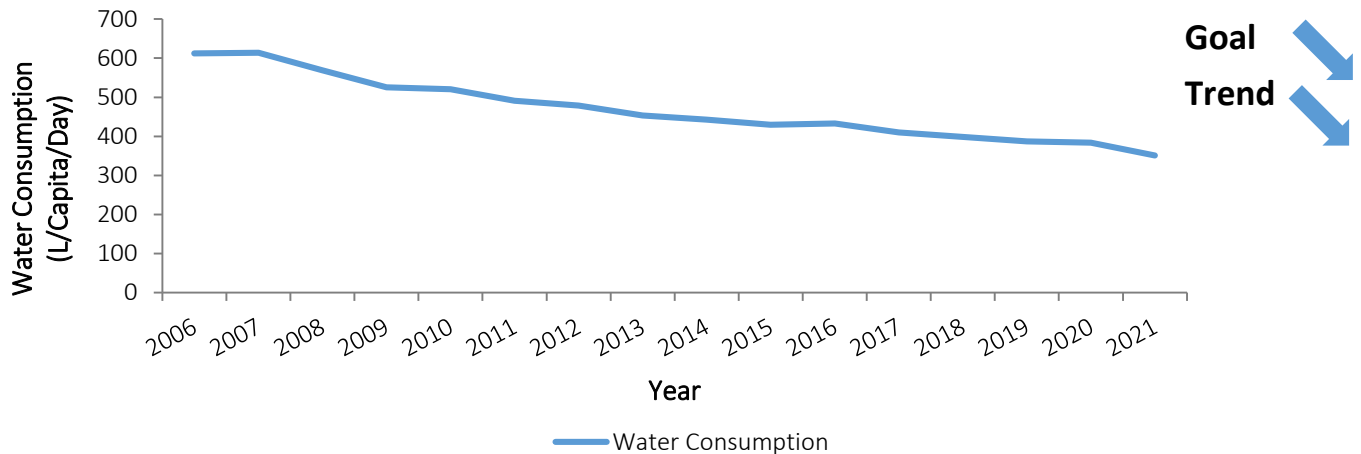


Figure 2.7 - Water Consumption in Litres per Capita per Day

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

Goal B: Improve Our Water Quality

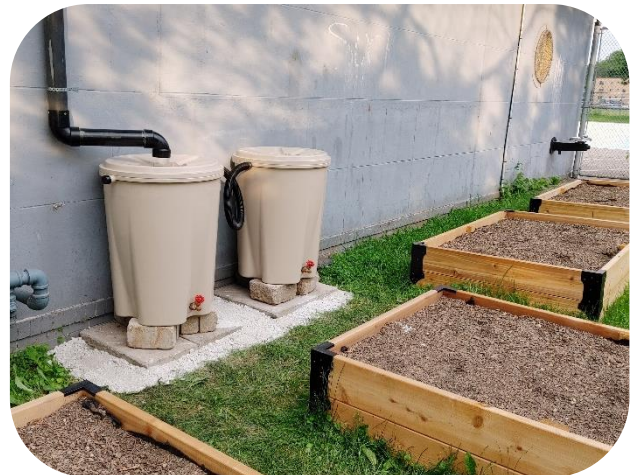
from the survey and the focus group meetings contributed to the development of a national FloodSmart Canada campaign to increase risk awareness and flood mitigation action for homeowners.

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

Goal B: Improve Our Water Quality

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.

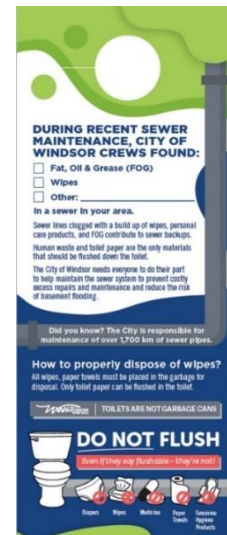
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Public Education to Preserve Water Quality

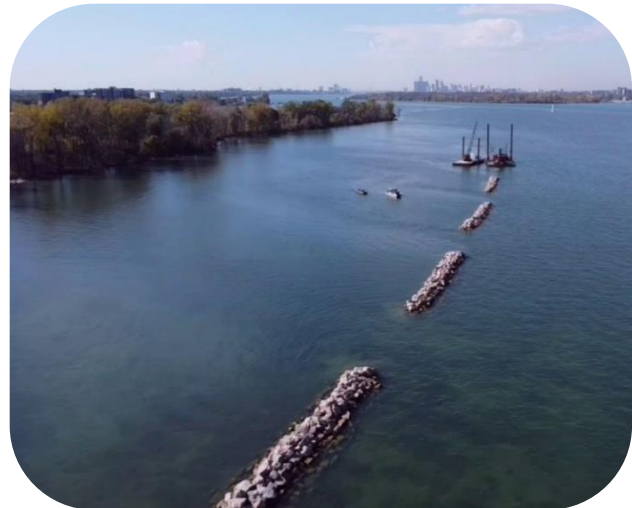
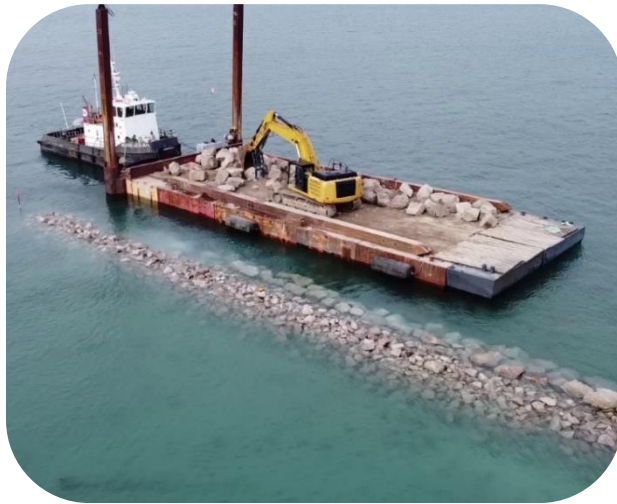
To remind residents of individual impacts to the sanitary and storm sewers, various tools have been developed including:

- 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

Goal B: Improve Our Water Quality

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 – Pilot 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
-

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

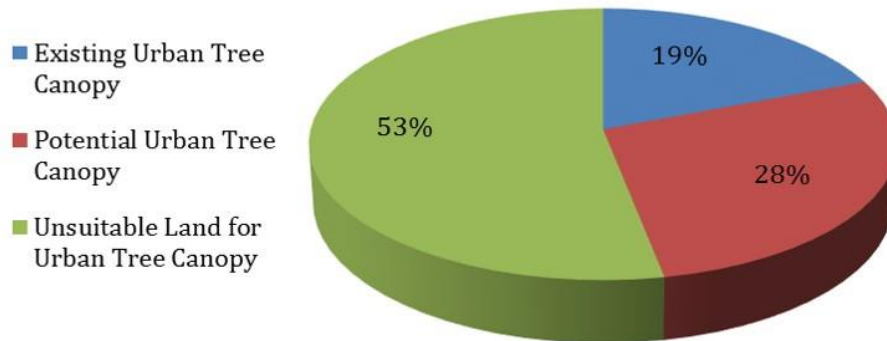
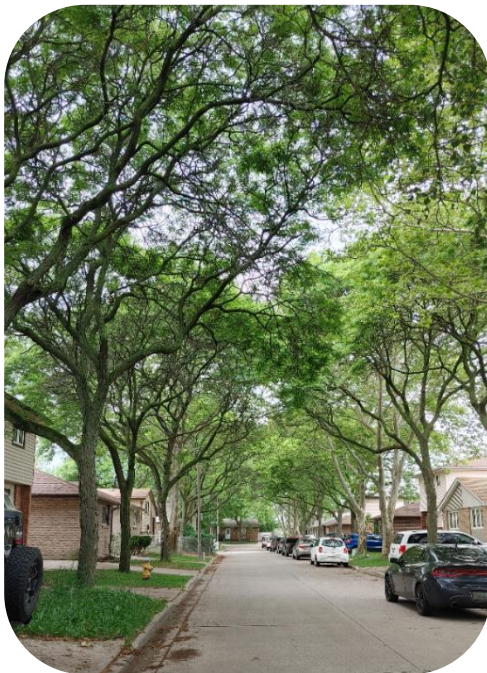


Figure 3.1b - Windsor's 2019 Urban Tree Canopy Assessment

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.

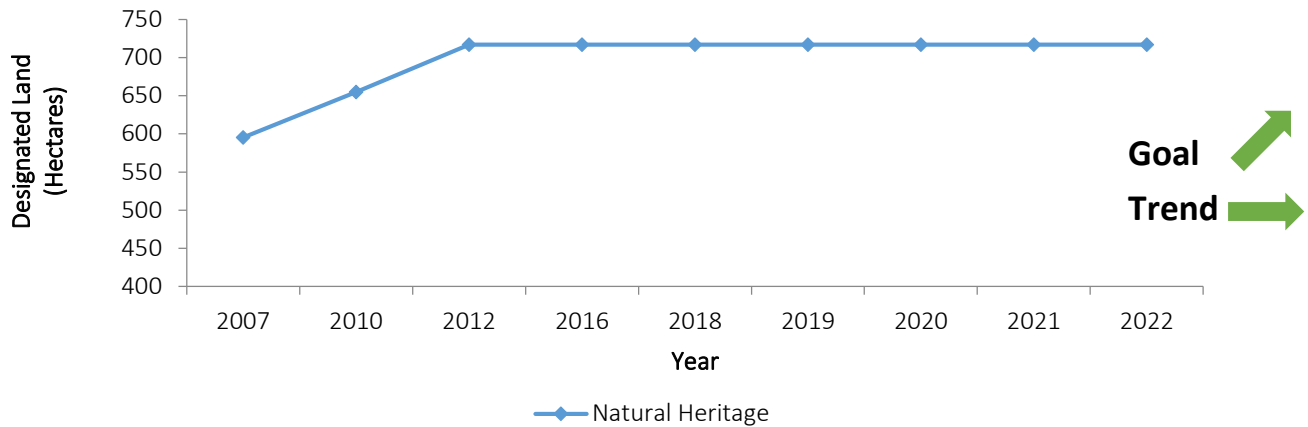


Figure 3.2 - Amount of Land Designated as Natural Heritage in Windsor's Official Plan

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.

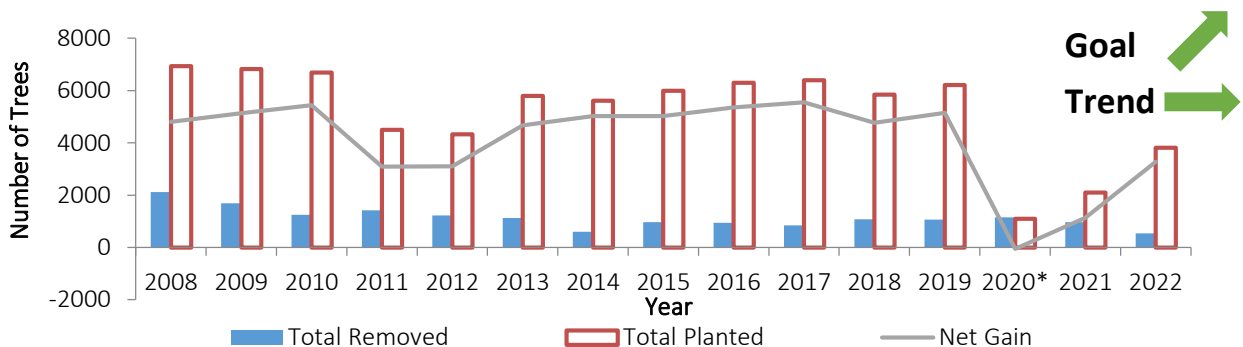


Figure 3.3 - Number of City-owned Street Trees Planted and Removed (by City and Community)

*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.

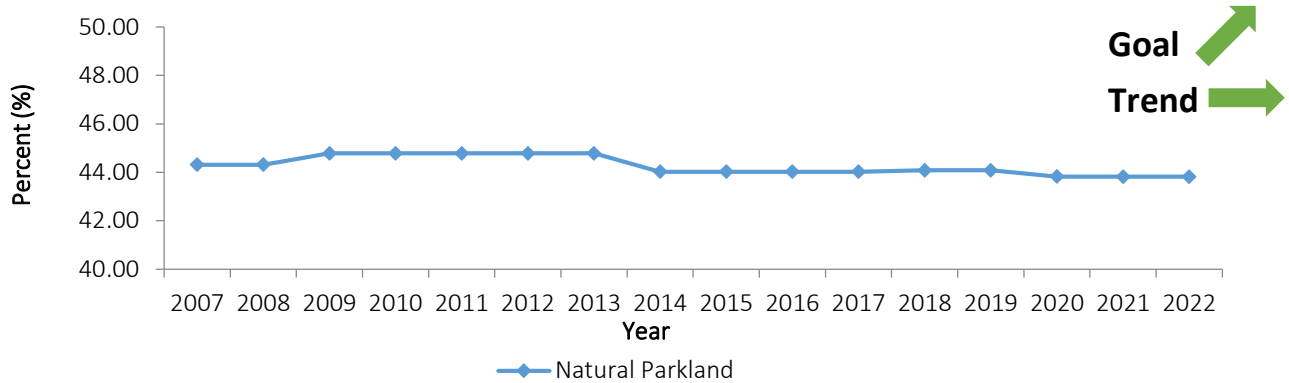


Figure 3.4 - Amount of Natural Parkland as a Percentage of Total Parkland

*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.

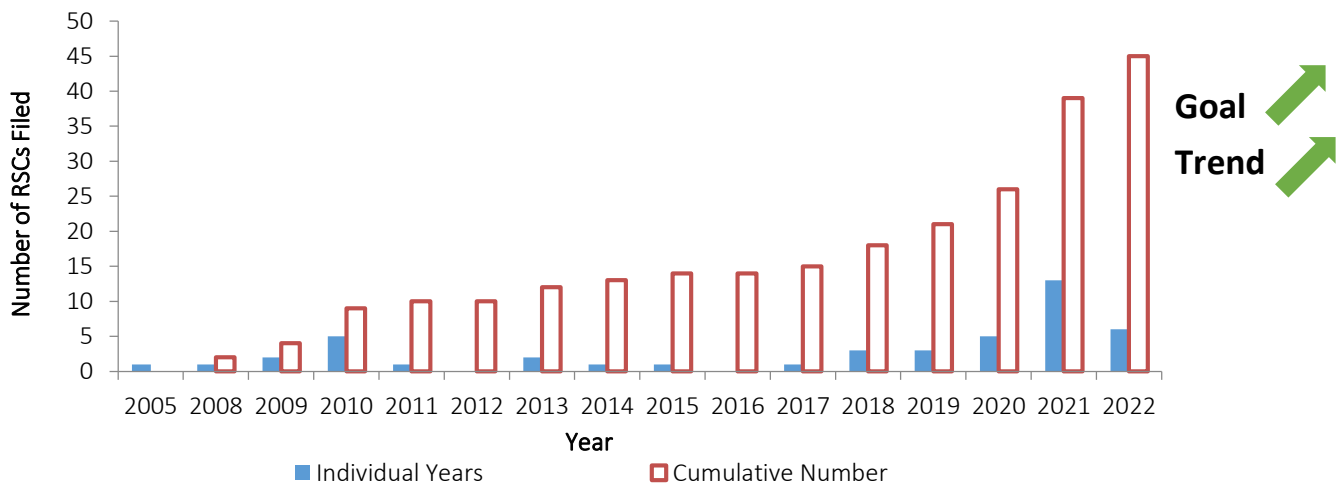


Figure 3.5 - Number of Records of Site Condition (RSCs) filed

* 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.

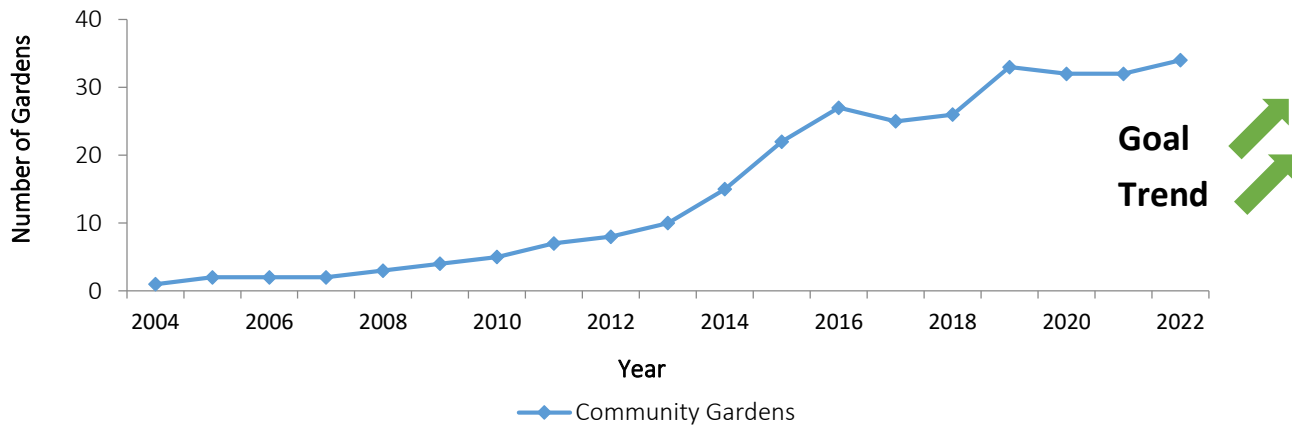


Figure 3.6 - Number of Community Gardens in Windsor

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.

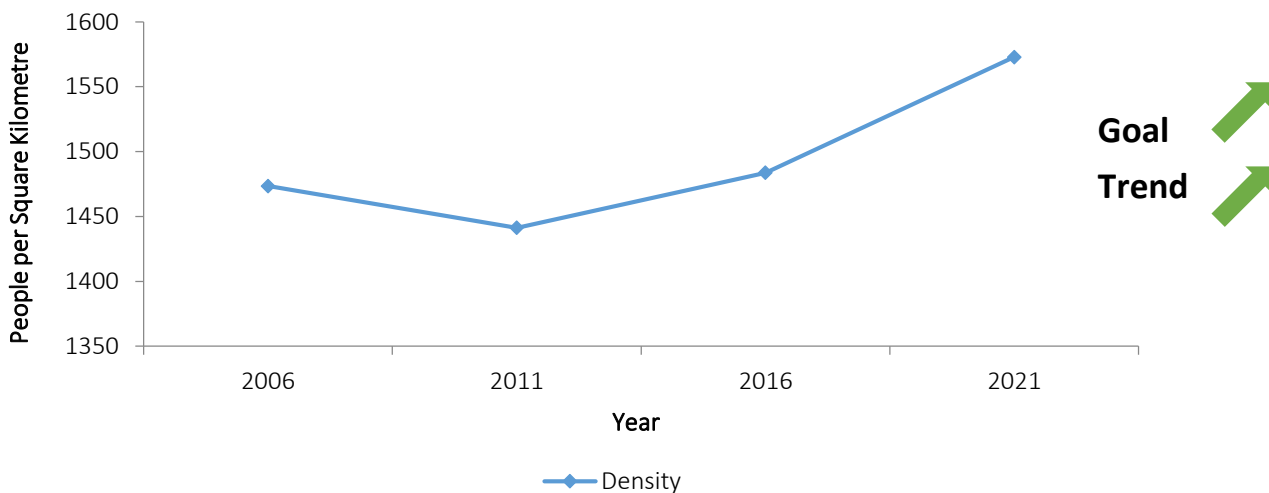


Figure 3.7 - Windsor's Population Density

* 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

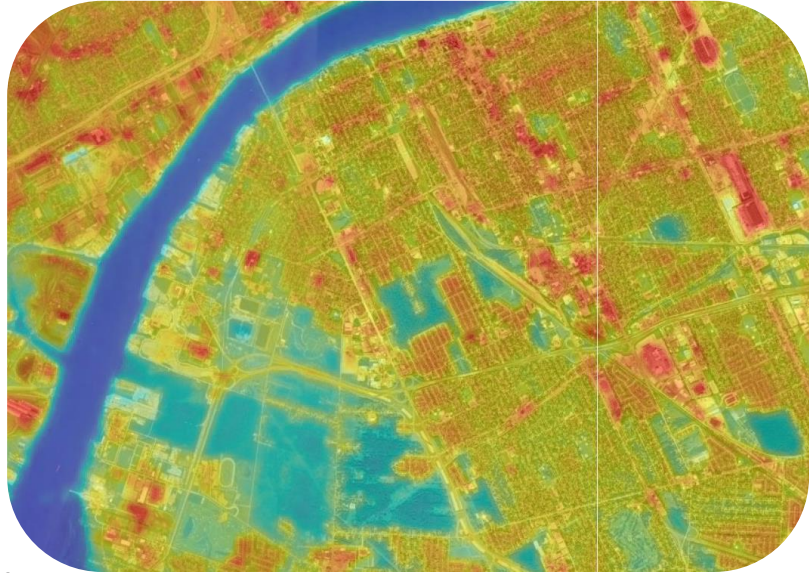
Community Gardens are an important tool for the development of healthy communities and improve quality of life for residents by encouraging people to grow healthy and nutritious food while having a positive impact on the environment. In 2019 Council approved the relocation of the Bruce Park Community 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.

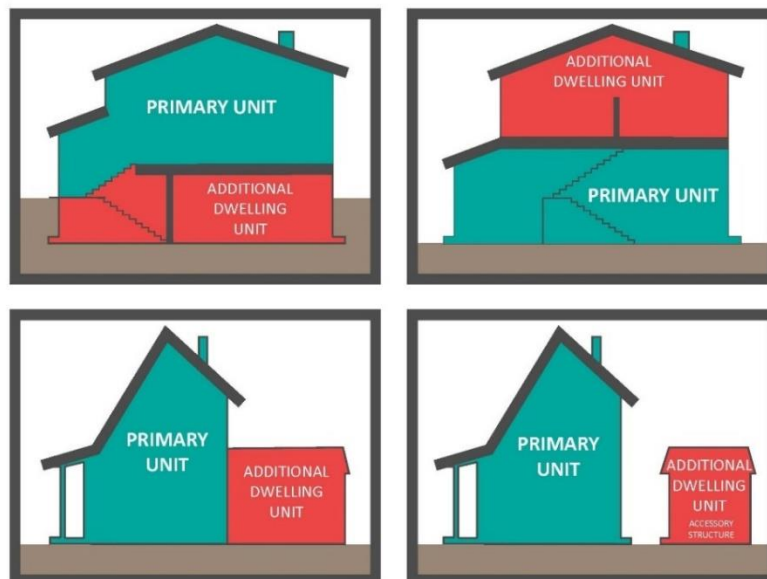


Sustainable Neighbourhood Action Plan (SNAP) Sandwich South

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.

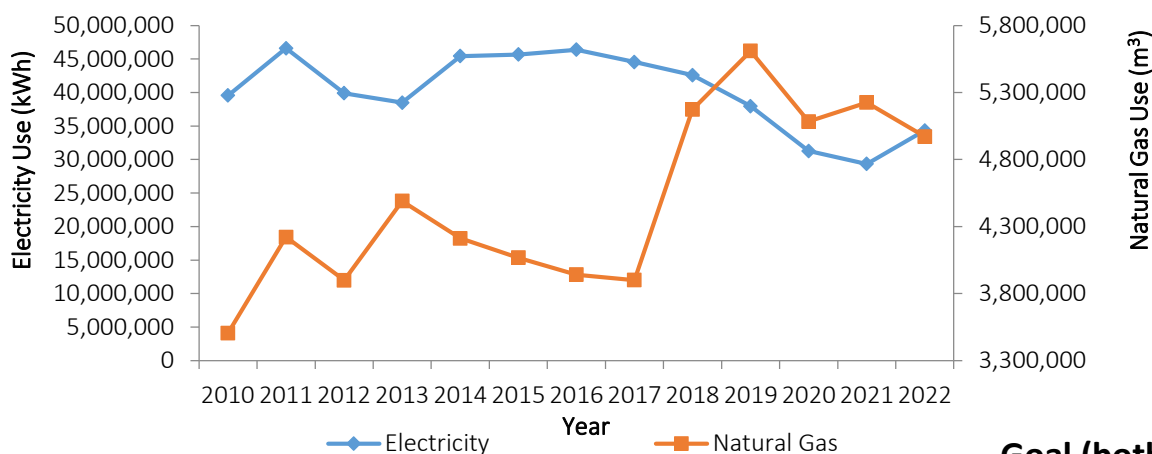


Figure 4.1a - Corporate Energy Consumed by Buildings - Electricity and Natural Gas

Note: Significant increase in natural gas consumption between 2017 and 2019 correlates 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.

Goal (both)

Electricity Trend

Natural Gas Trend

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

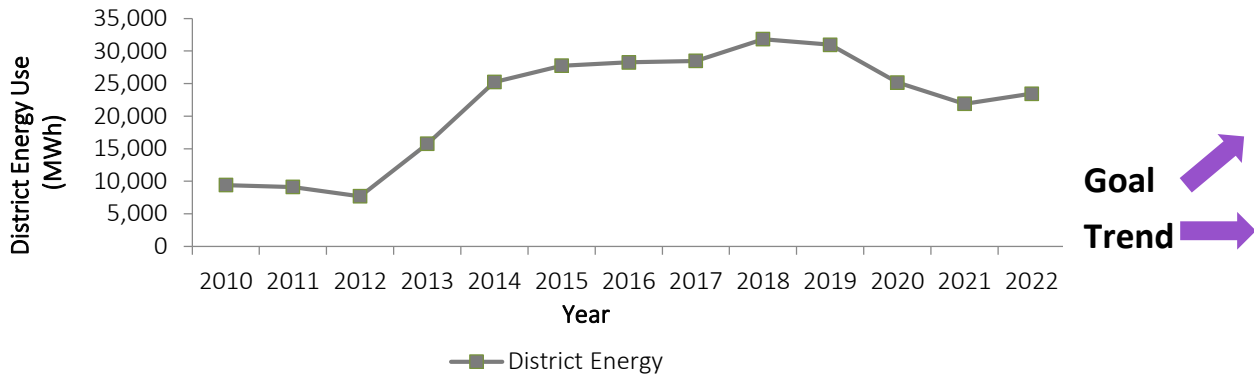


Figure 4.1b - Corporate Energy Consumed by Buildings - District Energy

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

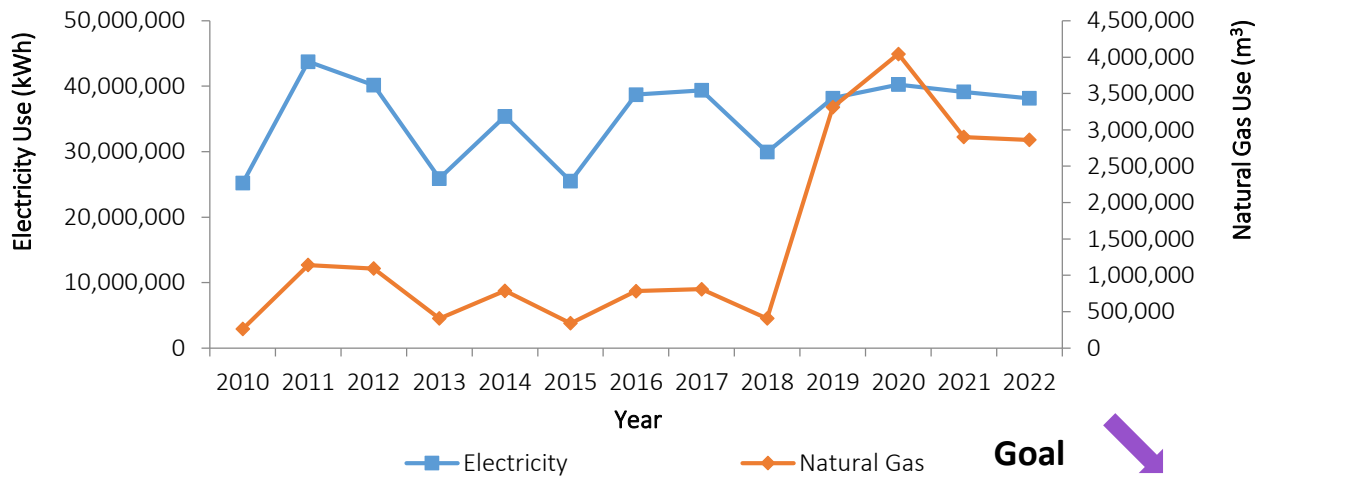


Figure 4.2 - Corporate Energy Consumed by Sewage Treatment

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

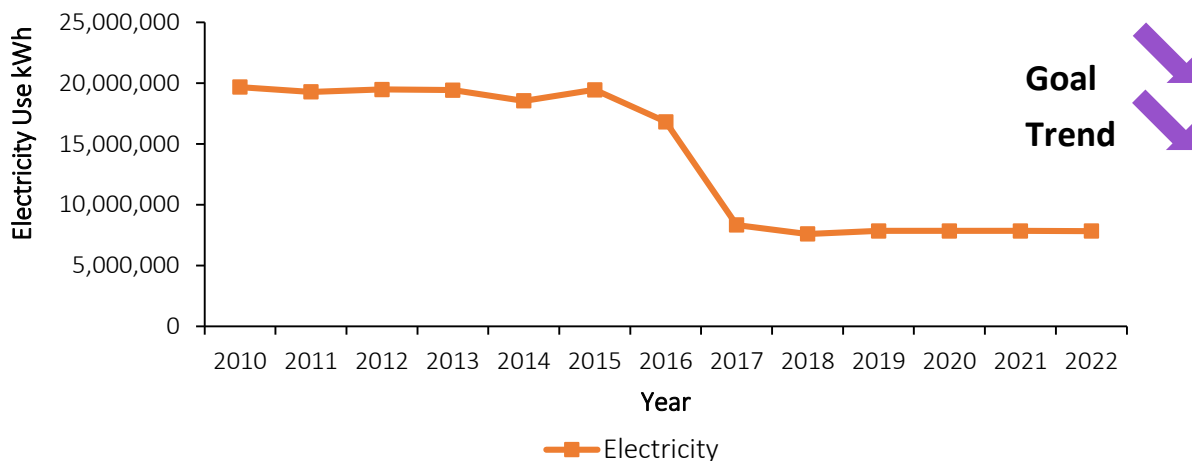


Figure 4.3 - Corporate Energy Consumed by Streetlights & Traffic Signals

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.

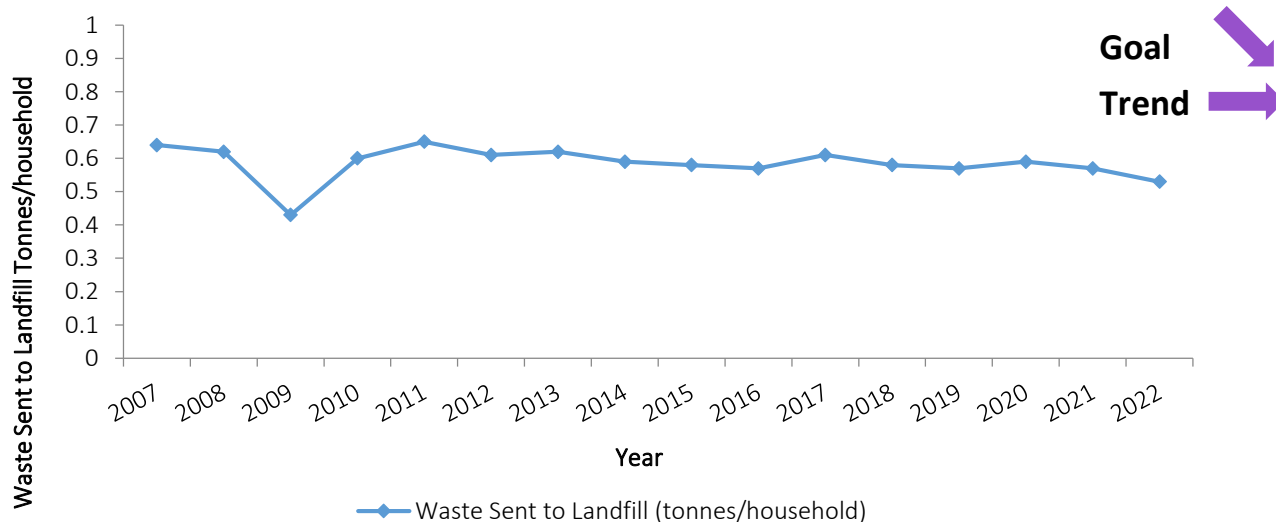


Figure 4.4 - Amount of Waste Sent to Landfill

Goal D: Increase Resource Efficiency

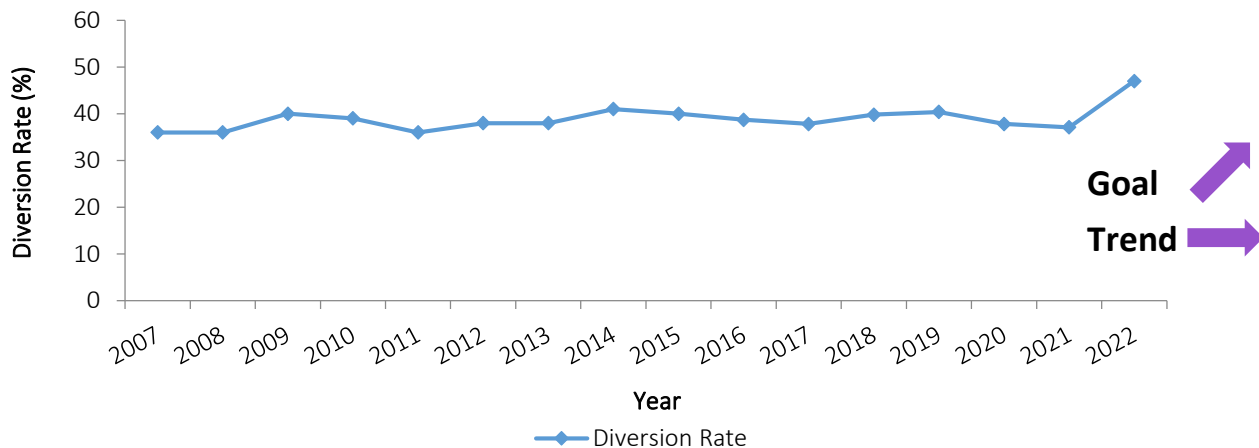


Figure 4.5 - Percentage of Solid Waste Diverted from Landfill

* 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.

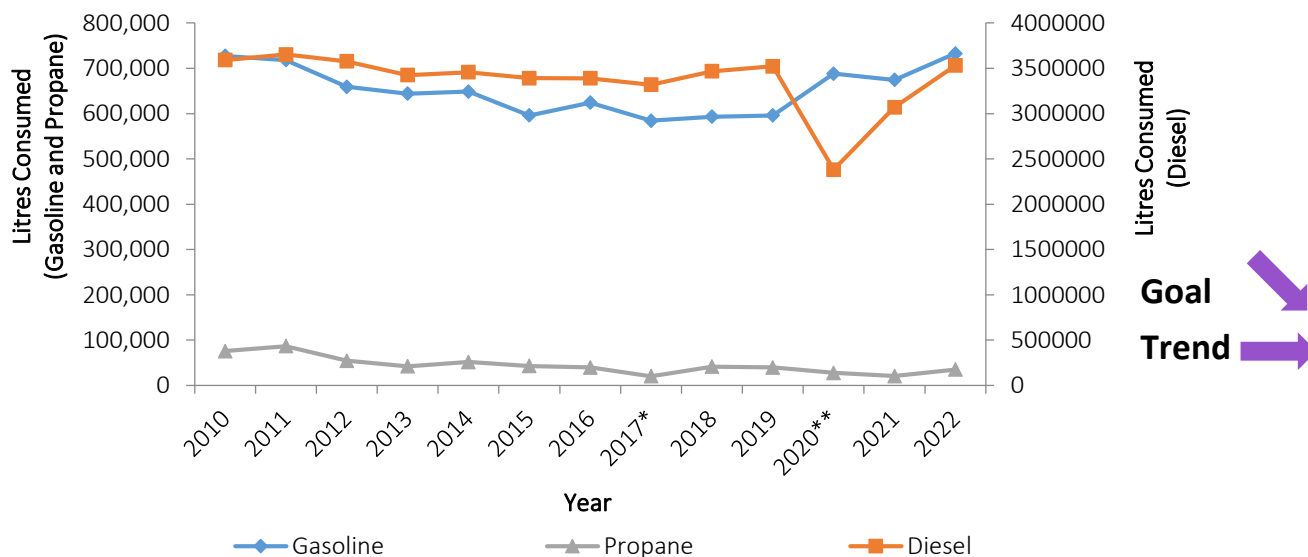


Figure 4.6 - Corporate Fuel Consumption by Type

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.

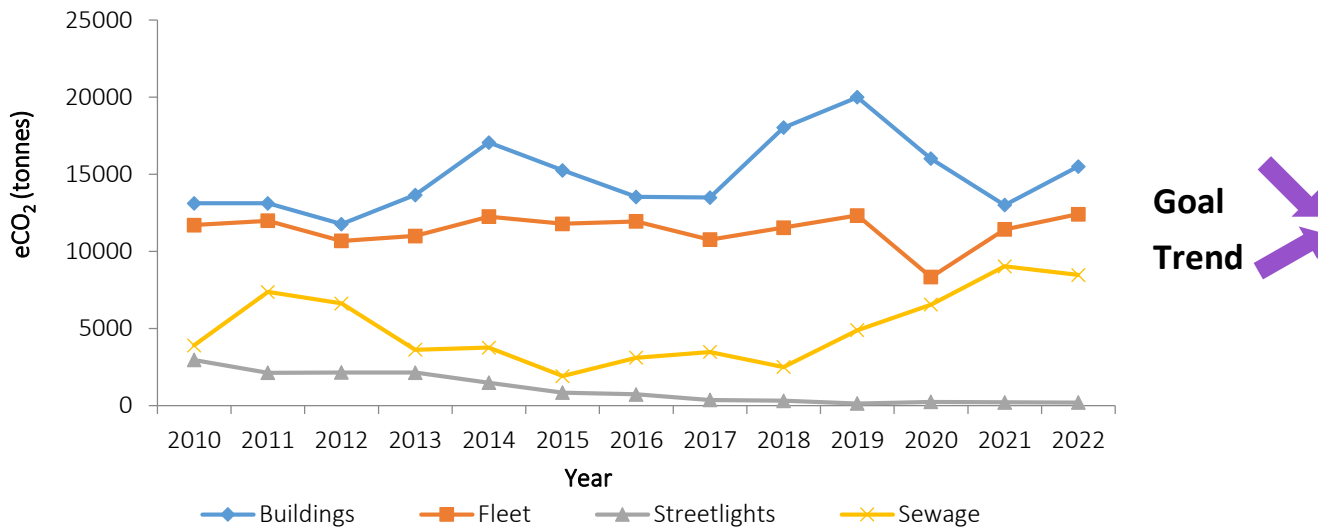


Figure 4.7a - Corporate Greenhouse Gas Emissions

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

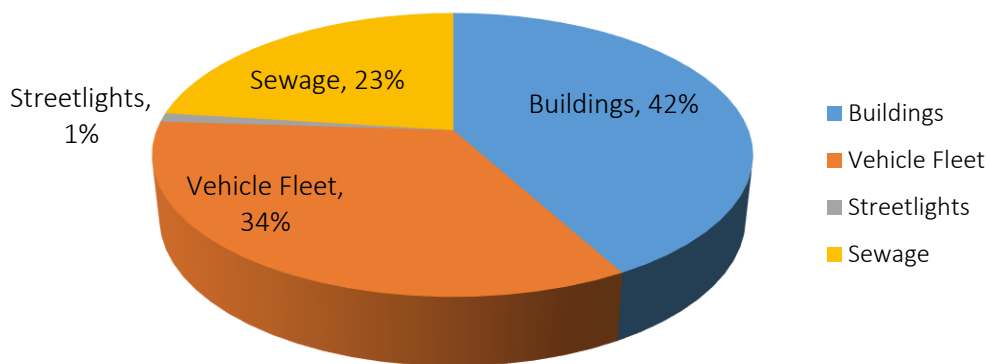


Figure 4.7b - 2022 Corporate Greenhouse Gas Emissions by Sector

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.

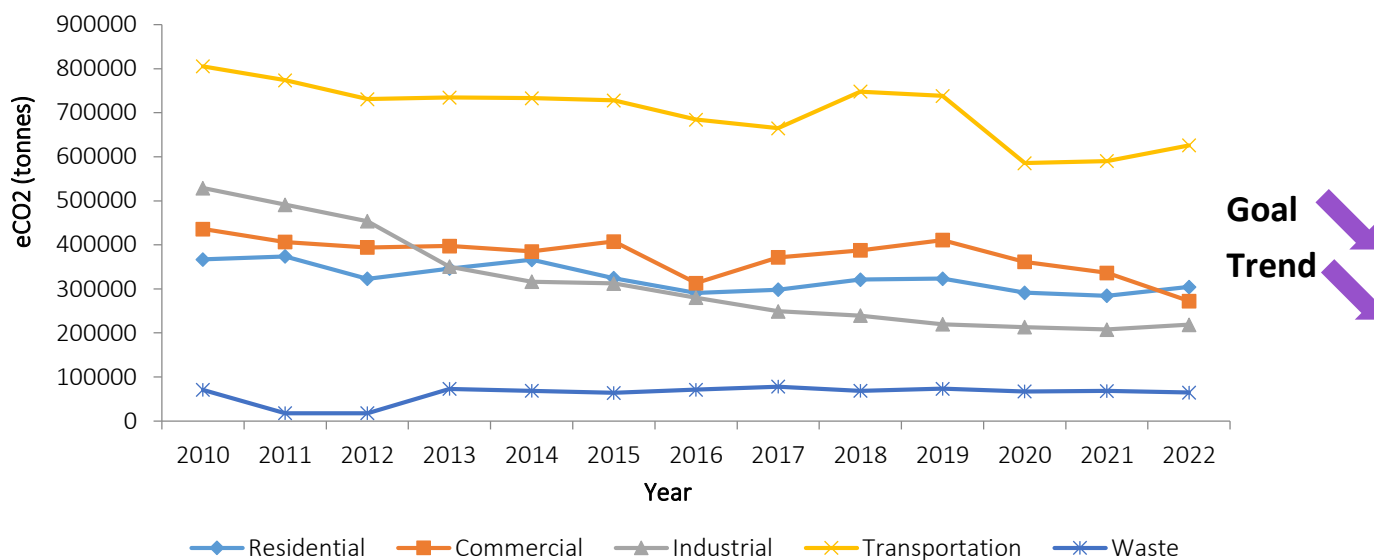


Figure 4.8a - Community Greenhouse Gas Emissions

* 2020: The industrial sector value was adjusted manually.

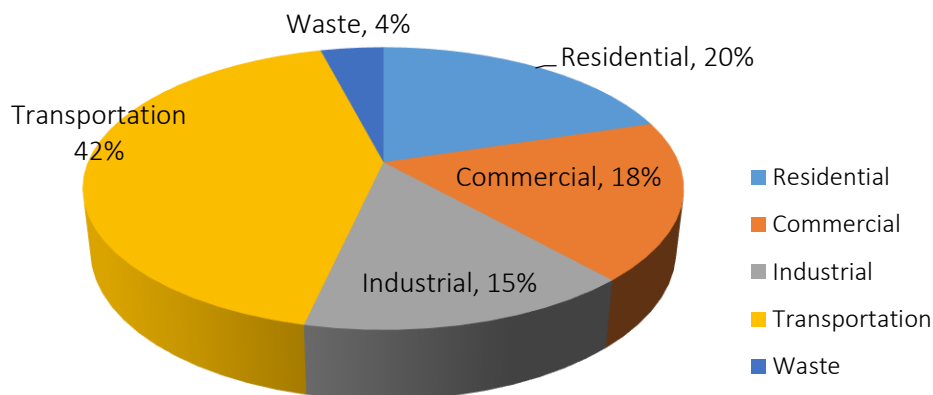


Figure 4.7b - 2022 Community Greenhouse Gas Emissions by Sector

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%

Goal D: Increase Resource Efficiency

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 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.

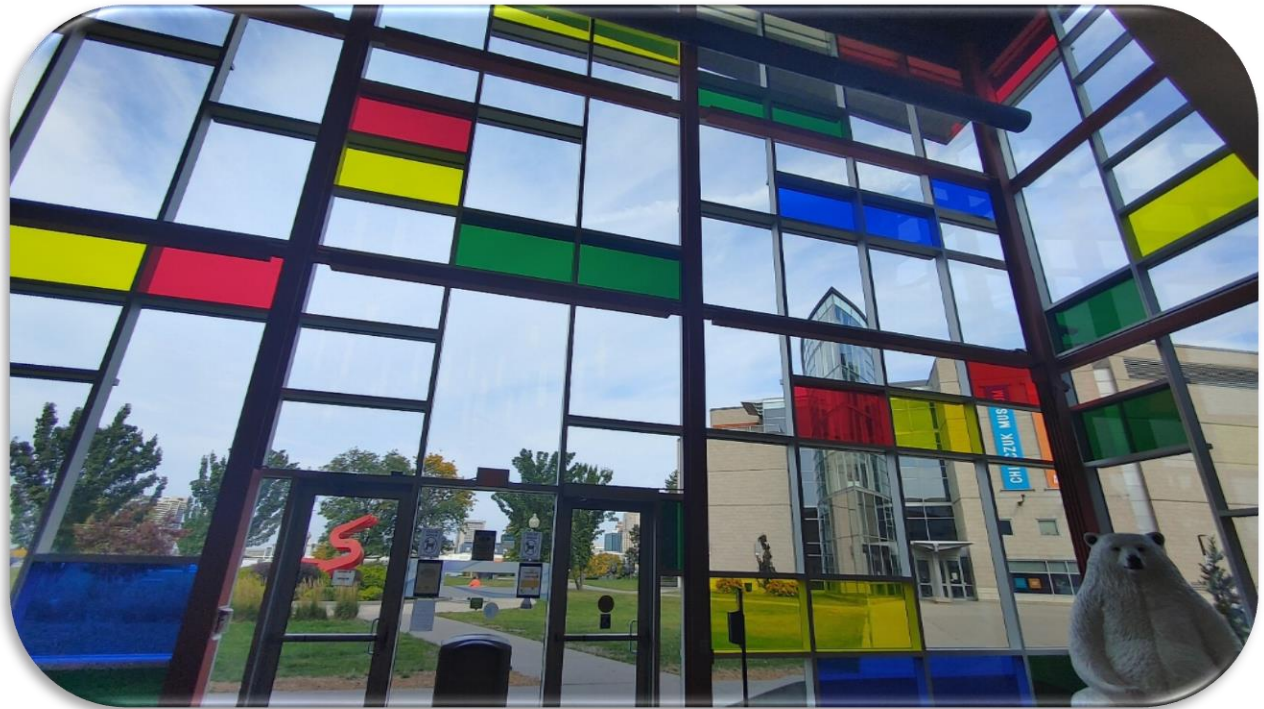
Large-scale Battery Storage

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.

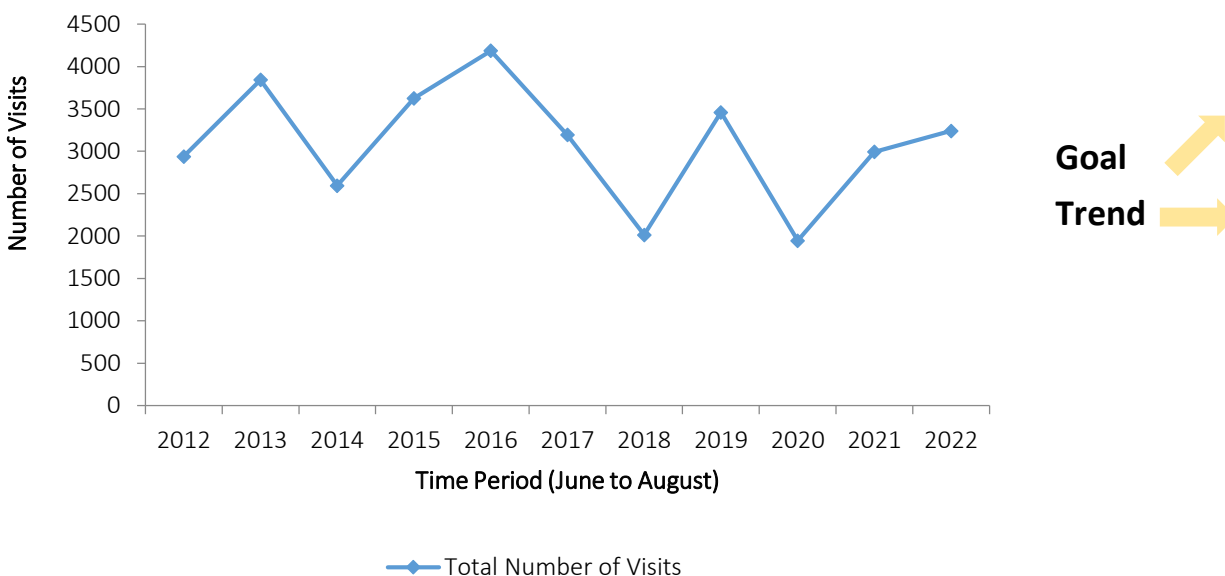


Figure 5.1 - Number of Visits to the Environmental Master Plan Website (Environment (citywindsor.ca))

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.

Goal E: Promote Awareness

- 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?

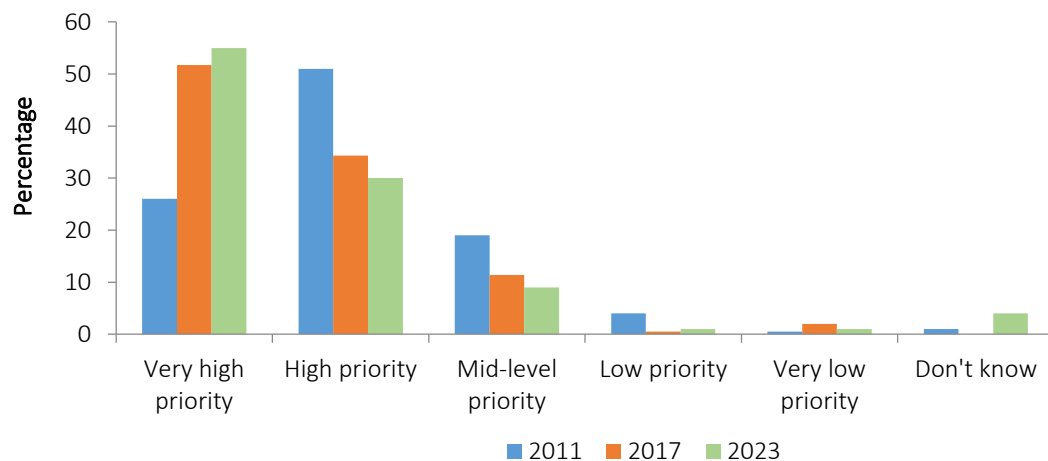


Figure 5.3 - Compared to all of the issues facing the City of Windsor today, how high a priority do you think local leaders should place on preserving and protecting the local environment?

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

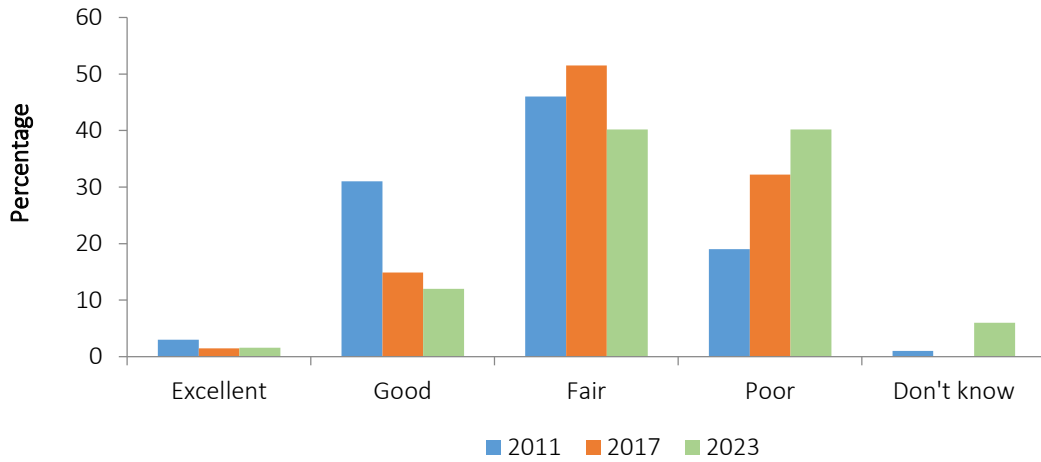
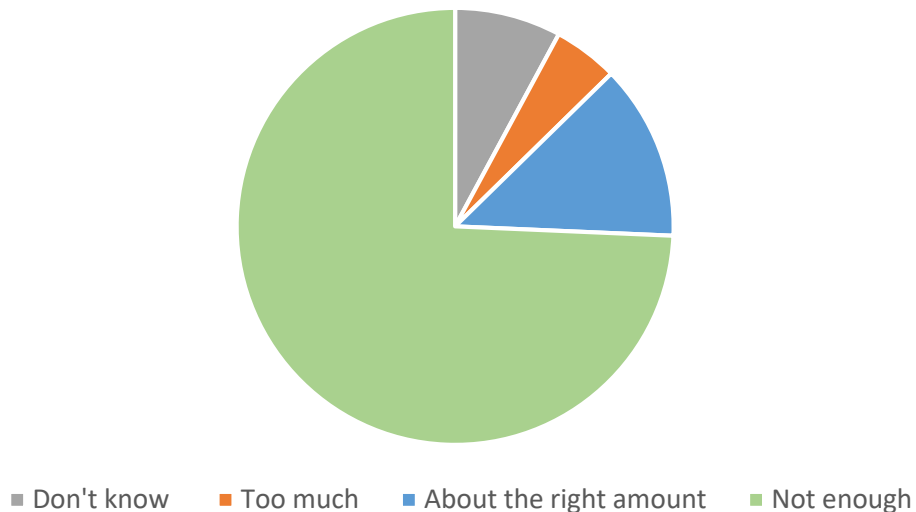


Figure 5.4 - How would you rate the overall quality of the environment in the City of Windsor today?

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.

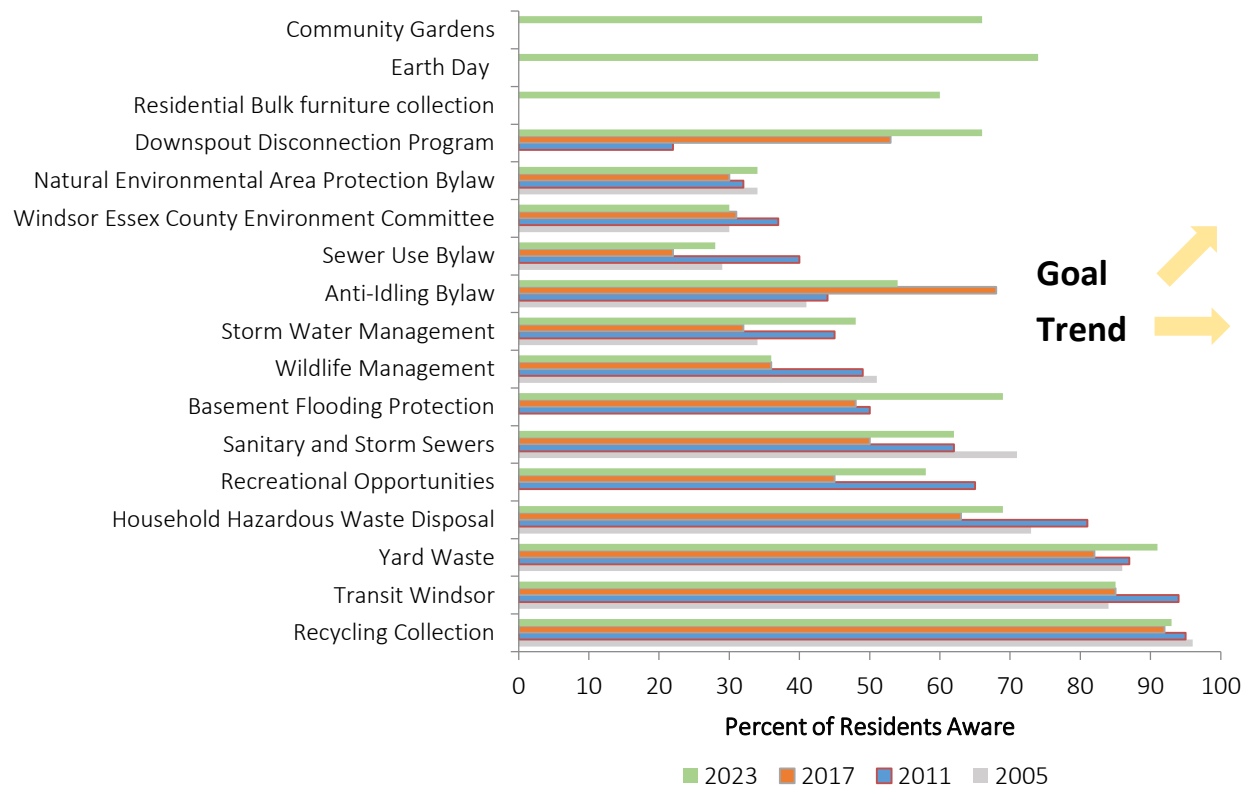


Figure 5.6 - Windsor Resident's Awareness of Environmental Programs

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 were for the Windsor Essex County Environment Committee, the Sewer use bylaw, and the Natural environment protection bylaws.

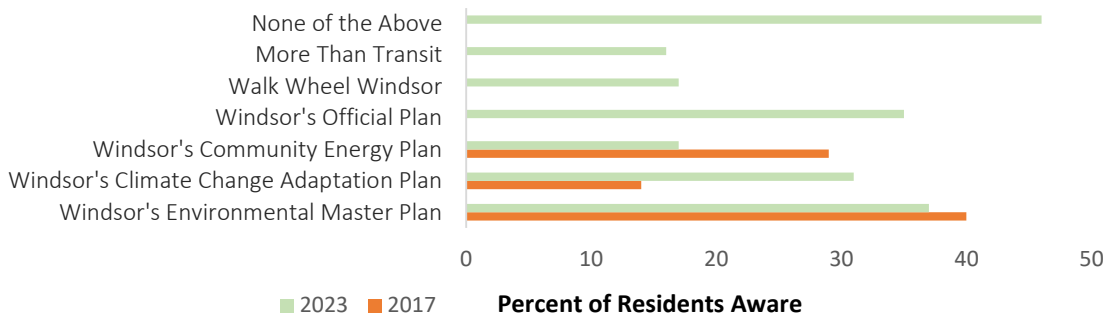


Figure 5.7 - Windsor Residents' Awareness of City's Plans

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.

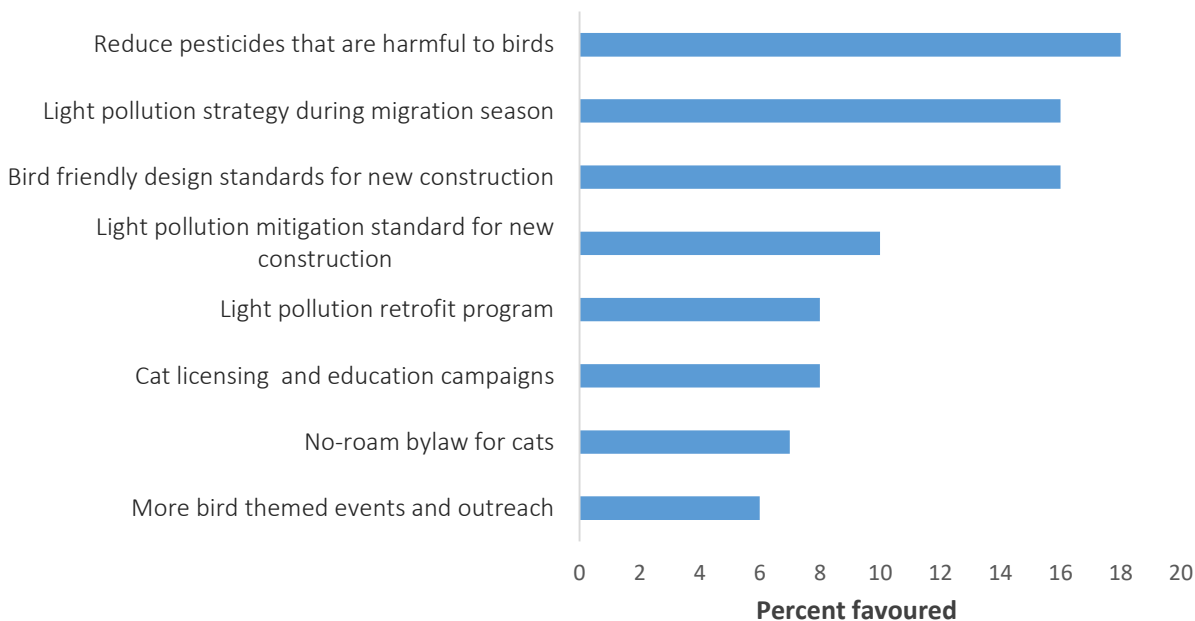


Figure 5.8 Windsor Resident's Prioritization of Bird Friendly City Strategies

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.

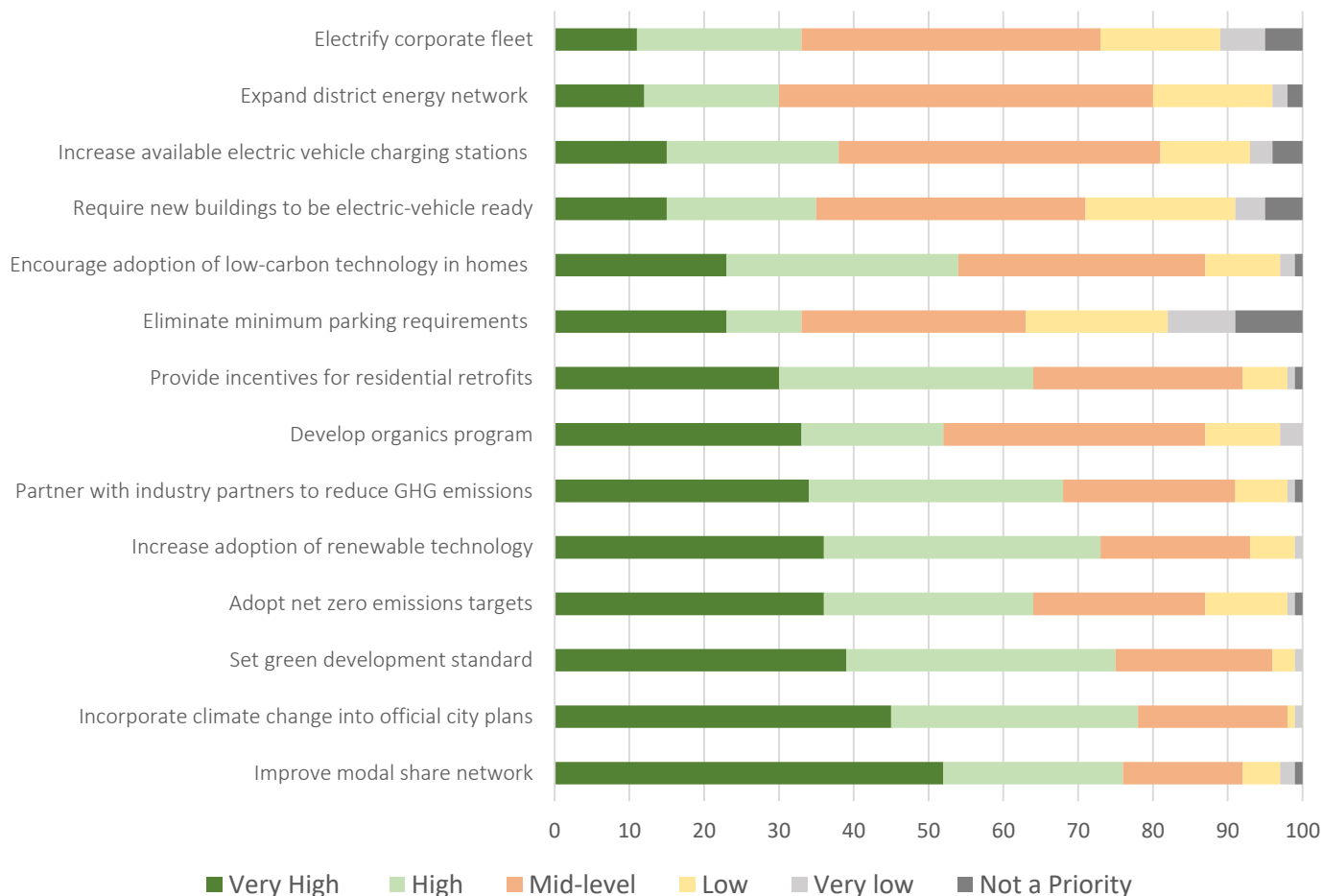


Figure 5.9 - Windsor Resident's Prioritization of Climate Change Planning Strategies

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, Scienstational 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

Goal E: Promote Awareness

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





Subject: Response to CQ 36-2023 – Repurposing Lot 16 – City Wide

Reference:

Date to Council: March 27, 2024
Author: Author: Bill Kralovensky
Coordinator, Parking Services
(519) 255-6247 ext. 6103
bkralovensky@citywindsor.ca

Public Works - Operations
Report Date: March 11, 2024
Clerk's File #: ST2024 & ACOQ2024

To: Mayor and Members of City Council

Recommendation:

THAT report S35/2024, "CQ 36-2023 – Repurposing Lot 16", **BE RECEIVED** for information.

Executive Summary:

N/A

Background:

On Monday, October 30, Councillor Agostino asked the following Council Question:

CQ 36-2023

Downtown residents are having a very tough time dealing with noise and loitering issues in lot 16. The problem is after hours partying and cars performing burnouts. It's my understanding that we have been losing this battle for at least a decade. Asks that Administration report back regarding options available for repurposing parking lot 16.

This report is provided in response to CQ 36-2023.

Discussion:

It is important to note that repurposing Lot 16 may not resolve the issues of noise and loitering. There's a likelihood that these challenges could simply shift to nearby parking lots to the east (Lot 34) and/or west (Lot 5), necessitating a broader approach to effectively address these concerns. Similar issues were noted near Festival Plaza previously and with the installation of fencing and gates to address that problem, the challenges shifted to Lot 16.

City Council adopted the Central Riverfront Implementation Plan (CRIP) on September 5, 2000. The CRIP included provisions for parking lots at strategic locations along the riverfront. Specifically, the plan envisaged that Lot 16 would continue to serve as a parking lot.

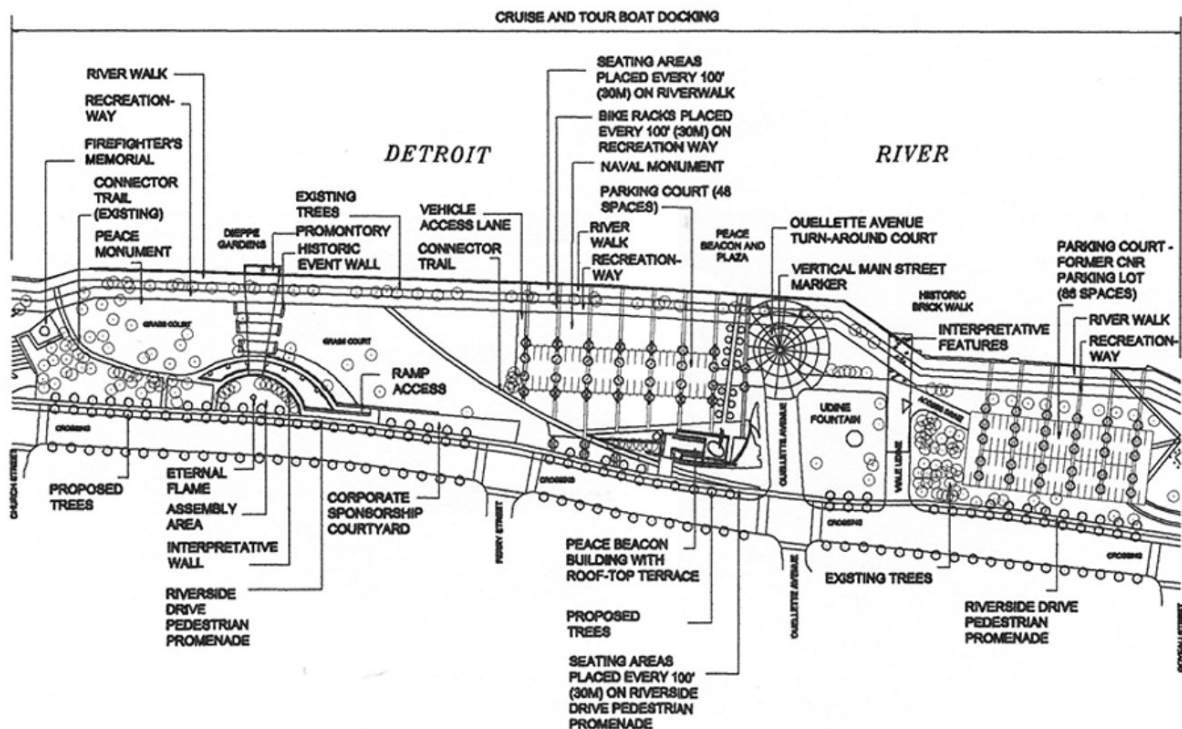


Figure 62. Central Riverfront Implementation Plan. September 2000, p. 75.

If Council wishes to change the functionality of Lot 16 from parking to some other use, they may wish to revisit the CRIP as this area was identified as a parking lot.

Lot 16 along with nearby Lot 5 is typically well utilised during our extended warm weather outdoor season and the Parks department does receive complaints about a lack of parking available. The elimination of Lot 16 and its 86 spaces will leave only the 48 spaces at Lot 5 to service the nearly 1.3 km stretch of riverfront parkland from Glengarry to Caron Ave. This stretch of parkland includes popular destinations such as Rotary Plaza, Festival Plaza and Dieppe Park. Dieppe Park is home to such amenities/attractions as The Great Canadian Flag, Bistro at the River, numerous memorials & monuments and over 30,000sqft of garden beds.

Should Council decide to maintain Lot 16 as a parking lot, there are a number of measures that could be considered to address the issues of noise and loitering. These include:

1. Installing a barrier gate (with integrated pay station) to control access to the parking lot, possibly including restrictions such as no entry after 10:00 p.m. The initial cost of the barrier gate is \$51,950 (plus HST), with associated infrastructure upgrade costs estimated to be approximately \$10,000. Below, Lot 16 is pictured.



Lot 16 - Central Riverfront Implementation Plan Review – Items to Consider, p. 5.

Pros:

- Provides a physical barrier to control access, reducing unauthorized parking and potential for loitering.
- May deter unwanted behavior by imposing a structured entry/exit system.
- Can be programmed to enforce specific access times (e.g., no entry after 10:00 p.m.).

Cons:

- Initial cost for installation and infrastructure upgrades.
- Ongoing maintenance and operational costs.
- May inconvenience legitimate users if access is restricted after certain hours.
- Potential for technical issues or malfunctions.
- Can be bypassed, vehicle(s) park in the lot before the gate restricts access. Even if it is just a single vehicle from the group, the vehicle will drive out to open the gate, and the other vehicles then drive in.

2. Enforcement of noise and loitering complaints by Windsor Police and continued parking enforcement through the current contractor.

Pros:

- Utilizes existing law enforcement and parking enforcement infrastructure.
- Can be effective in addressing specific complaints of noise and loitering.

Cons:

- Does not provide continuous monitoring or deterrence.
- Reliant on the availability and response times of enforcement.
- Enforcement actions will be reactive rather than proactive.

3. Contract security could be hired to monitor the parking lot between the hours of 8:00 p.m. and 4:00 a.m., Thursday through Sunday all year. The estimated 2024 hourly rate is \$30.00. Due to the nature and time of monitoring, two officers may be required. The approximate cost for two officers is \$99,840.

Pros:

- Provides dedicated monitoring during peak hours for noise and loitering issues.
- Visible security presence can deter unwanted behavior.
- Can respond quickly to incidents within the parking lot.

Cons:

- Ongoing cost for security personnel.
- Limited to specific hours and days, leaving gaps in coverage.
- Do not have authority to enforce laws / by-laws.

4. Installation of security cameras has been reviewed at various external locations around the City, i.e. parks, parking lots, etc., to address similar issues. Due to lack of infrastructure (conduits, fibre, connectivity, ability to continuously monitor these locations, etc.) it is not feasible at this time. However, Administration continues to look for potential solutions that could be feasible.

Regarding options for repurposing Lot 16 for alternative community use, ultimately, the determination of an alternate use for Lot 16 rests with Council. Since there are a multitude of options, Council could instruct Administration to explore specific options.

Risk Analysis:

It is important to note that repurposing Lot 16 for a different use may not resolve the issues of noise and loitering. There is a likelihood that these challenges could simply shift to nearby parking lots to the east (Lot 34) and/or west (Lot 5), necessitating a broader approach to effectively address these concerns. Similar issues were noted near Festival Plaza previously and with the installation of fencing and gates to address that problem, the challenges shifted to Lot 16.

The loss of these spaces will have a negative impact on park users. Residents and visitors alike will be challenged to find appropriate parking. This will likely lead to an increase in complaints, could lead to an overall reduction in the number of people visiting not only the parkland but also downtown overall which can lead to a negative impact on the city's image.

Further, if Lot 16 is repurposed, monthly permit holders in this lot would be displaced. At the moment, Garage 1 (Pitt & Goyeau) can accommodate the displace monthly parkers. The monthly rate for Garage 1 is \$12.43 more per month (or \$149.16 more per year).

Finally, the lot houses a transformer owned and operated by Enwin Utilities. Access to this transformer would need to be maintained even if the lot was repurposed.

Climate Change Risks

Climate Change Mitigation:

N/A

Climate Change Adaptation:

N/A

Financial Matters:

The costs associated with the options noted above are detailed below. Council should be aware that any additional expenditures are considered to be new matters not previously approved within either the current operating or 10-year capital plan. As such, there is no funding current allocated to improving security of Lot 16. City Council would need to provide direction as to which option they would like to be further considered.

Option 1 Cost:

The cost of a gated exit with a pay station is approximately \$51,950 excluding HST, with site preparation and other related installation costs estimated to be around \$10,000 excluding HST. The risk of the gates being damaged is low / medium, other similar gates in the City require repair a few times each year. Replacement costs for a gate that is damaged could be minimal, i.e. replacement of the gate only, however there is a potential that the concrete base can be damaged which would require funding similar to the initial installation cost. This option would be funded by the capital program for parking equipment, which is funded from the On-Off Street Parking Reserve Fund 138. At this time, gates are not part of the upcoming project works. To complete this project, funding would be required from the On-Off Street Parking Reserve. Parking fees could be increased to replenish funding used from the On-Off Street Parking Reserve.

Option 2 Cost:

There is no additional cost for option 2.

Option 3 Cost:

The additional cost to hire contract security to monitor the parking lot between the hours of 8:00 p.m. and 4:00 a.m., Thursday through Sunday all year is estimated at \$99,840 excluding HST based on the estimated 2024 contractual hourly rates. The additional security cost would require an operating budget increase. This increased operating budget would result in an offsetting reduction in the annual transfer to the On-Off Street Parking Reserve fund 138. At this time, the additional security is not part of the ongoing operating budget. To complete this project would require additional funds from the reserve. Alternatively, parking fees could be increased to offset this increased cost annually.

Lot 16 Revenue:

The parking revenue associated with Lot 16 was approximately \$80,000 for 2022 and \$120,000 for 2023 resulting in a 2-year average revenue of approximately \$100,000 per table 1 below.

Table 1:

Year	Cash Deposits	Debit / Credit	Parking App Net Revenue	Monthly Permit Revenue	Total
2022	\$38,964.16	\$14,549.55	\$5,269.72	\$20,805.29	\$79,588.72
2023	\$32,779.12	\$59,028.52	\$8,912.79	\$19,925.30	\$120,645.73
2-Year Average	\$35,871.64	\$36,789.04	\$7,091.26	\$20,365.30	\$100,117.23

Should Lot 16 be repurposed, there would be a net loss of approximately \$80,000 in revenue. It is anticipated that the loss of revenue would be only the loss of hourly parking revenue as the monthly permit holders would be moved to the Goyeau Garage. Loss of revenue results in a decrease in the transfer of net results (revenue minus expense) annually to the On-Off Street Parking Reserve Fund 138. Parking fees could also be increased to offset this loss of revenue annually.

Capital Rehabilitation Required:

The pavement in Lot 16 is failing and requires rehabilitation. Lot 16 pre-engineering and soil testing was completed in April 2023. Preliminary results indicate contaminated soils to a depth of 750 mm will need to be removed and remediated. The final soil report provided by the consultant will be utilized by Public Works Engineering to inform the design and remediation processes, as well as to develop a final budget estimate for the construction project. The cost of the Lot 16 rehabilitation is currently estimated in the range of \$850,000 to \$1,250,000 excluding HST pending completion of final cost estimating. The cost of this pending rehabilitation is currently being considered in the 10-year On-Off Street Parking Reserve and capital expenditure forecasts.

Non-refundable HST costs are not applicable for any costs, operating or capital, as Parking Operations are deemed to be commercial in nature with 100% of HST costs refunded to the City.

Consultations:

Ian Day, Senior Manager, Traffic Operations & Parking (A)

Craig Robertson, Manager, Licensing & Enforcement /Deputy License Commissioner

Cindy Becker, Financial Planning Administrator – Operations

Rob Slater, Executive Initiatives Coordinator

Alex Vucinic, Manager, Purchasing and Risk Management

Emilie Dunnigan, (A) Deputy Treasurer, Financial Planning

Conclusion:

While the repurposing of Lot 16 is possible, it would necessitate that the Central Riverfront Implementation Plan be revisited. The ultimate use of the space is up to Council.

If repurposed, the loss of Lot 16 would reduce the City's parking revenues by approximately \$80,000 per year and reduce the number of available parking spaces for visitors to the Riverfront.

Furthermore, it is important to note that repurposing Lot 16 does not tackle the noise and loitering problems. Consequently, without addressing these underlying issues, there is a high probability that these disturbances would merely shift to other nearby parking lots, either to the east (Lot 34) or west (Lot 5).

Rather than repurposing Lot 16, Council may wish to consider implementing the barrier gate noted in the report to address the issues of noise and loitering.

Planning Act Matters:

N/A

Approvals:

Name	Title
Cindy Becker	Financial Planning Administrator – Operations
James Chacko	Executive Director, Parks & Facilities
Shawna Boakes	Deputy City Engineer / Executive Director of Operations
Ray Mensour	Commissioner, Community Services
Mark Winterton	(A) Commissioner, Infrastructure Services
Janice Guthrie	Commissioner, Finance & City Treasurer
Joe Mancina	Chief Administrative Officer

Notifications:

Appendices: