

Agenda Including Addeds

Civic Works Committee

The 11th Meeting of the Civic Works Committee

August 31, 2021, 12:00 PM

2021 Meeting - Virtual Meeting during the COVID-19 Emergency

Please check the City website for current details of COVID-19 service impacts.

Meetings can be viewed via live-streaming on YouTube and the City website

Members

Councillors E. Pelosa (Chair), J. Helmer, M. Cassidy, P. Van Meerbergen, S. Turner,
Mayor E. Holder

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Cycling Advisory Committee

Report

The 6th Meeting of the Cycling Advisory Committee
July 21, 2021

Advisory Committee Virtual Meeting - during the COVID-19 Emergency

Attendance PRESENT: J. Roberts (Chair), I. Chulkova, C. DeGroot, D. Doroshenko, J. Jordan, E. Raftis, O. Toth, and T. Wade; A. Pascual (Committee Clerk).

ABSENT: B. Hill and M. Mur.

ALSO PRESENT: G. Dales, J. Dann, D. Hall, S. Harding, L. Maitland, J. Stanford, B. Westlake-Power, and S. Wilson.

The meeting was called to order at 4:05 PM; it being noted that the following Members were in remote attendance: I. Chulkova, C. DeGroot, D. Doroshenko, J. Jordan, E. Raftis, J. Roberts, O. Toth, and T. Wade.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Consent

2.1 5th Report of the Cycling Advisory Committee

That it BE NOTED that the 5th Report of the Cycling Advisory Committee, from its meeting held on June 16, 2021, was received.

2.2 Municipal Council Resolution from its meeting held on July 6, 2021, with respect to the 5th Report of the Cycling Advisory Committee

That it BE NOTED that the Municipal Council Resolution from its meeting held on July 6, 2021, with respect to the 5th Report of the Cycling Advisory Committee, was received.

2.3 Public Meeting Notice - Official Plan and Zoning By-law Amendments - 180-186 Commissioners Road West

That it BE NOTED that the Public Meeting Notice dated July 6, 2021, from B. Debbert, Senior Planner, related to an Official Plan and Zoning By-law Amendments, for property at 180-186 Commissioners Road West, was received.

2.4 2021 Cycling Project Updates - D. Hall, Program Manager, Active Transportation Planning and Design

That it BE NOTED that the memo from D. Hall, Program Manager, Active Transportation Planning and Design, with respect to 2021 Cycling Project Updates, was received.

3. (ADDED) Deferred Matters/Additional Business

3.1 Get Involved London - E-scooters and Large Cargo E-bikes Pilot

That it BE NOTED that the Cycling Advisory Committee held a general discussion with respect to the Get Involved London website information related to the e-scooters and large cargo e-bikes pilot.

4. Adjournment

The meeting adjourned at 4:41 PM.

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment and Infrastructure

Subject: Appointment of Consulting Engineer for the Hyde Park EA
SWM Works – Assignment ‘A’ Detailed Design

Date: August 31, 2021

Recommendation

That on the recommendation of Deputy City Manager, Environment and Infrastructure, the following actions **BE TAKEN** with respect to the appointment of consulting services for the Hyde Park EA SWM Works – Assignment ‘A’ project:

- (a) Stantec Consulting Inc. **BE APPOINTED** consulting engineers to complete the detailed design for the Hyde Park EA SWM Works – Assignment ‘A’ project in accordance with the estimate, on file, at an upset amount of \$301,032.57 (including contingency, provisional items and allowances), excluding HST, in accordance with Section 15.2 (e) of the City of London’s Procurement of Goods and Services Policy;
- (b) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached, hereto, as Appendix ‘A’;
- (c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this project;
- (d) the approval given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract; and
- (e) the Mayor and City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report recommends the appointment of Stantec Consulting Inc. to complete the detailed design for portions of the stormwater management (SWM) works in the Hyde Park Area identified as Assignment ‘A’.

Context

Since 2002, substantial new development has occurred in the Hyde Park area including numerous parcels of commercial and residential development, as well as major arterial road widenings. The “Hyde Park Community Storm Drainage and Stormwater Management Servicing Municipal Class Environmental Assessment Addendum: Schedule ‘B’ Master Plan” (Hyde Park EA Addendum) study was finalized in October 2020 to recommend solutions to localized stormwater servicing challenges and update servicing solutions since the original SWM EA had been developed in 2002.

The 2020 Hyde Park EA Addendum study made recommendations to balance the requirements of SWM servicing in relation to the natural and built environment. The study identifies retrofits to existing SWM facilities to optimize existing infrastructure, new natural channel construction, Low Impact Development opportunities, and environmental enhancements aimed at mitigating the impacts of development. This design Assignment ‘A’ is the first of two design packages to complete a holistic SWM strategy for the Hyde Park area.

Linkage to the Corporate Strategic Plan

This recommendation supports the following 2019-2023 Strategic Plan areas of focus:

- Building a Sustainable City:
 - London's infrastructure is built, maintained, and operated to meet the long-term needs of our community by replacing aged and failing infrastructure with new materials and sizing new infrastructure to accommodate future development;
 - Londoners can move around the city safely and easily in a manner that meets their needs by incorporating cycling infrastructure and safety enhancements; and
 - London has a strong and healthy environment by incorporating stormwater management quantity and quantity controls to protect downstream waterways.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

- Civic Works Committee – November 25, 2013 – Hyde Park Nos. 5 and 6 Stormwater Management Facilities;
- Civic Works Committee – April 7, 2014 – Appointment of Consulting Engineer for Engineering Services for the Functional and Detailed Design of the Hyde Park No. 6 SWMF;
- Civic Works Committee – April 28, 2014 - Appointment of Consulting Engineer for the Engineering Services for the Functional and Detailed Design of the Hyde Park No. 5 SWMF;
- Civic Works Committee – May 24, 2016 – Appointment of Consulting Engineer for the Hyde Park Community Stormwater Servicing Environmental Assessment Addendum Consultant Appointment; and,
- Civic Works Committee – September 25, 2018 – Hyde Park Community Storm Drainage and Stormwater Management Servicing Municipal Class Environmental Assessment Addendum: Schedule B Master Plan Notice of Study Completion.

2.0 Discussion and Considerations

2.1 Work Description

This Consultant assignment includes the detailed design of several components of the stormwater management (SWM) works recommended by the Hyde Park EA Addendum. Appendix 'B' shows the location of the works identified as follows:

1. Hyde Park SWM 1 Retrofit within existing block.
2. Hyde Park SWM 1B1 Retrofit within existing block.
3. Channel Remediation/Realignment from Sarnia Road to Hyde Park 1B1.
4. Trenchless design of a new storm culvert under the CP Rail line connecting the new storm channel (item #3 above) south of the CP Rail to a new inlet into SWM facility 1B1.
5. Decommissioning of the temporary Matthews Hall Subdivision SWM Facility.
6. Incorporation of a multiuse pathway system adjacent to the new channel to be constructed in conjunction with items 3 & 4 above; and,
7. Incorporation of natural channel design within the Sarnia Road channel as well as ecological enhancements to Hyde Park 1 and Hyde Park 1B1 SWM facilities.

All work will be designed and constructed in accordance with the mitigation/compensation plan identified in the Environmental Impact Study (EIS) completed during the EA and additional features identified through this detailed design.

2.2 Public Communications

These identified works will be of high interest to residents. This assignment will utilize a similar public communications approach to the City's Infrastructure Renewal Program and will include project letters that will be sent to area residents and electronic presentations that will be prepared and posted on the City's website. This communication material will inform residents about the project prior to construction and will include project contact information. The communication material will include a summary of the necessary work (e.g. tree removals, channel excavation, etc.) that residents should expect to see.

2.3 Additional Hyde Park Stormwater Management Detailed Design

In addition to the current Assignment 'A', there will also be an Assignment 'B' RFP process that will include the detailed design of the remaining SWM works identified by the Hyde Park EA Addendum. This additional detailed design RFP will be issued in the fall of 2021.

3.0 Financial Impact/Considerations

3.1 Procurement Process

The engineering consultant selection procedure for this assignment utilized a competitive Request for Proposal (RFP) process in accordance with Section 15.2(e) of the Procurement of Goods and Services Policy. Four qualified engineering firms from the City's pre-approved consultant list were invited to submit a formal proposal in response to RFP21-45 Hyde Park SWM Works – Assignment 'A' – Detailed Design tasks identified in the Hyde Park EA Addendum listed in Appendix 'B'.

3.2 Consultant Selection

In accordance with Section 15.2(e) of the Procurement of Goods and Services Policy, Staff recommend that Stantec Consulting Inc. be authorized to carry out the detailed design of the identified components of the Hyde Park EA works.

In addition to being the successful proponent through the competitive bidding process, Stantec Consulting Inc. has formed a proficient project team that has shown their competency and expertise with City infrastructure projects of this nature in the past.

Stantec's proposal was selected as the best value to the City to complete a comprehensive project that recognized all of the design elements for this assignment.

3.3 Funding

The contract administration fee has not been included as part of the current assignment as it was not possible to estimate the number of working days to complete the various works prior to completion of the detailed design. The Consultant will only be asked to submit a work plan for construction administration based on the performance during the detailed design. The fees will then be reviewed in the context of other competitive fees from similar SWM projects and assessed in consideration of clause 15.2 (g) of the Procurement of Goods and Services Policy.

Conclusion

Stantec Consulting Inc. was found to provide the best value to the City through the RFP selection process for consulting services for the detailed design of Hyde Park EA Addendum – Assignment 'A' project. The Stantec team has demonstrated the ability to complete the detailed design tasks required for this project, as well as successful consultation and engagement, and demonstrated a solid understanding of this project in

their proposal. It is recommended that Stantec Consulting Inc. be awarded this assignment.

Prepared by: **Shawna Chambers, DPA, P.Eng., Division Manager,
Stormwater Engineering**

Submitted by: **Scott Mathers, MPA, P.Eng., Director, Water,
Wastewater, and Stormwater**

Recommended by: **Kelly Scherr, P.Eng., MBA, FEC, Deputy City Manager,
Environment and Infrastructure**

Attachments: Appendix 'A' – Sources of Financing
Appendix 'B' – Location Map

CC: Steve Mollon
 Gary McDonald
 Alan Dunbar
 Jason Davies
 Jason Senese
 Jeff Paul - Stantec
 Paul Titus

Appendix "A"

#21144

August 31, 2021

(Appoint Consulting Engineers)

Chair and Members

Civic Works Committee

RE: Hyde Park EA SWM Works - Assignment A Detailed Design

(Subledger SWM21005)

Capital Project ESSWM-HP5 - SWM Facility - Hyde Park No. 5

Stantec Consulting Inc. - \$301,032.57 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	2,134,000	353,664	306,331	1,474,005
Land Purchase	444,700	2,239	0	442,461
Construction	3,927,023	0	0	3,927,023
City Related Expenses	11,977	11,977	0	0
Total Expenditures	\$6,517,700	\$367,880	\$306,331	\$5,843,489

Sources of Financing

Drawdown from Sewage Works Renewal Reserve Fund	289,667	16,350	13,614	259,703
Drawdown from City Services - Stormwater Reserve Fund (Development Charges) (Note 1)	1,916,557	351,530	292,717	1,272,310
Debenture By-law No. W.-5560-200 - Serviced through City Services - Stormwater Reserve Fund (Development Charges) (Note 1)	4,311,476	0	0	4,311,476
Total Financing	\$6,517,700	\$367,880	\$306,331	\$5,843,489

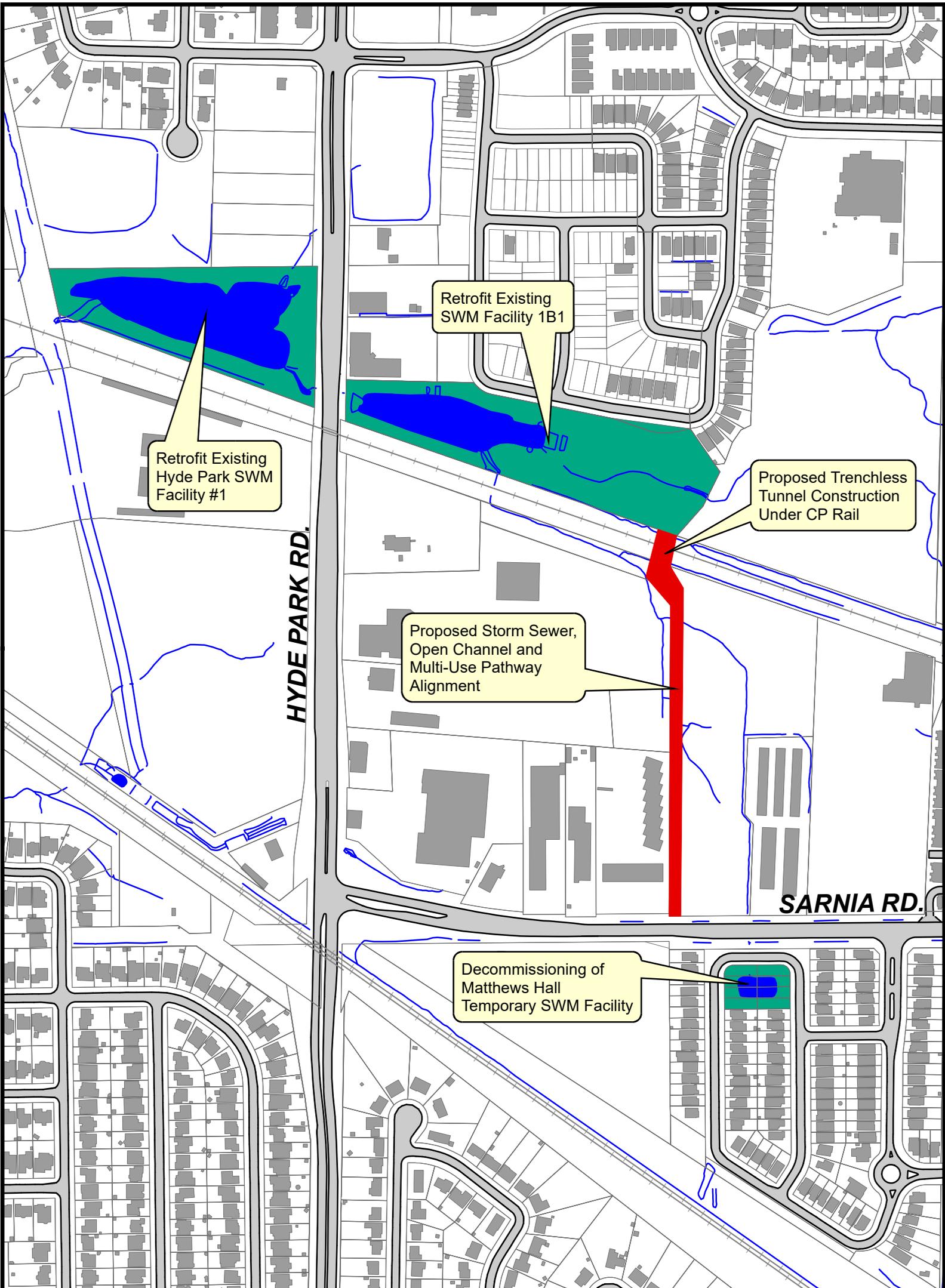
Financial Note:

Contract Price	\$301,033
Add: HST @13%	39,134
Total Contract Price Including Taxes	340,167
Less: HST Rebate	-33,836
Net Contract Price	\$306,331

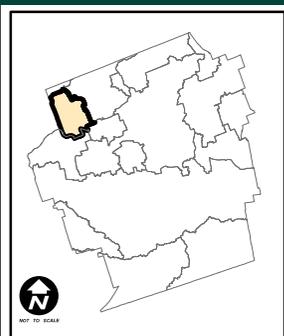
Note 1: Development charges have been utilized in accordance with the underlying legislation and the approved 2019 Development Charges Background Study and the 2021 Development Charges Background Study Update.

Jason Davies
Manager of Financial Planning & Policy

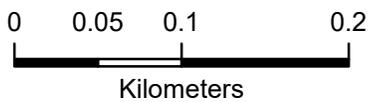
jg



PROJECT LOCATION MAP - APPENDIX 'B'



1:4,500



Kilometers

Legend

- Existing SWM Facilities
- Land Parcel
- Road
- Proposed Storm Sewer, Linear Channel and Tunnel location
- Railroad
- Water Body

Map Produced by the Stormwater Management Division
 300 Dufferin Avenue, PO Box 5035, London, Ontario N6A 4L9
www.London.ca



Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Contract Award: Tender RFT 21-88
Tender Award for Dingman Creek Southwinds (Tributary 12)
Natural Channel Reconstruction and Flood Mitigation

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions be taken with respect to the award of contract for the Dingman Creek Southwinds Channel (Tributary 12) Reconstruction and Multiuse Pathway.

- (a) the bid submitted by J-AAR Excavating Limited at its tendered price of, \$4,069,026.25 including 10% contingency, excluding HST, for the Dingman Creek Southwinds Channel (Tributary 12) Reconstruction and Multiuse Pathway Project, **BE ACCEPTED**; it being noted that the bid submitted by J-AAR Excavating Limited was the lowest of two bids received and meets the City's specifications and requirements in all areas;
- (b) Ecosystem Recovery Inc. **BE APPROVED** for additional construction administration fee of \$74,046.50, including 10% contingency, excluding HST, in accordance with Section 15.2(g) of the City of London's Procurement of Goods and Services Policy;
- (c) the financing for this project **BE APPROVED** in accordance with Section 8.1(a) of the City of London's Procurement of Goods and Services Policy, and as set out in the Sources of Financing Report attached, hereto, as Appendix A;
- (d) that Civic Administration **INITIATE** a Zoning By-law amendment following the completion of this project to update the limits of the Open Space (OS) Zones to reflect the limits of the Regulatory Floodplain Limits as identified in as-built construction drawings;
- (e) the approval given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract, or issuing a purchase order for the material to be supplied and the work to be done, relating to this project (Tender RFT21-88); and,
- (f) the Mayor and City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report seeks approval to award the construction contract to J-AAR Excavating Limited to complete the construction of the Dingman Creek Southwinds Channel (Tributary 12) Reconstruction and Multiuse Pathway Construction project.

Context

The "Dingman Creek Subwatershed: Stormwater Servicing Strategy for Stage 1 Lands – Schedule B Municipal Class Environmental Assessment" (Dingman Creek EA) (Aquafor Beech, 2020) identified Southwinds Channel (Tributary 12) to be susceptible to flooding under existing and future development conditions.

This channel reconstruction project involves lowering and widening the main flow channel, upsizing the flow capacity of culverts at Malpass Road and Isaac Court, and incorporating natural channel design elements to enhance the natural setting and increase new habitat opportunities. The design considered future culvert sizing at Colonel Talbot Road that can be completed as part of the upgrades scheduled for 2023. A multiuse pathway is included in the project as recommended in the City of London Master Cycling Plan (MMM, 2016).

Linkage to the Corporate Strategic Plan

This project supports the 2019-2023 Strategic Plan through the following: Building a Sustainable City, Build infrastructure to support future development and protect the environment.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

- Civic Works Committee – September 22, 2020 – Appointment of Consulting Engineer for Detailed Design and Contract Administration Services: Dingman Creek Stage 1 Lands (Tributary 12, Municipal Channel Improvements)
- Civic Works Committee – February 4, 2020 –Dingman Creek Subwatershed: Stormwater Servicing Strategy for Stage 1 Lands Municipal Class Environmental Assessment: Notice of Completion

2.0 Discussion and Considerations

2.1 Work Description

The Dingman Creek Southwinds Channel (Tributary 12) design process included assessing current flow conditions and flood remediation, opportunities to enhance the natural environment, and creation of pathway connections through the open space lands. Natural channel design principles, which integrate best practices in engineering, geomorphology, and ecology, have informed the channel design to create a naturalized and stable channel corridor. Increasing the flow capacity of this system will significantly reduce the potential flood frequency at road crossings and on private lands as well as facilitate future development in the catchment area to the east side of Colonel Talbot Road. The upstream future development lands will include a ‘complete corridor design’ that incorporates stormwater management, enhanced natural heritage elements, and recreational pathways to enhance walkability and the public amenity space.

2.2 Environmental Considerations

An Environmental Impact Study (EIS) was completed as part of the background assessment for the design of the project and an Environmental Management Plan (EMP) was developed to incorporate the findings of the EIS into the channel design. Some of the mitigation and compensation design includes invasive species removal, increased monarch butterfly habitat, installation of bat boxes, and construction of a snake hibernaculum. The natural channel design elements include series of riffles and pool throughout the reach to improve fish passage and habitat.

While making every effort to preserve trees on the project, the Tree Assessment determined that it was not possible to meet the objectives of the channel design and retain the majority of trees. Significant tree removals are planned to take place this

September prior to commencing channel construction. Tree removals will include both native and cultivated tree species, including Scot’s pine, white cedar, willow, and maple species. Large trees removed will be re-used on-site as part natural channel design elements. Residents were informed that the channel area will likely appear stark in the short-term but will be replanted with native tree, shrub, and grass species to ensure full restoration of the natural environment in the medium to long-term.

2.3 Public Notification

A project notice was issued to nearby residents in May 2021. The notice informed residents that they will likely experience elevated levels of noise, dust, and general disruption during construction. Impacts to the enjoyment of outdoor spaces, particularly backyards along the channel corridor are anticipated. This project has been planned to commence in September in the City’s best efforts to avoid disruption to backyards during the summer. A pre-recorded presentation will be available on the City’s Park’s website and the ‘get-involved’ website. A second notice letter will be issued to nearby residents at least two weeks in advance of construction.

3.0 Financial Impact/Considerations

3.1 Tender Summary

Tenders for the Southwinds Channel (Tributary 12) Reconstruction and Multiuse Pathway Project were issued on July 20, 2021 and closed on August 11, 2021. Two contractors submitted tender prices as listed below, including 10% contingency, excluding HST.

Contractor	Company Name	Tender Price Submitted
1	J-AAR Excavating Limited	\$4,069,026.25
2	L82 Construction Ltd	\$5,930,709.59

All tenders have been checked by Environment and Infrastructure and Ecosystem Recovery Inc. No mathematical errors were found. The results of the tendering process indicate a competitive process. The tender estimate just prior to tender opening was \$4.63M, excluding HST.

3.2 Financial Implications

A portion of this project (13%) is funded by Development Charges as the project will help to facilitate future neighbourhood growth of approximately 116 hectares. The current available budget for this project \$3.58M. This project is approximately \$600,000 over the original budget due to the need to replace two existing culverts and increased consultant fees. The detailed design process recommended the replacement of the culverts to increase flow capacity and in consideration of the age/condition of the pipes. Therefore, additional budget has been added to the account to proceed with the project.

3.3 Next Steps

Construction is expected to begin at the end of September 2021 and is anticipated to be substantially completed in January 2022. Restoration and landscaping will take place in Spring 2022.

A figure highlighting the major components of the overall improvements is included as Appendix ‘B’ “Location Map”.

Conclusion

The Dingman Creek Southwinds Channel (Tributary 12) Reconstruction and Multiuse Pathway includes construction of reconstructed conveyance channel from the Malpass Road upstream to the west side of Colonel Talbot Road including full restoration, new habitat features, tree planting, and wetland augmentations. At this time, it is recommended that J-AAR Excavating Limited be awarded the construction contract for this project.

Prepared by: **Shawna Chambers, P.Eng., DPA, Division Manager
Stormwater Engineering**

Submitted by: **Scott Mathers, MPA, P. Eng., Director, Water,
Wastewater and Storm Water**

Recommended by: **Kelly Scherr, P. Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure**

Attachments: Appendix 'A' – Sources of Financing
Appendix 'B' – Location Map

CC: Steve Mollen
Gary McDonald
Alan Dunbar
Jason Davies
Jason Senese
Adrienne Sones
Chris Moon – Ecosystem Recovery Inc

Appendix "A"

#21151
August 31, 2021
(Award Contract)

Chair and Members
Civic Works Committee

RE: RFT21-88 Dingman Creek Southwinds (Tributary 12) Natural Channel Reconstruction and Flood Mitigation
(Subledger SWM20006)
Capital Project ESSWMNLT12 - SWM Facility - North Lambeth Tributary 12 Downstream Channel Reconstruction
Capital Project PD204318 - New Major Open Space Network
J-AAR Excavating Limited - \$4,069,026.25 (excluding HST)
Ecosystem Recovery Inc. - \$74,046.50 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance and Corporate Services confirms that the cost of this project cannot be accommodated within the financing available for it in the Capital Budget but can be accommodated with development charge funding and a drawdown from the Sewage Works Renewal Reserve Fund and that, subject to the adoption of the recommendations of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing for this project is:

Estimated Expenditures	Approved Budget	Additional Funding Requirement	Revised Budget	Committed To Date	This Submission	Balance for Future Work
ESSWMNLT12 - SWM Facility - North Lambeth Tributary 12 Downstream Channel Reconstruction						
Engineering	228,353	75,350	303,703	228,353	75,350	0
Construction	3,378,247	562,394	3,940,641	0	3,940,641	0
ESSWMNLT12 - Total	3,606,600	637,744	4,244,344	228,353	4,015,991	0
PD204318 - New Major Open Space Network						
Engineering	192,170	0	192,170	0	0	192,170
Construction	804,233	0	804,233	135,362	200,000	468,871
PD204318 - Total	996,403	0	996,403	135,362	200,000	661,041
Total Expenditures	\$4,603,003	\$637,744	\$5,240,747	\$363,715	\$4,215,991	\$661,041
Sources of Financing						
ESSWMNLT12 - SWM Facility - North Lambeth Tributary 12 Downstream Channel Reconstruction						
Drawdown from Sewage Works Renewal Reserve Fund	3,137,742	0	3,137,742	198,667	2,939,075	0
Additional drawdown from Sewage Works Renewal Reserve Fund (Note 2)	0	554,837	554,837	0	554,837	0
Drawdown from City Services - Stormwater Reserve Fund (Development Charges) (Note 1)	468,858	0	468,858	29,686	439,172	0
Additional drawdown from City Services - Stormwater Reserve Fund (Development Charges) (Note 1 and 3)	0	82,907	82,907	0	82,907	0
ESSWMNLT12 - Total	3,606,600	637,744	4,244,344	228,353	4,015,991	0
PD204318 - New Major Open Space Network						
Capital Levy	36,000	0	36,000	36,000	0	0
Debenture Quota (Note 4)	389,242	0	389,242	21,770	85,355	282,117
Drawdown from City Services - Parks and Recreation Reserve Fund (Development Charges) (Note 1)	571,161	0	571,161	77,592	114,645	378,924
PD204318 - Total	996,403	0	996,403	135,362	200,000	661,041
Total Financing	\$4,603,003	\$637,744	\$5,240,747	\$363,715	\$4,215,991	\$661,041

Appendix "A"

#21151
 August 31, 2021
 (Award Contract)

Chair and Members
 Civic Works Committee

RE: RFT21-88 Dingman Creek Southwinds (Tributary 12) Natural Channel Reconstruction and Flood Mitigation
 (Subledger SWM20006)
 Capital Project ESSWMNLT12 - SWM Facility - North Lambeth Tributary 12 Downstream Channel Reconstruction
 Capital Project PD204318 - New Major Open Space Network
 J-AAR Excavating Limited - \$4,069,026.25 (excluding HST)
 Ecosystem Recovery Inc. - \$74,046.50 (excluding HST)

Financial Note: J-AAR - Construction	ESSWMNLT12	PD204318	Total
Contract Price	\$3,872,485	\$196,541	\$4,069,026
Add: HST @13%	503,423	25,550	528,973
Total Contract Price Including Taxes	4,375,908	222,091	4,597,999
Less: HST Rebate	-435,267	-22,091	-457,358
Net Contract Price	<u>\$3,940,641</u>	<u>\$200,000</u>	<u>\$4,140,641</u>

Financial Note: Ecosystem - Engineering	ESSWMNLT12
Contract Price	\$74,047
Add: HST @13%	9,626
Total Contract Price Including Taxes	83,673
Less: HST Rebate	-8,323
Net Contract Price	<u>\$75,350</u>

Total Construction and Engineering	<u>\$4,215,991</u>
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Note 1: Development charges have been utilized in accordance with the underlying legislation and the approved 2019 Development Charges Background Study and the 2021 Development Charges Background Study Update.

Note 2: The additional funding requirement for this project is available as a drawdown from Sewage Works Renewal Reserve Fund. The uncommitted balance in the reserve fund will be approximately \$43.5 million with the approval of the project.

Note 3: The additional funding requirement for this project is available as a drawdown from City Services - Stormwater Reserve Fund. The uncommitted balance in the reserve fund will be approximately \$4.0 million with the approval of the project.

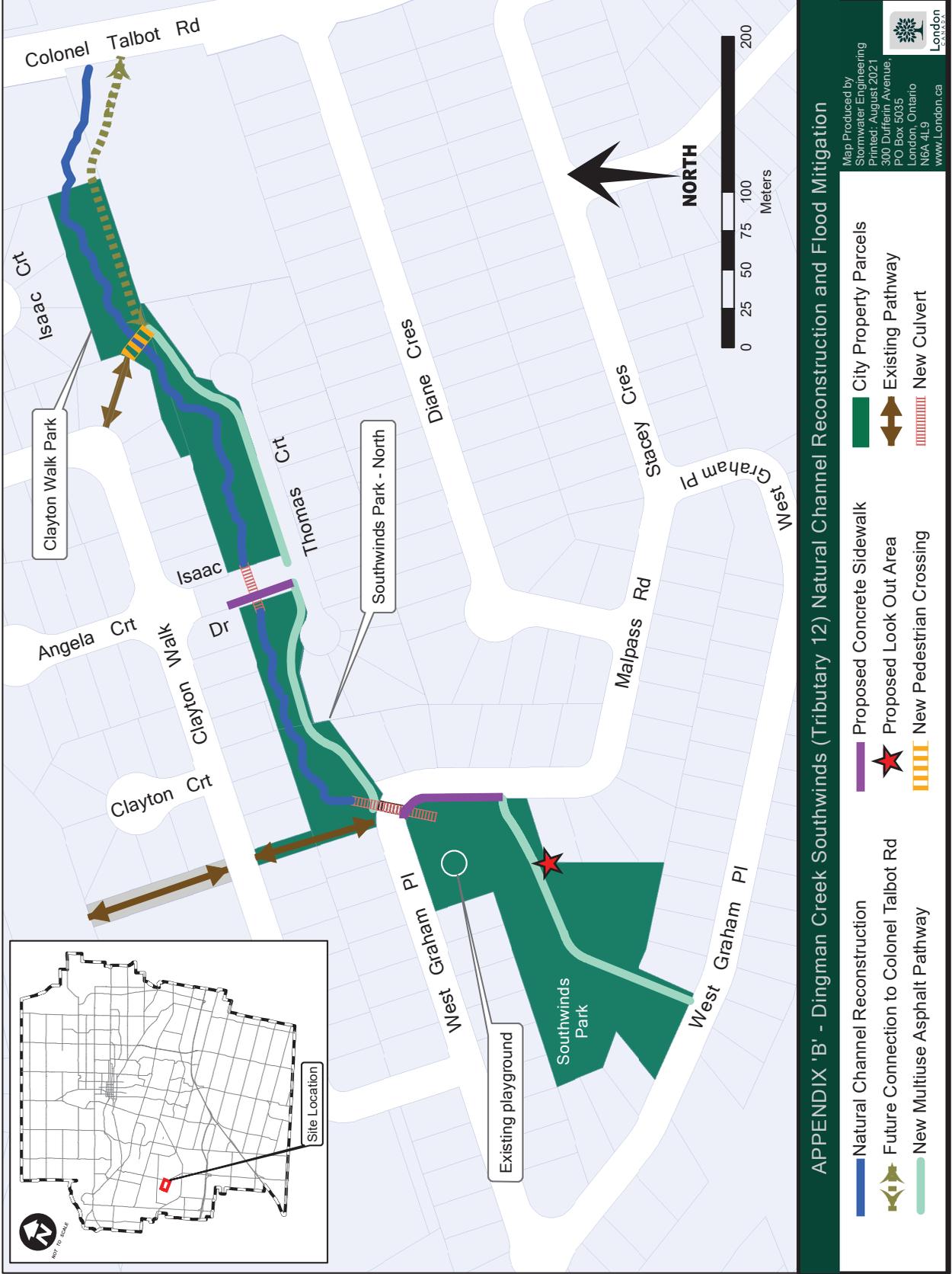
Note 4: Note to City Clerk: Administration hereby certifies that the estimated amounts payable in respect of this project does not exceed the annual financial debt and obligation limit for the Municipality from the Ministry of Municipal Affairs in accordance with the provisions of Ontario Regulation 403/02 made under the Municipal Act, and accordingly the City Clerk is hereby requested to prepare and introduce the necessary by-laws.

An authorizing by-law should be drafted to secure debenture financing for project PD204318 - New Major Open Space Network for the net amount to be debentured of \$389,242.00.

Kyle Murray
 Director, Financial Planning & Business Support

jg

Appendix 'B': Location Map



Report to Civic Works Committee

To: Chair and Members
Civic Works Committee
From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment and Infrastructure
Subject: Appointment of Consulting Engineer for Wastewater
Treatment Plant Condition Assessment and Asset Valuation
Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment and Infrastructure, the following actions **BE TAKEN** with respect to the Appointment of Consulting Engineer for the Condition Assessment and Asset Valuation of the City's Wastewater Treatment Plants:

- a) AECOM Canada Ltd. **BE APPOINTED** Consulting Engineers to complete the condition assessment, asset valuation and capital renewal forecasting assignment for the City's wastewater treatment plants, in the total amount of \$291,163.00, including contingency, excluding HST;
- b) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached, hereto, as Appendix 'A'.
- c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work;
- d) the approvals given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the project; and,
- e) the Mayor and the City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report recommends the appointment of AECOM Canada Ltd. to provide consulting engineering services for the condition assessment and asset valuation of each of the City of London's five wastewater treatment plants.

Context

The 2019 Corporate Asset Management Plan City identifies that the City's wastewater treatment facilities, including plants and pumping stations, have a replacement value of over \$1 billion with a projected annual infrastructure gap of \$13 million. The City of London recognizes the importance and necessity of asset management planning. The proposed work to conduct a condition assessment and asset valuation of the City's wastewater treatment plants will provide essential information to support the City's Corporate Asset Management program, as well as meeting the requirements of Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure, under the Infrastructure for Jobs and Prosperity Act, 2015, which came into force on January 1, 2018.

Linkage to the Corporate Strategic Plan

This recommendation supports the following 2019-2023 Strategic Plan areas of focus:

- Leading in Public Service:
 - Trusted, open, and accountable in service of our community;
 - Exceptional and valued customer service; and

- Leader in public service as an employer, a steward of public funds, and an innovator of service.
- Building a Sustainable City:
 - London's infrastructure is built, maintained, and operated to meet the long-term needs of our community.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Corporate Services Committee – July 26, 2021 – Corporate Asset Management Plan 2021 Review

Corporate Services Committee – September 8, 2020 – Corporate Asset Management Plan 2020 Review

Civic Works Committee – September 24, 2019 – Wastewater Treatment Operations Environmental Assessment Master Plan Study Initiation

Strategic Priorities and Policy Committee – August 26, 2019 – 2019 Corporate Asset Management Plan

Strategic Priorities and Policy Committee – April 8, 2019 – Corporate Asset Management Policy

2.0 Discussion and Considerations

2.1 Work Description

The City of London's Corporate Asset Management Plan describes current asset management practices and plans to secure the service of reliable infrastructure in the future and is required under Ontario Regulation (O.Reg 588/17): Asset Management Planning for Municipal Infrastructure. The work contemplated involves field surveys of the City's five wastewater treatment plants to assess the age and condition of the City's assets. The final deliverable is a report detailing the finding of the field work and identifying projected replacement timelines and cost.

This work enhances the current City practices for asset management by providing greater resolution for capital planning efforts, ensuring that the reported infrastructure gap more closely reflects the actual needs of London's Wastewater Treatment System. Because of the complexity of the wastewater facilities, this is a significant undertaking that will span into late 2022. Project delivery timelines are expected to align with provincial reporting requirements.

2.2 Procurement Process

An open procurement process was used to select the recommended consultant through a competitive Request for Proposal (RFP) process. This is in accordance with Section 15.2 (d) of the Procurement of Goods and Services Policy.

The evaluation of the proposals included both a technical and a cost component. The consultant was selected based on their methodology, approach, knowledge and understanding of project goals, their experience on directly related projects, project team members' qualifications and capacity, their implementation strategy and schedule, as well as cost.

3.0 Financial Impact/Considerations

3.1 Consulting Engineering Services

Three firms responded and submitted proposals for consulting engineering services associated with the wastewater treatment plant condition assessment, asset valuation and capital renewal forecasting assignment. The City's evaluation team determined that the proposal provided by AECOM Canada Ltd. provided the best overall value in the undertaking of this assignment.

AECOM's fees were the lowest of the successful proposals and were within the budget for the project. Overall, their proposal met all the key project requirements, and their staff are qualified to undertake the required engineering services.

AECOM Canada Ltd. submitted a proposal for \$291,163.00, which includes contingency (\$26,469.00), excluding HST.

In accordance with Section 15.2 (d) of the City of London's Procurement of Goods and Services Policy, civic administration is recommending that AECOM Canada Ltd. be awarded a contract to carry out this wastewater treatment plant condition assessment and asset valuation assignment.

Conclusion

AECOM Canada Ltd. have a demonstrated competence with condition assessments of municipal wastewater treatment infrastructure and have significant knowledge of the City's wastewater treatment plants. They submitted the highest value proposal in a competitive procurement process. It is recommended that AECOM Canada Ltd. be appointed the consulting engineers for this wastewater treatment plant condition assessment and asset valuation assignment, as it is in the best financial and technical interests of the City.

Prepared by: Kirby Oudekerk P.Eng.,
Division Manager, Wastewater Treatment Operations

Submitted by: Scott Mathers, MPA, P.Eng.,
Director, Water, Wastewater and Stormwater

Recommended by: Kelly Scherr, P. Eng., MBA, FEC
Deputy City Manager, Environment and Infrastructure

cc: Marcy McKillop, Environmental Services Engineer, Wastewater Treatment Operations
John Freeman, Manager III, Purchasing and Supply
Alan Dunbar, Manager III, Financial Planning and Policy
Zeina Nsair, Financial Business Administrator, Finance and Corporate Services
Geoff Smith, Procurement Officer

Appendix 'A' – Sources of Financing

Appendix "A"

#21145

August 31, 2021

(Appoint Consulting Engineers)

Chair and Members

Civic Works Committee

RE: Wastewater Treatment Plant Condition Assessment and Asset Valuation

(Subledger NT21ES15)

Capital Project ES5419 - Sewer System Asset Management Program

AECOM Canada Ltd. - \$291,163.00 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	2,004,107	1,707,820	296,287	0
Construction	16,352	16,352	0	0
City Related Expenses	100,000	94,459	0	5,541
Computer Equipment	641,941	82,789	0	559,152
Total Expenditures	\$2,762,400	\$1,901,420	\$296,287	\$564,693

Sources of Financing

Capital Sewer Rates	1,182,400	1,182,400	0	0
Drawdown from Sewage Works Renewal Reserve Fund	1,580,000	719,020	296,287	564,693
Total Financing	\$2,762,400	\$1,901,420	\$296,287	\$564,693

Financial Note:

Contract Price	\$291,163
Add: HST @13%	37,851
Total Contract Price Including Taxes	329,014
Less: HST Rebate	-32,727
Net Contract Price	\$296,287

Jason Davies
Manager of Financial Planning & Policy

jg

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment and Infrastructure

Subject: Appointment of Consulting Engineers – Stormwater
Management Facility Build-out Sediment Survey

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment and Infrastructure, the following actions **BE TAKEN** with respect to the Appointment of Consulting Engineers for the Stormwater Management Facility Build-out Sediment Survey project:

- (a) Ecosystem Recovery Inc. **BE APPOINTED** Consulting Engineers to complete the Stormwater Management Facility Build-out Sediment Survey project, in the total amount of \$273,600.00, including contingency, excluding HST;
- (b) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached, hereto, as Appendix 'A'.
- (c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work;
- (d) the approvals given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the project; and,
- (e) the Mayor and the City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

The purpose of this report is to appoint Ecosystem Recovery Inc. as the Consulting Engineers to complete the Stormwater Management Facility Build-out Sediment Survey project.

Context

In accordance with the City's Just-in-Time process, Regional Stormwater Management Facilities (SWM ponds) are constructed by the City in advance of subdivision development. These SWM ponds are funded by Development Charges to receive runoff from development lands during buildout conditions and currently accumulate sediment at much higher rates compared to ponds in established neighbourhoods.

Ultimately, the goal of this 3-year pilot project is to ensure that newly constructed SWM ponds are not overloaded with sediment during development build-out, maintenance costs are attributed to the upstream developers, and the City can get the greatest usable life out of new facilities prior to undergoing costly sediment removal works.

Linkage to the Corporate Strategic Plan

This recommendation supports the following 2019-2023 Strategic Plan area of focus:

- Building a Sustainable City
 - London constructs Regional Stormwater Management Facilities to support development of new subdivisions.

- London maintains Regional Stormwater Management Facilities to ensure they function correctly; providing quantity and quality controls to protect downstream waterways and the natural environment.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

- Civic Works Committee – July 29, 2012 – Development Charges Policy Review: Major Policies Covering Report

2.0 Discussion and Considerations

2.1 Discussion

When lands are developed, vegetation is removed and topsoil is stripped to facilitate construction of buildings, roads, and sewers. In efforts to mitigate the impacts, erosion and sediment control (E&SC) measures are required as part of development approval. The success of E&SC measures requires a continuous, multibarrier approach of planning, design, monitoring, adaptation, implementation, and maintenance. Inevitably, SWM ponds in proximity to active construction sites accumulate sediment at higher rates than SWM ponds in established neighbourhoods.

The City is responsible for the maintenance of SWM ponds in accordance with the Ministry of Environment, Conservation, and Parks (MECP) approval through an Environmental Compliance Approval (ECA). Sediment that accumulates in SWM ponds during upstream construction must be removed in accordance with ECA maintenance requirements. SWM ponds in established neighbourhoods have a 10 to 15-year sediment removal frequency. Each pond cleanout can cost from approximately \$200,000 to \$500,000, depending on the size of the SWM pond and how much sediment can accumulate. In developing neighbourhoods, a shorter clean out cycle is expected. The sediment loading to each pond can vary based on the amount of development in the area, soil conditions, topography, and the efficacy of on-site erosion and sediment controls. It is particularly important that E&SC measures are actively maintained to mitigate sediment loadings to each pond since it much more costly to remove sediment from the SWM pond than to prevent it from entering the pond.

Recognizing this issue, the City has begun requesting securities from upstream developments as part of the Subdivision Agreement to ensure that active developments contributing to the Regional SWM ponds cover the costs of sediment removal associated with the build-out period.

This 3-year pilot program will evaluate the effectiveness of E&SC measures implemented, the rate at which sediment is accumulating in the downstream SWM pond, estimate securities to address SWM pond maintenance during the build-out period, as well as look at ways to incentivize improvements to current E&SC practices. In essence, better E&SC measures would reduce sediment loadings to SWM ponds, thereby lowering the cost to remove sediment at each pond and lower costs to each development. Policies regarding funding for sediment removal for SWM ponds during buildout will also be reviewed during the next Development Charges Update process.

2.2 Work Description

Ecosystem Recovery Inc. will undertake an initial assessment of select SWM ponds across the City (listed in section 2.3 below) to determine baseline conditions. Then, semi-annual (Spring and Fall) surveys will be conducted for a period of three years (2021 – 2024) to assess the increase in sediment levels. Summary reports of inspection and survey results will be provided semi-annually. A final report summarizing the 3-year

program will be completed, including recommendations for E&SC protocols, SWM pond operations and maintenance, and the chemical analysis of sediment for each facility.

2.3 Locations

- | | |
|-----------------------------|-------------------------------|
| 1. Trib. C Riverbend SWMF F | 8. Fox Hollow SWM 2 |
| 2. Trib. C Riverbend SWMF G | 9. Fox Hollow SWM 3 |
| 3. Parker Phase 2 SWMF | 10. North Lambeth P9 |
| 4. Pincombe Drain SWMF 3 | 11. Dingman Tributary SWMF B4 |
| 5. Old Victoria SWMF 1 | 12. Wickerson SB |
| 6. Fox Hollow 1 North Cell | 13. Hyde Park 4 |
| 7. Fox Hollow 1 South Cell | |

The program includes capacity to allow for additional ponds constructed between now and 2024 to be added to the monitoring program.

2.4 Procurement Process

A two-staged procurement process was used to select the recommended consultant in accordance with Section 15.2(e) of the Procurement of Goods and Services Policy.

Stage one was an open, publicly advertised Request for Qualifications (RFQUAL21-04). The City received 20 submissions, which were evaluated by EESD and resulted in a short-list of engineering consulting firms.

Stage two was a competitive Request for Proposal (RFP21-43). Six consultant firms from the short-list were invited to submit a formal proposal for the Stormwater Management Facility Build-out Sediment Survey project. The City received two proposals, and the evaluation included both a technical and a cost component. The consultant was selected based on their knowledge and understanding of project goals, their experience on directly related projects, and their project team members' capacity, and qualifications.

2.5 Stakeholder Engagement

The results of the pilot program will be shared with the development community, including the London Development Institute and London Home Builders Association. The City plans to initiate a working group in the coming year to discuss improvements to E&SC measures citywide and make suitable updates to the City's design standards, policies, or by-laws.

3.0 Financial Impact/Considerations

Staff have reviewed the fee submissions in detail considering the hourly rates provided by each staff member and the time allocated to each project related task.

The fee of \$273,600.00 includes a 20% contingency and excludes HST.

Conclusion

The Stormwater Management Facility Build-out Sediment Survey pilot project will provide beneficial information on sediment loading rates in SWM ponds downstream of active developments. The data will primarily be used to approximate security amounts for developments but will also provide insight on implementation of E&SC measures during construction and incentivize improvement to current standards of E&SC methods. Ultimately, the goal is to ensure that newly constructed SWM ponds are not overloaded with sediment during development build-out, maintenance costs are attributed to the upstream developers and the City can get the greatest usable life out of new facilities prior to undergoing costly sediment removal works.

Ecosystem Recovery Inc. have demonstrated their competency and expertise with completing SWM pond sediment surveys for this type of project and it is recommended that they be appointed the consulting engineers for this project.

Prepared by **Shawna Chambers, P. Eng., DPA**
 Division Manager, Stormwater Engineering

Submitted by **Scott Mathers, MPA, P. Eng.**
 Director, Water, Wastewater, and Stormwater

Recommended by **Kelly Scherr, P. Eng., MBA, FEC**
 Deputy City Manager, Environment and Infrastructure

Attachments: Appendix 'A' – Sources of Financing

CC: Steve Mollen
Gary McDonald
Alan Dunbar
Jason Davies
Adrienne Sones
Mike Wallace – London Development Institute
Jared Zaifman – London Home Builders Association
Chris Moon – Ecosystem Recovery Inc.

Appendix "A"

#21143

August 31, 2021

(Appoint Consulting Engineers)

Chair and Members

Civic Works Committee

RE: Stormwater Management Facility Build-out Sediment Survey

(Subledger NT21ES14)

Capital Project ES5427 - Pre-Assumption Monitoring

Ecosystem Recovery Inc. - \$273,600.00 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	590,526	104,990	278,415	207,121
Construction	409,474	409,474	0	0
Total Expenditures	\$1,000,000	\$514,464	\$278,415	\$207,121

Sources of Financing

Drawdown from City Services - Stormwater Reserve Fund (Development Charges) (Note 1)	1,000,000	514,464	278,415	207,121
Total Financing	\$1,000,000	\$514,464	\$278,415	\$207,121

Financial Note:

Contract Price	\$273,600
Add: HST @13%	35,568
Total Contract Price Including Taxes	309,168
Less: HST Rebate	-30,753
Net Contract Price	\$278,415

Note 1: Development charges have been utilized in accordance with the underlying legislation and the approved 2019 Development Charges Background Study and the 2021 Development Charges Background Study Update.

Jason Davies
Manager of Financial Planning & Policy

jg

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Delegation of Authority to Approve Work at the Westminster
Wastewater Treatment Plant

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment and Infrastructure, the following actions **BE TAKEN** with respect to the current agreement with Trojan Technologies to use the Westminster Wastewater Treatment Plant:

- (a) The proposed By-law (attached) **BE INTRODUCED** at the Municipal Council Meeting of September 14, 2021 to delegate the authority to approve work within the Westminster Wastewater Treatment Plant site under an existing agreement with Trojan Technologies to the Deputy City Manager, Environment and Infrastructure or their delegate.

Executive Summary

Purpose

This report seeks a delegation of the authority to approve site modifications at the Westminster Wastewater Treatment Plant, considered under an existing agreement with Trojan Technologies, from City Council to the Deputy City Manager, Environment and Infrastructure, or their delegate.

Context

The City has entered into an agreement with Trojan Technologies for the use of the decommissioned Westminster Wastewater Treatment Plant facility, including their absolute discretion to modify as they see fit, subject to certain limitations and City approval. The agreement currently does not assign the authority to approve modifications to Civic Administration. By delegating the authority to the Deputy City Manager, Environment and Infrastructure, or her delegate, administrative burden on Council will be reduced.

Linkage to the Corporate Strategic Plan

The Agreement with Trojan Technologies supports the Corporate Strategic Plan through Growing our Economy - Increase partnerships that promote collaboration, innovation, and investment; and, Increase efficiency and consistency for administrative and regulatory processes.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Civic Works Committee, February 20, 2019 – Agreement Extension with Trojan Technologies for the use of the Decommissioned Westminster Wastewater Treatment Plant;

Civic Works Committee, April 17, 2018 - Southern Ontario Water Consortium London Wastewater Facility: Support for Local Water Research and Development

Civic Works Committee, September 22, 2014 - UV Disinfection Equipment Parts & Service-Single Source

Built and Natural Environment Committee Meeting, July 18, 2011 – An Agreement to Use the Decommissioned Westminster Wastewater Treatment Plant for Research and Development and Testing

2.0 Discussion and Considerations

The City's Westminster WWTP was acquired as part of the 1993 annexation and has since been decommissioned. The Westminster WWTP has been used by Trojan through an agreement with the City since 2011. The site provides them with a local facility they can modify as needed to test prototype equipment. The City retains ownership of the facility and Trojan is responsible for maintaining the site and buildings, with the City retaining the option to terminate the agreement with one year's notice. The City's interests are also protected through liability and insurance requirements already contained in the Agreement.

The agreement with Trojan was recently extended by Council to 2038 to allow them to justify making a larger investment in the site. Civic Administration recently received a request from Trojan to allow the construction of a structure within which to conduct testing throughout the winter. Upon review it was discovered that the wording of the Agreement did not specifically address the ownership, removal requirements or other practical considerations of the construction of a new building and while it does allow Trojan to make modifications to the site with written approval, the parties with the authority to issue that approval are not clearly identified, and so this authority is assumed to rest with London City Council.

To address this gap and avoid future burden to Council resulting from multiple requests for approval to modify the site, staff are requesting that Council, through the attached bylaw, delegate this authority to the Deputy Manager, Environment and Infrastructure, or their delegate. Civic Administration has a clear understanding of the City's use of that property both in the short and long term and are in a position to understand what is required of any proposed site modifications in order to ensure that the City's interests are not compromised.

Any written approval provided will also include any other conditions deemed appropriate, such as establishing ownership, requirements for removal, additional insurance, etc... to suit the specific request, and those additional requirements would be reviewed through the appropriate City Division prior to issuing any approvals.

3.0 Financial Impact/Considerations

There are no financial impacts to this delegation of authority.

Conclusion

The City's agreement with Trojan Technologies for the continued use of the Westminster Wastewater Treatment Plant site is intended to provide Trojan Technologies with the access and flexibility necessary to create a testing facility on the site that suits their needs on an ongoing basis. Civic Administration has a clear understanding of the potential uses of that facility, as well as legal and risk management requirements. Accordingly, Administration requests that the authority to approve proposed construction or other modifications at the Westminster Wastewater Treatment Plant site be delegated to the Deputy City Manager, Environment and Infrastructure, or their delegate, per the appended bylaw.

Prepared by: Kirby Oudekerk, P.Eng, Division Manager, Wastewater Treatment Operations

Submitted by: Scott Mathers, MPA, P. Eng., Director, Water, Wastewater and Stormwater

Recommended by: Kelly Scherr, P. Eng., MBA, FEC
Deputy City Manager, Environment and Infrastructure

CC: Aynsley Anderson, Solicitor II, Legal Services
Jason Wills, Manager III, Risk Management

Bill No. XXX
2021

By-law No. A.-XXXX-XXX

A by-law to amend by-law No. A.-7895-270 being “A by-law to authorize an Amending Agreement between The Corporation of the City of London and Trojan Technologies and to authorize the Mayor and City Clerk to execute the Agreement” to delegate the function of approving future site improvements and construction by Trojan Technologies to the Deputy City Manager, Environment and Infrastructure, or her delegate

WHEREAS section 5(3) of the *Municipal Act, 2001* S.O. 2001, c.25, as amended, provides that a municipal power shall be exercised by by-law;

AND WHEREAS section 9 of the *Municipal Act, 2001* provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act;

AND WHEREAS it is deemed expedient for The Corporation of the City of London (the “City”) to continue with the current amended agreement with Trojan Technologies Group ULC (the “Agreement”);

AND WHEREAS it is desirable to adopt a more efficient means of administering the Agreement on behalf of the City;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. By-Law No. A.-7895-270 being “A by-law to authorize an Amending Agreement between The Corporation of the City of London and Trojan Technologies and to authorize the Mayor and City Clerk to execute the Agreement” is hereby amended by adding the following provision after section 2 and renumbering the remaining sections as appropriate:

The authority to approve site improvements, construction or other modifications to the Westminster Wastewater Treatment Plant site by Trojan Technologies and their appointed contractors or sub-contractors is hereby delegated from Municipal Council to the Deputy City Manager, Environment and Infrastructure for the City of London, or her delegate.

2. This by-law shall come into force and effect on the day it is passed.

PASSED in Open Council on September 14, 2021

Ed Holder
Mayor

Catharine Saunders

City Clerk

First reading – September 14, 2021
Second reading – September 14, 2021
Third reading – September 14, 2021

Schedule A

THIS AMENDING AGREEMENT made this ____ day of _____.

BETWEEN:

THE CORPORATION OF THE CITY OF LONDON
(hereinafter the "City")

-and-

TROJAN TECHNOLOGIES
(hereinafter "Trojan")

WHEREAS the City owns and operates a water pollution control plant at Westminster Pollution Control Plant (the "Westminster PCP") located at 3225 Dingman Drive, London, Ontario.

AND WHEREAS Trojan has requested permission to maintain an ultra-violet testing facility at Westminster PCP (the "W-Facility") for the purposes of conducting research and development projects within the Westminster PCP and the City is agreeable to permitting Trojan to operate the W-Facility as set out herein rent-free, provided Trojan agrees to pay the utility and other costs associated with the operation;

AND WHEREAS the City and Trojan entered into an Agreement on August 31, 2011 ("Agreement") for a term of ten (10) years;

AND WHEREAS the parties wish to amend the Agreement to extend the term of the Agreement;

NOW THEREFORE THE AMENDING AGREEMENT WITNESSETH THAT in consideration of the mutual covenants and agreements set forth, the parties covenant and agree, to and with each other, as follows:

1. Sub article 1(b) of the Agreement is deleted and replaced with the following:

"Permit Trojan to operate the W-Facility at Westminster PCP for a term of twenty (20) years, commencing upon execution of this agreement (the "Term"). Trojan shall have unfettered discretion to cease operating the W-Facility any time prior to the expiration of the Term if it so chooses, in which case this agreement shall be terminated and all rights and obligations relating thereto shall be as if the said term had expired;"

IN WITNESS OF WHICH the parties have executed this agreement the day and year first above written.

The Corporation of the City of London

Trojan Technologies

Mayor

I have the authority to bind the Corporation

City Clerk

THIS AGREEMENT is made the 31st day of August, 2011.

BETWEEN:

The Corporation of the City of London
(hereinafter the "City")

and

Trojan Technologies
(hereinafter "Trojan")

WHEREAS the City owns and operates a water pollution control plant at Westminster Pollution Control Plant (the "Westminster PCP") located at 3225 Dingman Drive, London, Ontario.

AND WHEREAS Trojan has requested permission to maintain an ultra-violet testing facility at Westminster PCP (the "W-Facility") for the purpose of conducting research and development projects within the Westminster PCP and the City is agreeable to permitting Trojan to operate the W-Facility as set out herein rent-free, provided Trojan agrees to pay the utility and other costs associated with their operation;

NOW THEREFORE in consideration of the mutual covenants and agreements to be kept and performed on the part of the parties, the City and Trojan covenant and agree as follows:

1. The City hereby grants to Trojan an exclusive licence to occupy the Westminster PCP for the purposes hereinafter described. Subject to the terms and conditions herein, the City shall:
 - a. Permit Trojan in its absolute discretion to modify Westminster PCP for the W-Facility within the boundaries of Westminster PCP as shown in figure 1 on Schedule A; as it sees fit; including without limitation to upgrade the main electrical feed to building; install new electrical distribution service for Trojan's testing requirements; install waterline(s); sewer-line(s) and allow access to the current building for Trojan usage;
 - b. Permit Trojan to operate the W-Facility at Westminster PCP for a term of (10) years, commencing upon execution of this agreement (the "Term"). Trojan shall have unfettered discretion to cease operating the W-Facility any time prior to the expiration of the Term if it so chooses, in which case this agreement shall be terminated and all rights and obligations relating thereto shall be as if the said term had expired;
 - c. Invoice Trojan monthly for actual hydro usage in relation to W-Facility;
 - d. Grant permission for Trojan to access appropriate drainage on City property to dispose of test water, from time to time, as necessary;
 - e. Provide a minimum of 1 year notice to Trojan if the W-Facility needs to be removed from the Westminster PCP for any reason, provided such notice shall not be given before January 1, 2014;
 - f. Permit Trojan to change locks at Westminster so Trojan is the only key holder for the site and grant Trojan an exclusive access to the Westminster PCP; notify Trojan in the event the City requires site access and have Trojan employee to accompany City employee during any such access
 - g. Grant to Trojan the rights and benefits set out above without requiring rent or other compensation other than that which is specifically set out herein.
2. In exercising its rights under the licence hereby granted, Trojan shall:
 - a. Install a new main hydro meter and assume all charges for hydro for Westminster PCP as facility currently operates only using electricity to operate sump pump, 120 volt outlets, overhead lighting and heating;

- b. Promptly pay for actual hydro usage related to the W-Facility (invoiced monthly);
 - c. On expiry of this agreement, remove all of the test equipment and associated infrastructure promptly;
 - d. Respond in timely manner to accommodate City requests to visit site;
 - e. Provide, free of charge, up to \$30,000 worth of personnel hours annually from its service department for maintenance of City's ultra-violet disinfection equipment;
 - f. Permit the City to directly purchase parts at 30% discount off Trojan's list price during the Term of this Agreement;
 - g. At its own expense, obtain and maintain during the term of this Agreement, and promptly provide evidence of:
 - i. Comprehensive general liability (CGL) on an occurrence basis for an amount not less than Five Million (\$5,000,000) dollars and shall include City as an additional insured with respect to Trojan's operations, acts and omissions relating to its obligations under this Agreement, including without limitation the supply, care, handling, use or disposal of any raw material brought by Trojan onto the Westminster PCP site; such CGL insurance policy to include non-owned automobile liability, personal injury, broad form property damage, contractual liability, owners' and contractors' protective, products and completed operations, contingent employers liability, cross liability and severability of interest clauses;
 - ii. Automobile liability insurance for an amount not less than Two Million (\$2,000,000) dollars on forms meeting statutory requirements covering all owned or leased vehicles used in any manner in connection with the performance of the terms of this Agreement.
 - iii. The policies shown above will not be cancelled or permitted to lapse unless the insurer or Trojan notifies the City in writing at least thirty (30) days prior to the effective date of cancellation or expiry. London reserves the right to request such higher limits of insurance or other types of policies appropriate to the work as the City may reasonably require.
 - iv. Trojan agrees to provide evidence of continued insurance from insurer(s) licensed to operate in Canada once annually in a form acceptable to the City at each policy renewal date for the duration of the contract.
3. The Parties covenant and agree that the licence hereby granted shall also be subject to the following terms and conditions
- a. Trojan accepts the Westminster PCP in an "as is" condition as of the date of this Agreement and shall not call upon the City to do or pay for any work or supply any equipment to make the Westminster PCP more suitable for the proposed use by Trojan.
 - b. Trojan shall use the Westminster PCP only for the purposes as set out in the agreement;
 - c. Trojan shall maintain the appearance of the Westminster PCP in a neat, clean and well-kept manner and ensure that no rubbish, refuse or objectionable material accumulates in or about the Westminster PCP;
 - d. Trojan shall not bring onto the Westminster PCP or store on the Westminster PCP dangerous materials, including but not limited to flammable or explosive materials, except in quantities required for the purpose of conducting research and development projects

within the W-Facility, or with the prior written permission of the City;

- e. Except as permitted by this Agreement, Trojan shall make no alteration to the Westminster PCP, including structural changes, the removal of trees or grade changes, and not to erect any building or structures on the Westminster PCP without the City's prior written permission:
- f. Trojan shall restore the Westminster PCP at its sole expense at the end of the term to the satisfaction of the City, acting reasonably, normal wear and tear excepted, and in the event such restoration is reasonably required but not made by Trojan, the City may do so at the expense of Trojan and recover the expense by any legal means available;
- g. Trojan shall comply with all federal, provincial and municipal laws, rules, regulations and by-laws:
- h. If Trojan defaults in performing any of its obligations under this Agreement, the City may immediately terminate the licence granted under this Agreement immediately. Any waiver by the City of any breach by Trojan of any provisions of this Agreement shall be without prejudice to the exercise by the City of all or any of its rights or remedies in respect of any continuance or repetition of such breach.
- i. Subject to Section 1(e) hereof, either party may terminate this agreement upon 1 year's written notice for any reason. In the event of termination of this agreement, the City shall have no further obligations to Trojan. Upon expiry or other termination of this Agreement Trojan will no longer be required to pay for hydro or any other charges at W-Facility, upon Trojan's vacating the W-Facility and paying to the City any amounts previously invoiced but unpaid in relation to hydro, Trojan shall owe no further obligations to the City hereunder with respect to the W-Facility.
- j. The City reserves the right to inspect the Westminster PCP during regular business hours to ensure compliance with the terms of this Agreement, any Federal or Provincial Legislation, or municipal by-law. Special Conditions may be attached to this agreement as Schedule "B", and Trojan agrees to those Special Conditions.
- k. Any notice required to be given to the City or Trojan under this Agreement shall be sufficiently given if delivered or mailed postage prepaid to the addresses below. Such notice shall be deemed to have been received on the date of its delivery or in the case of mailing, three (3) business days after it was delivered to the post office.

City's Address:
City Engineer
The Corporation of the City of London
300 Dufferin Avenue
P.O. Box 5035
London, ON N6A 4L9

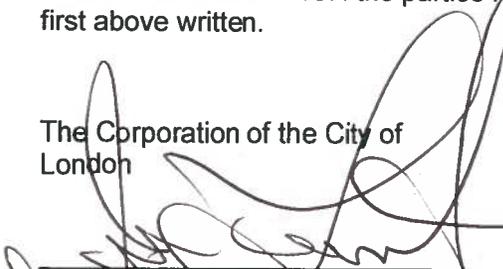
Trojan's Address:
Vice-President, Engineering
Trojan Technologies
3020 Gore Road
London, ON
N5V 4T7

- i. Amendments to the terms of this agreement must approved by both parties in writing.
- m. The W-Facility together with all associated Trojan infrastructure and equipment, including but not limited to UV disinfection equipment, piping, pumps, flow meters, valves, gates, building covering structure and all electrical wiring and conduits from main plant are the property of Trojan. Trojan shall have the right to remove all of its equipment and infrastructure at any time.
- n. Nothing herein contained shall be deemed or construed as creating a relationship of principal and agent, lessor and lessee, a partnership or a joint venture between the parties, nor shall any other action or provision contained herein be deemed to create any relationship between the parties other than an arm's length business transaction. Trojan is an independent contractor.
- o. Trojan shall defend, indemnify and hold harmless the City and its members of council, officers, employees and agents from and against claims, loss, liability, suits and damages for personal injury or damage to property (the "Loss"), including fees caused in whole or in part by the negligent acts, errors or omissions (hereinafter "Wrongful Act") of Trojan or anyone for whose acts it is responsible at law.
- p. In the event that both Trojan and the City have each committed a Wrongful Act which contributes to the aforementioned Loss, then each party shall be responsible for the Loss in the same proportion as that party's contribution to the Loss.
- q. In the event of legal action brought by either party against the other to enforce any of the obligations hereunder or arising out of any dispute concerning the terms and conditions hereby created, the unsuccessful party shall pay the prevailing party such reasonable amount for fees, costs and expenses, including attorney's fees, as may be set by the court – or the actual costs incurred by the prevailing party if the dispute does not reach final judgment.
- r. This agreement shall enure to the benefit of and be binding upon the parties, their successors and assigns. This is the entire agreement.
- s. This agreement is governed by and will be construed in accordance with the laws of the Province of Ontario, Canada and each party hereby attorns to the non-exclusive jurisdiction of the courts of Ontario with respect to any claims or disputes arising under, out of or in connection with this agreement or the subject matter hereof.

IN WITNESS OF WHICH the parties have executed this agreement the day and year first above written.

The Corporation of the City of London

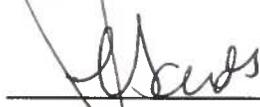
Trojan Technologies



 Joe Fontana, Mayor



 I have the authority to bind the corporation



 Catharine Saunders, City Clerk

CITY SOLICITOR'S OFFICE CITY OF LONDON	
DATE: <i>Aug 12/2011</i>	
APPROVED AS TO FORM ONLY	

SCHEDULE A



Figure 1. Municipal Address 3225 Dingman DR, London, ON

Roll number 0800040156000000

CON 4 E PT LOT 17

REG 4.02AC 726.00FR D

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Appointment of Consulting Engineers – Culvert Inventory and Condition Assessment (RFP21-52) – Irregular Result

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions **BE TAKEN** with respect to the Appointment of Consulting Engineer for the Culvert Inventory and Condition Assessment project:

- (a) Stantec Consulting Ltd. **BE APPOINTED** Consulting Engineers to complete the Culvert Inventory and Condition Assessment, in the total amount of \$119,532.48, including contingency, excluding HST in accordance with Section 19.4 (c) of the Procurement of Goods and Services Policy;
- (b) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached, hereto, as Appendix 'A'.
- (c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work;
- (d) the approvals given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the project; and,
- (e) the Mayor and the City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

The purpose of this report is to appoint Stantec Consulting Ltd. as the Consulting Engineers to complete the Culvert Inventory and Condition Assessment project. With only one bid received through the competitive process, award of this assignment is subject to review per Section 19.4 of the Procurement of Goods and Services Policy.

Context

In January 2018 the Province of Ontario enacted O.Reg 588/17 *Asset Management Planning for Municipal Infrastructure* requiring specific content for Asset Management Plans that builds upon the *Building Together Guide*. The timelines of the mandated regulation require that a strategic asset management policy be initiated by July 1, 2019, and requires that an analysis of the municipality's risks, asset performance, lifecycle management, and financial strategy to achieve the municipality's proposed levels of service be completed by July 1, 2025. To support the City's Corporate Asset Management division in achieving this regulation and to inform the next iteration of the City's Asset Management Plan, this assignment will create an updated inventory and condition assessment of critical culverts City-wide.

Linkage to the Corporate Strategic Plan

This recommendation supports the following 2019-2023 Strategic Plan area of focus:

Building a Sustainable City

- Informing the City's Asset Management Plan to manage the infrastructure gap.

- Maintaining infrastructure to protect and enhance downstream waterways and the natural environment.
- Improving London's resiliency to respond to potential future challenges, such as climate change impacts, through repair/replacement of aging infrastructure.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

- Strategic Priorities and Policy Committee – August 26, 2019 – 2019 Corporate Asset Management Plan

2.0 Discussion and Considerations

2.1 Discussion

A culvert is a pipe that conveys water under road crossings, driveways, or railways. Culverts appear in a variety of locations across the city, from large circular or box culverts under roads, to small diameter culverts under driveways. Culverts are located on public lands (e.g., within the City right-of-way, parkland, etc.) and on private property. Currently, there is no comprehensive list of municipally owned culverts across the city.

The City's Transportation Planning & Design division currently reviews culverts greater than 1.8 metres in span/diameter as part of a biennial structural inspection program. The City has limited available information on culverts smaller than 1.8 metres span/diameter; therefore, the focus of the Culvert Inventory and Condition Assessment project will be on completing a City-wide review to locate and evaluate culverts that are not currently assessed under the Transportation program and have a higher risk of creating flooding if they are to fail.

To define the scope of work for this project, staff undertook a high-level desktop review of existing data and waterways mapping. This resulted in the identification of approximately 183 waterway culverts and 110 railway culverts (i.e., culverts beneath CN or CP rail tracks) as the most critical culverts to be assessed. A map showing the anticipated location of the waterway and railway culverts to be assessed under this program has been provided in Appendix 'B'.

2.2 Work Description

Stantec Consulting Ltd. (Stantec) will review existing information on City culverts, develop a field assessment tool with a repeatable methodology, and determine a process to systematically evaluate all identified culverts city-wide. Following the field assessment, Stantec will provide the data to the City in a format compatible with our GIS systems for integration into the existing asset database. Finally, a report summarizing the data collected, condition rating of the infrastructure, and development of a 20-year workplan for repair/replacement will be provided to support the City's forthcoming asset management update.

2.3 Procurement Process

A two-staged procurement process was used to select the recommended consultant in accordance with Section 15.2(e) of the Procurement of Goods and Services Policy.

Stage one was an open, publicly advertised Request for Qualifications (RFQUAL20-19). The City received 19 submissions, which were evaluated by EESD and resulted in a short-list of engineering consulting firms.

Stage two was a competitive Request for Proposal (RFP21-52) exercise including both a technical and cost component. Six consultant firms were invited to submit a formal

proposal to undertake the Culvert Inventory and Condition Assessment project; however, only one (1) bid was received. Evaluation of the single bid is subject to Section 19.4 of the Procurement of Goods and Services Policy.

Staff have reviewed the fee submission in detail considering the hourly rates provided by each staff member and the time allocated to each project related task. Stantec is a capable firm that has provided a suitable work plan and a fair value to complete this assignment, all in consideration of projects of similar scope and scale that have been through competitive bid processes over the past year. As such, staff recommend proceeding with the single bid.

Since the bid amount exceeds \$100,000 and is an irregular result (i.e., specifications of the bid cannot be met by two or more suppliers); to award the consultant appointment to Stantec Consulting Ltd. Council approval is required, per Section 8.10.b of the Procurement of Goods and Services Policy.

3.0 Financial Impact/Considerations

There is budget available in the annual program per the source of financing attached as Appendix A.

Conclusion

The Culvert Inventory and Condition Assessment project will help close a gap within the City's asset records and provide a 20-year needs driven workplan to prioritize replacement/repairs. Ultimately, the project supports the improved maintenance of infrastructure that contributes to the protection and enhancement of downstream waterways and the natural environment.

Stantec Consulting Ltd. have demonstrated their competency and expertise with completing infrastructure assessments of this nature and it is recommended that they be appointed the consulting engineers for this project.

Prepared by: **Shawna Chambers, P.Eng., DPA**
Division Manager, Stormwater Engineering

Submitted by: **Scott Mathers, P. Eng., MPA**
Director, Water, Wastewater and Stormwater

Recommended by: **Kelly Scherr, P. Eng., MBA, FEC**
Deputy City Manager, Environment & Infrastructure

Attachments: Appendix 'A' – Sources of Financing
Appendix 'B' - Map of Anticipated Waterway and Railway
Culvert Locations

CC: Steve Mollon
Gary McDonald
Alan Dunbar
Jason Davies
Stantec Consulting Ltd.
Monica McVicar

Appendix "A"

#21142

August 31, 2021

(Appoint Consulting Engineers)

Chair and Members

Civic Works Committee

RE: Culvert Inventory and Condition Assessment (RFP21-52) - Irregular Result

(Subledger NT21ES13)

Capital Project ES242820 - Waterways and Erosion Management

Stantec Consulting Ltd. - \$119,532.48 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	300,415	63,264	121,636	115,515
Total Expenditures	\$300,415	\$63,264	\$121,636	\$115,515

Sources of Financing

Capital Sewer Rates	75,000	63,264	11,736	0
Drawdown from Sewage Works Renewal Reserve Fund	225,415	0	109,900	115,515
Total Financing	\$300,415	\$63,264	\$121,636	\$115,515

Financial Note:

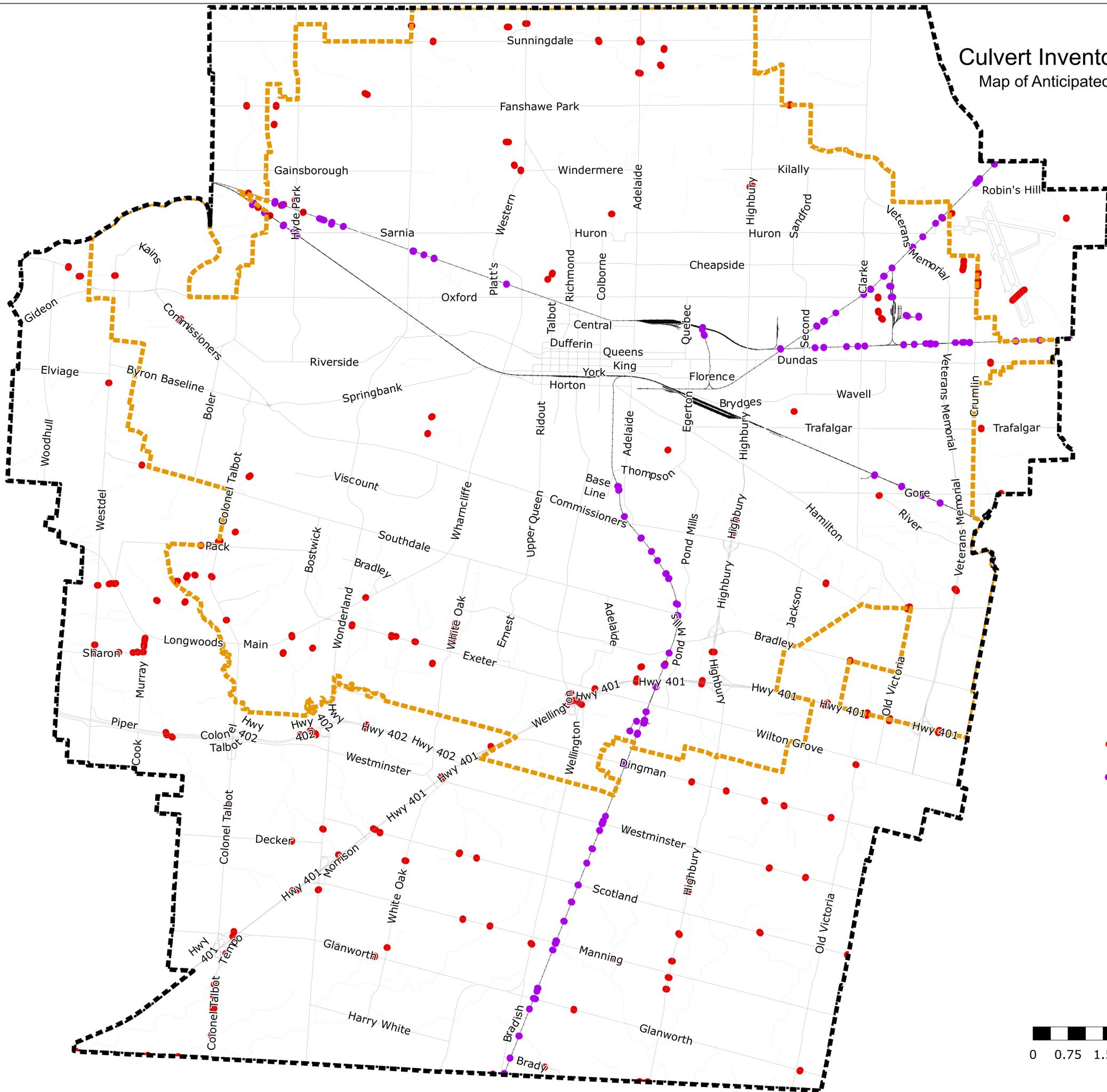
Contract Price	\$119,532
Add: HST @13%	15,539
Total Contract Price Including Taxes	135,071
Less: HST Rebate	-13,435
Net Contract Price	\$121,636

Jason Davies
Manager of Financial Planning & Policy

jg

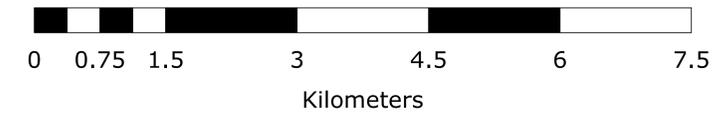
Appendix B Culvert Inventory and Condition Assessments

Map of Anticipated Waterway and Railway Culvert Locations



Legend

- Waterways Culvert
- Railway Culvert
- Railways
- Waterways
- Roads
- Urban Growth Boundary
- City Boundary



Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Increase Contract Award: West London Dyke Reapplication of
Anti-Graffiti Coating to Phases 1 and 2

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions **BE TAKEN** with respect to increasing the existing contract for Phase 7 West London Dyke project:

- (a) The Upper Thames River Conservation Authority **BE AUTHORIZED** to carry out added works for Phase 7 of the West London Dyke reconstruction by increasing the City's cost share by \$219,114.38, including contingency, excluding HST;
- (b) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached, hereto, as Appendix 'A'.
- (c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work;
- (d) the approvals given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the project; and,
- (e) the Mayor and the City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report seeks Council approval to increase the City's share of the West London Dyke Phase 7 construction contract, administered by the Upper Thames River Conservation Authority, to allow for the reapplication of anti-graffiti coating to Phases 1 and 2.

Context

The City of London owns flood and erosion control structures throughout the watershed that are maintained by the Upper Thames River Conservation Authority (UTRCA) under the terms of a Memorandum of Understanding (MOU). The MOU defines a collaborative approach to operation and maintenance and capital improvements to the flood and erosion control structures in which the City and UTRCA share an interest.

The most recent reconstruction of West London Dyke Phase 7, from St. Patrick Street to north of Oxford Street is currently under construction and should be completed by late fall with some landscaping and amenity features to be added in 2022. Ro-buck Contracting Ltd. is undertaking this work under a contract administered by the UTRCA with a funding share provided by the City. Part of this contract includes the application of an anti-graffiti coating to protect the wall, which is the same product used from Phases 4 and onward. This report seeks approval to increase the City's funding share to allow for the Phase 7 contractor to clean and reapply a new anti-graffiti coating to Phases 1 and 2 where the coating has degraded beyond its useful life.

Linkage to the Corporate Strategic Plan

This project supports the 2019-2023 Strategic Plan through the following: Building a Sustainable City, Build infrastructure to support future development and protect the environment, Improve London's resiliency to respond to future challenges, and Maintain or increase current levels of service; manage the infrastructure gap for all assets.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Civic Works Committee – November 17, 2020 – West London Dyke – Phase 7 and Fanshawe Dam Safety Study PO Boost

Civic Works Committee – July 14, 2020 – Upper Thames Conservation Authority and City of London Flood Protection Projects: West London Dyke Phase 7

Civic Works Committee – March 10, 2020 – Upper Thames River Conservation Authority and City of London Flood Protection Projects

Civic Works Committee – August 12, 2019 – Upper Thames River Conservation Authority and City of London Flood Protection Projects

Civic Works Committee – June 18, 2018 – Upper Thames River Conservation Authority and City of London Flood Protection Projects

Civic Works Committee – July 17, 2017 – Water and Erosion Control Infrastructure (WECI) Program: 2017 Provincially Approved Project Funding (Sole Sourced)

Civic Works Committee – August 22, 2016 – Water and Erosion Control Infrastructure (WECI) Program: 2016 Provincially Approved Project Funding (Sole Sourced)

Civic Works Committee – February 2, 2016 – West London Dyke Master Repair Plan Municipal Class Environmental Assessment Study

Strategic Priorities and Policy Committee – January 28, 2016 – Downtown Infrastructure Planning and Coordination

2.0 Discussion and Considerations

2.1 Discussion

The West London Dyke is a prominent feature of downtown London that runs adjacent to the Thames River and west of Harris Park. One of the recommendations of the 2007 West London Dyke Master Plan was to use vandal-resistant furnishing and products whenever possible to reduce the occurrences of vandalism within the area. To support this recommendation, each phase of the West London Dyke reconstruction has had anti-graffiti coating applied to the wall. By applying this coating, it allows graffiti to be easily removed with a pressure washer instead of using high pressure soda or sand blasting which can be costly and time consuming.

Phases 1 through 3 of the West London Dyke were constructed in 2007, 2011, and 2016, respectively. The coating applied to Phases 1 and 2 has come to the end of its design life, with Phase 3 needing replacement in a few years. As shown in Figure 1, the product is heavily degraded and is peeling from the block wall with some sections completely removed due to exposure to the elements and high flow events over the years. Figure 2 illustrates that the coating on Phase 3 is in reasonably good condition.



Figure 1: Peeling and degraded anti-graffiti coating from Phase 1 and Phase 2



Figure 2: Phase 3 anti-graffiti coating

Given that there is life remaining in the Phase 3 coating, it is recommended to leave this section and reapply the superior coating during a later phase of West London Dyke if required.

It is noted that during construction of Phases 1-3, the anti-graffiti coating was selected as one of the best available that could be exposed to submerged conditions. Since then, technology improvements along with cost reductions has allowed for other products to be considered. As such, Phases 4 and onward have used a new product that has provided better adherence to the block wall. Therefore, it is anticipated that the coating applied to Phases 4 onwards will have longer life and will not need to be replaced at the same frequency.

3.0 Financial Impact/Considerations

At this time, it is proposed that the original graffiti coating system for Phases 1 and 2 be removed via glass-blasting and replaced with the superior product, which includes full wall coverages and top coping stones. Prior to this work commencing, vegetation and brush removal will be required along the base of the wall. A cost of \$219,114 has been provided by Ro-buck Contracting Ltd. to complete this work. Staff have reviewed Robuck's fees and hours and have deemed the quote to represent a fair and consistent price with previously completed coating work. The cost to reapply the coating for Phase 3 will be incorporated into subsequent construction phases of the West London Dyke.

Conclusion

It is recommended that the City's share to the West London Dyke Phase 7 construction contract that is administered by UTRCA, be increased to replace the anti-graffiti coating for Phases 1 and 2 of the West London Dyke.

Prepared by: **Shawna Chambers, P.Eng., DPA, Division Manager,
Stormwater Engineering**

Submitted by: **Scott Mathers, MPA, P. Eng., Director, Water,
Wastewater and Storm Water**

Recommended by: **Kelly Scherr, P. Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure**

Attachments: Appendix 'A' – Source of Financing
Appendix 'B' – West London Dyke Phase Map

CC: John Freeman
Gary MacDonald
Alan Dunbar
Jason Davies
Geoff Smith
Monica McVicar

Appendix "A"

#21141

August 31, 2021

(Increase Contract Award)

Chair and Members

Civic Works Committee

RE: West London Dyke Reapplication of Anti-Graffiti Coating to Phases 1 and 2

(Subledger SWM20001)

Capital Project ES2474 - UTRCA Remediating Flood Control Works within City Limits

Upper Thames River Conservation Authority - \$219,114.38 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	6,485,357	6,262,386	222,971	0
Construction	9,892,742	6,101,580	0	3,791,162
City Related Expenses	80,859	80,859	0	0
Total Expenditures	\$16,458,958	\$12,444,825	\$222,971	\$3,791,162

Sources of Financing

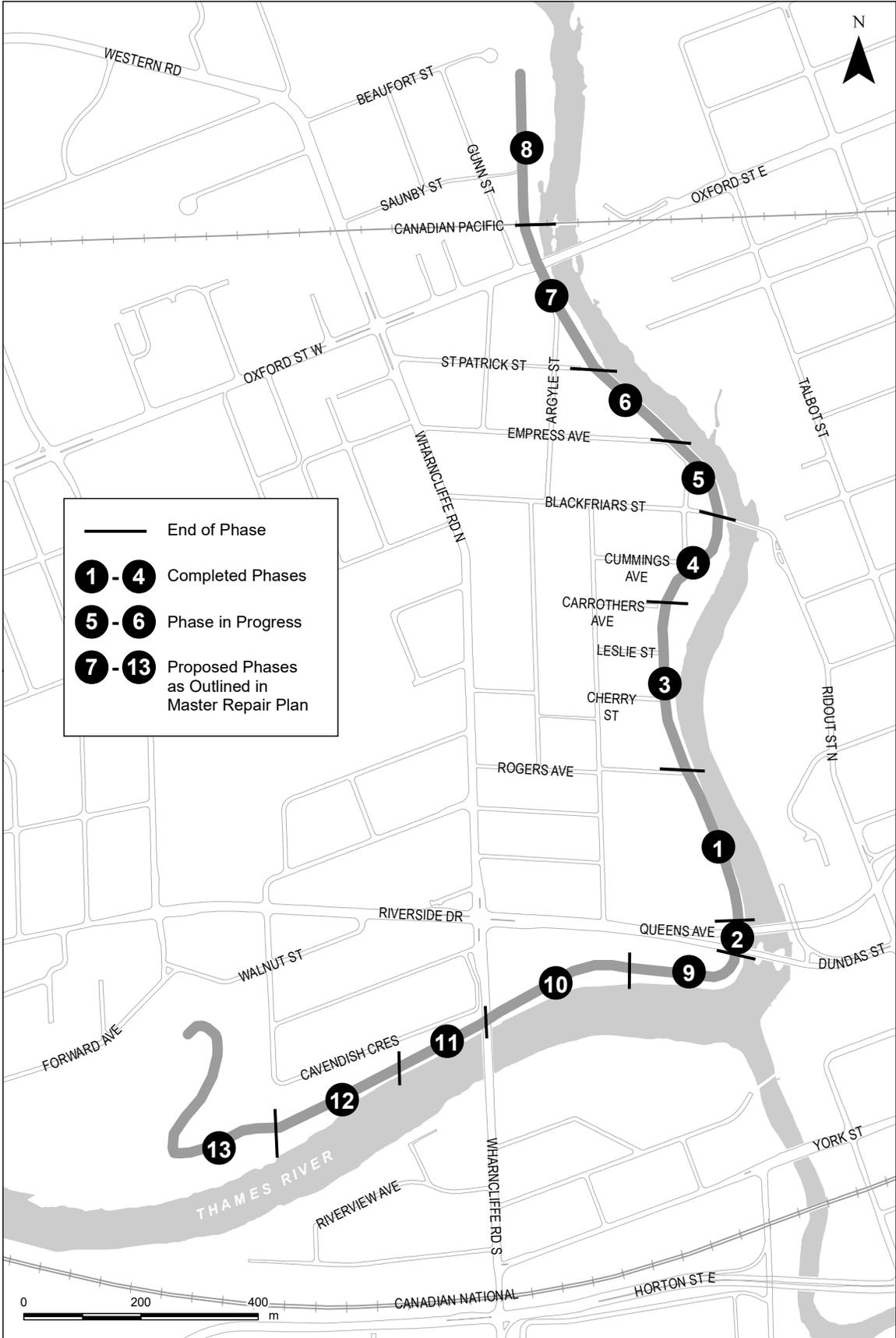
Capital Sewer Rates	1,000,000	1,000,000	0	0
Debenture By-law No. W.-5610-251	2,750,000	0	0	2,750,000
Drawdown from Sewage Works Renewal Reserve Fund	12,657,213	11,393,080	222,971	1,041,162
Other Contributions	51,745	51,745	0	0
Total Financing	\$16,458,958	\$12,444,825	\$222,971	\$3,791,162

Financial Note:

Contract Price	\$219,114
Add: HST @13%	28,485
Total Contract Price Including Taxes	247,599
Less: HST Rebate	-24,628
Net Contract Price	\$222,971

Jason Davies
Manager of Financial Planning & Policy

jg



Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Appointment of Consulting Engineers - McNay Drain
Rehabilitation and Construction Administration

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions **BE TAKEN** with respect to the Appointment of Consulting Engineers for the McNay Drain Rehabilitation and Contract Administration project:

- (a) Ecosystem Recovery Inc. **BE APPOINTED** Consulting Engineers to complete the McNay Drain Rehabilitation and Contract Administration, in the total amount of \$387,485, including contingency, excluding HST;
- (b) the financing for this project **BE APPROVED** as set out in the Sources of Financing Report attached, hereto, as Appendix 'A'.
- (c) the Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this work;
- (d) the approvals given, herein, **BE CONDITIONAL** upon the Corporation entering into a formal contract with the consultant for the project; and,
- (e) the Mayor and the City Clerk **BE AUTHORIZED** to execute any contract or other documents, if required, to give effect to these recommendations.

Executive Summary

Purpose

This report seeks the approval to appoint Ecosystem Recovery Inc. as the Consulting Engineers to complete the detailed design and contract administration for the McNay Drain Rehabilitation project.

Context

In 2018, the *London Urban Waterways Study* identified erosion sites along several tributaries within the city limits. The "ES2478 Waterways Restoration" project account was established in the 2020 budget to design and rehabilitate priority channels within the City. The McNay Drain was identified as a priority site due to the deteriorated conditions of the erosion controls within the structured channel.

The overall goals of the rehabilitation project are to remove the accumulated sediment and debris from the existing open channel, repair/replace failing erosion control structures, provide beaver management solutions to minimize blockages in the future, and revegetate the channel with native species and beaver resistant trees.

Linkage to the Corporate Strategic Plan

This project supports the 2019-2023 Strategic Plan through the following: Building a Sustainable City, Build infrastructure to support future development and protect the environment.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Clean Water and Wastewater Fund – Appointment of Consulting Engineers for the 2017 Projects for Stormwater Engineering. Civic Works Committee. June 7, 2017.

2.0 Discussion and Considerations

2.1 Discussion

In 2018, the *London Urban Waterways Study* was completed by Ecosystem Recovery Inc. identifying erosion sites along several tributaries within the city limits. The McNay Drain was identified as a priority site due to the deteriorated conditions of the erosion controls within the structured channel. The McNay Drain project limits span approximately one kilometer in length, from the outlet in Ed Blake Park to north of Kipps Lane, ending at the confluence with the Thames River. See Appendix 'B' for location map.

The existing drain has three distinct sections: (1) the outlet into Ed Blake Park, (2) the natural open channel from Barker Street to Kipps Lane and (3) the structural open channel north of Kipps Lane. The structural channel is comprised of armourstone and gabion retaining walls, broken concrete ramps, and gabion weirs. In its current state, there exists an accumulation of silt and sediment at the outlet in Ed Blake Park. Furthermore, due to significant beaver activity within the area, an accumulation of brush and woody debris collects at the culverts at Barker Street and at Kipps Lane. These blockages inhibit the flow of water to the outlet and must be frequently managed by the City's Sewer Operations team.

This section of the channel was rehabilitated by the City in 2007 (15 years ago), however, the 2018 study identified that the gabion baskets which line the channel bed and banks are failing, the gabion-weir structures are corroded and empty, there exists significant erosion along the valley slopes that could have negative impacts to private property and the channel is backwatered due to significant beaver activity. Furthermore, the sections of channel north of Kipps Lane require cleanout of silt, sediment, and debris as well as removal of brush in order to ensure adequate stormwater flow conveyance.

The overall goals of the project are to remove the accumulated sediment and debris from the existing open channels, repair/replace failing erosion control structures with more sustainable stabilization measures, provide beaver management solutions to minimize blockages in the future, and revegetate the channel with native species and beaver resistant trees. Ultimately, the rehabilitated channel should require less frequent maintenance by implementing the latest engineering and ecological stabilization techniques.

2.3 Procurement Process

A two-staged procurement process was used to select the recommended consultant in accordance with Section 15.2(e) of the Procurement of Goods and Services Policy. Stage one was an open, publicly advertised Request for Qualifications (RFQUAL21-04). The City received 23 submissions, which were evaluated by staff and resulted in a shortlist of 19 engineering consulting firms.

Stage two was a competitive Request for Proposal (RFP21-35) process. All engineering consulting firms on the RFQUAL21-04 short-list were invited to submit a formal proposal to undertake the detailed design and contract administration for the McNay Drain Rehabilitation project. Four qualified engineering firms submitted proposals to undertake the Consulting Services for the McNay Drain Rehabilitation

project. The evaluation of each consultant proposal focused on the understanding of project goals, experience on directly related projects, project team members, capacity and qualifications, and overall project fee.

City staff recommend the bid from Ecosystem Recovery Inc. and request approval be granted to proceed with the detailed design and contract administration services for McNay Drain Rehabilitation project.

Ecosystem Recovery Inc. have demonstrated their competency and expertise with completing infrastructure assessments of this nature and it is recommended that they be appointed the consulting engineers for this project.

3.0 Financial Impact/Considerations

The budget associated with “ES2478 Waterways Restoration” was established to design and rehabilitate priority channels within the City. There is budget available in this account to construct the anticipated repairs to the McNay Drain per the source of financing attached as Appendix A.

Conclusion

The McNay Drain rehabilitation was identified as a priority site by the 2018 London Urban Waterways study. The proposed consultant assignment will evaluate repairs to the McNay Drain to restore stable slopes, improve conveyance capacity, and mitigate future blockages of the channel. Ecosystem Recovery Inc. has been recommended to conduct the detailed design and contract administration associated with the rehabilitation of this channel as the consultant representing best value to the City.

Prepared by: **Shawna Chambers, P.Eng., DPA, Division Manager, Stormwater Engineering**

Submitted by: **Scott Mathers, MPA, P. Eng., Director, Water, Wastewater and Storm Water**

Recommended by: **Kelly Scherr, P. Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure**

Attachments: Appendix 'A' – Sources of Financing
Appendix 'B' – McNay Drain Project Location Map

CC: Steve Mollon
Gary McDonald
Alan Dunbar
Jason Davies
Geoff Smith
Monica McVicar

Appendix "A"

#21140

August 31, 2021

(Appoint Consulting Engineers)

Chair and Members

Civic Works Committee

RE: McNay Drain Rehabilitation and Construction Administration

(Subledger SWM21006)

Capital Project ES247820 - Waterways Restoration

Ecosystem Recovery Inc. - \$387,485 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	529,127	134,822	394,305	0
Construction	1,670,244	1,102,440	0	567,804
City Related Expenses	629	629	0	0
Total Expenditures	\$2,200,000	\$1,237,891	\$394,305	\$567,804

Sources of Financing

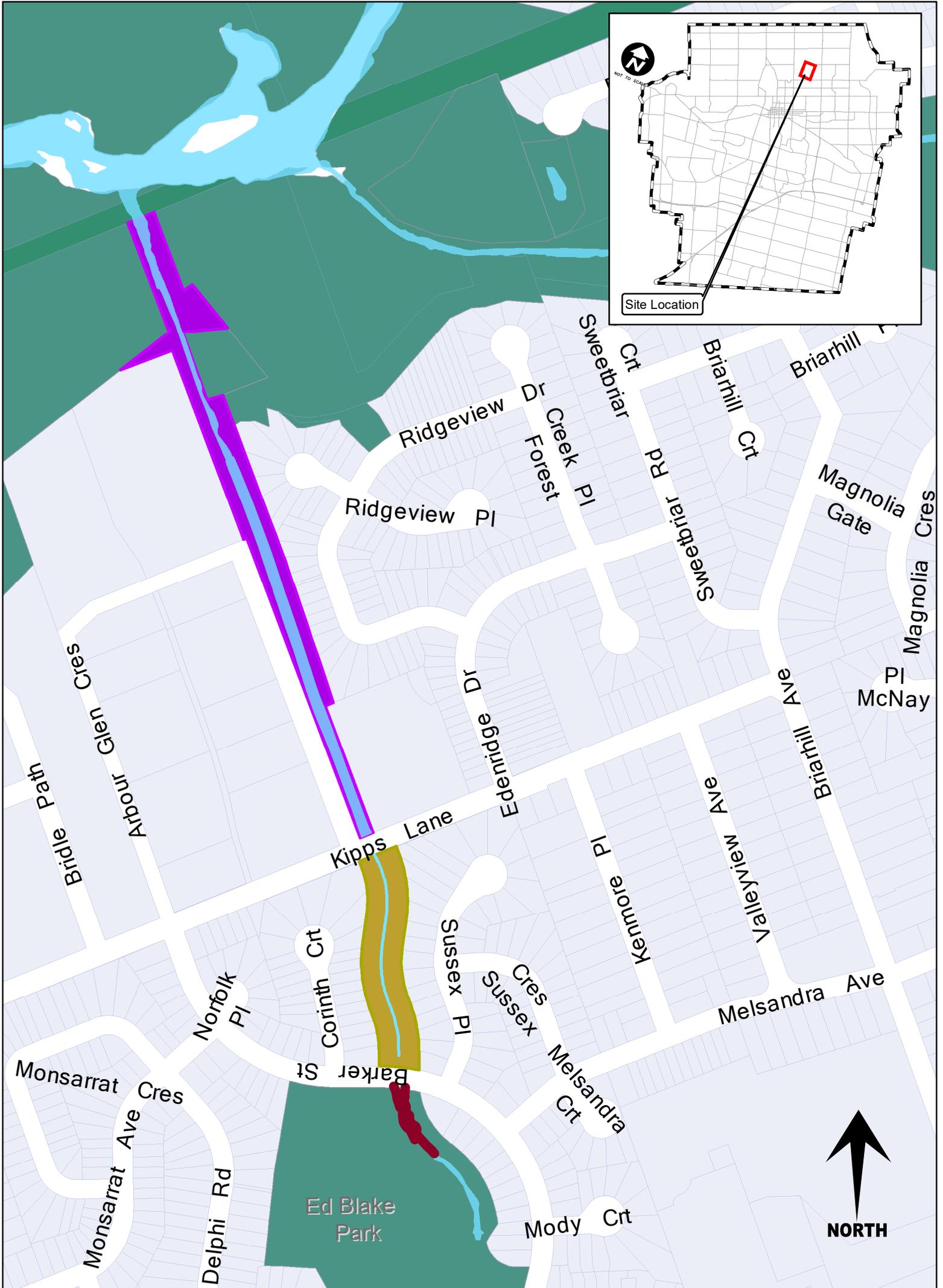
Capital Sewer Rates	2,200,000	1,237,891	394,305	567,804
Total Financing	\$2,200,000	\$1,237,891	\$394,305	\$567,804

Financial Note:

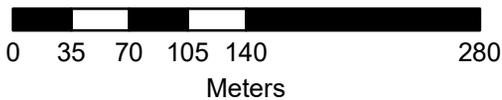
Contract Price	\$387,485
Add: HST @13%	50,373
Total Contract Price Including Taxes	437,858
Less: HST Rebate	-43,553
Net Contract Price	\$394,305

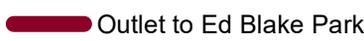
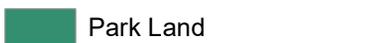
Jason Davies
Manager of Financial Planning & Policy

jg



Appendix 'B' - McNay Drain Project Location Map



-  Outlet to Ed Blake Park
-  Structural Open Channel
-  Water Body
-  Parcels
-  Open Channel
-  Park Land

Map Produced by
Stormwater Engineering
Printed: August 2021
300 Dufferin Avenue,
PO Box 5035
London, Ontario
N6A 4L9
www.London.ca



Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P. Eng., MBA, FEC, Deputy City Manager,
Environment & Infrastructure

Subject: Amendments to the Traffic and Parking By-law

Date: August 31, 2021

Recommendation

That on the recommendation of the Deputy City Manager, Environment & Infrastructure, the proposed by-law, attached as Appendix A **BE INTRODUCED** at the Municipal Council meeting to be held on September 14, 2021, for the purpose of amending the Traffic and Parking By-law (PS-113)

Linkage to the Corporate Strategic Plan

The following report supports the 2019 to 2023 Strategic Plan through the strategic focus area of **Building a Sustainable City** by improving safety, traffic operations and residential parking needs in London's neighbourhoods.

Analysis

1.0 Background Information

The Traffic and Parking By-law (PS-113) requires amendments (Appendix A) to address safety, traffic operations and parking concerns. The amendments in the following sections are proposed.

2.0 Discussion and Considerations

2.1 No Parking

To help ensure the orderly and safe flow of traffic, it is recommended that 'no parking anytime' zones be implemented at the following locations:

- The inside of the south curve of Acorn Crescent;
- The south side of Buchan Road from Kipling Avenue to Bonaventure Drive;
- The inside of the curve of Clayridge Way;
- The south side of Commissioners Road W from 144 m west of Lynden Crescent to Lynden Crescent;
- Both sides of Old Garrison Boulevard from Crane Avenue to Crown Grant Road;
- The east side of St. Julien Street from Tommy Hunter Way to the south limit of St. Julien Street; and
- The west and north sides of Valhalla Street from Clayridge Way (north intersection) to Clayridge Way (west intersection).

2.2 Stop Signs

All road accesses within Talbot Village subdivision are open to traffic. It is recommended to implement stops at the following locations:

Stop Signs

- Brash Drive at Frontier Avenue;
- Brash Drive at Regiment Road;
- Brushland Crescent at Brash Drive (east and west intersections);
- Crane Avenue at Pioneer Parkway;
- Crown Grant Link at Crane Avenue;
- Crown Grant Link at Crown Grant Road;
- Crown Grant Road at Frontier Avenue;
- Crown Grant Road at Old Garrison Boulevard;
- French Avenue at Frontier Avenue;
- French Avenue at Mersea Street;
- French Avenue at Regiment Road;
- Frontier Avenue at Old Garrison Boulevard,
- Frontier Avenue at Pack Road;
- Mersea Street at Old Garrison Boulevard;
- Mersea Street at Storey Chase;
- Regiment Road at Old Garrison Boulevard;
- Regiment Road at Pack Road; and
- Storey Chase at Crown Road Grant (east and west intersections).

Due to operational and safety concerns it is recommended to change the 'yield signs' with 'stop signs at the following locations:

- Hargrieve Road at Bessemer Road; and,
- Paulkane Chase at Bateman Trail.

2.3 Higher Speed Limits

Due to a significant increase in development, it is recommended to reduce the speed limit on Bradley Avenue from Pond Mills Road to 150 m east of Jackson Road from 80 km/h to 60 km/h.

2.4 Lawful Use of Space

Upon review of Schedule 31, Lawful Use of Space, it is discovered that Lot 9 is missing the assigned times and days as per the contract. It is recommended to add 8:00 a.m. to 12:00 a.m. Monday to Sunday inclusive to Schedule 31.

Conclusion

Several changes are proposed to improved road safety and operations for all users. Amendments are required to Schedule 2 (No Parking), Schedule 10 (Stop Signs), Schedule 17 (Higher Speed Limits) and Schedule 31 (Lawful Use of Space) to address the above changes.

Prepared by: Shane Maguire, P. Eng., Division Manager, Traffic Engineering

Submitted by: Doug MacRae, P. Eng., MPA, Director, Transportation & Mobility

Recommended by: Kelly Scherr, P. Eng., MBA, FEC, Deputy City Manager, Environment & Infrastructure

August 23, 2021/

Attach: Appendix A – By-law to Amend the Traffic and Parking By-law (PS-113)

cc: Parking Office

APPENDIX A By-law to amend the Traffic and Parking By-law (PS-113)

Bill No.

By-law No. PS-113

A by-law to amend By-law PS-113 entitled, “A by-law to regulate traffic and the parking of motor vehicles in the City of London.”

WHEREAS subsection 10(2) paragraph 7. Of the *Municipal Act, 2001*, S.O. 2001, c.25, as amended, provides that a municipality may pass by-laws to provide any service or thing that the municipality considers necessary or desirable to the public;

AND WHEREAS subsection 5(3) of the *Municipal Act, 2001*, as amended, provides that a municipal power shall be exercised by by-law;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. No Parking

Schedule 2 (No Parking) of the By-law PS-113 is hereby amended by **deleting** the following rows:

Column 1 Street	Column 2 Side	Column 3 From	Column 4 To	Column 5 Period
Commissioners Road W	South	Boler Road	A point 130 m west of Lynden Crescent	Anytime
Commissioners Road W	South	A point 60 m west of Lynden Crescent	A point 55 m east of said street	Anytime
St. Julien Street	East	Major Street	Tommy Hunter Way	Anytime

Schedule 2 (No Parking) of the By-law PS-113 is hereby amended by **adding** the following rows:

Column 1 Street	Column 2 Side	Column 3 From	Column 4 To	Column 5 Period
Acorn Crescent	West, North and East	A point 166 m south of Acorn Crescent (north intersection)	A point 255 m south of Acorn Crescent (north intersection)	Anytime
Buchan Road	South	Kipling Avenue	Bonaventure Drive	Anytime

Column 1 Street	Column 2 Side	Column 3 From	Column 4 To	Column 5 Period
Clayridge Way	East and South	A point 48 m north of Valhalla Street	A point 86 m north of Clayridge Way	Anytime
Commissioners Road W	South	Boler Road	A point 55 m west of Lynden Crescent	Anytime
Old Garrison Boulevard	Both	Crane Avenue	Crown Grant Road	Anytime
St. Julien Street	East	Major Street	A point 133m south of Tommy Hunter Way	Anytime
Valhalla Street	East and North	Clayridge Way (north intersection)	Clayridge Way (west intersection)	Anytime

2. Stop Signs

Schedule 10 (Stop Signs) of the By-law PS-113 is hereby amended by **adding** the following rows:

Column 1 Traffic	Column 2 Street	Column 3 Intersection
Eastbound	Brash Drive	Regiment Road
Westbound	Brash Drive	Frontier Avenue
Northbound	Brushland Crescent	Brash Drive (east and west legs)
Westbound	Crane Avenue	Pioneer Parkway
Northbound	Crown Grant Link	Crane Avenue
Southbound	Crown Grant Link	Crown Grant Road
Eastbound	Crown Grant Road	Frontier Avenue
Northbound	Crown Grant Road	Old Garrison Boulevard
Eastbound & Westbound	French Avenue	Frontier Avenue
Westbound	French Avenue	Mersea Street
Eastbound	French Avenue	Regiment Road
Northbound & Southbound	Frontier Avenue	Old Garrison Boulevard
Southbound	Frontier Avenue	Pack Road
Eastbound	Hargrieve Road	Bessemer Road
Northbound & Southbound	Mersea Street	Old Garrison Boulevard
Southbound	Mersea Street	Storey Chase

Column 1 Traffic	Column 2 Street	Column 3 Intersection
Southbound	Paulkane Chase	Bateman Trail
Northbound & Southbound	Regiment Road	Old Garrison Boulevard
Southbound	Regiment Road	Pack Road
Eastbound	Storey Chase	Crown Grant Road (east intersection)
Westbound	Storey Chase	Crown Grant Road (west intersection)

3. Yield Signs

Schedule 11 (Yield Signs) of the By-law PS-113 is hereby amended by **deleting** the following rows:

Column 1 Traffic	Column 2 Street	Column 3 Yield To
Westbound	Crane Avenue	Pioneer Parkway
Eastbound	Hargrieve Road	Bessemer Road
Southbound	Paulkane Chase	Bateman Trail

4. Higher Speed Limits

Schedule 17 (Higher Speed Limits) of the By-law PS-113 is hereby amended by **deleting** the following rows:

Column 1 Highway	Column 2 From	Column 3 To	Column 4 Maximum Rate of Speed
Bradley Avenue	East City Limit	Pond Mills Road	80 km/h
Bradley Avenue	A point 100 m east of Willow Drive	Pond Mills Road	60 km/h

Schedule 17 (Higher Speed Limits) of the By-law PS-113 is hereby amended by **adding** the following rows:

Column 1 Highway	Column 2 From	Column 3 To	Column 4 Maximum Rate of Speed
Bradley Avenue	A point 100 m east of Willow Drive	A point 150 m east of Jackson Road	60 km/h
Bradley Avenue	East City Limit	A point 150 m east of Jackson Road	80 km/h

5. Lawful Use of Space

Schedule 31 (Lawful Use of Space) of the said By-law PS-111 is hereby amended by **deleting** the following row:

Column 1 Lot Number	Column 2 Times	Column 3 Days
9		

Schedule 31 (Lawful Use of Space) of the said By-law PS-111 is hereby amended by **adding** the following row:

Column 1 Lot Number	Column 2 Times	Column 3 Days
9	8 a.m. to Midnight	Monday to Sunday Inclusive

This by-law comes into force and effect on the day it is passed.

PASSED in Open Council on September 14, 2021

Ed Holder
Mayor

Catharine Saunders
City Clerk

First Reading – September 14, 2021
 Second Reading – September 14, 2021
 Third Reading – September 14, 2021

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: 2020 Corporate Energy Consumption and Activities Report

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure and City Engineer, the following actions **BE TAKEN**:

- a) this report on the 2020 Corporate Energy Consumption and Activities Report **BE RECEIVED** for information; and,
- b) this report **BE CIRCULATED** to the Advisory Committee on the Environment (ACE) for their information.

Executive Summary

The Ontario Electricity Act (1998), under Regulation 507/18, requires all public agencies to prepare and publish annually updated reports on the energy consumption and greenhouse gas (GHG) emissions for City's facilities. Since 2014, public agencies are also required to prepare a Conservation and Demand Management (CDM) Plan and update it every five years.

The 2019-2023 Corporate Energy Conservation and Demand Management (CDM) Plan, the most recent plan, has the following targets using 2018 as the baseline year:

- A 5% reduction in total annual energy use by 2023;
- A 10% decrease in energy use per capita; and
- Keep annual total energy cost increases within five percent of 2018 costs.

The secondary long-term goals identified in this plan are to monitor and track the City's water consumption starting in 2018 and investigate possible pathways for achieving net zero emissions by 2050 or sooner.

In 2020, the Corporation of the City of London spent \$17.6 million on energy for municipal operations. Total energy used in 2020 was eight percent lower than the 2018, the baseline year used for the 2019-2023 CDM Plan. Energy-related greenhouse gas emissions from corporate energy use in 2020 was 17,500 tonnes per year. Corporate energy use in 2020 was influenced by COVID-19 pandemic restrictions, primarily in office environments. Corporate energy management activities continued in 2020, with projects completed in 2020 contributing \$200,000 in annual energy cost savings, with an additional \$160,000 received in incentives from energy utilities.

The City's performance in 2020 is currently exceeding the 2023 targets established in the 2019-2023 CDM Plan as follows:

Goal	2018 Baseline	2023 Reduction Target	Progress as of end of 2020
Reduction in total energy use	-	5%	8%
Total energy use (million Equivalent kilo-watt hours - ekWh)	174	165	160

Goal	2018 Baseline	2023 Reduction Target	Progress as of end of 2020
Energy performance for service delivery (ekWh/person)	436	394	386
Energy related GHG emissions (tonnes)	18,700	17,800	17,500
Total energy costs (millions)	\$17.9	\$18.8	\$17.6
Water consumption (thousands m ³)	646	-	587

It is expected that, except where investments are made to create sustainable reductions, energy and water use trends will return to a more typical level once City office facilities are fully staffed post-pandemic. Since the first year of baseline energy data was collected in 2007, however, the City’s water and energy performance has been improving year over year with:

- Energy performance for service delivery (ekWh/person) 31% better than 2007;
- Total greenhouse gas emissions 61% lower than 2007; and,
- Total water consumption 29% lower than 2007.

Since 2014, the start of the first CDM Plan, there have been several other key outcomes:

- The City has received approximately \$3 million in incentives for energy management projects; and,
- The City has avoided about \$20 million in utility costs through the combination of energy conservation projects and energy commodity procurement strategies.

In 2020, there was a shift in focus from making decisions based just on the reduction of energy usage towards making decisions from an integrated climate change perspective, particularly as it related to projects and funding opportunities for projects. Many internal studies are underway to identify net-zero emission opportunities at individual facilities including operations centres, community centres, and wastewater treatment facilities. The development of the Climate Lens Process in 2020 and 2021 has increased the visibility and awareness of the need for energy conservation measures for City facilities, programs, projects, and operations.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of managing energy costs, energy conservation, and climate change and other related environmental issues in its 2019-2023 - Strategic Plan for the City of London. Specifically, London’s efforts in climate change mitigation address three of the five Areas of Focus, at one level or another:

- Building a Sustainable City
- Growing our Economy
- Leading in Public Service

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Relevant reports that can be found at www.london.ca under Council and Committee meetings include:

- Report to the October 22, 2019 Civic Works Committee (CWC) Meeting, 2018 2019-2023 Corporate Energy Conservation and Demand Management (CDM) Plan (Agenda Item #2.8)

1.2 Context

Addressing the Need for Action on Climate Change

On April 23, 2019, the following was approved by Municipal Council with respect to climate change:

Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change.

The 2020 Corporate Energy Consumption and Activities Report is the measurement tool to highlight The Corporation of the City of London's progress towards meeting its energy reduction and greenhouse gas reduction targets along with other targets and directions.

Background

The Ontario Electricity Act (1998), under Regulation 507/18, requires all public agencies to prepare and publish:

- Annually updated reports on the energy consumption and greenhouse gas (GHG) emissions for City's facilities; and,
- A Conservation and Demand Management (CDM) Plan starting in 2014 and to update this plan every five years.

The Annual Energy Consumption and GHG Emissions Report submissions can be found on the City's [open data catalogue](#).

The provincial reporting requirement does not include significant corporate energy users such as street lighting and corporate fleet fuel use, nor other needs such as sports field lighting. However, these energy needs are included within the scope of the 2020 Corporate Energy Consumption and Activities Report, as in previous years, as it is imperative that all energy uses and impacts within the City's control are continuously examined for reduction opportunities.

The 2019-2023 Corporate Energy Conservation and Demand Management (CDM) Plan has the following targets, using 2018 as the baseline year:

- A 5% reduction in total annual energy use by 2023;
- A 10% decrease in energy use per capita; and,
- Keep annual total energy cost increases within five percent of 2018 costs.

The secondary long-term goals identified in this plan were to:

- Monitor and track the City's water consumption starting in 2018; and,
- Investigate possible pathways for achieving net zero emissions by 2050 or sooner

To achieve these goals, planned, proposed, and behavioural initiatives were identified in the CDM Plan for each service area and the primary goal was further divided into individual goals. All City service areas are separated into two areas: buildings and vehicle fleet. Additionally, wastewater treatment, water operations and traffic signals and streetlights are monitored separately in the Environment & Infrastructure service area.

2.0 Discussion and Considerations

A collaborative process to implement the action items in the 2019-2023 CDM Plan was introduced with major service areas during the development of the CDM Plan in 2019. Bi-weekly meetings with Facilities and monthly meetings with Fleet and Wastewater Treatment Operations teams are held to review current energy consumption, progress towards CDM goals, and to discuss future projects and initiatives as these service areas contribute to highest energy consumption. Regular quarterly meetings are also held with

other service areas who have direct control over energy use and GHG emissions. These focused staff meetings facilitated sharing of best practices and the identification of measures and initiatives that will work towards achieving the overall 2019-2023 CDM plan goal.

Highlights from the 2020 report (Appendix A) are below in two categories:

1. Corporate Energy CDM Plan Progress
2. Summary of corporate energy CDM actions taken in 2020

The 2020 Corporate Energy Consumption and Activities Report can be found on the [Get Involved London Climate Emergency Action Plan website](#).

2.1 Corporate Energy CDM Plan Progress

Table 1 outlines the City’s overall progress towards the 2019-2023 CDM Plan goals as of 2020:

Table 1 – 2019-2023 CDM Plan Target Tracking

Goal	2018 Baseline	2023 Reduction Target	Progress as of end of 2020
Reduction in total energy use	-	5%	8%
Total energy use (million Equivalent kilowatt hours - ekWh)	174	165	160
Energy performance (ekWh/person)	436	394	386
Energy related GHG emissions (tonnes)	18,700	17,800	17,500
Total energy costs (millions)	\$17.9	\$18.8	\$17.6
Water consumption (thousands m ³)	646	-	587

In terms of assessing options for achieving net-zero emissions for the Corporation by 2050 or sooner, City staff are currently working on an internal net-zero analysis study. In support of this activity:

- In 2020, Facilities staff commissioned a study to look at the feasibility of retrofitting fifteen existing City facilities, including the A.J. Tyler Operations Centre, Exeter Road Operations Centre, and Earl Nichols Arena, to be net-zero energy or near net-zero emission buildings through the implementation of heat pump technology. Preliminary results indicate that these retrofits are financially feasible.
- Request for Qualifications have been received for companies to test the deployment of large-scale net-metered solar PV power generation at wastewater treatment plants and water supply pumping stations.

In the 2019-2023 CDM Plan, the corporate CDM primary goals are further divided to individual service areas. The performance to date is summarized in Table 2.

Overall, the City’s performance in 2020 is currently exceeding the 2019-2023 CDM Plan’s goals. The performance in 2020 was influenced by COVID-19 pandemic restrictions limiting in-office work and reduced employee travel requirements. A similar consumption pattern to 2020 might be observed in 2021 as well as the pandemic continues. While the pandemic restrictions have impacted usage in 2020, corporate energy management activities also continued in 2020.

Table 2 – Individual Service Area 2019-2023 CDM Plan Tracking

Service Area	2018 Baseline	2023 Reduction Target	Progress as of end of 2020
Buildings – energy use (million ekWh)	68.3	64.1	62.6
Wastewater treatment – energy efficiency (ekWh/megalitre)	738	671	628
Traffic and streetlights – energy use (million ekWh)	18.4	15.1	17.7
Water supply – energy use (million ekWh)	8.7	7.8	8.9
Fleet operations – GHG emissions (tonnes CO ₂ e)	7,340	7,090	6,910

2.2 Summary of Corporate Energy CDM Actions Taken in 2020

The City’s corporate energy team worked closely with various service areas within the City, utility personnel, and industry experts to retrofit existing buildings, construct new buildings, and upgrade equipment and processes.

An important part of the process also involves securing incentives and funding opportunities and post-project monitoring and verification of savings. The City tracks the energy savings achieved from projects once they are complete. Projects completed in 2020 contributed \$200,000 in annual energy cost savings, with an additional \$160,000 (one-time incentive) received in incentives from utility providers.

2020 highlights include:

- **Aeration Blower Upgrades** - Upgrades to all aeration blowers at wastewater treatment plants to new efficient turbo blowers were initiated in 2016 and were completed in 2020. This work is estimated to provide over \$600,000 in energy savings annually. Over \$1 million in incentives is being provided from the Ontario Independent Electricity System Operator (IESO) to support this work.
- **Electric Ice Resurfacers** - In 2020, the City made the decision to replace all compressed natural gas (CNG) ice resurfacers with electric resurfacers. Four units are now ready to go into service when arenas re-open and four additional units are planned for use in the 2021/2022 arena season.
- **Green Fleet** – The City commissioned its first two CNG packers for solid waste collection services. This started the process of moving away from fossil fuel for the packers, as the long-term goal is to use renewable natural gas (RNG) from the W12A landfill as fuel in the City’s waste collection fleet.
- **Insulation Upgrades** - Arena glass walls were replaced with insulated panels at Bostwick Community Centre.
- **Organic Rankine Cycle (ORC) Engine Project** - The City completed most of the installation of the ORC engine for waste heat recovery for power generation at Greenway Wastewater Treatment Facility in 2020. When commissioned in 2021, this will offset 475 kilowatts of electrical grid consumption, which represents over 12 percent of the City’s overall CDM Plan goal for energy reduction by 2023.

2.3 Corporate Energy CDM Plan Progress Since 2007

Since 2007, the first year for baseline energy data, the City’s energy performance has been improving year over year with:

- Energy performance for service delivery (ekWh/person) 31% better than 2007;
- Total greenhouse gas emissions 61% lower than 2007; and,
- Total water consumption 29% lower than 2007.

The introduction of the first CDM Plan in 2014 provided the City with an opportunity to review its energy management program initiatives and proposed energy targets. It provided the groundwork for successful implementation of energy management decisions and actions within all corporate operations, particularly those that begin to take actions needed to respond to the City of London's Climate Emergency Declaration.

The City has seen a number of key achievements since 2014, as listed below:

- Met and exceeded its 2014 CDM target for a 10% reduction in energy use by 2020, with a 16% reduction in total energy consumption;
- Received approximately \$3 million in energy conservation and management incentives;
- Invested in deepening the culture of conservation within the Corporation's operations by having regular employee engagement activities and awareness programs;
- Avoided about \$20 million in energy costs through the combination of energy conservation projects and energy commodity procurement strategies; and,
- Improved energy performance (energy used per capita for service delivery) by 25%

2.4 Development of the Climate Lens Process

The Climate Lens Process was designed to ensure that climate emergency issues are part of the decision-making processes throughout the Corporation. To date, it has been considered in a number of areas of the Corporation. The Climate Lens Process will take this experience and new knowledge to significantly increase climate emergency activities and actions. The objectives associated with the creation and use of the Climate Lens Process are to:

- Ensure climate emergency issues are included in decision-making and evaluation of existing plans, programs and projects;
- Establish a clear process for accountability and tracking of climate emergency issues, including collection of information on decision outcomes and tracking the progress of projects/programs implemented; and,
- Elevate understanding of the importance of climate emergency issues in decision-making across the Corporation.

The Climate Lens Process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates & Multi-year Budgets
5. Building Climate Change Capacity

The Climate Emergency Screening Tool (CEST) can be used in the Climate Lens Process especially when it is customized for an area. The customized CEST is used to guide the screening of projects and programs for key climate emergency issues and opportunities for improvement.

The development of the Climate Lens Process in 2020 and 2021 has increased the visibility and awareness of the need for energy conservation measures for City facilities, programs, projects, and operations.

2.5 Development of the Climate Emergency Action Plan

The development of a Climate Emergency Action Plan is a fundamental and required response to the City of London's climate emergency declaration. The goals are to improve London's resilience to climate change impacts, reduce London's greenhouse gas emissions by at least 37% below 1990 levels by 2030 and reach net-zero emissions by 2050.

A recent report to Council's Strategic Priorities and Policy Committee on April 27, 2021 provided an update on the plan's engagement and development to date. City staff are currently reviewing the ideas and feedback collected from residents and businesses submitted between October 2020 and April 2021 as part of the development of the plan. Opportunities for input continue and can be found at <https://getinvolved.london.ca/climate>

The 2020 Corporate Energy Consumption and Activities Report, reporting on corporate energy use and resulting greenhouse gas emissions, and the background data behind it, are part of the foundation for the development of the Climate Emergency Action Plan (CEAP). The CEAP is currently scheduled to be submitted to the Strategic Priorities and Policy Committee (SPPC) in late fall 2021.

Conclusion

Overall, 2020 saw a large shift in focus from making decisions based on the reduction of energy usage to decision-making from an integrated climate change perspective, particularly as it related to projects and funding opportunities for projects. Many internal studies are underway to identify net-zero opportunities at individual facilities.

The City will always require energy to run its facilities, vehicles, and operations, but the strategic management of energy usage, emissions, investment in renewable technologies and a keen focus on climate change can help use less, become carbon neutral and greener overall.

Prepared by: Sneha Madur, B.Eng., M.Eng., CEM
Corporate Energy Management Engineer

Prepared by: James Skimming, P.Eng.
Manager, Energy & Climate Change

Prepared and Submitted by: Jay Stanford MA, MPA
Director, Climate Change, Environment & Waste Management

Recommended by: Kelly Scherr, P.Eng., MBA, FEC, Deputy City Manager,
Environment & Infrastructure

Appendix A 2020 Corporate Energy Consumption and Activities Report

c. Anna Lisa Barbon, CPA, CGA, Deputy City Manager, Finance Support
Tim Wellhauser, CIM, Director, Fleet and Facilities



2020 Corporate Energy Consumption and Activities Report

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Executive Summary

The Executive Summary for the 2020 Corporate Energy Consumption & Activities Report is now a stand-alone document.



1. Background

In 2009, the Ontario legislature passed the *Green Energy Act (GEA)*. As one of its objectives, the GEA aimed to increase energy conservation by introducing measures to help Ontarians manage energy use. The GEA's Regulation 397/11 (now the O. Reg 507/18, Electricity Act 1998), requires all public agencies to prepare and publish:

- Annually updated reports on the energy consumption and greenhouse gas emissions for City's facilities.
- A Conservation and Demand Management (CDM) Plan starting in 2014 and to update this plan every five years. The CDM Plan outlines strategies for identification and implementation of CDM projects throughout City facilities. The first plan was released in July 2014, and an updated 2019-2023 CDM Plan was released in August 2019.

The Ontario Regulation 507/18 reporting requirement does not include significant corporate energy users such as street lighting and corporate fleet fuel use, nor other needs such as sports field lighting. However, these energy needs are included within the scope of this Corporate Energy Consumption and Activities Report as it is imperative that all energy uses and impacts within the City's control are continuously examined for reduction opportunities.

2. Alignment with Existing Strategies

This report and the CDM Plan align with:

1. The City's Climate Emergency Declaration: On April 23, 2019, the following was approved by the municipal Council with respect to Climate change:

Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change

2. Climate Emergency Action Plan (CEAP)– The development of the Climate Emergency Action Plan will be a fundamental response to the City's climate emergency declaration. The goals will be to improve London's resilience to climate change impacts, reduce London's community-wide greenhouse gas emissions by at least 37 per cent below 1990 levels by 2030 and reach net-zero by 2050. The 2019-2023 CDM plan's long-term goals closely align with CEAP.
3. City of London Strategic Plan – Building a Sustainable City is one of the Strategic Areas of Focus in the 2019-2023 Strategic Plan with a key performance indicator being to conserve energy and increase actions to respond to climate change and severe weather.

3. Collaboration with Service Areas

A collaborative process to implement the energy conservation action items was introduced with major service areas during the development of the CDM Plan in 2019. Bi-weekly meetings with Facilities and monthly meetings with Fleet and Wastewater Treatment service areas are held to review current energy consumption, progress towards CDM goals and to discuss future projects and initiatives as these service areas contribute to highest energy consumption. Regular quarterly meetings are also held with other service areas who have direct control over energy use and greenhouse gas emissions. These focused staff meetings facilitated sharing of best practices and identification of measures and initiatives that will work towards achieving the overall 2019-2023 CDM plan goal.

Further, the implementation and development of the Climate Lens Process as discussed in section 7.2 in this report, includes collaborative work with every service area and operational units within the Corporation to work together towards the common net-zero goal by 2050 or sooner.

4. Methods and Limitations of Measurement

The City procured the EnergyCap software in 2007 to log monthly utility bills for municipally owned and administered buildings and facilities. This software has the capability to track, monitor and capture data to assist the City with reporting consumption and providing historical data.

Fleet fuel use data is provided from the PetroVend fuel management software system which is used for tracking vehicle fuelling at operation centers.

The annual energy consumption and greenhouse gas emissions for the City does not include energy consumed in leased office space where the utility costs are incorporated in the leasing agreements. This energy use and greenhouse gas emissions are captured in the 2020 Community Energy Use & Greenhouse Gas Emissions Inventory report.

4.1 Service Areas and Energy Consumption

The City manages diverse operations of buildings, including office spaces, community centres, arenas, and fire halls which use energy for interior and exterior lighting, heating and cooling of buildings and energy associated with maintaining recreational services like pools and arenas. The City also manages linear assets such as wastewater treatment plants, water supply and pumping facilities, traffic lights, and City fleet operations. Ninety per cent of the energy consumed by linear assets is electricity associated with running and maintaining the processes.

For this report, all the City's service areas are divided in the following categories to compare their individual contribution to City's total energy consumption:

- Buildings
- Wastewater Treatment Plants

- Water Supply Operations
- Traffic Signals & Streetlights, and
- Fleet Operations

4.2 Sources and Emission Factors for Greenhouse Gas

greenhouse gas emissions within City operations are contributed by consumption of electricity, natural gas, steam, chilled water, diesel, and gasoline. Among these, fleet fuel, followed by natural gas and steam have highest emissions per equivalent kWh of fuel as shown in table 1.

Table 1: Commodity Emission Factors - Grams of CO₂ equivalent per equivalent kilowatt-hour (kWh)

Commodity	2020
Electricity	30
Natural Gas	182
Diesel	262
Gasoline (E-10 blend)	237
Steam	143
Chilled Water	98

Table Notes:

- The electricity emission factors are based on The Atmospheric Fund report (TAF) <https://taf.ca/wp-content/uploads/2019/06/A-Clearer-View-on-Ontarios-Emissions-June-2019.pdf>.
- Steam and chilled water are supplied by London District Energy (LDE) for City's downtown office building locations and its associated emissions have been provided by LDE.
- Gasoline and diesel have highest emission factors and are used in City fleet vehicles.

5. Performance to 2019-2023 CDM Plan Goals

The City's 2019-2023 CDM Plan primary goal is to achieve a five per cent reduction on overall annual energy use by 2023. The baseline year is 2018. Tied to this goal are:

- A ten per cent reduction in energy use per capita,
- 900 tonnes of avoided greenhouse gas emissions by 2023, and
- Keeping the total energy cost increases within five per cent from 2018 baseline year.

The secondary long-term goals identified in this plan are:

- Monitor and track the City's water consumption starting in 2018, and
- Investigate possible pathways for achieving net zero emissions by 2050 or sooner

To achieve these goals, Planned, Proposed, and Behavioural initiatives were identified in the CDM Plan for each service area and the primary goal was further divided into individual goals for each service area. All the City service areas are separated into five areas as below:

- Buildings
- Wastewater & treatment operations
- Water pumping operations
- Traffic signals & streetlights, and
- Vehicle fleet

Identified in Table 2 is the City’s detailed progress towards the 2019-2023 CDM goals to date:

Table 2 – 2019-2023 CDM Plan Target Tracking

Goal	2018 Baseline	2023 Reduction Target	Progress as of end of 2020	Notes
Reduction in total energy use from 2018 baseline	-	Down by 5%	Down by 8%	Exceeded target (mostly due to COVID-19 shutdowns, which reduced buildings energy consumption).
Total Energy use (million ekWh)	174	165	160	Exceeding target so far.
Energy Performance (ekWh/person)	436	394	386	Exceeding target so far.
Energy related greenhouse gas emissions (tonnes)	18,700	17,800	17,500	Exceeded target by 2% so far due to: <ul style="list-style-type: none"> • COVID -19 shutdowns • Greenway incinerator off for two months for Organic Rankine Cycle (ORC) project installation.
Total Energy Costs (millions)	\$17.9	\$18.8	\$17.6	2% below baseline so far (within target).

Goal	2018 Baseline	2023 Reduction Target	Progress as of end of 2020	Notes
Monitor and Track water consumption (thousands m ³)	646	-	587	6% reduction year over year so far.

In terms of assessing options for achieving net-zero emissions for the Corporation by 2050 or sooner, City staff are currently working on an internal net-zero analysis study. In support of this activity:

- Ameresco has completed a net-zero energy buildings pathway study involving 16 buildings, and
- Request for Qualifications have been received for companies to test the deployment of large-scale net-metered solar PV power generation at wastewater treatment plants and water supply pumping stations.

In the 2019-2023 CDM Plan, the corporate CDM primary goals are further divided to individual service areas. This performance is tracked in Table 3:

Table 3 – Individual Service Area 2019-2023 CDM Plan Tracking

Service Area	2018 Baseline	2023 Reduction Target	Progress as of end of 2020	Notes
Buildings (million ekWh)	68.3	64.1	62.6	Decrease in consumption due to COVID-19 shutdowns.
Wastewater Treatment Operations (ekWh/megalitre)	738	671	628	Energy efficiency exceeded 2018 target. This is mostly due to natural gas being turned off at Greenway incinerator for two months for ORC project.

Service Area	2018 Baseline	2023 Reduction Target	Progress as of end of 2020	Notes
Traffic and Streetlights Operations (million ekWh)	18.4	15.1	17.7	3% decrease as of 2020 and on track towards 2023 target. Phase 1 and Phase 2 LED conversion of streetlights are resulting in continued energy savings year over year.
Water Supply Operations (million ekWh)	8.7	7.8	8.9	4% increase in electricity consumption led to overall energy increase. Electricity increase was due to a 3% increase in water supply.
Fleet operations (tonnes CO ₂ e greenhouse gas emissions)	7,340	7,090	6,910	Decrease in fuel emissions by almost 6% in 2020 compared to 2018 and exceeded target. This is due to reduced diesel consumption in 2020 by conversion of 4 solid waste packers to CNG. Use of CNG contributed to only 0.03 tonnes of greenhouse gas in 2020.

Overall, the City’s performance in 2020 is currently exceeding the 2019-2023 CDM goal. The performance in 2020 was influenced by COVID-19 restrictions. A similar consumption pattern to 2020 might be observed in 2021 performance as well, as the pandemic continues in 2021. However, corporate energy management activities also continued in 2020. A complete list of 2020 corporate energy activities are provided in Section 7 and Appendix B of this report.

6. Corporate Annual Energy Analysis

In 2020, the City’s energy use is categorized by consumption, associated emissions, and costs by commodity. The 2020 energy data are also normalized to London’s population to measure improvements in efficiency. This allows City to demonstrate and relay to Londoners the energy consumed in relationship to service delivery provided by the City.

For this report, all the 2020 energy emissions data are compared to below two years:

- 2007 – as this was the first year that City started measuring and monitoring its corporate energy consumption.
- 2018 – as this is the baseline year for the updated 2019-2023 CDM Plan

6.1 Total Corporate Energy Consumption

With the use of the EnergyCap software, the City has ability to breakdown and report annual energy consumption by the commodity and by service area.

Table 4 – Total Energy Consumption by Commodity

Energy Consumption (ekWh)	2007	2018	2020	Change from 2007	Change from 2018
Electricity	108,328,000	98,448,000	89,893,000	-17%	-9%
Natural Gas	58,682,000	42,430,000	40,889,000	-30%	-4%
Steam	3,499,000	3,269,000	2,093,000	-40%	-36%
Chilled Water	1,759,000	1,521,000	913,000	-48%	-40%
Diesel Fuel	20,129,000	22,194,000	20,306,000	0.8%	-9%
Gasoline	6,718,000	6,889,000	6,667,000	-1%	-3%
Total	199,115,000	174,751,000	160,761,000	-19%	-8%

Table 4 shows the City’s energy consumption by commodity, which amounts 160 million equivalent kilowatt-hours (kWh) in 2020. Electricity represents the 56 per cent of all the energy used by the City. Out of this, more than 50 per cent is consumed by electricity-intensive operations such as water supply and wastewater treatment plants, 20 per cent is consumed by streetlights and traffic lights, and the remaining 30 per cent is consumed for maintain building ventilation, lighting, and office equipment.

Natural gas is second highest commodity, representing 25 per cent of the total energy consumption. Most of the natural gas is used for space heating and hot water heating, but approximately eight to ten per cent of the total natural gas is used for wastewater sludge incineration at Greenway Wastewater Treatment Plant every year.

Diesel and gasoline are consumed by variety of fleet vehicles and equipment which include waste collection trucks, snowplows, off-road construction equipment, and portable hand-held tools used by Parks & Recreation.

Steam and Chilled water account for only one per cent of the total energy consumption each and is completely used by administration buildings owned by the City in downtown London including City Hall. Steam and chilled water are supplied by London District Energy.

Overall, total energy use is 20 per cent lower compared to 2007 and eight per cent lower compared to 2018. Energy associated with heating and cooling buildings (steam, electricity, chilled water, and natural gas) have shown greatest reduction from 2007. This shows that energy efficiency measures in place since 2007 have played a major role in conservation.

6.2 Total Corporate Energy Consumption Per Capita

The City’s energy consumption is a direct function of serving the public, businesses, and visitors of London. The trends in consumption reported is significant to the services provided to the community. London continues to grow in population and increased services are required to support that growth. It is important to capture energy usage per capita to demonstrate the City’s achievements in energy reductions while continued growth occurs in London.

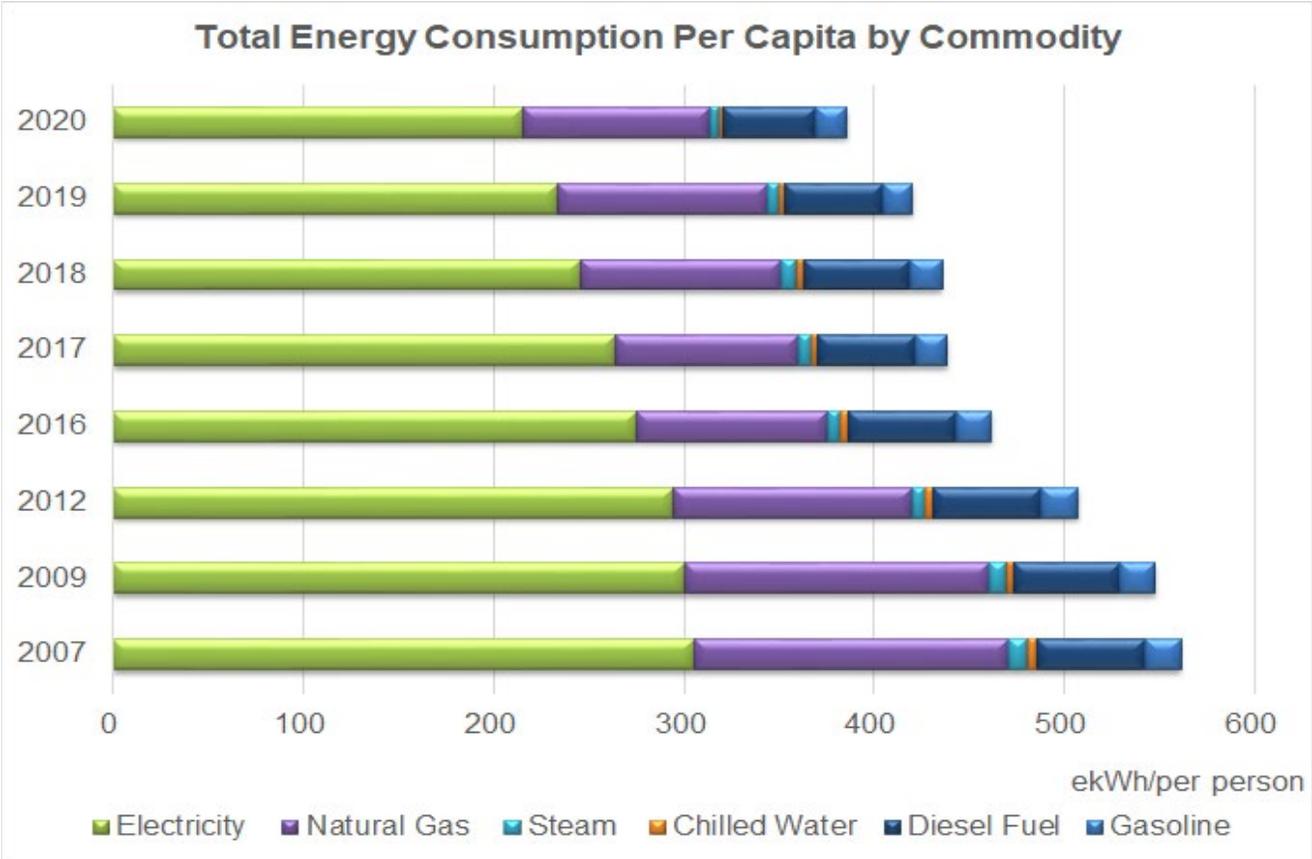


Figure 1: Corporate Total Energy Consumption per Capita by Commodity Type

Figure 1 shows total energy consumption per capita by commodity which is explained as follows:

- London’s population has grown by almost 18 per cent (62,000 people) since 2007. Thirteen years of data show continued improvement of corporate energy use per

capita with an overall reduction of 31 per cent in 2020 compared to 2007.

- In 2020, the City improved energy efficiency by over twelve per cent compared to 2018. This significant reduction in 2020 is mostly due to offices and community service centers being shutdown in 2020 due to the COVID-19 pandemic.
- London's population increased by four per cent in 2020 from 2018, while corporate energy use per person decreased by twelve per cent from 2018.

6.3 Total Corporate Energy Consumption by Service Area

Separating the municipal service by categories gives the City the ability to see where progress is being made and the opportunity to target areas for improvements.

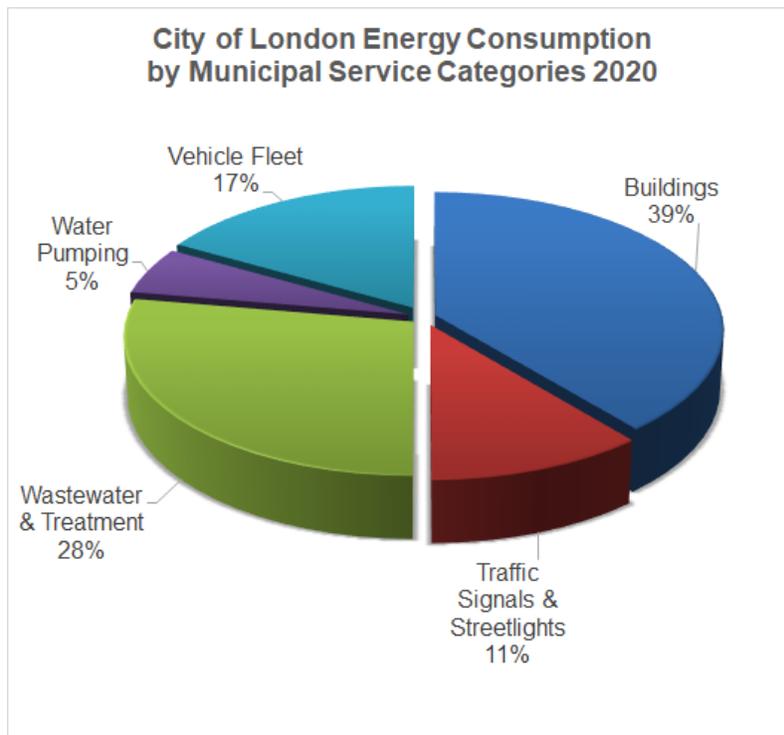


Figure 2: City of London 2020 Energy Consumption by Municipal Service Categories

Figure 2 is a pie chart showing buildings as the highest energy consumer at 39 per cent followed by wastewater treatment operations at 28 per cent, fleet operations at 17 per cent, traffic signals & streetlights at eleven per cent, and water operations at five per cent.

Figure 3, a stacked bar graph, represents the overall energy consumption (ekWh) by the municipal service categories since 2007. The last six years are highlighted in this figure to show continuous improvement year over year since 2015.

Most of the energy consumption reductions have been observed in buildings, wastewater treatment operations and traffic signals & streetlights.

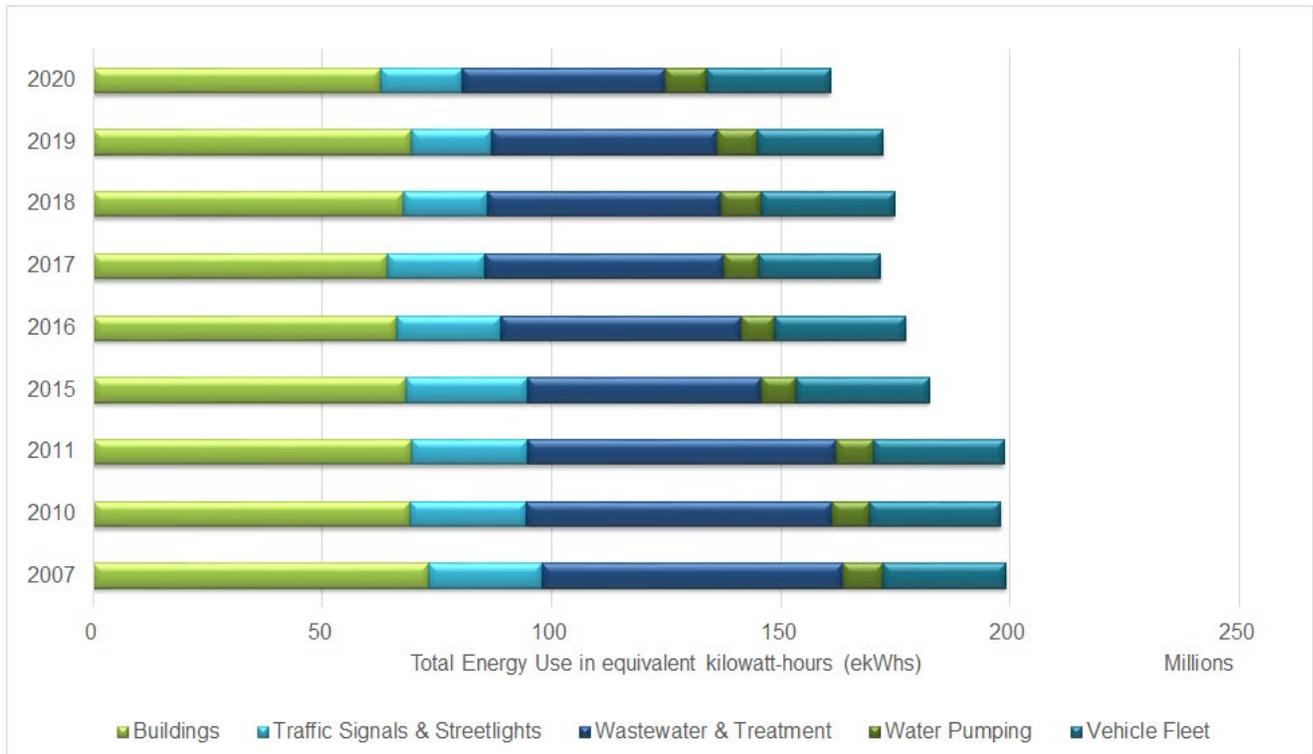


Figure 3 – Total Energy Consumption by Service Area (ekWhs)

Buildings reduced energy consumption by 17 per cent compared to 2007 and eight per cent to 2018. Most of these reduction from 2007 are a result of heating, ventilation, and air conditioning (HVAC) upgrades and LED lighting upgrades at Buildings.

Wastewater treatment continues to see improved energy efficiency as a result of HVAC upgrades, aeration blower upgrades and utilizing waste heat. There was 30 per cent drop in natural gas at wastewater treatment operations in 2020 alone compared to 2019 due to the sludge incinerator at the Greenway Wastewater Treatment Plant being shut off for two months for the installation of the Organic Rankine Cycle (ORC) engine. With the completion of the ORC engine commissioning in 2021 and boiler upgrades at Greenway in 2022, the natural gas consumption at the plant is expected to drop further by five to ten per cent by end of 2022.

Traffic signals and streetlights have seen an 18 per cent decrease from 2007 and a four per cent decrease from 2018. However, electricity use has remained the same over the last two years as the first two phases of the LED streetlighting project are completed. There is an opportunity to further reduce streetlights consumption by completing the third phase of decorative and side streetlights conversion from halogens to LEDs. However, the current cost of decorative LED fixtures is high and does not meet the City’s business case requirements.

Fleet fuel consumption has remained the same since 2018 and is influenced directly by activities undertaken by different service areas. Although total consumption increased by just under one per cent compared to 2007, the per capita consumption shows a decrease by 14 per cent. This shows that the efficiency of fleet operations increased over the years.

Adding the new Southeast Reservoir Pumping Station (SERPS) water supply facility in 2017 increased water supply’s overall energy consumption by two per cent compared to 2007 and 2018. However, on-going energy efficiency efforts at this new facility and other water supply facilities will help reduce energy consumption in the next five years.

6.4 Total Energy-Related Corporate Greenhouse gas Emissions

In 2020, greenhouse gas emissions from energy use were six per cent (1,200 tonnes) lower than 2018 and 61 per cent lower compared to 2007. Figure 4 shows the greenhouse gas reduction trend since 2007. Greenhouse gas reductions have been observed across the corporation since 2007, except for Fleet.

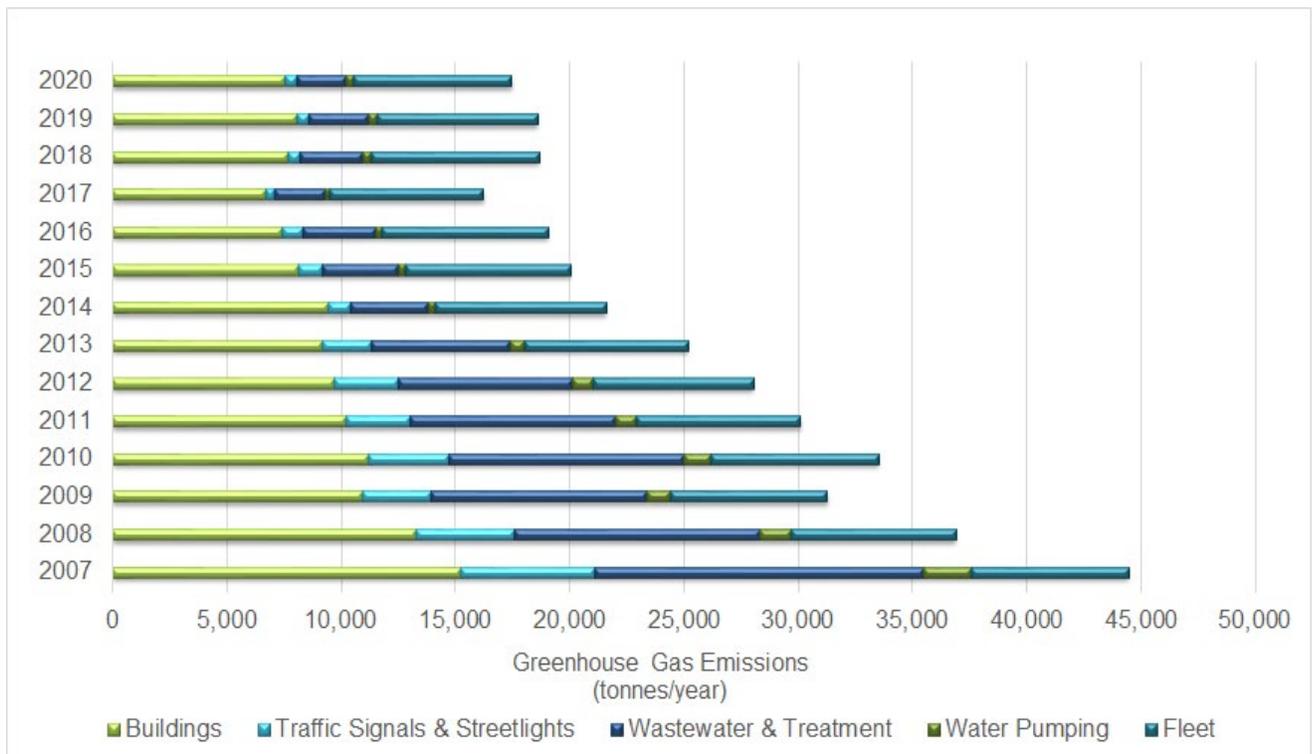


Figure 4 – Corporate Energy-Related Greenhouse Gas Emissions since 2007

Fleet’s greenhouse gas emissions are now a larger share of corporate energy-related emissions due to emissions from burning gasoline and diesel as explained in section 4.2 of this report.

Wastewater treatment operations have reduced their greenhouse gas emissions by 21 per cent (580 tonnes per year) since 2018. Most of these reductions per cent between 2019 and 2020 were due to the sludge incinerator at Greenway being shutoff for two

months in 2020 for the installation of the ORC engine. However, since 2007, wastewater has seen overall reductions of 85 per cent (12,300 tonnes per year) due to the sludge dewaterer eliminating the need to constantly burn natural gas for sludge incineration, as well as energy efficiency projects as waste heat recovery, aeration blowers, and HVAC upgrades.

Most of the emission reductions are due to a cleaner electricity grid in Ontario due to increased conservation efforts and cleaner sources of energy used to generate electricity in Ontario:

- 90% reduction in electricity-related emissions
- 44% reduction in steam-related emissions, due solely to corporate actions
- 23% reduction in natural gas related emissions, due solely to corporate actions

However, looking ahead, based on power supply forecasts provided by Ontario's Independent Electricity System Operator (IESO), The Atmospheric Fund estimates that greenhouse gas emission factors for Ontario's electricity grid will increase between 2018 and 2035, from 30 to 86 grams of CO_{2e}/kWh. This is due to an expected greater reliance on gas-fired power plants after the closure of the Pickering Nuclear Generating Station after 2024 as well as the Provincial Government's cancellation of the last round of renewable power generation procurement in 2018.

This could result in corporate energy related greenhouse gas emissions increasing over the 2019-2023 timeframe even with the planned energy savings, given that electricity represents about 60 per cent of corporate energy needs.

However, after 2035, it is assumed that Ontario's electricity grid will become emissions free by 2050 as these natural gas power plants, designed to meet peak demand needs, are replaced by renewable power generation combined with power storage systems.

6.4.1 Net Zero Emissions Pathway by 2050

The City is currently working on developing projects and initiatives towards achieving its long-term target of Net-zero by 2050 or sooner as part of its 2019-2023 CDM Plan and as part of next steps of Climate Emergency Action Plan. Figure 5 shows City's performance to date towards achieving net zero by 2050. With 2020 emissions being 17,500, the actual emissions till date are below the trendline to net-zero by 2050.

The electricity emission factor is expected to increase from 30 to 85 grams of CO₂ equivalent per kilowatt hour between 2021 and 2035 as Ontario nuclear power generators are undergoing refurbishment and natural gas generators would be used to compensate for the lost capacity during this period.

In terms of assessing options for achieving net-zero emissions for the Corporation by 2050 or sooner, City staff are currently working on an internal net-zero analysis study. In support of this activity:

- Ameresco has completed a net-zero energy buildings pathway study involving 16 buildings
- Request for Qualifications have been received for companies to test the deployment of large-scale net-metered solar PV power generation at wastewater treatment plants and water supply pumping stations

London District Energy is currently working on making its own steam and chilled water generation free of fossil fuels in the next ten years, which will directly help reduce City’s emissions and contribute towards achieving net-zero goal by 2050 or sooner as a community.

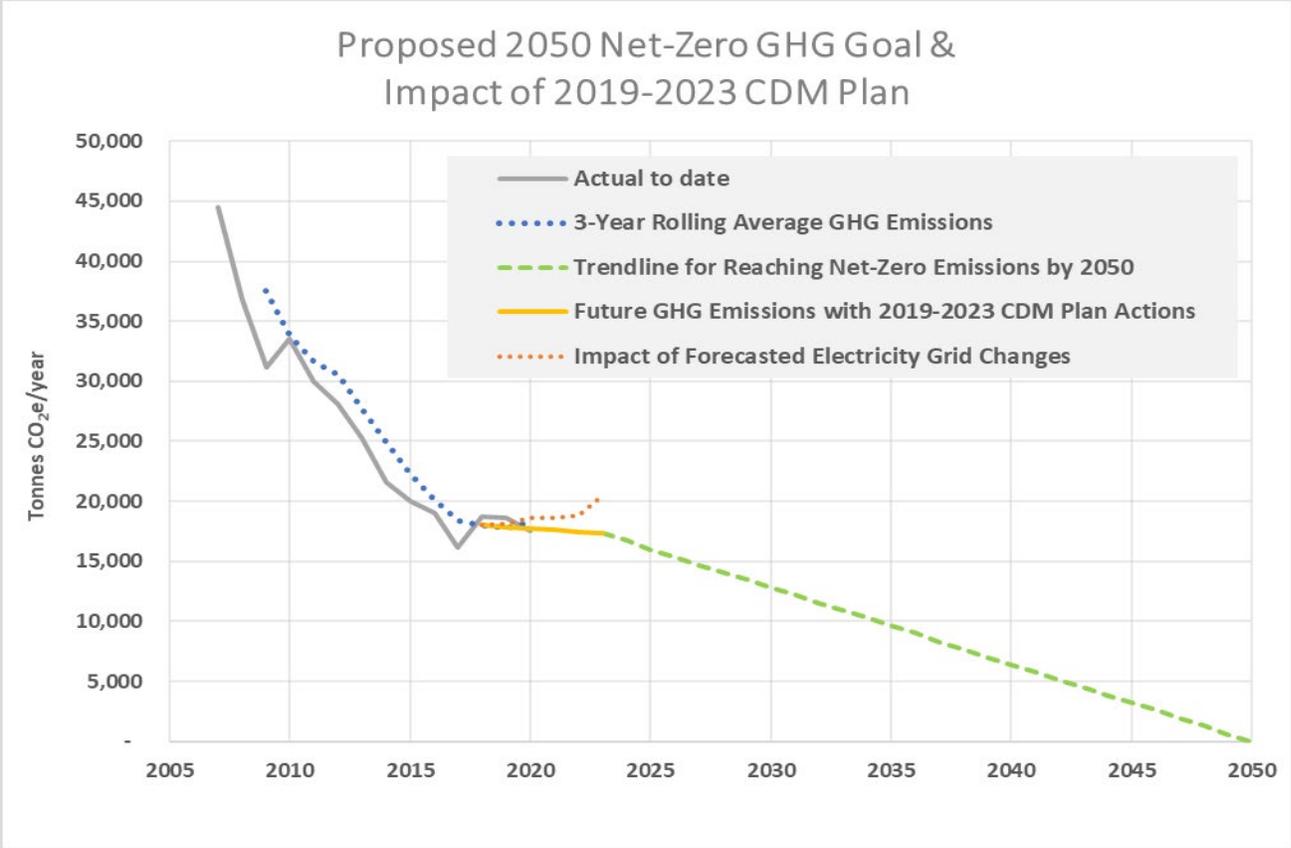


Figure 5 – Greenhouse Gas Emissions to Date and Progress Towards Goals

6.4.2 Non-Energy Related Greenhouse gas Emissions

The City also has direct control over two major sources of greenhouse gas emissions not associated with energy use:

- Methane emissions from the W12A Landfill as well as closed landfills; and
- Nitrous oxide (N₂O) emissions from the incineration of sewage sludge at the Greenway Wastewater Treatment Plant.

In fact, methane emissions from landfill sites are significantly larger in magnitude than energy related greenhouse gas emissions. With the installation and ongoing expansion of the landfill gas collection and flaring system at the W12A landfill, the City has made significant reductions in greenhouse gas emissions as seen in Table 3.

Table 5 – Summary of Landfill Gas Flaring at W12A Landfill

Year	Methane Flared (tonnes)	Equivalent CO₂ Reduced (tonnes)	Cumulative Methane Flared (tonnes)	Cumulative CO_{2e} Reduced (tonnes)
2004	852	21,000	852	21,000
2005	1,975	49,000	2,827	70,000
2006	1,800	45,000	4,627	115,000
2007	1,441	36,000	6,068	151,000
2008	1,845	46,000	7,914	197,000
2009	2,282	57,000	10,196	254,000
2010	2,324	58,000	12,520	312,000
2011	2,658	66,000	15,177	378,000
2012	3,237	81,000	18,415	459,000
2013	4,516	113,000	22,931	572,000
2014	4,165	104,000	27,096	676,000
2015	4,299	107,000	31,395	783,000
2016	5,989	149,700	37,384	932,700
2017	6,380	159,500	43,764	1,092,200
2018	4,292	107,300	48,056	1,199,500
2019	5,246	131,200	53,302	1,330,700
2020	6,791	169,800	60,093	1,500,500

As a result of London having joined the Compact of Mayors in 2015, nitrous oxide (N₂O) emissions from sewage treatment are now included within London’s energy and greenhouse gas emissions inventory as per the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories. Nitrous oxide, a potent greenhouse gas with 310 times the global warming potential of carbon dioxide, is a combustion by-product from the incineration of sewage sludge and its formation is influenced by incinerator operating conditions (i.e., combustion temperature).

Since 2008, annual stack testing at the Greenway Wastewater Treatment Plant sludge incinerator has included the measurement to nitrous oxide alongside other air pollutants. Table 6 summarizes the nitrous oxide stack test results.

Table 6- Summary of 2008 – 2017 Stack Test Results for N₂O Emissions from the Greenway WWTP Sewage Sludge Incinerator

Year	Measured average N ₂ O emissions g/s	Measured average N ₂ O emissions kg/h	Estimated annual N ₂ O emissions tonnes/y	Estimated annual CO ₂ e tonnes/y
2008	0.1	0.4	4	1,200
2009	1.1	3.9	34	10,700
2010	1.1	3.9	34	10,600
2011	1.2	4.4	39	12,000
2012	1.0	3.5	31	9,600
2013	0.2	0.6	5	1,700
2014	1.1	4.1	36	11,000
2015	1.0	3.7	32	10,000
2016	0.3	1.1	9	2,900
2017	2.4	8.6	65	20,200
2018	1.7	6.0	43	13,200
2019	1.5	5.5	33	10,200
2020	0.8	3.0	16	5,100

As can be seen from the table above, measured emissions of nitrous oxide can vary from year to year.

As Environment and Climate Change Canada has reduced the reporting threshold for facility emissions to 10,000 tonnes per year of carbon dioxide equivalent emissions for the 2017 reporting year, the Greenway Wastewater Treatment Plant is now required to report its emissions.

6.4.3 Total Corporate Greenhouse Gas Emissions by Employee Travel

City staff have estimated the greenhouse gas emissions impact associated with employees commuting to work as well as work-related travel in 2017. These types of greenhouse gas emissions indirectly induced by an organization are referred to as “Scope 3” greenhouse gas emissions, with Scope 1 being greenhouse gas emissions directly from corporate activities and Scope 2 being greenhouse gas emissions from the generation of electricity used in corporate activities:

Scope 3: Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g.,

transmission & distribution losses) not covered in Scope 2, outsourced activities, waste disposal, etc.

Greenhouse gas emissions have been estimated for the following:

- Car allowance reimbursements – based on 2017 reimbursement expenditures from Finance, a \$0.50/km mileage reimbursement rate, and an assumed 10L/100km average passenger vehicle fuel economy:
- Corporate travel – based on 2017 total travel and convention expenditures from Finance, an assumption of one-third of these costs being air travel costs, published data an average airfare cost per kilometre travelled, and published air travel greenhouse gas emissions per passenger-kilometre travelled; and
- Employee commuting – based on the 2014 City of London Mobility Survey results, average commuting distance based on employee home postal codes, and an assumed 10L/100km average passenger vehicle fuel economy.

Table 7: Summary of 2017 Employee Travel Greenhouse Gas Emissions

Activity	Cost	Estimated fuel use (L/year)	Estimated greenhouse gas Emissions (tonnes CO₂e/year)
Car allowance	\$255,000	51,000	110
Air travel (estimated)	\$240,000	not applicable	460
Employee commuting	not applicable	1,200,000	2,500
Total	\$495,000		3,500

These provide an order-of-magnitude estimate of the significance of these activities and will be used to help set priorities, particularly for promoting transportation demand management activities (e.g., carpooling, cycling, telecommuting, and transit) for City of London employee commuting.

Given that about 870 City employees were working from home as of March 2020, it is estimated that commuting related greenhouse gas emissions decreased by about 750 tonnes in 2020.

6.5 Water Consumption

Water is the second highest utility cost for the City. In 2020 alone, water cost was \$2 million for the City and hence is an important utility to monitor and track consumption. Figure 6 shows total water consumed by the City plotted along cooling degree-days (CDD – a measure of how hot the summer weather was for that year), given that water

use for municipal buildings tends to increase during hot weather when it also tends to be dry. The majority of the water consumed at municipal buildings is for public facilities or employee use. Also, the portion of water consumed by buildings and wastewater treatment plants is identified in the graph.

Figure 6 also shows:

- Buildings consume 80 per cent of the total water consumed by City.
- Buildings water consumption is influenced by weather i.e., with hotter weather, as measured by cooling degree days, water consumption and vice versa.
- Wastewater operations consume about 20 per cent of the total water consumed by the City. Majority of this usage is in summer months to flush and clean wastewater holding tanks at pumping stations.
- Wastewater operations water consumption is stable year over year since the past six years.

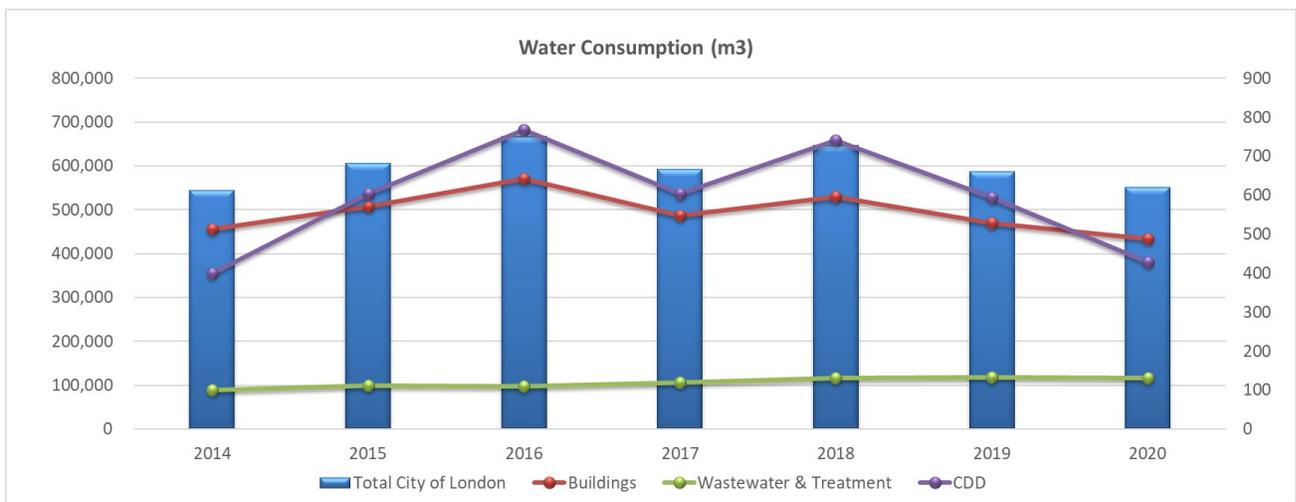


Figure 6 – Total Water Consumption (m3)

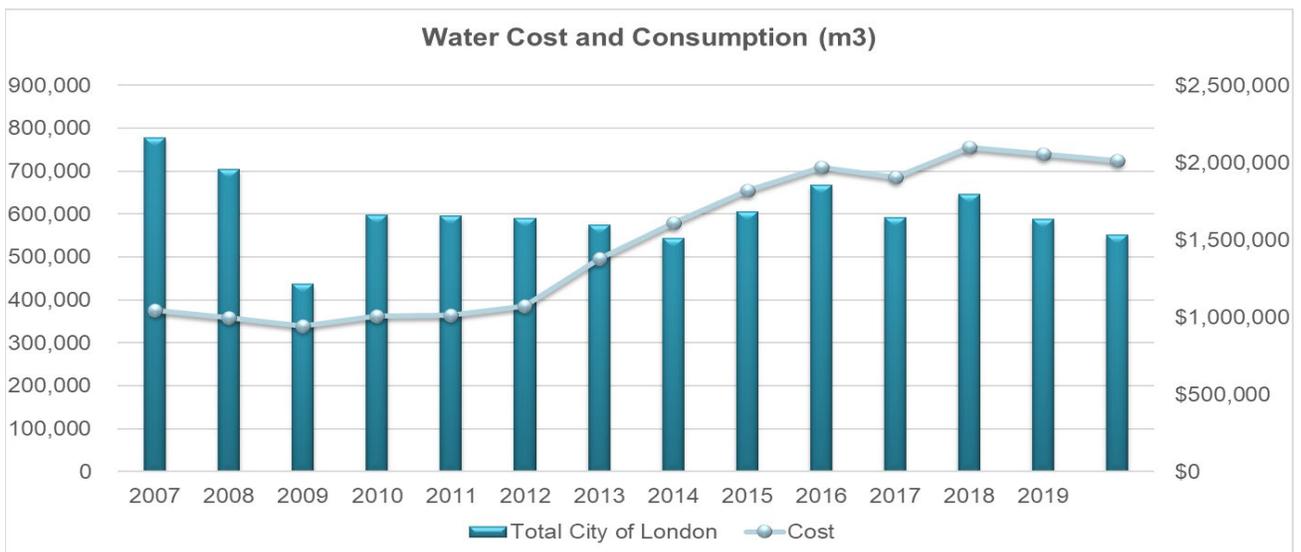


Figure 7 – Water Cost and Consumption (m3)

Figure 7 shows how water consumption has been reduced by 29 per cent from 2007 to 2020. During the same period, water cost increased by double due to the changes made to water billing between 2012 and 2014.

6.6 Corporate Energy Cost

Total corporate energy costs continue to increase with the price of electricity in Ontario being the major contributor. However, corporate energy management practices by the City including cost avoidance measures through procurement, building retrofits, and other conservation measures assist in continued efforts to reduce amounts of energy used to help reduce the market cost increase.

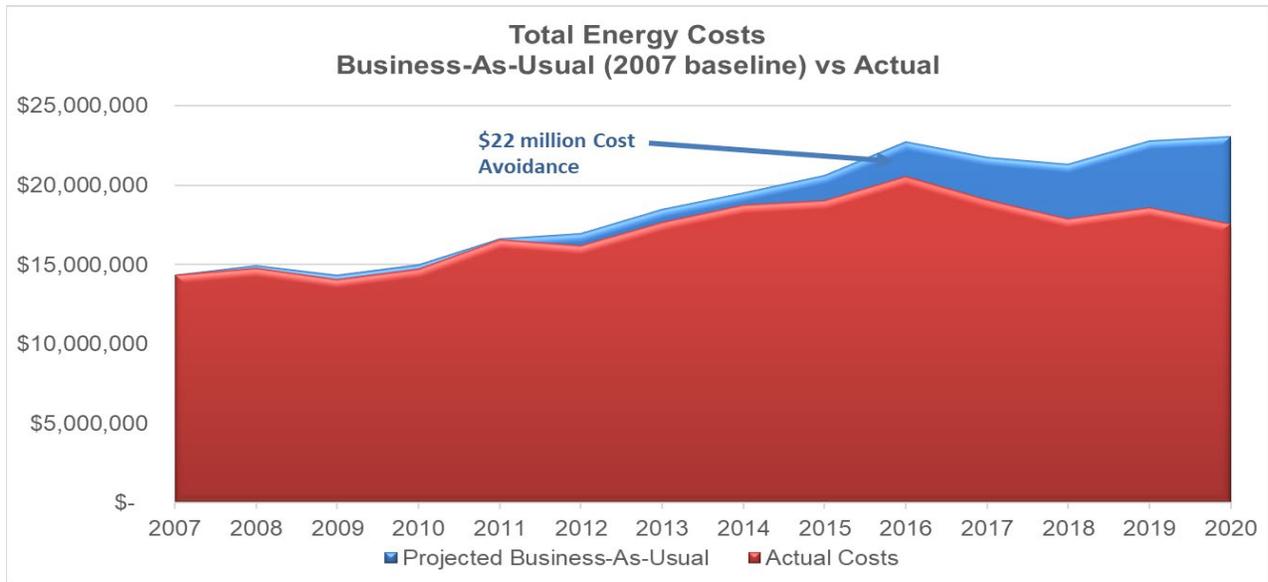
Table 8 – Energy Costs by Commodity

	2007	2018	2020	Change since 2007	Change since 2018
Electricity	\$9,289,000	\$13,520,000	\$14,003,000	51%	4%
Natural Gas	\$2,350,000	\$1,029,000	\$1,251,000	-47%	22%
Steam	\$273,000	\$192,000	\$151,000	-45%	-21%
Chilled Water	\$251,000	\$277,000	\$196,000	-22%	-29%
Diesel Fuel	\$1,518,000	\$2,133,000	\$1,410,000	-7%	-34%
Gasoline	\$664,000	\$755,000	\$587,000	-12%	-22%
Total City of London	\$4,345,000	\$17,906,000	\$17,598,000	23%	-2%

Total energy costs in 2020 were \$17.6 million, 23 per cent higher than 2007 and slightly lower by two per cent compared to 2018. As shown in Table 8, electricity price plays a major role in overall commodity costs. Though electricity consumption went down by 17 per cent since 2007, total electricity costs increased by over 50 per cent in the same period.

Figure 8 shows that approximately \$5 million in energy costs were avoided in 2020 compared to 2007 levels and more than \$22 million in avoided energy costs have been accumulated since 2007.

Figure 8 - Avoided Energy Costs (Accumulated)



The City requires several different initiatives to sustain and/or reduce energy costs. The cost per capita is continuing to drop between 2016 and 2020 (from \$54 per person to \$42 per person in 2020). The energy improvements and cost avoidance measures being implemented today are trying to avoid and sustain the market changes and inflation costs the City is faced with in the associated costs to procure energy.

6.6.1 Utility Procurement

The City of London uses energy procurement strategies to mitigate the cost of energy. To assist the City of London in preparing forecasts for long-term budgetary considerations, Blackstone (the City’s energy procurement advisor) has provided the following commodity price escalation estimates shown in Table 9. These projections in market forecasts give the City the opportunity to prepare for increased operating costs and to develop additional measures to mitigate some of these financial impacts. Specific notes regarding each commodity follow.

Table 9- Utility Price Forecast - Annual Commodity Escalation Estimates

	2022	2023	2024	2025	2026
Electricity Rates	0.6%	3.0%	2.9%	1.7%	1.8%
Natural Gas Rates	-0.8%	8.9%	10.4%	9.1%	8.4%
Steam	1.3%	3.6%	5.8%	5.1%	4.9%

Electricity:

Ontario is a unique electricity market in that the majority of costs consumers face are outside of the actual wholesale energy price, or Hourly Ontario Energy Price (HOEP). The bulk of costs are paid through Global Adjustment (GA), which covers the cost of building new assets, maintaining existing infrastructure, and delivering conservation and demand management programs. Ontario continues to maintain a diverse grid-connected electricity supply mix with approximately 33 per cent of generation capacity coming from nuclear, 29 per cent from natural gas, 23 per cent from hydro, 12 per cent from wind, solar and small amounts from biofuel. Despite the diverse supply mix, natural gas pricing plays a prominent role in determining HOEP as natural gas generators are often the marginal units setting price in Ontario – particularly in summer and winter.

Blackstone is projecting a significant increase in electricity commodity costs for 2022. This stems from 1) Blackstone's confident natural gas forecast, which would put upward pressure on HOEP, and 2) generally higher forecasted demand in 2022 as the province recovers and the economy re-opens after COVID-19. Beyond 2022, electricity prices continue to rise as additional nuclear generators undergo refurbishment, resulting in a greater reliance on more expensive natural gas generation.

Costs outside of HOEP make up most of the City's costs, particularly in the form of GA. Taking into consideration GA, regulatory, and delivery charges, Blackstone forecasts a moderate decrease in 2022 resulting primarily from 2020 COVID-19 GA deferrals being paid off in 2021. Post-2022, Global Adjustment, as well as utility regulatory and delivery charges are forecasted to steadily rise year-over-year at an inflationary pace.

Natural Gas:

The City currently has its natural gas supply secured at variable index prices until October 2021. Beyond this time, City will work with Blackstone to hedge portions of the City's natural gas supply in future years to take advantage of the current low pricing environment before the price escalations mentioned in Table 9 are fully realized.

So far, 2021 has shown higher commodity costs compared to last year. In contrast, we are in a relatively lower storage environment with less production as well as stronger export and demand expectations. This has created a higher pricing environment which is expected to continue over the winter and into 2022. It is expected that production levels will trend upwards towards highs set in early 2020, but it is still unclear as to how long that will take.

Uncertainty remains around the existing supply/demand balance for the rest of summer 2021. Industrial demand will be a driving factor as the economy begins to recover from COVID-19 shut-downs. Blackstone expects electricity demand to increase as lockdowns are lifted and more jurisdictions reopen, which will drive natural gas demand for electricity generation. Weather is another wildcard, as expectations for cooling demand

change frequently and will cause greater volatility on prices this summer due to lower storage levels.

In 2023-2024 it is expected that overall commodity prices will decrease over time as more production begins to come online, and storage moves towards more favorable levels.

Even though commodity pricing forecasts are lower post-2022, overall costs are projected to increase once escalation of utility delivery fees and carbon charges are factored in. These are the primary drivers of costs in the outer years evaluated, out until 2026. Carbon charges will increase once again in April 2022 from \$40 to \$50 per tonne, but there is currently legislation before parliament to continue increases out until 2030. It is expected that the carbon price will increase an additional \$15/tonne per year out until 2030, reaching \$170/tonne.

City will be working with Blackstone in reviewing low carbon alternatives for the City, such as renewable natural gas (RNG).

Steam:

Steam input costs are strongly tied to natural gas, as this is the main input cost for steam. Carbon costs will also factor into steam costs as London District Energy passes on carbon charges to its client base. As a result of these factors and expected costs increases from London District Energy, it is forecasted that costs for steam will rise slowly over the coming years.

7. Energy Conservation

One of the energy reduction strategies the City employs is the completion of energy conservation projects and Culture of Conservation Activities. Upgrades to existing corporate buildings by installing energy efficient lighting and equipment or utilizing new technologies can help to improve operational efficiencies, cost effectiveness, and help meet corporate targets for energy intensity and greenhouse gas reductions. With global attention on climate change, greener public buildings are an expectation by staff and communities and will help move the City toward meeting its strategic and corporate goals.

The City's corporate energy team work closely with various service areas within the City, utility personnel and industry experts to retrofit existing buildings, construct new buildings, and upgrade equipment and processes. An important part of the process also involves securing incentives and funding opportunities and post project monitoring and verification of savings. The City tracks the energy savings achieved from projects once they are complete. The 2020 contribution from project savings was \$200,000 and \$160,000 in incentives. Cumulatively, a total of \$5.7 million in savings since 2010 for projects and incentives.

2020 Highlights:

Electric Zambonis:

- In 2020, City made an important decision to replace all compressed natural gas (CNG) ice resurfaces with electric resurfaces. Four ice resurfacers are now ready to go into service (when arenas re-open) and four additional units planned for the 2021/2022 arena season.
- London was one of the first cities in North America to make this move.
- This project will result in 290 tonnes of greenhouse gas savings annually.

Renewable Energy

- Facilities conducted net-zero energy study of the A.J. Tyler Operations Centre and 15 other buildings with Ameresco with a focus on PV generation.
- Wastewater Operations is investigating wastewater heat recovery technology at its new Dingman Creek pumping station.
- Solar Photovoltaic (PV) opportunities and challenges were identified at wastewater treatment plants and water supply plants in 2020. Further work is underway.

Insulation Upgrades:

- Facilities replaced arena glass walls with insulated panels at Bostwick Community Centre.
- This project resulted in \$35,000 in savings per year.

Electric Vehicle Charging:

- Installation of electric vehicle chargers at nine community locations, such as community centers and arenas, are currently underway through the land-lease agreement with ChargeCrew signed in 2020.
- City installed seven chargers for employees and public use at A.J. Tyler Operations Centre and City Hall.

Aeration Blower Upgrades

- Continuation of upgrades to all aeration blowers at wastewater treatment plants to new efficient turbo blowers was completed in 2020.
- This project will result in \$600,000 in energy savings annually.
- Over \$1 million in incentives from IESO have been identified at this time (monitoring and verification is still in progress).

Smart Lights Retrofit Project

- LED lights with individual dimming capability were installed at J. Allen Taylor building.
- This will result in \$10,000 in annual savings.
- \$4,000 in incentives from IESO have been received.

Organic Rankine Cycle Engine (ORC) Project

- The City completed most of the installation of the ORC engine for waste heat recovery for power generation at Greenway Wastewater Treatment Facility in 2020.
- When this starts operating in 2021, this will offset 475 kilowatts of electrical grid consumption, representing over 12 per cent of the City's overall goal for energy reduction by 2023.

Demand Response Program

- The City's Arva pumping station and South East Reservoir Pumping Station (SERPS) enrolled into 2020 Demand Response (DR) program from IESO to avoid blackouts during high energy demands in Ontario.
- Both the facilities together received \$10,000 in incentives for actively participating and reducing demand during peak hours in 2020.

Green Fleet

- City commissioned four CNG packers for waste collection as part of its fuel switching project from diesel to CNG. Fuel switching to CNG reduces emissions and noise, removes toxic pollutants from the air and enhances the lifecycle of the asset.
- In 2020, contracts were signed to switch more municipal fleet light duty vehicles to hybrids and electric vehicles.
- In 2020 Fleet approved purchasing of Hydraulic Bush Chippers for forestry use. Replacement of the diesel engines currently used with gasoline powered engine units will provide environmental benefits. Gasoline powered engines have an idle down control system which reduce the RPM of the engine to an idle position when high power demands are not required resulting in both reduced greenhouse gas emissions, fuel consumption and reduce costs compared to diesel engines.

Indoor/Outdoor Lighting Upgrades

- Facilities installed LEDs at Canada Games Aquatic Centre, Dearness Home, Adelaide operations Centre, and Fire Hall 9.
- This project will result in annual savings of \$16,000.
- \$9,000 in incentives from IESO have been received.

Heating, Ventilation and Air Conditioning Upgrades

- HVAC optimization at Dearness home and Eldon House.
- \$10,500 per year in energy savings annually will be achieved.

Greenway lighting upgrades

- As part of continuous lighting upgrades to LEDs, greenway wastewater treatment plants aeration blower building replaced its building lights to LEDs in 2020.
- \$3,000 in energy savings annually will be achieved.
- \$2,000 in incentives from IESO have been received.

7.1 Development of the Climate Lens Process

The Climate Lens Process was designed to ensure that climate emergency issues are part of the decision-making processes throughout the Corporation. To date, it has been considered in a number of areas of the Corporation. The Climate Lens Process will take this experience and new knowledge to significantly increase climate emergency activities and actions. The objectives associated with the creation and use of the Climate Lens Process are to:

1. Ensure climate emergency issues are included in decision-making and evaluation of existing plans, programs, and projects.
2. Establish a clear process for accountability and tracking of climate emergency issues including collection of information on decision outcomes and tracking the progress of projects/programs implemented.
3. Elevate understanding of the importance of climate emergency issues in decision-making across the Corporation.

The Climate Lens Process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates & Multi-year Budgets
5. Building Climate Change Capacity

The Climate Emergency Screening Tool (CEST) can be used in the Climate Lens Process especially when it is customized for an area. The customized CEST is used to guide the screening of projects and programs for key climate emergency issues and opportunities for improvement.

The development of the Climate Lens Process in 2020 and 2021 has increased the visibility and awareness of the need for energy conservation measures for City facilities, programs, projects, and operations.

8. Conclusion

Overall, 2020 saw a large shift in focus from making decisions based on the reduction of energy usage to decision-making with a climate change perspective, particularly as it related to projects and funding opportunities for projects. Many internal studies are underway to identify net-zero opportunities at individual facilities.

The City declared a climate emergency to focus its future development, infrastructure, corporate energy planning and community engagement to improve the City's resiliency plans and favorable climate change outcomes.

The City will always require energy to operate its facilities, vehicles, and operations, but strategic management of energy usage, emissions, investment in renewable technologies and a keen focus on climate change can help use less, become carbon neutral and greener overall. Detailed energy consumption and cost numbers along with energy project incentives are listed in Appendix A and B.

Appendix A – Energy Consumption and Cost Tables

Total Energy Consumption

Table A-1 – Consumption by Commodity 2018-2020 (2019-2023 CDM Plan baseline tracking)

Energy Consumption (ekWh)	2018	2020	Change since 2018	% Change
Electricity	98,448,000	89,893,000	(8,555,000)	-9%
Natural Gas	42,430,000	40,889,000	(1,541,000)	-4%
Steam	3,269,000	2,093,000	(1,176,000)	-36%
Chilled Water	1,521,000	913,000	(608,000)	-40%
Diesel Fuel	22,194,000	20,306,000	(1,888,000)	-9%
Gasoline	6,889,000	6,667,000	(222,000)	-3%
Total City of London	174,751,000	160,761,000	(13,990,000)	-8%

Table A-2 – Energy Consumption by Commodity 2007 – 2020

Energy Consumption (ekWh)	2007	2020	Change since 2007	% Change
Electricity	108,328,000	89,893,000	(18,435,000)	-17%
Natural Gas	58,682,000	40,889,000	(17,793,000)	-30%
Steam	3,499,000	2,093,000	(1,406,000)	-40%
Chilled Water	1,759,000	913,000	(846,000)	-48%
Diesel Fuel	20,129,000	20,306,000	177,000	0.88%
Gasoline	6,718,000	6,667,000	(51,000)	-1%
Total City of London	199,115,000	160,761,000	(38,354,000)	-19%

Energy Consumption by Municipal Service Categories

Table A-3 Consumption by Municipal Service Categories 2018 – 2020

Energy Consumption (ekWh)	2018	2020	Change since 2018	% Change
Buildings	67,659,000	62,576,000	(5,083,000)	-8%
Traffic Signals & Streetlights	18,421,000	17,773,000	(648,000)	-4%
Wastewater & Treatment	50,823,000	44,535,000	(6,288,000)	-12%
Water Pumping	8,764,000	8,903,000	139,000	2%
Vehicle Fleet	29,083,000	26,973,000	(2,110,000)	-7%
Total City of London	174,750,000	160,760,000	(13,990,000)	-8%

Table A - 4 – Energy Consumption by Municipal Service Categories 2007 – 2019

Energy Consumption (ekWh)	2007	2020	Change since 2007	% Change
Buildings	73,225,000	62,576,000	(10,649,000)	-15%
Traffic Signals & Streetlights	24,762,000	17,773,000	(6,989,000)	-28%
Wastewater & Treatment	65,594,000	44,535,000	(21,059,000)	-32%
Water Pumping	8,687,000	8,903,000	216,000	2%
Vehicle Fleet	26,847,000	26,973,000	126,000	0%
Total City of London	199,115,000	160,760,000	(38,355,000)	-19%

Total Energy Consumption per Capita by Municipal Service Categories

Table A-5 Energy Consumption Per Capita 2018 – 2020

Energy Consumption (ekWh) by Service Area per person			Change since 2018	Change since 2018
	2018	2020	Variance	% Change
Buildings	169	150	(18.7)	-11.1%
Traffic Signals & Streetlights	46	43	(3.3)	-7.2%
Wastewater & Treatment	127	107	(19.9)	-15.7%
Water Pumping	22	21	(0.5)	-2.3%
Vehicle Fleet	73	65	(7.8)	-10.8%
Total City of London (ekWh/pp)	436	386	(50.3)	-11.5%
London's Population	401,000	417,000	(16,000)	-4%

Table A-6 Energy Consumption Per Capita 2007-2020

Energy Consumption (ekWh) by Service Area per person			Change since 2007	Change since 2007
	2007	2020	Variance	% Change
Buildings	206	150	(56)	-27.2%
Traffic Signals & Streetlights	70	43	(27)	-38.9%
Wastewater & Treatment	185	107	(78)	-42.2%
Water Pumping	24	21	(3)	-12.8%
Vehicle Fleet	76	65	(11)	-14.5%
Total City of London (ekWh/pp)	561	386	(175)	-31.3%
London's Population	355,000	417,000	(65,000)	17.5%

Total Energy Costs per Capita by Municipal Service Categories

Table A-7 – Energy Costs Per Capita 2018- 2020

Energy Costs by End Use per person			Change from 2018	Change from 2018
	2018	2020	Variance	% Change
Buildings	\$ 12.90	\$ 3.19	\$ 0.29	2.2%
Traffic Signals & Streetlights	\$ 8.45	\$ 8.88	\$ 0.44	5.2%
Wastewater & Treatment	\$ 13.45	\$12.53	\$ (0.92)	-6.9%
Water Pumping	\$ 2.66	\$ 2.82	\$ 0.16	6.0%
Fleet	\$ 7.20	\$ 4.79	\$ (2.42)	-33.5%
Total Energy Cost Per Person	\$ 44.66	\$ 42.20	\$ (2.45)	-5.5%
London's Population	401,000	417,000	(16,000)	-4%

Table A-8 – Energy Cost Per Capita 2007- 2020

Energy Costs by End Use per person			Change since 2007	Change since 2007
	2007	2020	Variance	% Change
Buildings	\$ 14.31	\$ 13.19	\$ (1.12)	-7.8%
Traffic Signals & Streetlights	\$ 5.29	\$ 8.88	\$ 3.59	68.0%
Wastewater & Treatment	\$ 12.59	\$ 12.53	\$ (0.07)	-0.5%
Water Pumping	\$ 2.07	\$ 2.82	\$ 0.75	36.2%
Fleet	\$ 6.15	\$ 4.79	\$ (1.36)	-22.1%
Total City of London	\$ 40.41	\$ 42.20	\$ 1.80	4.4%
London's Population	355,000	417,000	(62,000)	17.5%

Appendix B - 2020 Energy Project Incentives

Organization	Project	Year	Incentive	Status
EnelX	Demand Response	2020	\$509	Received
EnelX	Demand Response	2020	\$946	Received
Enbridge	Bostwick feasibility Study	2020	\$4,000	Received
London Hydro	Retrofit lights with LEDs	2020	\$2,266	Received
London Hydro	Exterior and Parking lot lights retrofit	2020	\$6,218	Received
London Hydro	HVAC controls upgrade	2020	\$2,114	Received
London Hydro	Lighting controls & upgrades at AJT	2020	\$9,166	Received
London Hydro	Replace glass wall in arena with insulated panels - Bostwick	2020	\$32,000	Received
London Hydro	Adelaide ops Centre - lights retrofit	2020	\$6,352	Received
London Hydro	Fire hall 9- lights upgrade	2020	\$581	Received
London Hydro	Dearness - BAS upgrades	2020	\$81,221	Received
London Hydro	Greenway Fluorescent lights	2020	\$1,500	Received
Enbridge	Adelaide Ops Centre ERV	2020	\$400	Received
Enbridge	Oxford Ops Centre ERV	2020	\$500	Received
Enbridge	AJ Tyler Ops Centre ERV	2020	\$235	Received
Enbridge	AJ Tyler Bldg. 8 ERV	2020	\$350	Received
Enbridge	EROC main ERV	2020	\$200	Received
Enbridge	EROC Bldg. 2 ERV	2020	\$450	Received
Voltus	Demand Response for SERPS & ARVA	2020	\$10,000	Received
			\$0	In Process
			\$159,007	Total

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee
From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure
Subject: 2020 Community Energy Use and Greenhouse Gas
Emissions Inventory
Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure and City Engineer, the following actions **BE TAKEN**:

- a) this report on the 2020 Community Energy Use and Greenhouse Gas Emissions Inventory **BE RECEIVED** for information; and,
- b) this report **BE CIRCULATED** to the Advisory Committee on the Environment (ACE), Transportation Advisory Committee (TAC), Cycling Advisory Committee (CAC), Trees and Forestry Advisory Committee (TFAC), Agricultural Advisory Committee (AAG) and Environmental & Ecological Planning Advisory Committee (EEPAC) for their information.

Executive Summary

The 2020 Community Energy Use and Greenhouse Gas Emissions Inventory provides an overview of the energy used in the London community. This report covers all significant energy sources used in London: natural gas, gasoline, electricity, diesel, fuel oil, and propane. Energy-using sectors covered by the inventory include transportation, residential, industrial, commercial, and institutional. It also includes an estimate of the total cost associated with these energy needs and the greenhouse gas emissions associated with these energy sources. The COVID pandemic has had a major influence of energy use and greenhouse gas emissions.

2020 Community Energy Use

The impact of the COVID pandemic on transportation energy use was significant, which was 20 percent lower than 2019 overall. In particular:

- the amount of gasoline and diesel sold at London's gas stations dropped by 21%;
- Londoners used the opportunity provided by quieter roads to ride their bikes, with the estimated total distance of trips taken by bike increasing by 20% in 2020; and,
- The number of vehicles registered in London in 2020 decreased by 6%.

Energy used in London's single-family homes was down by four percent overall. Electricity use in homes did increase due in part to shifting to work from home as well as warmer summer temperatures increasing the demand for air conditioning. However, natural gas use decreased due to warmer winter and autumn weather reducing the demand for interior heating.

Energy used by London's industrial, commercial, and institutional sector remained relatively unchanged in 2020.

It is estimated that Londoners spent about \$1.35 billion on energy in 2020, a decrease of 11 percent from 2019. The improvements in energy efficiency seen since 2010, combined with the COVID-19 pandemic, are estimated to have saved Londoners \$380 million in avoided energy costs in 2020. Added up year-over-year, London has avoided

over \$1.3 billion in energy costs due to improved efficiency since 2010. On average, every percentage that Londoners reduce their energy use results in around \$13 million staying in London.

2020 Greenhouse Gas Emissions

London's current greenhouse gas emission reduction targets are:

- 15% reduction from 1990 levels by 2020;
- 37% reduction from 1990 levels by 2030; and,
- Net-zero emissions by 2050.

In April 2021, the federal government revised its 2030 target to aim for a 40 to 45 percent reduction in greenhouse gas emissions from 2005 levels as well as net-zero emissions by 2050. To date, the provincial government has not revised its 2030 target for a 30 percent reduction from 2005 levels and has not established an emission reduction target beyond 2030.

Total greenhouse gas emissions in 2020 were over 2.7 million tonnes of equivalent carbon dioxide, or 22 percent lower than the 1990 level. This is well below the 15 percent reduction target set for 2020. However, it is important to note the extraordinary impact of the COVID-19 pandemic on emissions.

The COVID-19 pandemic has shown the impact that transportation demand management activities such as working-from-home can have on reducing emissions. This highlights the importance of new City-led measures to be developed in the upcoming Mobility Master Plan. There is also the potential role that building energy retrofits can play as part of the London Community Recovery Network.

Annual reporting on community energy use and resulting greenhouse gas emissions has been underway since 2012. These details are part of the foundation for the development of the Climate Emergency Action Plan, a response to the climate emergency declaration. Complete details are found in Appendix A: 2020 Community Energy Use and Greenhouse Gas Emissions Inventory – Executive Summary and Appendix B: 2020 Community Energy Use and Greenhouse Gas Emissions Inventory – Report.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of climate change mitigation, sustainable energy use, related environmental issues, and the need for a more sustainable and resilient city in its 2019-2023 - Strategic Plan for the City of London. Specifically, London's efforts in climate change mitigation address four of the five Areas of Focus, at one level or another:

- Strengthening Our Community
- Building a Sustainable City
- Growing our Economy
- Leading in Public Service

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

- Report to the October 22, 2019 Civic Works Committee (CWC) Meeting, 2018 Community Energy and Greenhouse Gas Inventory (Agenda Item #2.9)

1.2 Context

Addressing the Need for Action on Climate Change

On April 23, 2019, the following was approved by Municipal Council with respect to climate change:

Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change.

The 2020 Community Energy Use and Greenhouse Gas Emissions Inventory report is the measurement tool to highlight London's progress towards meeting its community energy reduction and greenhouse gas reduction targets along with other targets and directions.

Background

The City of London does not have direct control over how much energy is used in London, but it does have influence. The control over energy use in London rests primarily with citizens, visitors, employers, and employees. Individual and collective action with respect to sustainable energy use, energy management, and energy conservation is critical for our future.

Continuing from London's previous 2014-2018 Community Energy Action Plan, the upcoming Climate Emergency Action Plan will continue to place a priority on providing Londoners with annual information on community energy use and greenhouse gas emissions. London's current greenhouse gas emission reduction targets are:

- 15% reduction from 1990 levels by 2020;
- 37% reduction from 1990 levels by 2030; and,
- Net-zero emissions by 2050.

In April 2021, the federal government revised its 2030 target to aim for a 40 to 45 percent reduction in greenhouse gas emissions from 2005 levels as well as net-zero emissions by 2050. To date, the provincial government has not revised its 2030 target for a 30 percent reduction from 2005 levels and has not established an emission reduction target beyond 2030.

The three most common benchmark dates used by City staff to report on overall progress are:

- 1990 – The first year that for which London's community-wide greenhouse gas emissions and energy use were determined, as well as Province of Ontario's previous baseline year;
- 2005 – the baseline year used for the Government of Canada's and the new Province of Ontario's greenhouse gas reduction targets; and,
- 2010 – the first year for which total energy cost data was determined in London.

The 2020 Community Energy Use and Greenhouse Gas Emissions Inventory provides an overview of the energy used in the London community. This report covers all significant energy sources used in London: natural gas, gasoline, electricity, diesel, fuel oil, and propane. Energy-using sectors covered by the inventory include transportation, residential, industrial, commercial, and institutional. It also includes an estimate of the total cost associated with these energy needs and the greenhouse gas emissions associated with these energy sources. In addition, this report also includes the greenhouse gas emissions associated with the City of London's W12A Landfill and closed landfill sites, as well as sewage sludge incineration at the Greenway Wastewater Treatment Plant.

The City of London also reports this information on an annual basis to CDP Cities and the Global Covenant of Mayors for Climate & Energy.

2.0 Discussion and Considerations

The 2020 Community Energy Use and Greenhouse Gas Emissions Inventory report can be found on the [Get Involved London Climate Emergency Action Plan website](#). Highlights from the 2020 report are below in two categories:

1. Community energy use by product and sector including cost spent on energy
2. Greenhouse gas emissions and progress towards current targets

Energy use accounted for 95 percent of community greenhouse gas emissions. Not only does burning fossil fuels such as gasoline, diesel, and natural gas produce carbon dioxide – the most common greenhouse gas associated with human activity – but the use of electricity also contributes to greenhouse gas emissions. The remaining five percent of greenhouse gas emissions are methane emissions from landfills and nitrous oxide emissions from sewage sludge incineration.

2.1 2020 Community Energy Use

Energy use by sector in London was as follows:

- 44% from industrial, commercial, and institutional buildings and facilities;
- 31% from transportation, primarily cars and trucks on London’s roads; and,
- 25% from single-family residential homes.

There are four major energy commodities used in London – natural gas, gasoline, electricity, and diesel. The following table summarizes the impact of these energy commodities in terms of total energy use, total cost, and greenhouse gas emissions.

Energy Commodity	Share of Total Energy Used (in terajoules)*	Share of Total Energy Costs	Share of Energy-related GHG Emissions
Natural gas	47%	21%	51%
Gasoline	20%	27%	29%
Electricity	21%	42%	4%
Diesel	8%	7%	11%
Other	4%	3%	5%

Table Note: * a terajoule (or, one trillion joules) is a metric unit for measuring energy and is approximately equivalent to the energy provided by burning 26,000 litres of gasoline (roughly the amount of gasoline in 500 cars).

The impact of the COVID-19 pandemic on transportation energy use was significant, which was 20 percent lower than 2019 overall. In particular:

- the amount of gasoline and diesel sold at London’s gas stations dropped by 21% because of many London workplaces shifting to work-from-home as well as reduced non-work automobile trips associated with stay-at-home orders and similar restrictions;
- Londoners used the opportunity provided by quieter roads to ride their bikes, with Google’s Environmental Insights Explorer estimating the total distance of trips taken by bike increasing by 20% in 2020; and,
- The number of vehicles registered in London in 2020 decreased by 6%.

Other highlights of recent community energy use progress and longer-term trends, include:

- **The total amount of energy used in London in 2020 was 55,100 terajoules.** This is an 8% decrease from 2019.
- **Londoners are using energy more efficiently** – on a per person basis, Londoners and London businesses used 21% less energy overall in 2020 than used in 1990.
- **London is producing more goods and services for every unit of energy used** – on a dollar gross domestic product (GDP adjusted for inflation) per unit energy basis, London's industrial, commercial, and institutional sector improved the value of goods and services produced per unit of energy used by 37% between 1990 and 2020.
- **\$1.35 billion was spent by Londoners and London businesses on energy in 2020.** This is a decrease of 11% from 2019. As noted earlier, the response to the COVID Pandemic reduced the demand for gasoline, which also reduced the price for gasoline in 2020. In total, Londoners spent about \$170 million less on gasoline in 2020 than they did in 2019. Almost 90% of the \$1.35 billion leaves London. On average, every 1% reduction in energy use keeps about \$13 million from leaving the local economy.
- **London is spending less money on energy** – The improvements in energy efficiency seen since 2010, combined with COVID, are estimated to have saved London \$380 million in avoided energy costs in 2020. Added up year-over-year, London has avoided over \$1.3 billion in energy costs due to improved efficiency since 2010.

In addition, since 1990, on an energy used per person basis:

- Transportation fuel use has decreased by 31%;
- Energy use to heat and power single-family residential homes has decreased by 21%; and,
- Energy use to heat and power industrial, commercial, and institutional buildings decreased by 12%.

Prior to COVID, vehicle ownership in London had grown by over four percent every year on average between 2010 and 2019, much faster than London's overall population growth. As of December 2020, the number of light-duty vehicles registered in London dropped by six percent to just over 273,000 vehicles. This works out to about 0.86 vehicles per person aged 20 to 84.

In terms of low-emission vehicles, the number of hybrid and/or electric vehicles in London is almost six times higher in 2020 compared to 2010. There are also now over 1,000 electric vehicles registered in London. Almost one percent of new 2020 model year vehicles registered were electric vehicles and four percent were hybrid vehicles.

On the negative side, high gas-consuming sport utility vehicles and large pick-ups continue to gain in popularity as the relative number of minivans and mid-sized sedans decline.

Figure 1 illustrates the trend in energy use for major energy-using sectors on a per person basis since 1990. Figure 2 illustrates the trend for energy costs by commodity since 2010.

Figure 1 – Change in Energy Use in London, Per Person, by Sector Since 1990

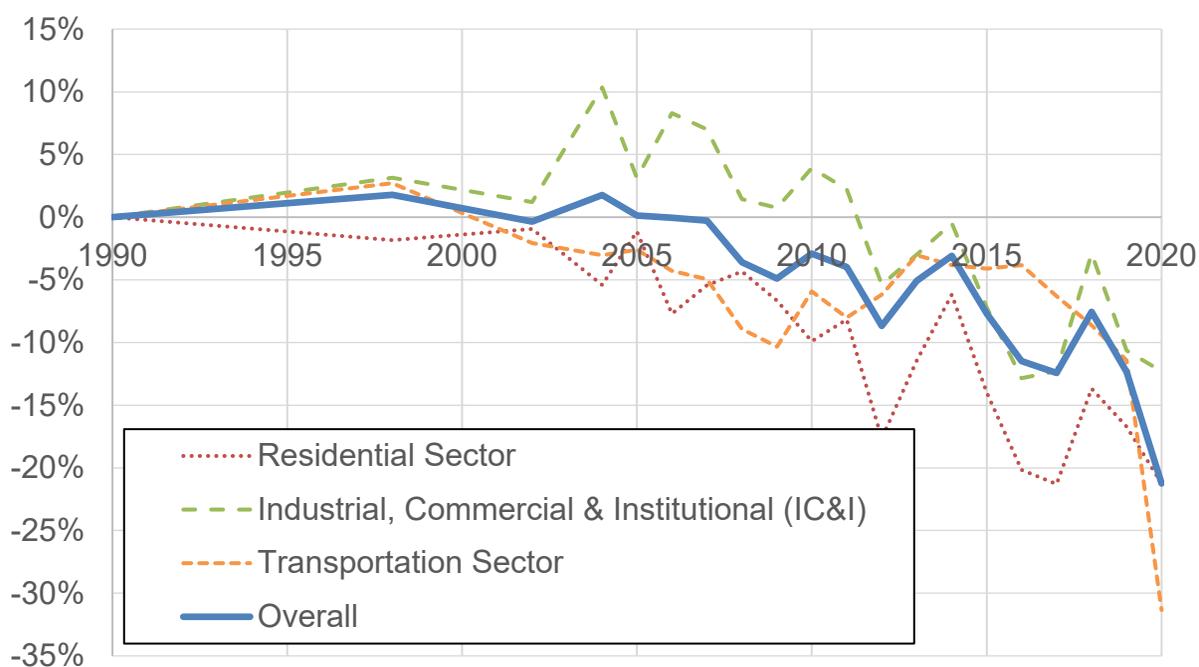
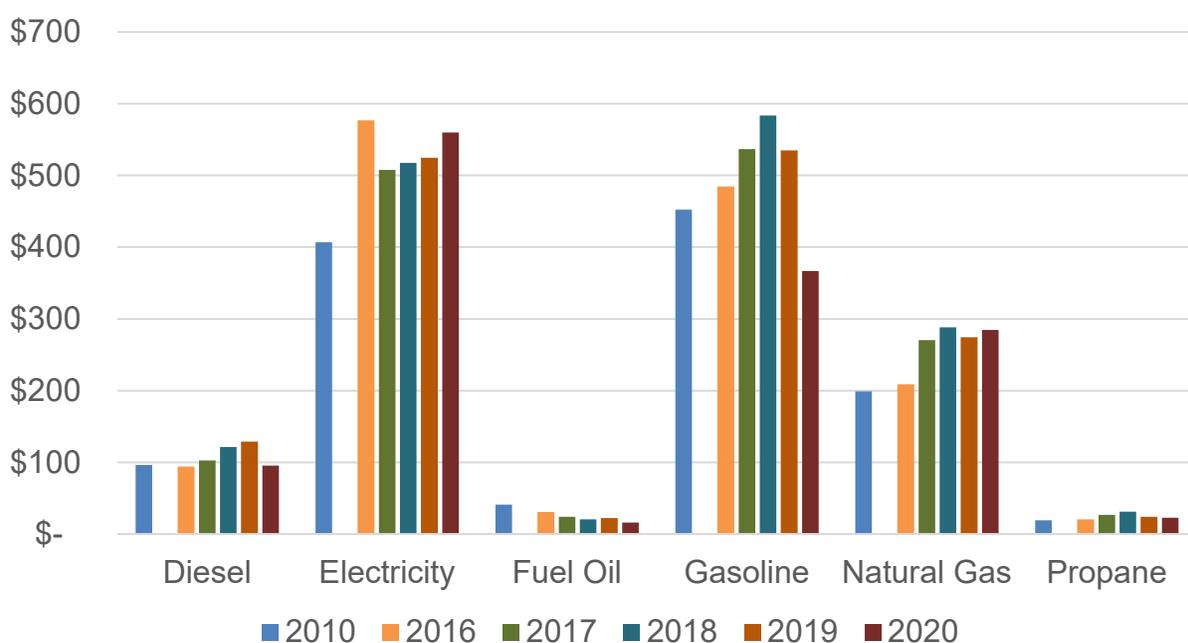


Figure 2 – Trends in Energy Costs (\$ Millions) by Energy Commodity



2.2 2020 Greenhouse Gas Emissions and Progress Towards Targets

Total greenhouse gas emissions in 2020 were over 2.7 million tonnes of equivalent carbon dioxide. This is 22 percent lower than the 1990 level. This is well below the 15 percent reduction target set for 2020.

Compared to 2005, the baseline year used by the federal and provincial governments, total greenhouse gas emissions from London in 2020 have decreased by 30 percent.

As noted earlier, the COVID-19 pandemic had a significant impact on transportation fuel use, with an associated 20 percent drop in transportation greenhouse gas emissions between 2019 and 2020. Warmer weather in the winter and autumn also reduced the demand for natural gas used for heating, with an associated seven percent drop in residential greenhouse gas emissions between 2019 and 2020.

Over 90 percent of Ontario’s electricity was generated from emissions-free sources in 2020, such as nuclear and hydro-electric generating stations as well as renewable sources (wind and solar). However, Ontario still relies on fossil fuels such as natural gas to generate almost seven percent of its electricity.

In summary:

- **Total greenhouse gas emissions in 2020 were over 2.7 million tonnes of equivalent carbon dioxide** – the top three sources in 2020 were personal vehicles (27%), single-family homes (20%), and commercial buildings (17%).
- **Londoners’ per-person greenhouse gas emissions are significantly lower** – on a per person basis, Londoners and London businesses released 30% fewer greenhouse gas emissions in 2020 than they did in 1990.

Figure 3 illustrates the trends to date for greenhouse gas emissions compared to London’s greenhouse gas emission reduction targets as well as targets set by senior levels of government.

Figure 3 – London’s Greenhouse Gas Emissions Trend versus Reduction Targets

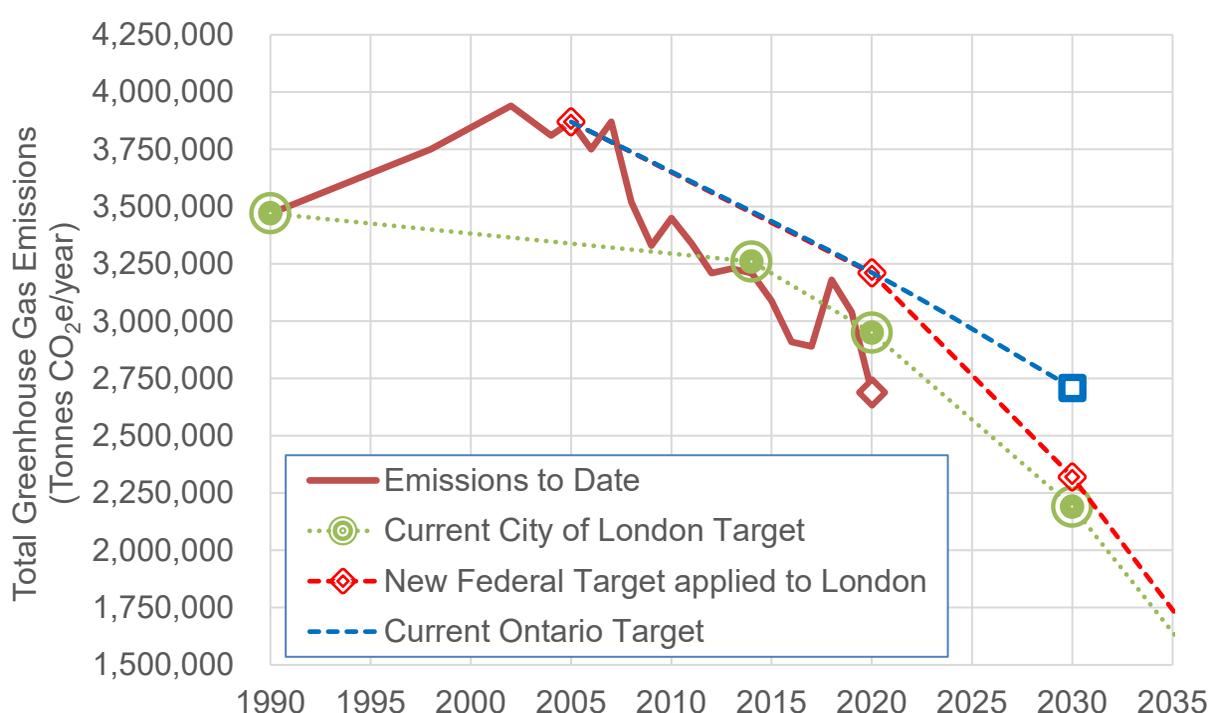


Chart Note:

- London’s targets are for a 15% reduction from 1990 levels by 2020, 37% reduction from 1990 levels by 2030, and net-zero emissions by 2050.
- Federal targets are for a 40% to 45% reduction from 2005 levels as well as net-zero emissions by 2050. The 40% target is shown here.
- Provincial target is for a 30% reduction from 2005 levels by 2030. The province does not currently have any long-term targets.

Whether emissions continue to decrease depends upon the impact of energy and fuel conservation efforts, provincial and federal climate change policies, climate trends, economic growth, and consumer choices. It is also important to note that these actions also contribute to reductions in air pollution emissions (e.g., nitrogen oxides, volatile organic compounds) from fossil fuel use.

Household-Level Energy Use and Greenhouse Gas Emissions

It is estimated that the average household in London, living in a single-family home, spent over \$380 every month on energy in 2020. Almost half of this, about \$170 a month, was spent on gasoline. Note that this was \$70 a month lower than 2019. Electricity accounted for around \$120 per month, while natural gas was around \$70 per month.

In terms of household greenhouse gas emissions, the average household emitted over nine tonnes per year. As with cost, almost half of this came from burning gasoline. Natural gas used for interior heating and water heating accounted for 42 percent of emissions. Organic waste in the landfill accounts for about seven percent. Given Ontario's clean electricity grid, using electricity in the home only accounts for under two percent of household GHG emissions.

It is important to recognize the fact that the production and transportation of the consumer goods purchased also have an environmental impact and that some types of goods (e.g., meat and dairy products) do have a larger impact than others. At this point in time, there is no easy-to-use methodology to estimate this at the community-wide scale. Therefore, municipalities across Canada currently do not include the energy use and greenhouse gas emissions from these activities in inventory reporting. These are often considered Scope 3 emissions (generated outside of the community). Establishing a consistent and acceptable measurement and reporting methodology will be important in the near future.

However, the Environmental Commissioner of Ontario report, *Climate Pollution: Reducing My Footprint (2019)*, provides estimates of consumption related GHG for Ontario residents. This report estimated that the average household's consumption related GHG emissions are about 18 tonnes per year. This is larger than the emissions from the direct use of energy and from waste. This highlights the climate change mitigation of several environmental initiatives such as:

- Food waste reduction;
- Buying durable products;
- Buying local products and local "staycations";
- Recycling and the circular economy; and,
- Repurposing and renovating existing buildings.

2.3 Development of the Climate Emergency Action Plan

The development of a Climate Emergency Action Plan is a fundamental and required response to the City of London's climate emergency declaration. The goals are to improve London's resilience to climate change impacts, reduce London's greenhouse gas emissions by at least 37% below 1990 levels by 2030 and reach net-zero emissions by 2050.

A recent report to Council's Strategic Priorities and Policy Committee on April 27, 2021 provided an update on the plan's engagement and development to date. City staff are currently reviewing the ideas and feedback collected from residents and businesses submitted between October 2020 and April 2021 as part of the development of the plan. Opportunities for input continue and can be found at <https://getinvolved.london.ca/climate>

The 2020 Community Energy Use and Greenhouse Gas Emissions Inventory Report Annual reporting on community energy use and resulting greenhouse gas emissions has been underway since 2012. These details are part of the foundation for the development of the Climate Emergency Action Plan (CEAP). The CEAP is currently scheduled to be submitted to the Strategic Priorities and Policy Committee (SPPC) in late fall 2021.

Conclusion

The results as demonstrated in the 2020 Community Energy Use and Greenhouse Gas Emissions Inventory Report continue to tell a positive story for London. Ontario's actions to replace coal-fired power plants with cleaner power generation have played a significant role in this reduction. Londoners have also taken action by reducing the amount of energy they use at home and at work.

Transportation fuel use remains an area where progress is needed. The COVID-19 pandemic has shown the impact that transportation demand management activities such as working-from-home can have on reducing emissions. This highlights the importance of City-led measures to be developed in the upcoming Mobility Master Plan.

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Environment & Infrastructure**

Appendix A 2020 Community Energy Use and Greenhouse Gas Emissions Inventory – Executive Summary

Appendix B 2020 Community Energy Use and Greenhouse Gas Emissions Inventory – Report

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Community Energy Use & Greenhouse Gas Emissions Inventory

Executive Summary

2020



London
CANADA

Introduction

The purpose of this document is to provide an overview on energy consumption in London and associated greenhouse gas emissions during the period from 1990 to 2020. The details in the document provide a useful source of information to strengthen existing projects/programs, or to help identify new business and academic opportunities for energy efficient products and technologies, energy conservation and demand management products and services, biofuels, and renewable energy generation.



There are many factors that influence how much energy a modern city uses to function and thrive:

- Land use and development
- Urban design
- Transportation
- Buildings
- Personal choices and actions
- Local climate & economy



Previous annual reports for 2012 through to 2018, as well as 2006 to 2008, 1998, and 1990 are available upon request.



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Community energy use inventory

The three most common benchmark dates being used for reporting on overall progress are:



1990

The first year that for which London's community-wide GHG emissions and energy use were determined, as well as Ontario's previous baseline year.



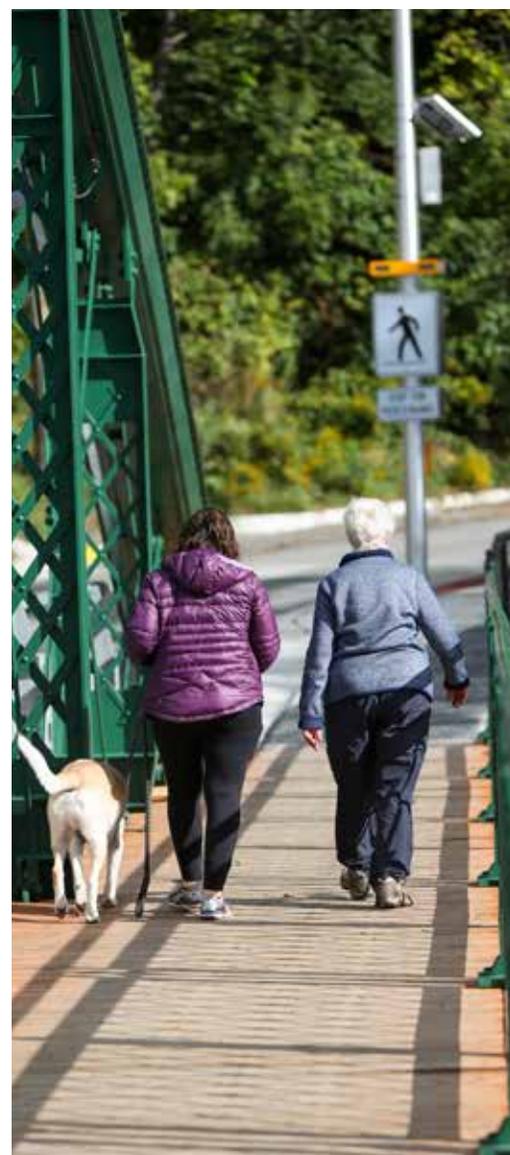
2005

the baseline year used for the Government of Canada's and the Province of Ontario's greenhouse gas (GHG) reduction targets



2010

the first year for which total energy cost data has been determined in London



Previous annual reports for 2012 through to 2019, as well as 2006 to 2008, 1998, and 1990 are available upon request.

COVID's big impact on transportation in 2020

The impact of the COVID-19 pandemic on transportation energy use was significant, which was 20 percent lower than 2019 overall. In particular:



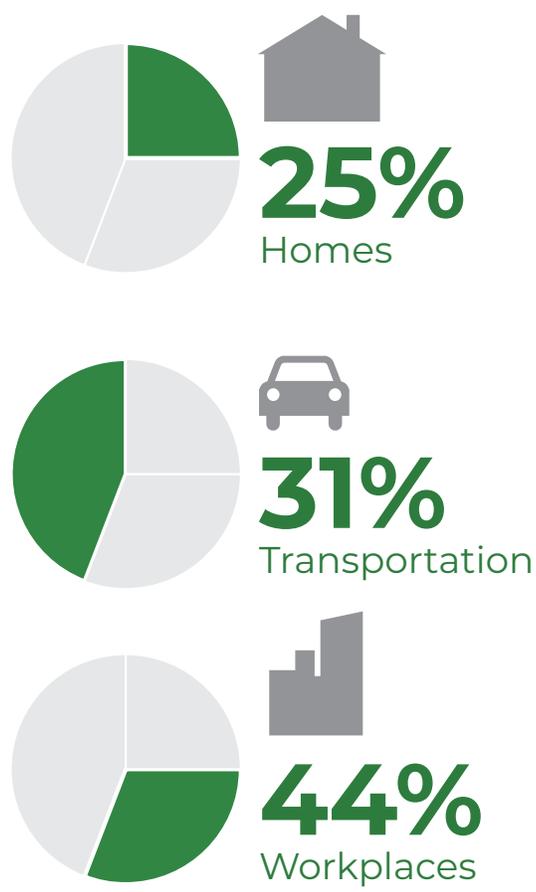
It is anticipated that the shift to working-from-home will remain in place at London's workplaces after the COVID-19 pandemic is over, although this is not likely to be a full-time shift for everybody. It is also anticipated that the interest in cycling for transportation will continue to grow.

Energy used in London's single-family homes was down by four percent overall. Electricity use in homes did increase due in part to shifting to work from home as well as warmer summer temperatures increasing the demand for air conditioning. However, natural gas use decreased due to warmer winter and autumn weather reducing the demand for space heating.

Energy used by London's industrial, commercial, and institutional sector remained relatively unchanged in 2020.

Total energy use in London in 2020 was 55,100 terajoules, an eight percent decrease from the previous year (2019).

Energy Use by Sector in 2020



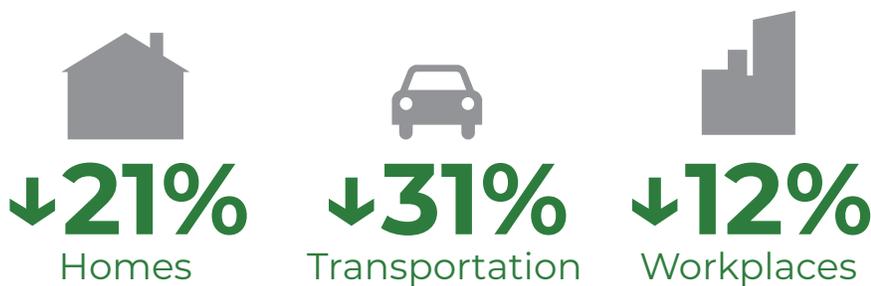
Energy efficiency trends

In 2020, energy use per person in London was 21 percent below 1990 levels.

As noted earlier, COVID-19's impact on transportation in 2020 was dramatic. However, it is too early to consider this a long-term trend.

The biggest long-term trend seen since 1990 is in residential energy use per person, which was 21 percent lower in 2020 than 1990. This may be attributed to improvements in the energy efficiency of consumer appliances, space heating and cooling systems, home retrofits, and new home construction.

Reduction In Energy Use Per Person Since 1990



Energy use per person in 2020 related to workplaces was 12 percent lower than 1990. However, London's energy productivity – dollars of real gross domestic product generated per unit energy used by London's employment sector – looks even more impressive with a 37 percent improvement between 1990 and 2020, even when adjusting for inflation.

Energy productivity, measured in terms of dollars of local Gross Domestic Product (GDP - adjusted for inflation)

1990

\$524

2020

\$717

of value /gigajoule of energy used

= 37%

more value for every gigajoule used!

Transportation fuel use is decreasing even as vehicle ownership increases

Prior to COVID-19, vehicle ownership in London had grown by over four percent every year on average between 2010 and 2019, much faster than London's overall population growth. As of December 2019, there were almost 292,000 light-duty vehicles registered in London – an increase of almost 89,000 since 2010. When compared to Census data on Londoners between the age of 20 and 84, vehicle registration increased from 0.75 per person in 2010 to an estimated 0.94 per person in 2019.

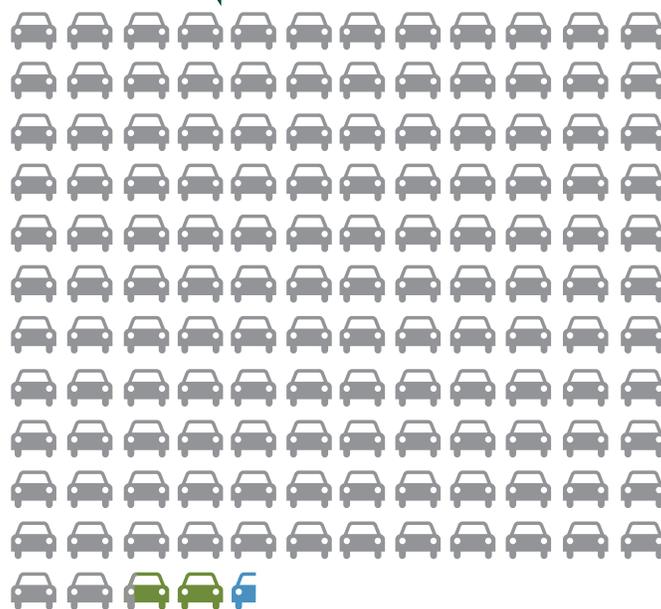
However, as of December 2020, the number of light-duty vehicles registered in London dropped by six percent down to just over 273,000 vehicles. This works out to about 0.86 vehicles per person aged 20 to 84.

The number of hybrid and/or electric vehicles in London are almost six times higher in 2020 compared to 2010. There are also now over 1,000 electric vehicles registered in London.

Almost one percent of new 2020 Model Year vehicles registered were electric vehicles and four percent were hybrid vehicles.

On the negative side, high gas consumption sport utility vehicles and large pick-ups continue to gain in popularity as the relative number of minivans and mid-sized sedans decline.

273,000 vehicles in London (2020)



1,020 vehicles are electric

3,720 vehicles are hybrids

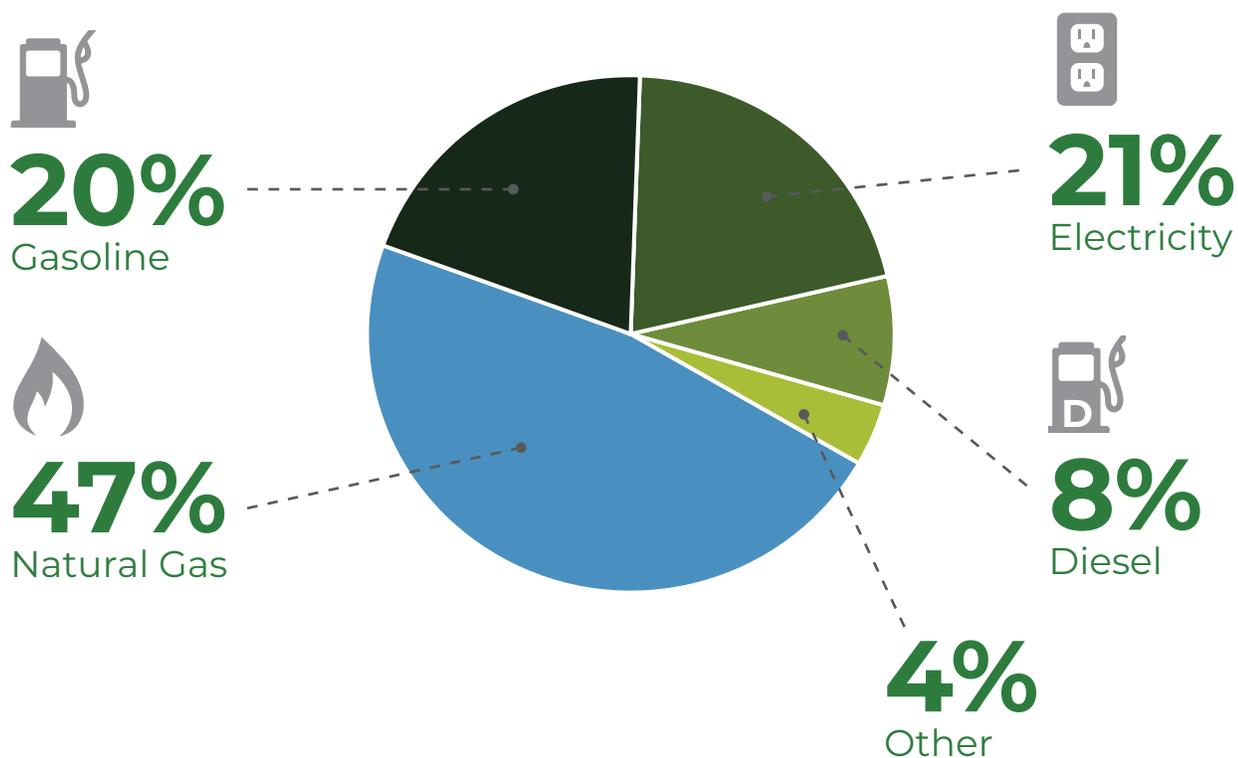
 = 2000 vehicles

 **0.86** Vehicles per adult Londoner

 **↓24%** Fuel use per vehicle since 2010

Sources of energy used in London

What sources of energy were used in London?



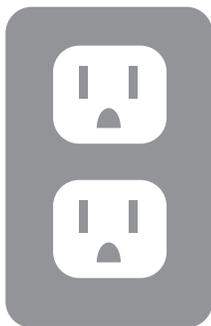
In terms of sources of energy, natural gas is the largest source of energy used in London, accounting for 47 percent of all energy used in 2020. Natural gas is used primarily for heating buildings, heating water, and providing heat for industrial processes.

Electricity was the second largest source of energy, accounting for 21 percent of London's energy use.

Gasoline accounted for 20 percent of all the energy used in London.

Electricity generation in London

London has almost 90 megawatts (MW) of local electricity generation capacity installed to date, an increase of about one megawatt from 2019. As of April 2021, there was 68.3 megawatts of gas-fired co-generation, 17.9 megawatts of solar photovoltaic (PV), 2.85 megawatts of biogas, and 0.675 megawatts of hydro-electric power generation in operation in London.



Most of London's local generating capacity is associated with natural gas combined heat and power cogeneration plants, used in four different applications:

- **District energy** - London District Energy (38.7 MW) provides power to the grid plus steam and chilled water to downtown buildings from its Colborne Street facility.
- **Industrial** - Ingredion (14.1 MW) and Labatt Brewery (4.2 MW) generate steam as well as electricity "behind-the-meter" for use in their operations.
- **Campus** – the London Health Sciences Centre (9.6 MW) Victoria Hospital campus generates both steam and electricity for hospital buildings.
- **Micro-scale** – small scale systems (under 100 kilowatts) are in use at the Canada Games Aquatic Centre and H.B. Beal Secondary School for pool heating as well as electricity "behind-the-meter" for use in their operations.

Translating energy use into economic and business development opportunities

It is estimated that Londoners spent about \$1.35 billion on energy in 2020, a decrease of 11 percent from 2019.

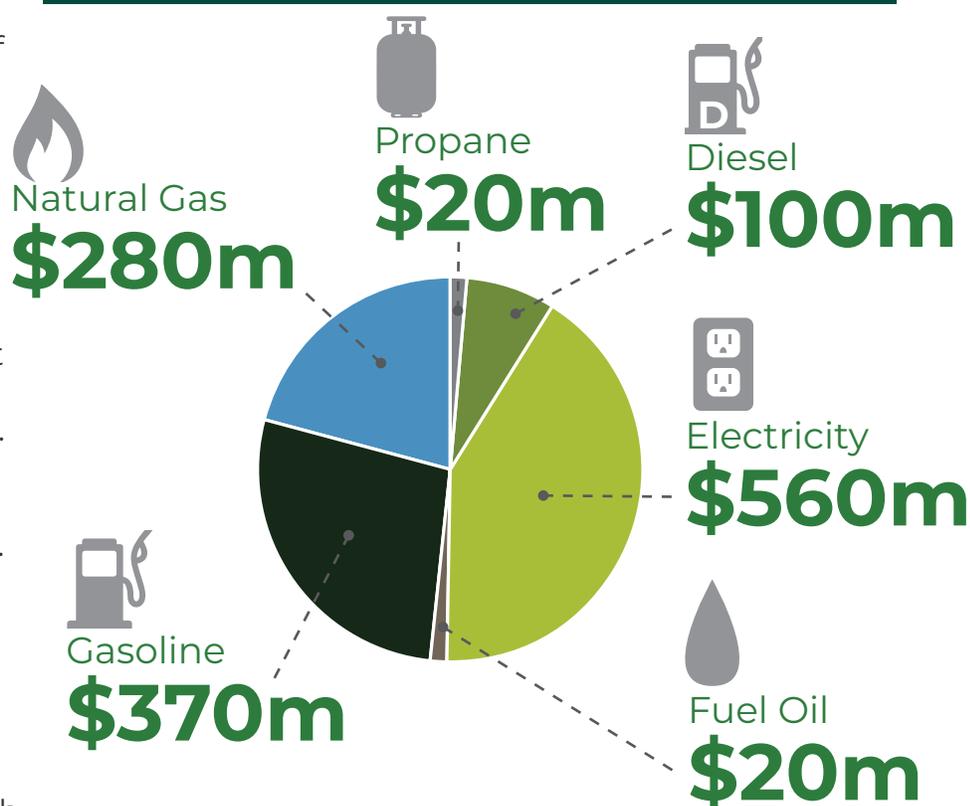
As noted earlier, COVID-19 reduced the demand for gasoline. As a result, the price for gasoline in 2020 decreased by 13 percent. In total, Londoners spent about \$170 million less on gasoline in 2020 than they did in 2019.

Electricity accounts for 42 percent of total energy costs.

Natural gas use accounts for only 21 percent of energy costs, even though it is the largest source of energy we use. This is due to the low price of natural gas, even with the \$30 per tonne carbon price in place during 2020.

On average, every percentage that Londoners reduce their energy use results in around \$13 million staying in London.

1.35 Billion Spent



The improvements in energy efficiency seen since 2010, combined with COVID-19, are estimated to have saved London \$380 million in avoided energy costs in 2020. Added up year-over-year, London has avoided over \$1.3 billion in energy costs due to improved efficiency since 2010.

Please note: due to rounding of numbers, individual numbers illustrated above may not add up to the rounded total.

Translating energy use to greenhouse gas impact

Total greenhouse gas emissions in 2020 were about 2.7 million tonnes of equivalent carbon dioxide, or 22 percent lower than the 1990 level. This is well below the 15 percent reduction target set for 2020. However, it is important to note the extraordinary impact of the COVID-19 pandemic on emissions.

Energy use is responsible for 95 percent of all GHG emissions from human activity in London. Not only does burning fossil fuels such as gasoline, diesel, and natural gas produce carbon dioxide – the most common GHG associated with human activity – but the use of electricity also contributes to GHG emissions.

Over 90 percent of Ontario’s electricity was generated from emissions-free sources in 2020, such as nuclear and hydro-electric generating stations as well as renewable sources (wind and solar).

However, Ontario still relies on fossil fuels such as natural gas to generate almost seven percent of the electricity we use.

In summary, energy related GHG emissions are:

- 51 percent from natural gas
- 29 percent from gasoline
- 11 percent from diesel
- 4 percent from electricity
- 5 percent from other fuels

The remaining five percent of GHG emissions are methane emissions from the anaerobic decomposition of organic materials in the active and closed landfills located in London as well as commercial sector waste disposed in landfills outside London, and nitrous oxide emissions from sewage sludge incineration.

GHG emissions from energy sources



Electricity
8kg



Natural Gas
51kg



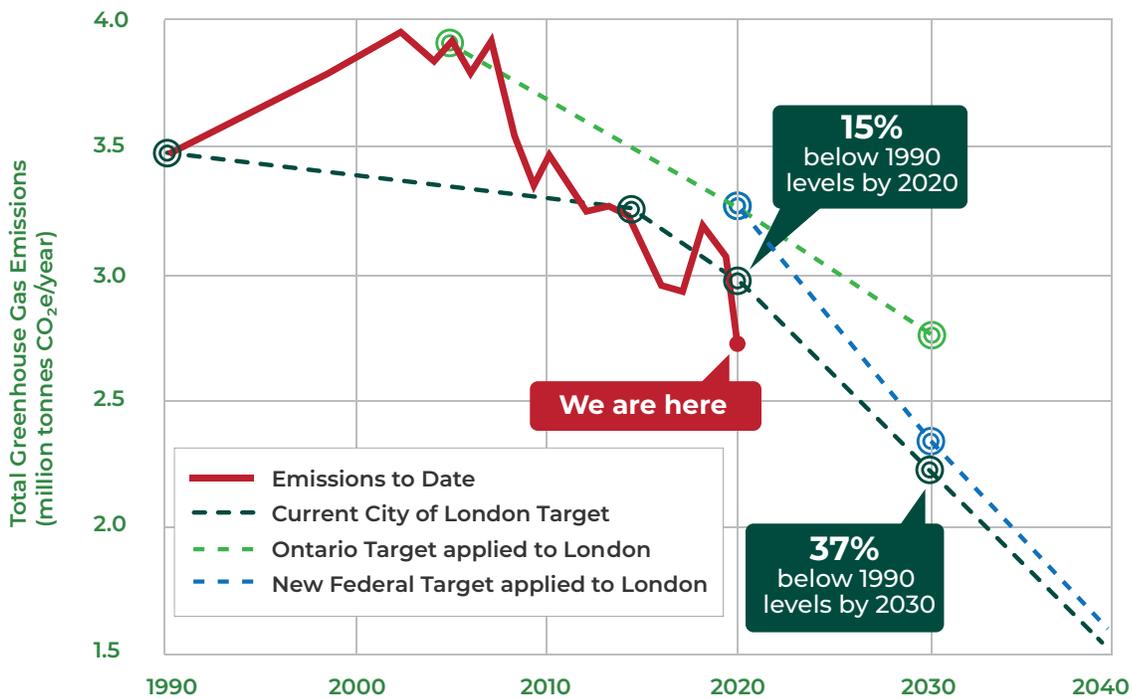
Gasoline
64kg



Diesel
70kg

Measured in kilograms (kg) of equivalent carbon dioxide CO₂E per unit of energy gigajoule

London's greenhouse gas emissions versus CEAP targets and Federal & Provincial reduction targets



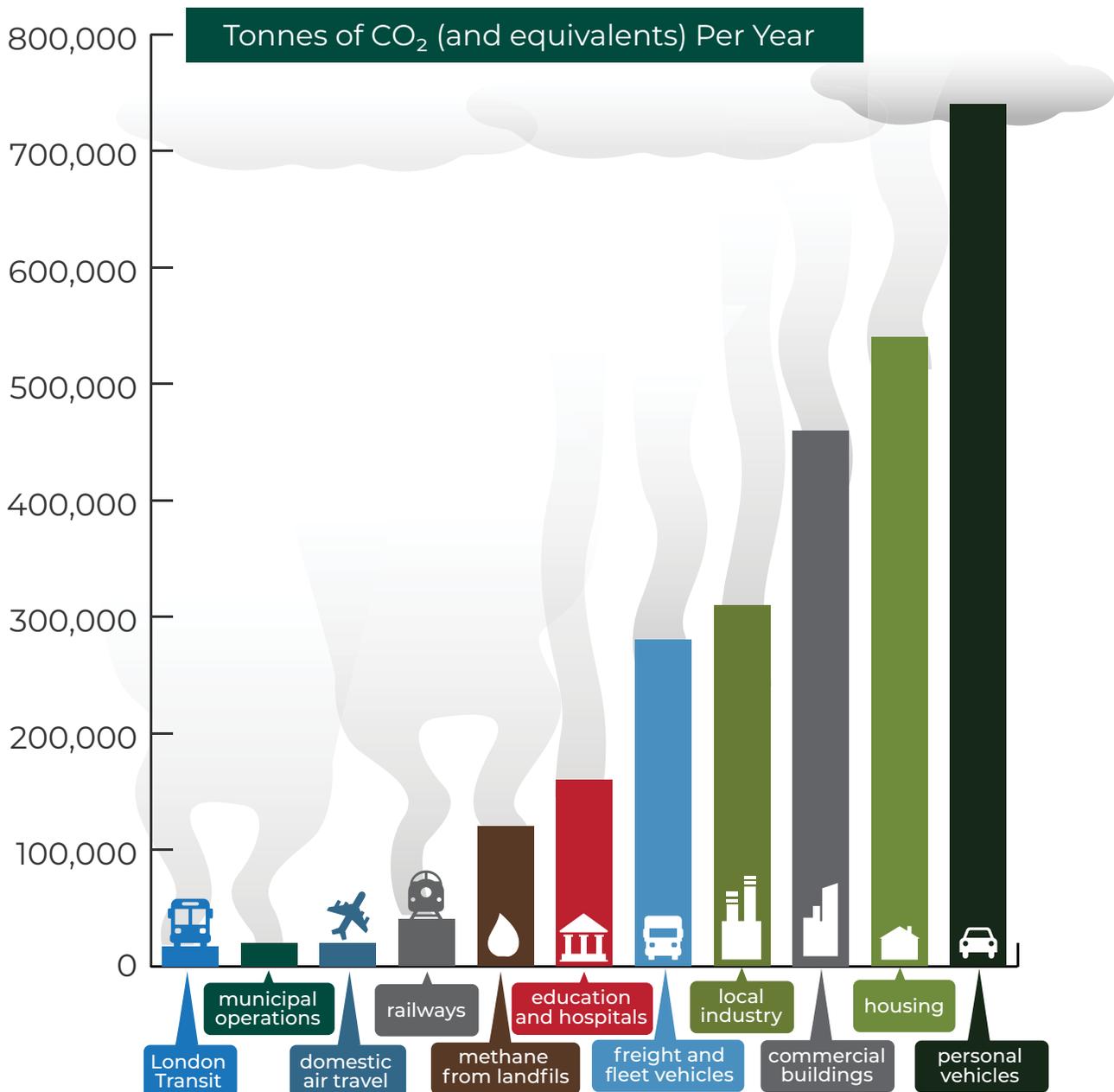
London's Climate Emergency Action Plan (CEAP) currently has the following greenhouse gas emission reduction goals:

- 15 percent reduction from 1990 levels by 2020
- 37 percent reduction by 2030, and
- Net-zero emissions by 2050.

In April 2021, the federal government revised its 2030 target to aim for a minimum 40 percent reduction in GHG emissions from 2005 levels as well as net-zero emissions by 2050. To date, the provincial government has not revised its 2030 target for a 30 percent reduction from 2005 levels and has not established an emission reduction target beyond 2030.

Compared to 2005, total greenhouse gas emissions from London in 2020 have decreased by 30 percent.

The following figure illustrates the estimated breakdown of greenhouse gas emissions in terms of human activity, with half of the emissions coming from personal transportation and energy use at home.





As mentioned earlier, the COVID-19 pandemic had a significant impact on transportation fuel use, with an associated 20 percent drop in transportation GHG emissions between 2019 and 2020. Warmer weather in the winter and autumn also reduced the demand for natural gas used for heating, with an associated seven percent drop in residential GHG emissions between 2019 and 2020.

Seasonal weather variations can affect energy use and associated emissions significantly on a year-by-year basis. However, over the last ten years, winter average temperatures and most summer average temperatures have been warmer than normal.

Since 2005 there has been a downward trend in community-wide emissions driven by a combination of cleaner electricity generation in Ontario and improved energy efficiency.



Whether emissions continue to decrease depends upon the impact of City-led actions as well as energy and fuel conservation efforts from Londoners, provincial and federal climate change policies, climate trends, economic growth, and consumer choices.

Household energy use and greenhouse gas emissions

It is estimated that the average household in London, living in a single-family home, spent over \$380 every month on energy in 2020. Almost half of this, about \$170 a month, was spent on gasoline. Note that this was \$70 a month lower than 2019.

Electricity accounted for around \$120 per month, while natural gas was around \$70 per month.

In terms of household greenhouse gas emissions, the average household emitted over nine tonnes per year. As with cost, almost half of this came from burning gasoline. Natural gas used for space heating and water heating accounted for 42 percent of emissions. Organic waste in the landfill accounts for about seven percent. Given Ontario's clean electricity grid, using electricity in the home only accounts for under two percent of household GHG emissions.

It is important to recognize the fact that the production and transportation of the consumer goods purchased do have an environmental impact, and that some types of goods (e.g., meat and dairy products) do have a larger impact than others. At this point in time, there is no

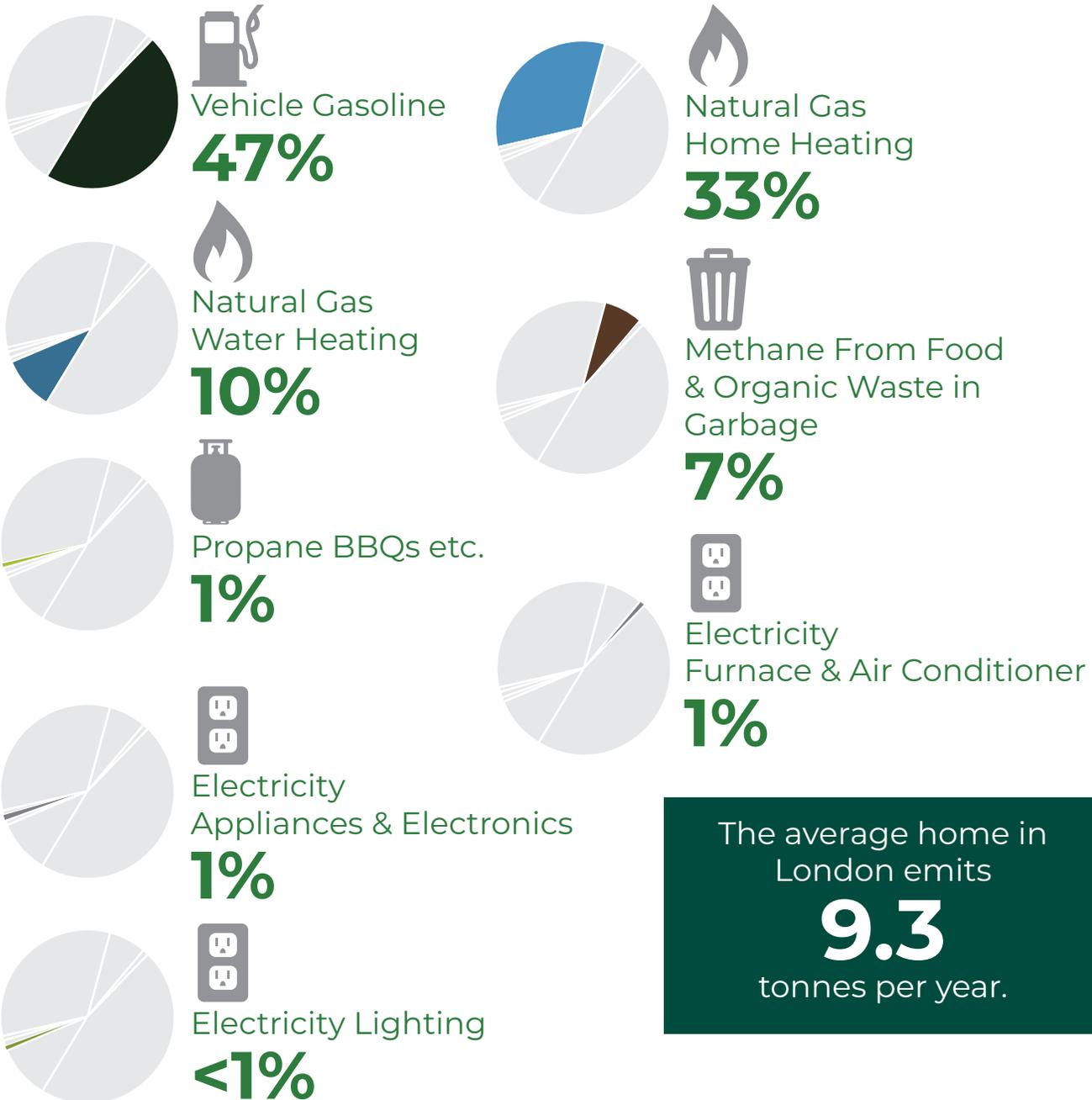
easy-to-use methodology to estimate this at the community-wide scale.

However, the Environmental Commissioner of Ontario report, *Climate Pollution: Reducing My Footprint*, provides estimates of consumption related GHG for Ontario residents. Using the information in this report, it is estimated that the average household's consumption related GHG emissions are about 18 tonnes per year. This is larger than the emissions from the direct use of energy and from waste.

This highlights the climate change mitigation of several environmental initiatives such as:

- Food waste reduction
- Buying durable products
- Buying local products and local "staycations"
- Recycling and the circular economy
- Repurposing and renovating existing buildings

Where do your greenhouse gas emissions come from?



The average home in London emits
9.3
tonnes per year.

Based on 2020 average energy use for residential customers of London Hydro and Enbridge (formerly Union Gas), combined with retail sales of gasoline data.





Glossary – what do these mean?

Gigajoule – (or, one billion joules) is a metric unit for measuring energy, and is approximately equivalent to energy provided by burning 26 litres of gasoline (roughly half a tank of gas in a car)

Terajoule – (or, one trillion joules) is equal to 1,000 gigajoules, or approximately 26,000 litres of gasoline (roughly the amount of gasoline in 500 cars).

Megawatt – (or, one million watts) is a metric unit for measuring power output, usually for electricity, and is approximately the amount of power needed to light 200,000 LED light bulbs (at 5 watts each).

Greenhouse gas - a gas that contributes to the greenhouse effect in our atmosphere by absorbing infrared radiation, similar to the glass in a greenhouse that traps heat. Carbon dioxide is the most common greenhouse gas produced by human activity, but methane from decomposing garbage and nitrous oxides from incinerating sewage sludge are also potent greenhouse gases. Emissions of greenhouse gases are reported in terms of “equivalent carbon dioxide.”

Tonne – is the alternate metric unit of mass used to represent one megagram (one million grams or 1,000 kilograms), which is roughly the same (about 10% different) as a “ton” in the old Imperial system of measurement. Emissions of greenhouse gas emissions are reported in terms of “tonnes of equivalent carbon dioxide”. Given that carbon dioxide is an invisible gas, the best way to picture what a tonne of carbon dioxide like is to imagine this as a balloon about ten metres wide.



London
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2020 Community Energy Use & Greenhouse Gas Emissions Inventory

August 2021



london.ca



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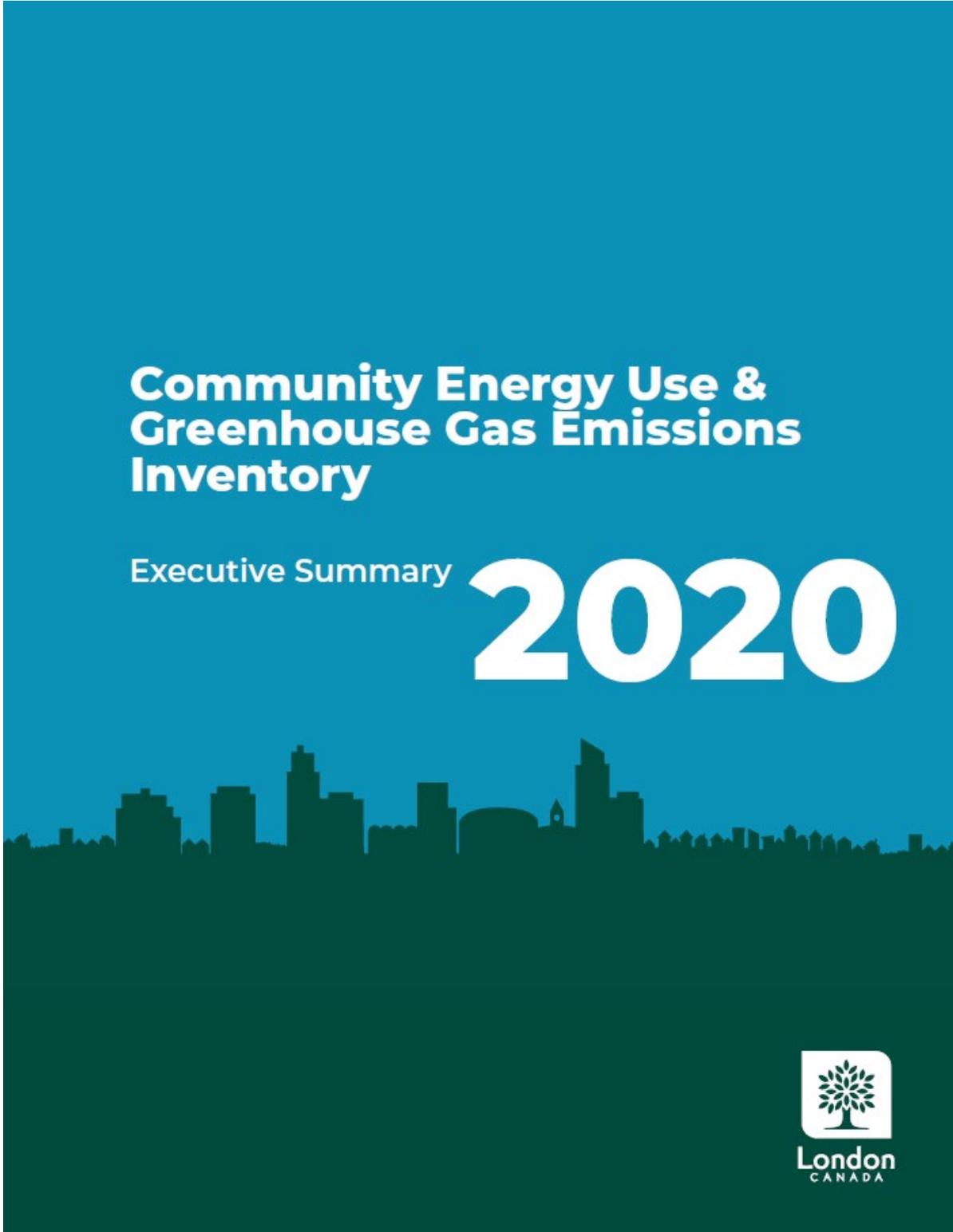
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EXECUTIVE SUMMARY

The Executive Summary for the 2020 Community Energy Use & Greenhouse Gas Emissions Inventory is now a stand-alone document.



1 PURPOSE OF THIS DOCUMENT

The purpose of this document is to provide an overview of:

- energy consumption in London (a high-level inventory of energy use) during the period 1990 to 2020;
- associated greenhouse gas (GHG) emissions; and
- energy expenditures in London.

On April 23, 2019, the following was approved by Municipal Council with respect to climate change:

Therefore, a climate emergency be declared by the City of London for the purposes of naming, framing, and deepening our commitment to protecting our economy, our eco systems, and our community from climate change.

This document is the measurement tool to highlight London's progress towards meeting its community energy reduction and GHG emission reduction targets along with other targets and directions.

Energy efficiency and conservation provides important opportunities to reduce costs. Most of the money spent on energy leaves London, but money spent on energy efficiency and conservation stays in London. It supports local businesses offering these products and services, while the resulting money saved from energy efficiency and conservation can then be used for more productive uses.

Many people benefit from the use of energy efficiency, renewable energy, and energy conservation products and services:

- Households can help the environment and typically save more money in the long run.
- Business owners and managers can reduce operating costs, become role models for corporate social responsibility, and position themselves with a competitive advantage.
- Students and teachers can benefit from learning about our current, unsustainable demand for energy and how energy conservation, energy efficiency and renewable energy technologies can help our environment and replace fossil fuels that are being depleted.
- Innovators can create new energy-efficient and renewable energy products and services, and become architects of change.

Many of these inventory reports have a similar look and feel by design. The data may change annually, but the rationale and dialogue remain similar. A complete listing of reports is found in Section 3.

The City of London also reports this information on an annual basis to CDP Cities and the Global Covenant of Mayors for Climate & Energy.

2 BACKGROUND

The City of London does not have direct control over how much energy is used in London, but it does have influence. The control over energy use in London rests primarily with citizens, visitors, employers, and employees. Individual and collective action with respect to sustainable energy use, energy management, and energy conservation is critical for our future.

London's 2014-2018 Community Energy Action Plan (CEAP) was approved by Council in July 2014. Within the 2014-2018 CEAP, listed under the subsection titled Reporting and Education about the Economic and Environmental Considerations of Energy Use, the highest priority actions for the City of London were to:

1. Provide Londoners with annual information on community energy use and GHG emissions.
2. Develop and report new energy-related performance indicators that highlight the total cost of energy and total money saved/generated from community energy actions.
3. Develop new tools to raise awareness on progress being made in London.

With the development of the new Climate Emergency Action Plan underway, the necessity to provide up-to-date information on London's progress towards its GHG emission reduction targets remains in place.

There are many factors that influence how much energy a city uses to function and thrive:

Land use and urban development – planning city growth sets the framework for how much energy is needed for a city to function. Mixed density balances the energy-efficiency of higher-density and social demand for living space. Mixed land use reduces the distance people and goods need to travel.

Urban design – urban design can either negate or enhance the energy efficiency benefits of good functional planning (mixed land use and mixed density). This includes design factors such as connectivity between city blocks, streetscape design, and street orientation.

Transportation – transportation planning accounts for the movement of people and goods. In an ideal world, you would minimize the interactions between the two. However, the reality is that a city's transportation network often must serve both needs at the same time. An energy-efficient transportation system is one that provides several competitive choices for the movement of people and goods.

Buildings – The design, construction, and maintenance of all building types (homes, office buildings, industrial buildings) has a significant impact on the energy consumed by that building. New buildings can be designed that approach net-zero energy use, but most London's buildings are old, inefficient designs that often have unseen problems with their insulation and draft-proofing. Building type can also affect energy use and associated emissions. Building energy modelling done for the London Energy Efficiency Partnership (LEEP) Project indicates the following:

- Single-family residential buildings (detached, semi-detached and row housing) require more energy for winter space (interior) heating than for summer space (interior) cooling;
- Conversely, commercial office buildings require more energy for summer space cooling than for winter space heating; and
- Multi-unit residential buildings generally have a balance between annual space heating and space cooling energy demand.

Personal choices and actions – Design and technology has its limits. For example, a programmable thermostat has no energy conservation benefit if its user does not program it. Social norms are a powerful influence on people’s behaviour.

Local economy – the nature of the economic base will influence how much energy it will use. For some businesses, energy use is a minor cost. For others, energy bills can make the difference between profit and loss. For many local employers, there are opportunities for energy conservation, energy-efficiency, and renewable energy generation waiting to be developed.

Leadership – the words spoken, commitments made, and actions taken by leaders in the business, institutional, government and non-government sectors with respect to energy conservation, sustainable energy, reducing the use of fossil fuels, reducing GHG emissions and adapting to climate change.

Seasonal weather variations can affect energy use and associated emissions. London’s climate is one that is dominated by the heating demand during cold weather months. On average, the heating season starts in late September and ends in May. With climate change, the energy demand for heating are expected to fall.

The energy demand for space cooling (i.e., air conditioning) in London is relatively small compared to space heating. However, on a hot summer day, a typical household’s electricity demand will be three times greater than a cool summer day. This short term “peak demand” places strain on Ontario’s electricity generation and supply system. With climate change, the energy demand for air conditioning is expected to increase.

3 PREVIOUS INVENTORY REPORTS

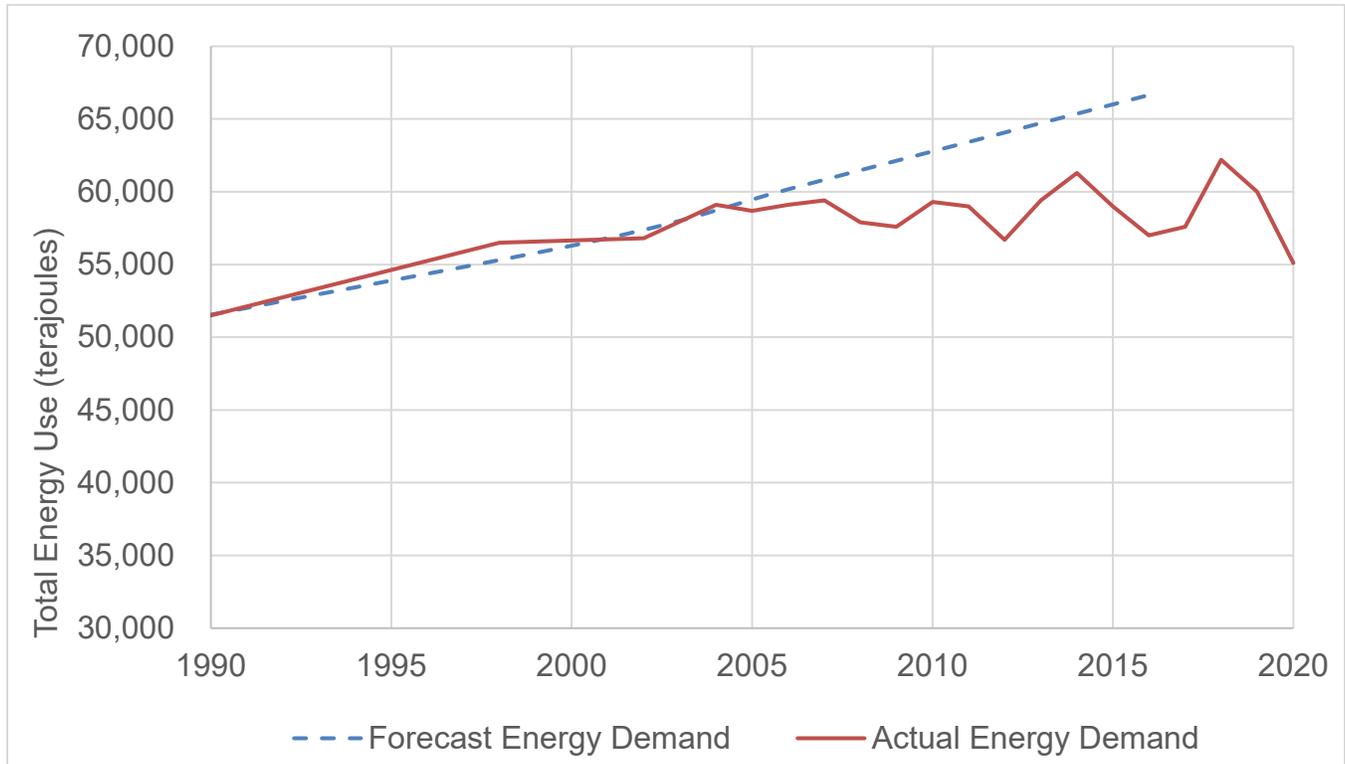
The following is a list of the previous energy inventory reports that have been prepared for London:

- *2019 Community Energy & Greenhouse Gas Inventory*, published on the City of London's Get Involved London website in December 2020.
- *2018 Community Energy & Greenhouse Gas Inventory*, prepared by the City of London for the Civic Works Committee in October 2019.
- *2017 Community Energy & Greenhouse Gas Inventory*, prepared by the City of London for the Civic Works Committee in August 2018.
- *2016 Community Energy & Greenhouse Gas Inventory*, prepared by the City of London for the Civic Works Committee in August 2017.
- *2015 Community Energy & Greenhouse Gas Inventory*, prepared by the City of London for the Civic Works Committee in June 2016.
- *2014 Community Energy & Greenhouse Gas Inventory*, prepared by the City of London for the Civic Works Committee in May 2015.
- *2013 Community Energy & Greenhouse Gas Inventory*, prepared by the City of London for the Civic Works Committee in July 2014.
- *2012 Community Energy & Greenhouse Gas Inventory: Challenges & Opportunities*, prepared by the City of London for the Civic Works Committee in October 2013.
- 2011 data was highlighted in the *Environmental Programs Update*, prepared for the Civic Works Committee meeting in May 2012.
- *2008 Energy Use Inventory Report*, prepared by the City of London for the Environment and Transportation Committee in July 2010.
- *2007 Energy Use Inventory Report*, prepared by the City of London for the Environment and Transportation Committee in May 2008.
- *2006 Energy Use Inventory Report*, prepared by the City of London for the Mayor's Sustainable Energy Council in November 2007.
- *1998 Air Emissions and Energy Use in the City of London*, prepared for the London Energy/Air Emissions Reduction Strategy Task Force in March 2000.
- *1990 City of London Air Emissions Study*, prepared by SENES Consultants in association with Proctor and Redfern Limited and Torrie Smith Associates for Vision '96 in September 1995.

4 COMMUNITY ENERGY USE INVENTORY

Total energy use in London in 2020 was 55,100 terajoules¹, seven per cent above 1990 levels, and six per cent below 2005 levels. As seen from Figure 1, since the mid 2000s, London’s total energy use has dropped below the forecasted “business as usual” track forecasted in the 1990s. This illustrates the impact that energy conservation activities over the last 15 years have had decoupling energy use from growth.

Figure 1 - Comparison of Forecast vs. Actual Energy Demand for London



The COVID-19 pandemic had an impact on energy used in London, with overall total energy use in 2020 being eight per cent lower than 2019, as shown in Figure 1 above and Table 1 below.

The main impact was seen in transportation energy use, which was 20 per cent lower than 2019 overall. In particular, the local retail sales of gasoline and diesel at gas stations dropped by 21 per cent because of many London workplaces shifting to work from home as well as reduced discretionary trips associated with stay-at-home orders and similar restrictions.

Energy used by London’s industrial, commercial, and institutional sector remained relatively unchanged in 2020. A six per cent decrease in electricity use was offset by a 14 increase in natural gas used in the industrial sector.

¹ a terajoule (or, one trillion joules) is a metric unit for measuring energy, and is approximately equivalent to the energy provided by burning 26,000 litres of gasoline (roughly the amount of gasoline in 500 cars)

Energy used in London’s single-family homes was down by four per cent overall. Electricity use in homes did increase by six per cent, due in part to shifting to work from home as well as warmer summer temperatures increasing the demand for air conditioning. However, natural gas use decreased by eight per cent due to warmer winter and autumn weather reducing the demand for space heating.

Table 1 – 1990-2020 Total Community Energy Use by Sector (Terajoules per Year)

Sector	1990	2005	2019	2020
Transportation	18,200	20,200	21,200	17,000
Residential	13,100	14,800	14,600	14,000
Industrial, Commercial & Institutional (IC&I)	20,200	23,800	24,200	24,100
Total	51,500	58,700	60,000	55,100

NOTE: due to rounding of numbers, individual numbers may not add up to the total

London’s industrial, commercial, and institutional buildings and facilities accounted for 44 per cent of all energy used in London (Table 2). London Hydro and Enbridge include multi-unit residential buildings (apartment buildings and condominiums) under the category of commercial buildings. Transportation accounted for 31 per cent of all energy used in London, most of which is associated with personal vehicle use. Single family residential homes accounted for 25 per cent of all the energy used in London.

Table 2 – 1990-2019 Share of Community Energy Use by Sector

Sector	1990	2005	2019	2020
Transportation	35%	34%	35%	31%
Residential	25%	25%	24%	25%
Industrial, Commercial & Institutional (IC&I)	40%	40%	40%	44%

The community energy model developed by the Canadian Urban Institute for the Integrated Energy Mapping for Ontario Communities project, combined with latest provincial Broader Public Sector (BPS) energy data (2018 data), was used to estimate a more-detailed breakdown of energy use by building type, as shown in Table 3.

Table 3 – 2020 Estimated Breakdown of Energy Use by Subsector (Terajoules per Year)

Sector	Sub-sector	Energy Use
Transportation	Fuel sold at gas stations	11,900
Transportation	Road freight transport	3,100
Transportation	Corporate fleets	1,000
Transportation	London Transit	200
Transportation	Railway freight transport	500
Transportation	Domestic aviation	300
Residential	Low-density homes	11,700
Residential	Medium-density townhomes	2,400
Industrial, Commercial & Institutional	High-density residential buildings	1,600
Industrial, Commercial & Institutional	Commercial – office buildings	3,700
Industrial, Commercial & Institutional	Commercial – retail (e.g., malls)	6,300
Industrial, Commercial & Institutional	Industrial	8,000
Industrial, Commercial & Institutional	Institutional - schools	700
Industrial, Commercial & Institutional	Institutional - hospitals	1,200
Industrial, Commercial & Institutional	Institutional - colleges & universities	2,100
Industrial, Commercial & Institutional	Institutional - municipal	400
Industrial, Commercial & Institutional	Other	200

Over the 1990-2020 period, London’s population has increased by 36 per cent. Energy use per person in London was 132 gigajoules (GJ) per year in 2020, down 21 per cent from 2007 and the 1990 baseline level as well (Table 4).

Table 4 – 1990-2020 per Person Energy Use by Sector (Gigajoules per person)

Sector	1990 (Pop. 307,000)	2005 (Pop. 349,000)	2020 (Pop. 417,000)	Change from 1990
Transportation	59	58	41	-31%
Residential	43	42	34	-21%
Industrial, Commercial & Institutional (IC&I)	66	68	58	-12%
Total	168	168	132	-21%

NOTE: due to rounding of numbers, individual numbers may not add up to the total

Figure 2 – Change in Energy Use in London, Per Person by Sector Since 1990

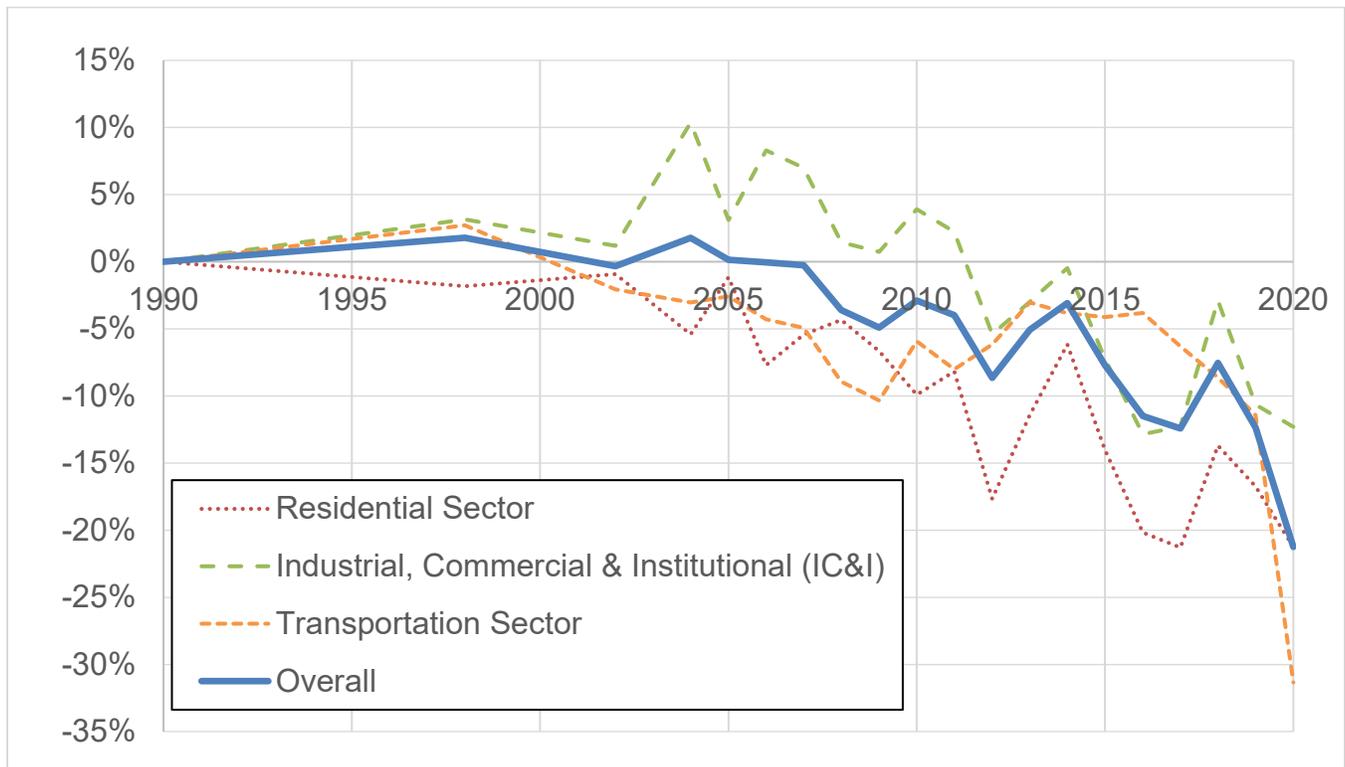


Figure 2 illustrates the change in energy consumption in London by sector on a per person basis, using 1990 as the baseline year. Overall, since the mid 2000s, the trend has been downwards, with the weather-related impacts of the “Winter that Wasn’t” of 2012 (very warm winter), the “Polar Vortex” of 2014 (very cold winter), and the combination of a colder winter and warmer summer in 2018 being clearly visible, especially for the residential sector. The major impact of the COVID-19 pandemic on transportation energy use in 2020 is also very apparent.

4.1 TRANSPORTATION ENERGY USE

In the early 2010s, transportation energy use was increasing, with the volume of fuel sold in London increasing year-over-year between 2011 and 2016. However, this trend reversed in 2017 and the volume of fuel sold continued to drop through to 2019. This recent trend may not be driven by fuel prices since the average fuel prices at the pumps actually decreased by about 10 cents per litre between 2018 and 2019. Therefore, this could be due to a combination of fewer trips by car and improving vehicle fuel economy.

Registered Vehicles in London

The City started to track local vehicle registration data beginning with 2010 data to try and gain additional insight into transportation energy use.

Prior to COVID-19, vehicle ownership in London has grown by over four per cent every year on average between 2010 and 2019, much faster than London’s overall population growth. As of December 2019, there were almost 292,000 light-duty vehicles registered in London – an increase of almost 89,000 since 2010. When compared to Census data on Londoners between

the age of 20 and 84, vehicle registration increased from 0.75 per person in 2010 to an estimated 0.94 per person in 2019.

However, as of December 2020, the number of light-duty vehicles registered in London dropped by six per cent down to just over 273,000 vehicles. This works out to about 0.86 vehicles per person aged 20 to 84.

The vehicle registration data is showing a mix of positive and negative trends.

On the positive side:

- fuel-efficient compact cars remain the most-popular vehicle segment in London.
- the number of hybrid and/or electric vehicles in London are almost six times higher in 2020 compared to 2010.
- There are now over 1,000 electric vehicles registered in London.
- 0.8% of new 2020 Model Year vehicles registered were electric vehicles and 3.9% were mild hybrid vehicles

On the negative side, high gas consumption sport utility vehicles and large pick-ups continue to gain in popularity as the relative number of minivans and mid-sized sedans decline.

Additional detail is provided in Table 5 below.

Table 5 – Vehicle Ownership Statistics for London

	2010	2020	Change
Total registered vehicles	202,800	273,300	35%
No. of adults 20-84 years old	271,000 (estimate)	317,000 (estimate)	17%
Vehicles per adult	0.75	0.86	15%
Hybrid gas-electric vehicles (excluding plug-in hybrids)	840	3,720	+ 2,880
Plug-in electric vehicles	0	1,020	+ 1,020
Fuel use per vehicle (GJ/year)	71	54	-24%
Average vehicle age	n/a	7 years (2014 models)	
Top five vehicle segments (share of vehicle registrations)	Compact car (22%) Mid-sized car (14%) Minivan (10%) Compact SUV 10%) Full-sized car (7%)	Compact car (23%) Compact SUV (22%) Mid-sized car (11%) Large pickup (9%) Intermediate SUV (8%)	

Transportation Data from Google’s Environmental Insights Explorer

The City of London was amongst the first cohort of Canadian cities to participate in Google’s Environmental Insights Explorer project. This project makes use of Google Maps data such as building shapes and mobility data (from tracking the movement of smart phones equipped with GPS) to estimate greenhouse gas emissions from cities.

There are some limitations to this data, in that not everyone travels with a smart phone on hand or with location services enabled on their phone. However, their transportation data has provided some useful insights, namely that trips to/from London have a large impact on emissions even through they are far fewer in number of trips.

The Environmental Insights Explorer tool has also provided data on 2020, which confirms the impact that COVID-19 has had on transportation. Table 6 summarizes the 2019 and 2020 transportation trip information for London from the Environmental Insights Explorer.

Table 6 – Total Trip Distance Travelled by Mode and Destination for 2019 and 2020

Travel Mode	Destination	2019 Total Trip Distance (km)	2020 Total Trip Distance (km)	Change
Automobile	Inbound	1,581,600,000	1,170,900,000	-26%
Automobile	Outbound	1,590,100,000	1,165,300,000	-27%
Automobile	In-Boundary	1,402,100,000	999,100,000	-29%
Cycling	In-Boundary	12,000,000	14,500,000	21%
Walking	In-Boundary	53,700,000	42,100,000	-22%
Transit	In-Boundary	56,200,000	39,100,000	-30%
VIA Rail	Inbound	30,600,000	n/a	n/a
VIA Rail	Outbound	32,100,000	n/a	n/a

Note that cycling was the only travel mode that saw an increase in distance travelled in 2020, with a 21 per cent increase in 2020. Increases in cycling was also seen in other Ontario cities with Environmental Insights Explorer data. This has been noted in cities world-wide, with the reduction of vehicle traffic on roads encouraging more people to use bicycles for transportation. Many North American reports and articles highlighted the increase in bicycle sales in 2020 including London, Ontario.

Trips made by walking were also down in 2020, which can be attributed primarily to the closure of schools, post-secondary education campuses, and workplaces during the COVID-19 pandemic.

This highlights the importance of City-led transportation initiatives such as rapid transit and the Cycling Master Plan. According to London’s *Smart Moves 2030 Transportation Master Plan*, around 84 per cent of all personal trips made in London during the weekday afternoon peak period are made in personal vehicles, and most of these only have one occupant – the driver.

4.2 ENERGY USE AND THE LOCAL ECONOMY

Energy use per person related to the industrial, commercial, and institutional sector in 2020 was 12 per cent lower than 1990 and 18 per cent lower than 2007. London Hydro and Enbridge have also been increasing efforts to promote energy conservation and demand management with their business client base.

Another way to measure improvements in energy efficiency of the local economy is to compare it to Gross Domestic Product (GDP). According to the Conference Board of Canada, the COVID-19 pandemic reduced the greater London area's GDP by six per cent. However, most of this reduction is expected to be reversed once the COVID-19 pandemic has ended.

However, since 1990, London's GDP has grown significantly. Using statistics from the London Economic Development Corporation (LEDC) and the Conference Board of Canada, London's GDP (in constant 2012 dollars – i.e., excluding inflation) has grown by 63 per cent between 1990 and 2020.

Using these GDP estimates for 1990, London's energy productivity - GDP generated per unit energy used in London's employment sector - has improved by 37 per cent. Table 7 illustrates this in more detail. This means that local businesses are producing products and services more efficiently and/or moving towards producing products and services of higher value for the same amount of energy used.

Table 7 – 1990-2020 Energy Productivity of London's Employment (IC&I) Sector

	1990	1998	2007	2020
Gross Domestic Product (\$ millions GDP ¹)	\$10,600 ²	\$12,800 ²	\$16,900	\$17,300
Energy Used by IC&I Sector (Terajoules - TJ)	20,200	22,500	25,100	24,100
Energy Productivity (\$GDP per Gigajoules - GJ) ³	\$524	\$569	\$675	\$717
Improvement in Productivity Since 1990		9%	29%	37%
Average Annual Productivity Improvement		1.0%	2.0%	0.6%

A number of London's major employers have taken a leadership position on energy management, but there are still many opportunities to reduce energy use in the employment

1 – GDP data based on the London Census Metropolitan Area (includes St. Thomas & Strathroy), prorated by 77% based on population of London, and adjusted to constant 2012 dollars based on the Consumers Price Index (CPI) for Ontario

2 – Extrapolated from 2007 GDP data for London CMA based on changes to Ontario's real GDP for 1990 and 1998

3 – London's GDP divided by energy used in IC&I sector

sector, particularly amongst small-to-medium sized enterprises who may not have the human, financial, and/or technical resources to manage their energy use effectively.

4.3 ENERGY COMMODITIES USED IN LONDON

The breakdown of energy use and GHG emissions by commodity is outlined in Table 8.

Natural gas was the largest source of energy used in London in 2020, accounting for 47 per cent of all energy used. Natural gas use decreased by one per cent from 2019. Gasoline was the second largest source of energy, accounting for 21 per cent of London’s energy use. Total gasoline use decreased by 18 per cent from 2019. For transportation fuels, at least 90 per cent of all the gasoline sold in gas stations in London was ethanol blended gasoline (10% ethanol) according to Kent Marketing. Electricity accounted for 21 per cent of all the energy used in London. Electricity use decreased by two per cent from 2019.

Compared to 2019, the weather in 2020 had an overall warmer winter, cooler spring, warmer summer, and warmer autumn. Warmer summer weather increases the demand for electricity used for air conditioning, while warmer winter and autumn weather decreases the demand for natural gas used for heating.

For electricity, it is important to note that over 90 per cent of the electricity generated in Ontario comes from emissions-free sources. In 2020, as reported by the Independent Electricity System Operator (IESO), 60 per cent of Ontario’s grid electricity was supplied by nuclear generating stations, while hydroelectric generating stations supplied 25 per cent and other renewable sources of electricity (wind, biomass, solar) provided nine per cent of our electricity needs. Natural gas-fired generating stations provided almost seven per cent of Ontario’s supply.

Table 8 – 2020 Community Energy Use by Energy Commodity

Energy Commodity	Total Used	Energy (Terajoules)	Energy (%)
Natural Gas	697,000,000 m ³	25,900	47%
Gasoline ¹	328,900,000 L	11,400	20%
Electricity	3,162,000 MWh	11,400	21%
Diesel ^{1,2}	108,700,000 L	4,200	8%
Aviation fuel ²	6,900,000 L	300	< 1%
Propane ¹	27,400,000 L	700	> 1%
Ethanol (blended into gasoline)	30,000,000 L	600	> 1%
Fuel Oil ¹	15,000,000 L	600	> 1%
	Total	55,100	

NOTE: due to rounding of numbers, individual numbers may not add up to the total

1 – includes some data prorated from Ontario consumption data provided by Statistics Canada; 2019 data

2 – aviation and freight fuel data prorated from Canada consumption data provided by Statistics Canada; 2020 data

However, one important concept that needs to be understood is thermal efficiency. Whenever any fuel is burned in an engine to create mechanical energy or used to make steam to spin a turbine to generate electricity, only a small portion of thermal energy ends up being converted to mechanical or electrical energy. The rest of the energy often ends up being lost as “waste heat”. For example, the amount of thermal energy converted into power by steam-driven turbines in electricity generating stations is usually about 33 per cent, or in other words you need to use three units of heat energy to make one unit of electrical energy. The conversion rate is higher for combined cycle gas-fired power plants, which can reach about 50 per cent conversion of heat energy into electricity.

This is the same for internal combustion engines used in vehicles, which are about 35 per cent efficient when running in highway driving, and about 20 per cent efficient overall when you take into account the fuel wasted in city driving associated with waiting at stop lights and other situations where the engine idles. Replacing internal combustion vehicles with battery-powered electric vehicles is more efficient overall, even more so when sources like hydroelectricity are used.

When the thermal efficiency of converting heat into power in electricity generating stations is considered, a different picture of energy needs emerges, as seen in Table 9.

Table 9 – 2020 Energy Use in Electricity Generation Accounting for Thermal Efficiency

Source of Energy ¹	Energy (Terajoules)	Energy (%)
Uranium ²	20,500	79%
Hydroelectric	2,900	11%
Natural Gas ³	1,500	6%
Wind	910	4%
Solar ⁴	60	0.2%
Biofuels ²	90	0.4%
Total	25,900	

NOTE: due to rounding of numbers, individual numbers may not add up to the total

1 – Based on IESO 2019 annual electricity generation data from transmission-connected sources

2 – Assumed 33% thermal efficiency for generating electricity

3 – Assumed 50% thermal efficiency for generating electricity

4 – IESO data for solar only includes large transmission-connected solar farms. The Ontario Energy Board estimates that solar PV accounts for over 2% of power generation when smaller, local embedded generation is included

Table 9 helps illustrate the fact that electricity is not an energy resource, but the conversion of one form of energy (e.g., thermal energy in the case of nuclear and natural gas, gravitational potential energy in the case of hydroelectricity, kinetic energy in the case of wind) into electrical energy. In most cases, the remaining heat from large electricity generation plants is wasted. For London’s electricity needs, 26,700 terajoules of energy resources were consumed to provide London with 11,600 terajoules of electricity – the remaining 15,100 terajoules of energy was waste heat that was not utilized. However, this table helps to illustrate that greater use of cogeneration (or combined heat and power) and non-fuel renewables (hydro, wind,

solar) will help to reduce this waste. Note that there are other “losses” that occur in energy distribution, such as line losses from power transmission, which have not been quantified.

Table 10 outlines the trend in per person energy commodity use since 1990.

Table 10 – 1990-2020 per Person Energy Use by Energy Commodity (GJ per Person)

Energy Commodity	1990	2005	2020	Change from 1990
Natural Gas	67	69	62	-7%
Gasoline (including ethanol-blended gasoline)	41	40	29	-30%
Electricity	34	37	27	-21%
Diesel	13	13	10	-22%
Fuel Oil	7	4	1	-81%
Aviation fuel	3	2	1	-80%
Propane	2	2	2	-31%
Total	168	168	132	-21%

NOTE: due to rounding of numbers, individual numbers may not add up to the total

5 ENERGY EXPENDITURES AND ENERGY GENERATION

5.1 ENERGY EXPENDITURES IN LONDON

Using information on utility billing rates and fuel price data from Kent Marketing, the total cost of energy use can be estimated. Note that these costs also include costs for the distribution and delivery of the energy commodity, as well as taxes on these commodities. A full description of the methodology is outlined in Appendix A (Section A.3).

Energy use and associated expenditures on energy are a significant operating cost for many businesses. In addition, for many Londoners, the rising costs of gasoline and electricity have put pressure on day-to-day household expenses, often requiring households to cut back on discretionary purchasing.

Understanding how much is collectively spent on energy, and the opportunities arising from energy conservation, is important for London. Table 11 outlines the total estimated costs associated with the energy commodities used in London.

Table 11 – Total Estimated Cost by Energy Commodity in 2020

Energy Commodity ¹	Cost (\$ million)	Share (%)	Energy (terajoules)	Price per gigajoule
Gasoline (including ethanol-blends)	\$367	27 %	12,000	\$31
Electricity	\$560	42 %	11,400	\$49
Natural Gas	\$285	21 %	25,900	\$11
Diesel ¹	\$97	7 %	4,200	\$27
Propane	\$24	2 %	700	\$32
Fuel Oil	\$16	1 %	600	\$27
Total	\$ 1,346		54,500¹	\$24

NOTE: due to rounding of numbers, individual numbers may not add up to the total

1 – excludes diesel for railway freight transportation and aviation fuels

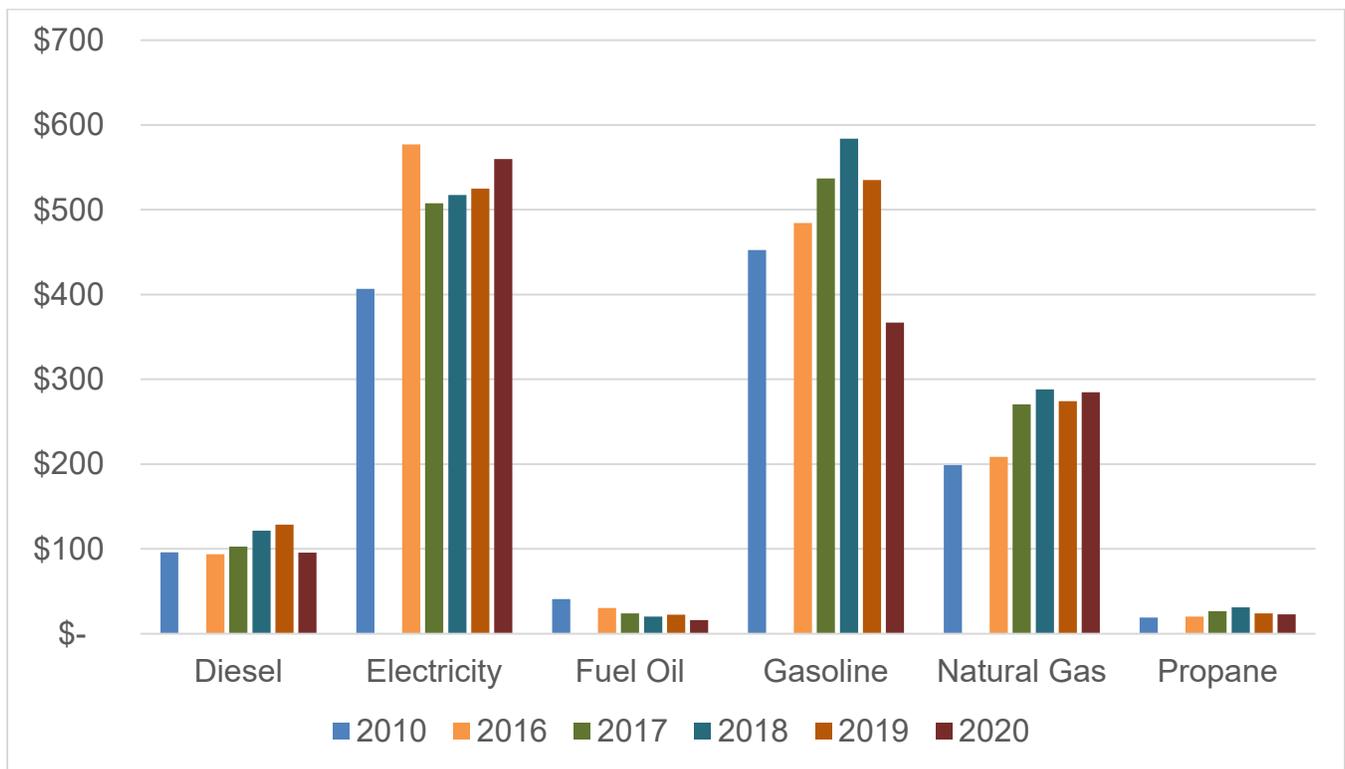
It is estimated that Londoners spent about \$1.35 billion on energy in 2020, a decrease of 11 per cent from 2019.

As noted earlier, the work-from-home and stay-at-home orders due to COVID-19 reduced the demand for gasoline. As a result, the price for gasoline in 2020 decreased by 13 per cent. In total, Londoners spent about \$170 million less on gasoline in 2020 than they did in 2019.

Electricity accounts for 42 per cent of total energy costs, due to electricity being the most expensive energy commodity used by Londoners.

Natural gas use accounts for only 21 per cent of energy costs, even though it is the largest source of energy we use, because of the low price of natural gas even with the \$30 per tonne carbon price in place during 2020.

Figure 3 – Trend for Total Energy Commodity Costs (Millions) by Commodity in London



It is important to note that costs could have been higher. If 2010 is used as a baseline year in terms of energy use per capita, as noted in Figure 4, recent improvements in energy efficiency have created ongoing savings. In 2020, it is estimated that \$380 million in energy costs were avoided through energy efficiency as well as the unique COVID-19-related reductions in transportation fuel use. Added up year-over-year, London has avoided over \$1.3 billion in energy costs due to improved efficiency since 2010.

In recent years, every percentage that Londoners reduce their energy use results in around \$13 million staying in London.

Information from utility billing rates and fuel price data can also be used to provide a reasonable estimate where the money is spent by Londoners on energy, as illustrated in Table 11. Out of the \$1.35 billion spent on energy in 2020, it is estimated that 18 per cent of this money stayed in London, most of which goes towards London Hydro’s and Enbridge’s local operations. This is higher than previous years due to the impact of the COVID-19 pandemic. The rest leaves London. On average, from 2010 to 2019, between 85 per cent and 88 per cent of the annual expenditure on energy has left London’s local economy.

With the drop in global oil commodity prices due to the COVID-19 pandemic related reductions in transportation fuel use, Western Canada’s share of our energy dollars has dropped significantly. In 2014, Londoners and London businesses sent about \$440 million of their energy dollars to Western Canada compared to about \$180 million in 2020.

About \$420 million of our energy dollars also goes to electricity generators in Ontario like Bruce Power and Ontario Power Generation, as well as Ontario’s electricity transmitter, Hydro One.

Figure 4 – Trend for Total Energy Costs Compared to 2010 Energy Efficiency Baseline

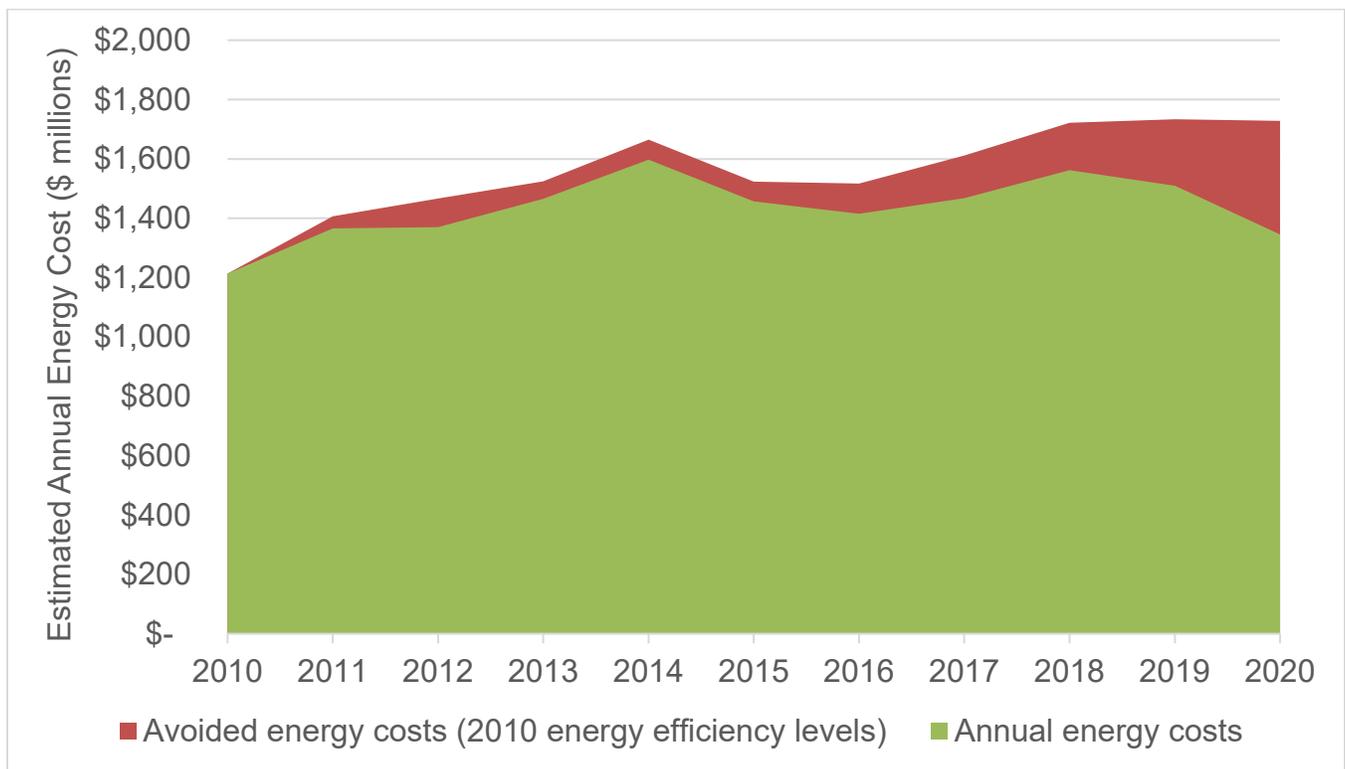


Table 11 – Estimated Share of Energy Revenue (2020)

Commodity	London Region	Ontario - Business	Ontario - Government	Western Canada	Canada - Government	United States
Diesel	>1%	2%	2%	2%	1%	-
Electricity	5%	31%	4%	-	1%	-
Fuel Oil	<1%	<1%	<1%	<1%	<1%	-
Gasoline	4%	6%	6%	8%	4%	-
Natural Gas	6%	3%	4%	3%	1%	4%
Propane	1%	1%	<1%	-	<1%	-
Total	18%	43%	16%	13%	7%	4%

NOTE: due to rounding of numbers, individual numbers may not add up to the total

A portion of the money collected from federal and provincial taxes and other utility bill fees does help pay for other government services in London. For example, the City of London gets a portion of the gasoline tax to help pay for improvements to local transportation, other infrastructure, and environmental projects. Also, energy conservation incentives offered by utility companies are also funded through utility bills, as it is usually more economical to invest in conserving energy rather than it is to build new power plants.

The federal government also applies their carbon pollution pricing backstop in Ontario given that Ontario no longer has a carbon pricing system in place. Most of the funds collected by the backstop are used for the Climate Action Incentive provided when filing personal income tax

returns, with the remaining used for funding federal climate action programs such as the Incentives for Zero-Emission Vehicles program. City staff estimate that about \$65 million was collected through the carbon pricing backstop in 2020.

5.2 ENERGY GENERATION IN LONDON

London has almost 90 megawatts (MW) of local electricity generation capacity installed to date, an increase of about 1 megawatt from 2019. Currently, there is 68.3 megawatts of gas-fired co-generation, 17.9 megawatts of solar photovoltaic (PV), 2.85 megawatts of biogas, and 0.675 megawatts of hydro-electric power generation in operation in London.

Most of London's local generating capacity is associated with natural gas combined heat and power cogeneration plants, used in four different applications:

- **District energy** - London District Energy (38.7 MW) is a “merchant plant” that sells the power to the Independent Electricity System Operator and the thermal energy (steam for heating, chilled water for cooling) to buildings in central London. London District Energy has recently doubled its capacity to deliver combined heat and power at its Colborne Street facility.
- **Industrial** - Ingridion (14.1 MW) and Labatt Brewery (4.2 MW) generate steam as well as electricity “behind-the-meter” for use in their operations.
- **Hospital campus** – the London Health Sciences Centre (9.6 MW) Victoria Hospital campus generates both steam and electricity for hospital buildings, including the ability to keep the heat and power in the event of an emergency.
- **Micro-scale** – small scale combined heat and power systems (under 100 kilowatts) are in use at the Canada Games Aquatic Centre and H.B. Beal Secondary School for pool heating as well as electricity “behind-the-meter” for use in their operations.

6 TRANSLATING ENERGY USE INTO GREENHOUSE GAS IMPACT

6.1 GREENHOUSE GAS EMISSIONS FOR 2020

Energy use in London was responsible for almost 2.6 million tonnes of greenhouse gas (GHG) emissions (expressed in terms of equivalent carbon dioxide, or CO_{2e}) in 2020. Table 12 provides additional information on GHG emissions associated with the various sources of energy used in London.

Table 12 – 2020 GHG Emissions by Energy Commodity

Energy Commodity	Energy (Terajoules - TJ)	GHG Emissions (kilotonnes CO _{2e})	GHG (%)	GHG Intensity (tonnes/TJ)
Natural Gas	25,900	1,320	51%	51
Gasoline (including ethanol)	12,000	760	29%	63
Diesel	4,200	300	11%	70
Electricity	11,400	100	4%	8
Aviation Fuel	300	20	1%	68
Propane	700	40	2%	60
Fuel Oil	600	40	2%	70
Total	55,100	2,570		

NOTE: due to rounding of numbers, individual numbers may not add up to the total

Energy use is responsible for 95 per cent of all GHG emissions from human activity in London. Not only does burning fossil fuels such as gasoline, diesel, and natural gas produce carbon dioxide – the most common GHG associated with human activity – but the use of electricity also contributes to GHG emissions.

Over 90 per cent of Ontario's electricity was generated from emissions-free sources in 2020, such as nuclear and hydro-electric generating stations as well as renewable sources (wind and solar). However, as reported by the Independent Electricity System Operator, Ontario still relies on fossil fuels such as natural gas to generate almost seven per cent of the electricity we use. In 2020, it is estimated that every 1,000 kilowatt-hours of electricity generated in Ontario produced about 30 kilograms of carbon dioxide emissions. This is ten times better than it was 16 years ago (2003), when electricity generated in Ontario produced around 300 kilograms of carbon dioxide emissions.

The remaining five per cent of GHG emissions are methane emissions from the anaerobic decomposition of organic materials in the active and closed landfills located in London as well as commercial sector waste disposed in landfills outside London, and nitrous oxide emissions from sewage sludge incineration.

The City of London currently has the following GHG reduction targets:

- a 15% reduction from 1990 levels by 2020,
- a 37% reduction from 1990 levels by 2030, and
- net-zero emissions 2050.

In April 2021, the federal government revised its 2030 target to aim for a 40 to 45 per cent reduction in GHG emissions from 2005 levels as well as net-zero emissions by 2050. To date, the provincial government has not revised its 2030 target for a 30 per cent reduction from 2005 levels and has not established an emission reduction target beyond 2030.

In 2020, total GHG emissions were estimated to be 2.72 million tonnes of equivalent carbon dioxide, or 22 per cent lower than the 1990 level. This is well below the 15 per cent reduction target set for 2020. However, it is important to note the extraordinary impact of the COVID-19 pandemic on emissions.

As mentioned earlier, the COVID-19 pandemic had a significant impact on transportation fuel use, with an associated 20 per cent drop in transportation GHG emissions between 2019 and 2020. Warmer weather in the winter and autumn also reduced the demand for natural gas used for heating, with an associated seven per cent drop in residential GHG emissions between 2019 and 2020.

Seasonal weather variations can affect energy use and associated emissions significantly. However, over the last ten years, winter average temperatures and most summer average temperatures have been warmer than normal (as defined by Environment Canada's 1971-2000 climate data for London - see Appendix B).

Figure 5 illustrates the total GHG emission trend since 1990 in comparison to the targets used for London, for Ontario, and for Canada (with the minimum 40 per cent reduction target shown in the chart). The increase in GHG emissions began to stabilize around 2002 after a continued climb from 1990. Since 2005 there has been a downward trend driven by a combination of cleaner electricity generation and improved energy efficiency.

Figure 5 - Targets vs. Actual GHG Emissions from London

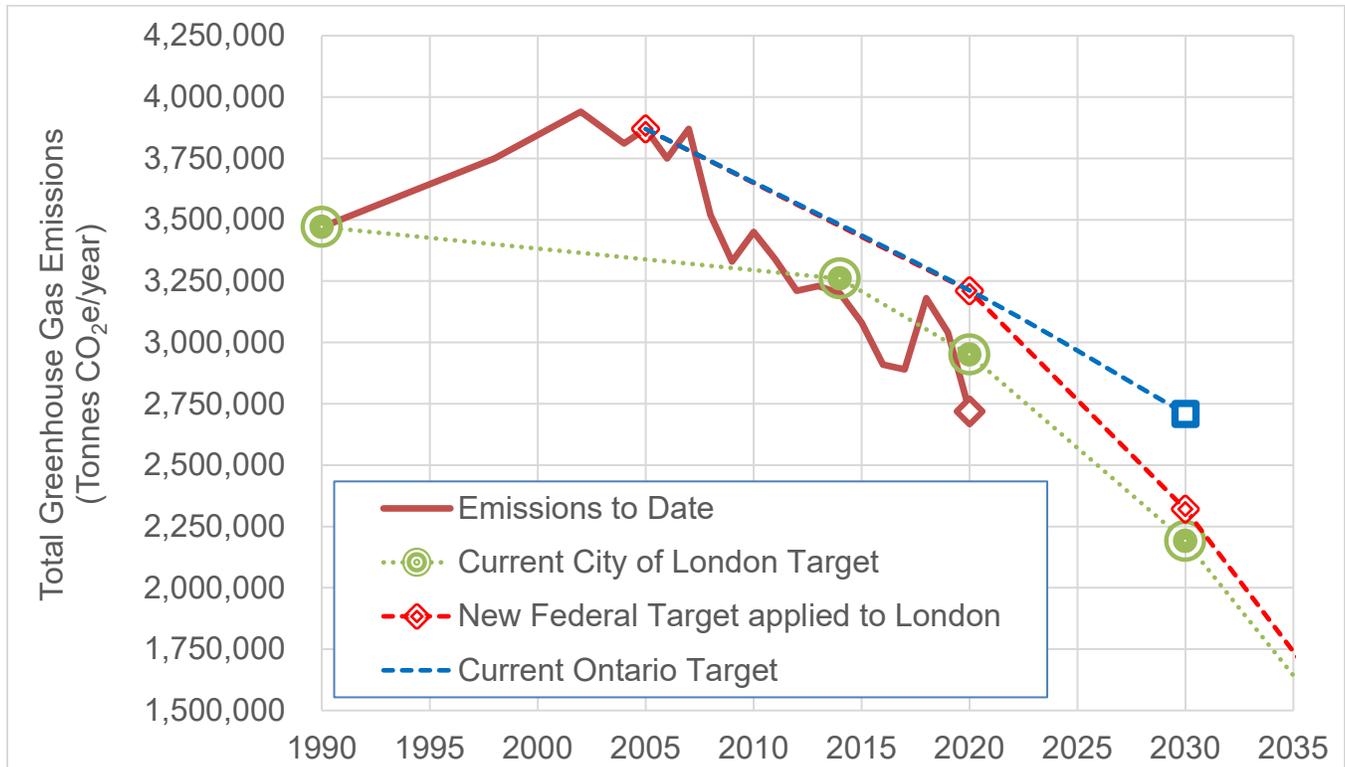


Table 13 illustrates the GHG emission trends by sector, including landfill gas emissions. As seen in Table 13, transportation and the industrial, commercial, and institutional sectors have the greatest contribution.

Table 13 – 1990-2020 Community GHG Inventory in London (kilotonnes CO₂e per year)

Sector	1990	2005	2020
Transportation	1,290	1,400	1,100
Residential	730	850	540
Industrial, Commercial & Institutional	1,120	1,380	940
Landfill Gas Emissions & Sewage Incineration	300	240	150
Total	3,440	3,870	2,720

NOTE: due to rounding of numbers, individual numbers may not add up to the total

The community energy model developed by the Canadian Urban Institute for the Integrated Energy Mapping for Ontario Communities project, combined with provincial Broader Public Sector (BPS) energy data, was used to estimate a more-detailed breakdown of GHG emissions by building type, as shown in Table 14.

Table 14 – 2020 Breakdown of GHG Emissions by Subsector

Sector	Sub-sector	GHG Emissions (kilotonnes/year)
Transportation	Fuel sold at gas stations	740
Transportation	Road freight transport	220
Transportation	Corporate fleets	60
Transportation	London Transit	20
Transportation	Railway freight transport	40
Transportation	Domestic aviation	20
Residential	Low-density homes	460
Residential	Medium-density townhomes	80
Industrial, Commercial & Institutional	High-density residential buildings	50
Industrial, Commercial & Institutional	Commercial – office buildings	160
Industrial, Commercial & Institutional	Commercial – retail & warehouses	250
Industrial, Commercial & Institutional	Industrial	310
Industrial, Commercial & Institutional	Institutional - schools	20
Industrial, Commercial & Institutional	Institutional - hospitals	50
Industrial, Commercial & Institutional	Institutional - colleges & universities	80
Industrial, Commercial & Institutional	Institutional - municipal energy use	10
Waste Management	W12A Landfill	90
Waste Management	Closed landfills	30
Waste Management	IC&I waste disposed outside London	20
Wastewater Treatment	Sewage sludge incineration	10

In terms of per person emissions, as illustrated in Table 15 and Figure 6, emissions today are 42 per cent lower than they were back in 1990 (11.3 tonnes per person in 1990 versus 6.5 tonnes per person in 2020).

This reduction in GHG emissions has been created by a reduced GHG intensity for Ontario’s electricity grid, improved home energy efficiency, reduced energy use in the business sector, and the City of London landfill gas collection and flaring system at the W12A Landfill.

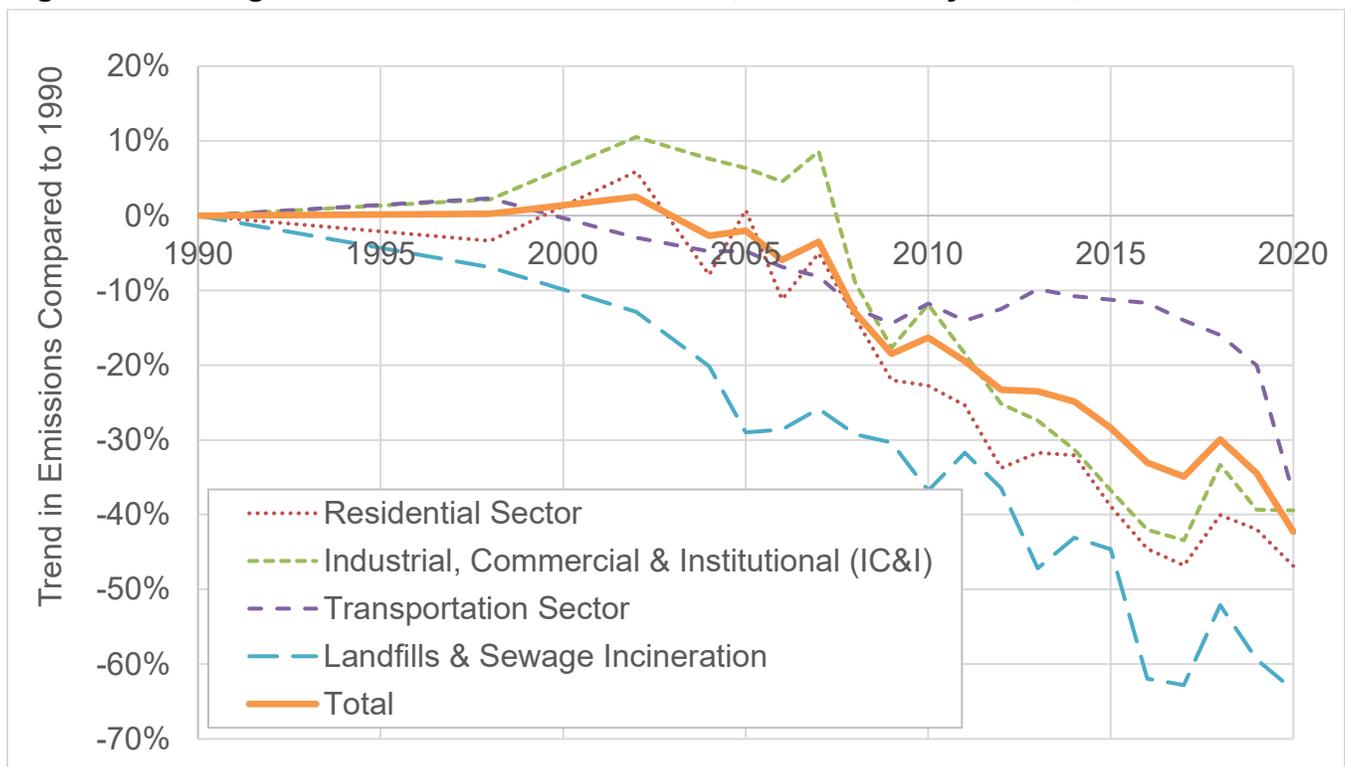
Transportation emissions are also lower due to improved fuel efficiency, the use of ethanol-blended gasoline (10% ethanol by volume) as well as vehicle tailpipe emission controls that have reduced emissions of nitrous oxide.

Table 15 – 1990-2020 per Person GHG Inventory in London (tonnes per person)

Sector	1990 (Pop. 307,000)	2005 (Pop. 349,000)	2020 (Pop. 417,000)	Change from 1990
Transportation	4.2	4.0	2.6	-37%
Residential	2.4	2.4	1.3	-47%
Industrial, Commercial & Institutional	3.6	3.9	2.2	-39%
Landfill Gas Emissions & Sewage Incineration	1.0	0.7	0.4	-63%
Total	11.2	11.1	6.5	-42%

NOTE: due to rounding of numbers, individual numbers may not add up to the total

Figure 6 – Change in GHG Emissions in London, Per Person by Sector, Since 1990



It is important to note these GHG emission estimates do not include emissions (indirect emissions) associated with the extraction, production, and transportation of materials, fuels, food, and consumer products (e.g., emissions from produce grown and transported from California, consumer products made and transported from China.) This is consistent with the approach taken by other Canadian cities reporting GHG emissions through the Partners for Climate Protection program. However, it is important to recognize the fact that the production and transportation of the consumer goods purchased do have an environmental impact, and that some types of goods (e.g., meat and dairy products) do have a larger impact than others. Additional information on consumption-related household GHG emissions are provided in Section 7 – Household Energy Use and Emissions.

6.2 PUBLICLY REPORTED LOCAL EMITTERS

In 2019, the provincial government required facilities that emit more than 10,000 tonnes of greenhouse gases to report their emissions on an annual basis. In London, there are eight facilities that have reported their emissions, including Fanshawe College who report voluntarily, as shown in Table 16. Note that these are direct emissions only, and do not include emissions associated with electricity use or vehicle fuel use.

The district heating steam plant at Western University provides heat for buildings on the Western University campus as well as the neighbouring London Health Sciences Centre University Hospital. In the case of London District Energy, these emissions are associated with providing steam heating and chilled water to buildings, as well as generating electricity. Many building owners served by London District Energy, including the City of London and St. Joseph's Health Care, include their share of these emissions within their energy and GHG reporting.

It is important to note that these "large emitters" only accounted for 15 per cent of London's total GHG emissions.

Table 16 – Annual GHG Emissions from Reporting Facilities (tonnes CO_{2e} per year)

Reporting Facility	2010	2013	2019
Fanshawe College of Applied Arts and Technology	3,143	2,924	3,007
3M Canada	N/A	N/A	10,316
Ingredion Canada Incorporated	124,320	115,988	126,752
Labatt Breweries of Canada LP	26,594	27,503	29,335
London Health Sciences Centre (Victoria Campus)	37,108	41,707	51,874
Western University (steam plant)	51,364	47,322	54,163
London District Energy	39,844	44,622	34,476
Great Lakes Copper	N/A	N/A	12,581
Kaiser Aluminum	N/A	N/A	16,566
W12A Landfill – Corporation of the City of London	160,430	106,349	102,025
Greenway Pollution Control Centre – Corporation of the City of London	N/A	N/A	12,653
Total	442,803	386,415	453,748
Percentage of total emissions from London	13%	12%	15%

The institutional sector – municipal government, colleges and universities, schools, hospitals – is also required to report its energy use and associated GHG emissions to the Province of Ontario through Ontario Regulation 397/11. These emissions will be for the organization as a whole, not just one specific facility or building. Table 17 summarizes the data reported for 2018, the most recent information available from the provincial government. Note that this information will include emissions from electricity use but does not include emissions from

vehicle fuels. Also, in the case of the City of London, the province's reporting requirements do not require electricity use for street lighting and sports field lighting to be reported.

Table 17 – Ontario Regulation 397/11 Reporting Organizations in London

Reporting Organization (based on building electricity and fuel use)	Annual GHG Emissions 2018 (tonnes CO_{2e})
University of Western Ontario	56,095
London Health Sciences Centre	49,876
Thames Valley District School Board	14,283
St. Joseph's Health Care London	14,210
City of London	10,548
Fanshawe College	5,144
London District Catholic School Board	9,005
Conseil scolaire de district des écoles catholiques du Sud-Ouest	447
County of Middlesex (buildings in London)	564
Conseil scolaire de district du Viamonde	273
Municipality of Thames Centre (building in London)	5
Boreal College	4
total	160,456
Percentage of industrial, commercial, and institutional emissions	16%
Percentage of total emissions from London	5%

7 HOUSEHOLD ENERGY USE AND EMISSIONS

Providing estimates of energy use and greenhouse gas emissions for an average household in London provides a clearer understanding the current situation (i.e., what to focus efforts on) and identify opportunities for improvements. These estimates can be made using the following assumptions:

- For electricity and natural gas, divide the total residential customer energy use by the number of customers
- For gasoline, divide the total retail sales of gasoline by the number of households in London
- For propane, divide the estimated total residential use of propane by the number of households in London

Electricity and natural gas use can be broken down further based on provincial data on typical energy use breakdown in Ontario homes.

Greenhouse gas emissions from organic waste in curbside waste can be estimated by dividing the annual GHG emissions from the W12A Landfill by the number of households in London.

Note that these estimates best reflect those Londoners who live in single-family homes.

Table 18 – Estimated Average Household Energy Use and Emissions in London for 2020

Household Activity	Average Monthly Use over the Year	Average Monthly Cost over the Year	Average Annual Cost	Average Annual GHG Emissions (tonnes CO _{2e})
Gasoline use (vehicles)	169 litres	\$173	\$2,070	4.3
Natural gas use	172 m ³	\$71	\$850	3.9
<i>Home heating</i>		\$55	\$660	3.0
<i>Hot water heating</i>		\$16	\$190	0.9
Electricity use	680 kWh	\$122	\$1,470	0.25
<i>Air conditioning</i>		\$16	\$190	0.03
<i>Appliance & plug load</i>		\$39	\$470	0.08
<i>Lighting</i>		\$12	\$140	0.02
<i>HVAC fan motor</i>		\$55	\$660	0.11
Propane use	6 litres	\$11	\$120	0.1
Food waste in garbage		n/a	n/a	0.7
Total		\$377	\$4,520	9.3

NOTE: due to rounding of numbers, individual numbers may not add up to the total

7.1 CONSUMPTION (SCOPE 3) GREENHOUSE GAS EMISSIONS

As noted earlier, it is important to recognize the fact that the production and transportation of the consumer goods we purchase do have an environmental impact, and that some types of goods (e.g., meat and dairy products) do have a larger impact than others. At this point in time, there is no easy-to-use methodology to estimate this at the community-wide scale.

However, with the information contained within the Environmental Commissioner of Ontario report, *Climate Pollution: Reducing My Footprint*, that report's estimates of consumption-related GHG emissions per person for Ontario residents can be compared to the GHG emissions from the direct use of energy and from waste shown in Table 18.

Table 19 – Estimated Average Household Consumption-Relation GHG Emissions in London

Household activity or purchases	Average Annual Lifecycle GHG Emissions (tonnes CO _{2e} per household)
Air travel – domestic	0.4
Air travel – international	2.7
Food – beef (e.g., enteric fermentation, processing, transportation)	1.1
Food – other (e.g., fertilizer, farm fuel use, processing, transportation)	2.0
Home – raw material extraction & processing, home construction	0.7
Home – natural gas extraction & processing, pipeline transportation	1.2
Other purchased goods & services (e.g., clothing, electronics, internet)	7.0
Vehicle – raw material extraction & processing, parts manufacturing & assembly	1.6
Vehicle fuel – oil extraction, fuel refining, pipeline transportation	1.0
Total Consumption (Scope 3) Emissions	17.7

As can be seen from Table 18 and Table 19, greenhouse gas emissions associated with the manufacturing and delivery of the goods purchased by the average household is larger than the emissions from the direct use of energy and from waste. This highlights the importance climate change mitigation of several environmental initiatives such as:

- Food waste reduction
- Buying durable products
- Buying local products
- Recycling and the circular economy (end-of-product-life material recovery and reuse)
- Repurposing and renovating existing buildings

8 SUMMARY AND CONCLUSIONS

8.1 ENERGY USE

The impact of the COVID-19 pandemic on transportation energy use was significant, which was 20 per cent lower 2019 overall. In particular:

- the local retail sales of gasoline and diesel at gas stations dropped by 21% because of many London workplaces shifting to work from home as well as reduced discretionary trips associated with stay-at-home orders and similar restrictions.
- Londoners took the opportunity provided by quieter roads to use their bikes for trips, with the estimated total distance of trips taken by bike in London increasing by 20% in 2020.
- The number vehicles registered in London in 2020 decreased by 6%.

It is anticipated that the shift to working-from-home will remain in place at London's workplaces after the COVID-19 pandemic is over, although this is not likely to be a full-time shift for everybody. It is also anticipated that the interest in cycling for transportation will continue to grow.

Residential (single-family home) energy efficiency has seen improvement, driven by energy conservation programs such as the former federal and provincial home energy audit and retrofit programs, along with utility conservation and demand management programs. New home construction in London has seen energy efficiency improvements driven by voluntary participation in efficiency programs such as Energy Star New Homes, as well as the 2012 Ontario Building Code.

Over the last ten years, energy efficiency for London's industrial, commercial, and institutional sector has been improving. London has many examples of local employers who have acted on energy efficiency and conservation.

In summary, specific highlights of recent community energy use progress and longer-term trends, include:

- The total amount of energy used in London in 2020 was 55,100 terajoules. This is an 8% decrease from the previous year (2019).
- Londoners are using energy more efficiently – on a per person basis, Londoners and London businesses used 21% less energy overall in 2020 than used in 1990.
- London is producing more goods and services for every unit of energy used – on a dollar gross domestic product (GDP adjusted for inflation) per unit energy basis, London's industrial, commercial, and institutional sector improved the value of goods and services produced per unit of energy used by 37% between 1990 and 2020.
- About \$1.35 billion was spent by Londoners and London businesses on energy in 2020. Over 80% of this money left London.

- London is spending less money on energy – improvements in energy efficiency compared to 2010 levels of efficiency (on a per person basis and applied to activity in 2019) avoided about \$380 million in energy costs had there been no improvements.

Vehicle ownership in London has grown by 35 per cent since 2010, or over double the pace that London’s population has grown. The number of “green” vehicles in London (i.e., hybrids and electric vehicles) is over five times higher than it was in 2010. There are now over 1,000 electric vehicles registered in London. However, the number of “gas guzzling” SUVs and pick-up trucks in London has also increased.

8.2 OPPORTUNITIES FOR LONDON

Out of the \$1.35 billion spent on energy in 2020, it is estimated that about 18 per cent of this money stayed in London. London would benefit from keeping more of its money in London. Every percentage that Londoners reduce their energy use results in approximately \$13 million staying in London.

For example, the average household in London, living in a single-family home, spent about \$380 every month on energy in 2020. This is about \$70 a month lower than 2019, most of this due to reduced vehicle use associated with working from home as well as stay-at-home orders.

Money saved through energy efficiency and conservation can be used for other purposes, whether that’s paying down debts faster or purchasing other goods and services (or a combination of both). Also, investing in energy saving retrofits, local sustainable energy projects and local energy production creates local jobs.

8.3 GREENHOUSE GAS EMISSIONS

From a GHG reduction perspective, credit should be given to the previous Government of Ontario for following through in its plans to replace coal-fired power generation plants with cleaner sources, such as nuclear, hydroelectric, natural gas, and renewables, as well as encouraging electricity conservation. GHG emissions from the province’s electricity grid are now 90 per cent lower than they were ten years ago.

The reductions in energy use noted above are also a contributor to London’s significant reductions in GHG emissions. Federal vehicle emission standards and provincial ethanol in gasoline requirements have also helped to reduce transportation GHG emissions. Finally, the City of London’s landfill gas collection and flaring system represents the largest source of GHG emissions reduction directly under municipal government control.

In summary: the use of energy in London has had the following GHG impacts:

- Total GHG emissions in 2020 were about 2.7 million tonnes of equivalent carbon dioxide – the top three sources in 2020 were personal vehicles (27%), single-family homes (20%), and commercial buildings (17%).

- London's total GHG emissions in 2020 were 22% below 1990 levels – an 11% decrease from the previous year due to the impact of COVID-19 in transportation energy use as well as a warmer winter and autumn.
- London met and exceeded its 2020 goal to reach 15% reduction from 1990 levels.
- Londoners' per-person GHG emissions are significantly lower – on a per person basis, Londoners and London businesses released 42% fewer GHG emissions in 2020 than they did in 1990.

In terms of household GHG emissions, the average household emitted 9.3 tonnes per year. As with cost, about half (47%) of this came from burning gasoline. Natural gas used for space heating and water heating accounted for 42 per cent of emissions. Organic waste in the landfill accounted for about seven per cent. Given Ontario's clean electricity grid, using electricity in the home only accounts for two per cent of household GHG emissions.

Whether emissions continue to decrease depends upon the impact of energy and fuel conservation efforts, provincial and federal climate change policies, climate trends, economic growth, and consumer choices. It is also important to note that these actions also contribute to reductions in air pollution emissions (e.g., nitrogen oxides, volatile organic compounds) from fossil fuel use.

The quantification of GHG emissions from the consumption of goods and services used by Londoners and London's employers is a growing area of interest for the City of London. Almost all these GHG emissions occur outside London. For consumer goods, most of these emissions occur outside of Canada. However, Londoners and London's employers can influence these emissions by the choices made regarding the goods and services they use.

APPENDIX A - METHODOLOGY

This document builds upon two foundational energy use and GHG emissions inventories that have been developed for London and related data, specifically:

- The 1995 *City of London Air Emissions Study*, prepared by SENES Consultants in association with Proctor & Redfern Limited and Torrie Smith Associates. It provided the baseline inventory for the community (1990) and municipal operations (1992).
- The London Energy/Air Emissions Reduction Strategy Task Force report in March 2000 titled *Air Emissions and Energy Use in the City of London*. This report revised the baseline 1990 community inventory and provided an update to the community inventory using 1998 data. It also provided an emissions and energy use business-as-usual forecast for 2001, 2006, 2012, and 2016.

Since 2003, City of London (Environmental Programs) staff has maintained and updated the community energy use and GHG emissions inventory on an annual basis.

The methodology employed is consistent with the GHG emission inventory protocol provided by ICLEI Canada for participants in the Federation of Canadian Municipalities' Partners for Climate Protection (PCP) program. The *2012 Community Energy & Greenhouse Gas Inventory: Challenges & Opportunities* report was reviewed by ICLEI and FCM staff as part of the City of London's Milestone 5 recognition for the PCP program.

The GHG inventory includes Scope 1 and Scope 2 emission sources, plus those Scope 3 emission sources required by the Global Covenant of Mayors:

- Scope 1 - GHG emissions from fuel use and landfills within the boundary of the city
- Scope 2 - Indirect GHG emissions that occur outside of the city boundary because of electricity consumption within the city
- Scope 3 - Other indirect emissions that occur outside of the city boundary because of activity within the city:
 - solid waste disposal (IC&I waste disposed in landfills outside London)
 - domestic aviation
 - railways

The remaining Scope 3 emissions, other indirect emissions and embodied emissions that occur outside of the city boundary because of activities of the city, are not included in the inventory, such as:

- marine transportation of goods
- embodied emissions upstream of power plants
- embodied emissions in fuels
- embodied emissions in imported construction materials
- embodied emissions in imported goods
- embodied emissions in imported food

A.1. COMMUNITY INVENTORY DATA COLLECTION

Data for the community inventory is available for 1990, 1998, 2002, and 2004-2020 unless otherwise noted below. The inventory information used for the residential sector is based on the following:

- Annual electricity use data was provided by London Hydro. Note that this excludes multi-unit residential buildings, which are considered to be commercial accounts by London Hydro.
- Annual natural gas use data was provided by Union Gas. Note that this excludes multi-unit residential buildings, which are considered to be commercial accounts by Union Gas.
- Other home heating fuel data (e.g., propane, fuel oil) was obtained from Statistics Canada end-use energy data for Ontario prorated by population to estimate use within London. Note that the latest information is from 2019.

The inventory information used for the business and institutional sector is based on the following:

- Annual electricity use was provided by London Hydro. Note that this includes General Service < 50 kW , General Service > 50 kW , Large Users > 5000 kW, Users with Embedded Services (e.g., co-generation plants), sentinel lights, and street lighting.
- Annual natural gas use was provided by Union Gas. Note that this includes industrial, commercial, and institutional accounts.
- Other fuel data (e.g., fuel oil, kerosene) developed from Statistics Canada end-use data for Ontario prorated by population to estimate use within London. Note that the latest information is from 2019.

The inventory information used for the transportation sector is based on the following:

- Annual retail transportation fuel sales data for gasoline, ethanol-blended gasoline (E10) and diesel was provided by Kent Group. Given that London is a self-contained urban area, it is assumed that all transportation fuel used by London residents and businesses are purchased within London. This information has the benefit of being current (2020 data).
- Diesel use for public transit was provided by London Transit.
- Diesel use for road freight transportation was estimated using national-level 2020 data from Statistics Canada, prorated by population, to provide estimates that reflected the impact of the COVID-19 pandemic on road freight transportation.
- Diesel used for railways was developed from Statistics Canada energy end-use data for Ontario prorated by population to estimate use within London. Note that the latest information is from 2019.
- Community non-retail (i.e., commercial and other institutional) transportation fuel data developed from Statistics Canada end-use energy data for Ontario prorated by

population to estimate use within London. Propane identified as being used in the commercial and industrial sector is assumed to be used as transportation fuel only. Note that the latest information is from 2019.

- Aviation fuel use was estimated using national-level 2020 data from Statistics Canada, prorated by population, to provide estimates that reflected the impact of the COVID-19 pandemic on air travel.

The inventory information used for landfills is based on the following:

- Annual waste quantities placed within the landfills for each calendar year.
- For the W12A landfill, the emission reductions associated with the landfill gas collection and flaring system are based on continuously measured landfill gas flow rate and methane concentration at the landfill flare.
- The global warming potential of methane of 25, as per the Intergovernmental Panel on Climate Change's *Fourth Assessment Report* and used by the federal government in its GHG emissions reporting.

The inventory information used for waste generated in London and disposed outside of London is based on the following:

- GHG emissions were estimated by taking the reported GHG emissions from the Twin Creek Landfill and Ridge Landfill for 2016 and dividing it by London's share of the annual fill rate at these landfills. City of London Solid Waste Management staff estimated the volume of London's industrial, commercial, and institutional (IC&I) sector solid waste disposed outside of London to be around 83,000 tonnes – 45,000 tonnes to the Twin Creek Landfill and 8,000 tonnes to landfills in Michigan.
- For the 1990 to 2016 period, the amount of IC&I waste per capita was assumed to be the same as reported last year, namely 0.31 tonnes per person. GHG emissions were estimated based on the Ontario Waste Management Association's Cap & Trade Research spreadsheet model for Ontario waste sector; based on the model's estimated 0.75 tonnes CO₂e emitted per tonne waste disposed at large landfills. It was assumed 50% landfill gas capture from 2002 to 2019, only 25% landfill gas capture for 1998, and no landfill gas capture for 1990.

As a result of London having joined the Global Covenant of Mayors in 2015, it is recommended that nitrous oxide emissions from sewage treatment be included within London's energy and GHG emissions inventory as per the Global Protocol for Community-Scale GHG Emission Inventories (GPC). Nitrous oxide is a combustion by-product from the incineration of sewage sludge and its formation is influenced by incinerator operating conditions (i.e., combustion temperature).

Since 2008, annual stack testing at the Greenway Wastewater Treatment Plant sludge incinerator has included the measurement to nitrous oxide alongside other air pollutants. Table A-1 summarizes the nitrous oxide stack test results.

Table A-1: Summary of 2008 – 2020 Stack Test Results for Nitrous Oxide (N₂O) Emissions from the Greenway WWTP Sewage Sludge Incinerator

Year	Measured average emissions g/s	Measured average emissions kg/h	Estimated annual emissions tonnes/y	Estimated annual CO ₂ e tonnes/y
2008	0.1	0.4	3	1,000
2009	1.1	3.9	28	8,800
2010	1.1	3.9	28	8,700
2011	1.2	4.4	32	9,900
2012	1.0	3.5	26	7,900
2013	0.2	0.6	4	1,400
2014	1.1	4.1	29	9,100
2015	1.0	3.7	26	8,200
2016	0.3	1.1	7	2,300
2017	2.4	8.6	65	20,000
2018	1.7	6.0	43	13,000
2019	1.5	5.5	33	10,200
2020	0.8	3.0	18	5,500

As can be seen from the table above, measured emissions of nitrous oxides can vary from year to year.

A.3. GREENHOUSE GAS EMISSION FACTORS FOR ENERGY COMMODITIES

Greenhouse gas emissions associated with energy use were calculated based on the emission factors provided by *Canada's National Inventory Report 1990-2019*, except for the 2020 grid-average emission factors for Ontario, which have been estimated based on the 2020 electricity supply mix for Ontario reported by the IESO, combined with the data from *Canada's National Inventory Report 1990-2019*. A summary of emission factors has been provided in Table A-2.

All GHG emissions are expressed in terms of equivalent carbon dioxide (CO₂e), based on the global warming potentials (GWP) of the various GHG emissions provided by *Canada's National Inventory Report 1990-2019*.

Table A-2 – Greenhouse Gas Emission Factors and Energy Conversions

Source of Emission	Emission Factor (CO₂e)	Information Source
Electricity - Ontario 2020	0.03 kg/kWh	Estimated based on IESO information for 2020
Electricity - Ontario 2019	0.03 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2018	0.03 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2017	0.02 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2016	0.04 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2015	0.04 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2014	0.04 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2013	0.08 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2012	0.11 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2011	0.11 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2010	0.14 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2009	0.12 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2008	0.17 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2007	0.24 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2006	0.21 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2005	0.25 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 2002	0.29 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 1998	0.23 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
Electricity - Ontario 1990	0.22 kg/kWh	National Inventory Report, 1990-2019 - ANNEX 11
natural gas	1.90 kg/m ³	National Inventory Report, 1990-2019 - ANNEX 6
fuel oil	2.73 kg/L	National Inventory Report, 1990-2019 - ANNEX 6
propane	1.54 kg/L	National Inventory Report, 1990-2019 - ANNEX 6
gasoline	2.31 kg/L	National Inventory Report, 1990-2019 - ANNEX 6
diesel	2.71 kg/L	National Inventory Report, 1990-2019 - ANNEX 6
gasoline (E-10)	2.08 kg/L	National Inventory Report, 1990-2019 - ANNEX 6

A.4. COST ESTIMATES FOR COMMUNITY ENERGY USE

Information on the cost of using petroleum products is based on information available from Kent Marketing Services, specifically:

- Annual retail prices (including tax) and wholesale prices for regular-grade gasoline, mid-grade gasoline, premium-grade gasoline, diesel, and furnace oil;
- Crude oil price component associated with retail fuels, allocated to Western Canada (Alberta and Saskatchewan) which is the source of oil for refineries in Sarnia;
- The refiners operating margin, which is the difference between annual crude oil prices and wholesale prices, allocated to Ontario (refineries in Sarnia);
- The Harmonized (Federal and Provincial) Sales Tax and Federal Fuel Excise Tax; and
- The marketing operating margin, which is the difference between annual retail prices the wholesale prices and federal and provincial taxes, allocated to London (gas stations).

This allocation method was reviewed and accepted as being reasonable in 2013 by Kent Marketing.

Information on the cost of using electricity is based on customer rate structure information available on London Hydro's website, specifically:

- The Rate Component (\$/kWh), the Loss Adjustment Factor, and (where applicable) the Global Adjustment, which is allocated to Ontario reflect the cost to generate electricity in Ontario;
- Delivery-related costs (Distribution Variable Charge, Network Charge, Connection Charge, Rate Rider for Tax Change, and Rate Rider for Variance Account), which is allocated to London to reflect London Hydro's operations;
- Transmission-related costs, which is allocated to Ontario to reflect Hydro One's operations; and
- Regulatory-related and Government-related charges (e.g., Ontario Hydro Debt Retirement, HST).

This allocation method was reviewed and accepted as being reasonable in 2013 by Wattsworth Analysis, the City of London's energy procurement advisor.

Information on the cost of using natural gas is based on customer rate structure information available on Union Gas's website, specifically:

- The Gas Commodity Rate, the Gas Price Adjustment, and Transportation, which is allocated to a mix of Western Canada (conventional gas wells) and United States (shale gas) to reflect the sources of natural gas supply and transporting this gas to Ontario ;
- Storage-related costs, which is allocated to Ontario to reflect Union Gas's regional and Ontario-wide storage and distribution operations;

- Delivery-related costs, which is allocated to London to reflect Union gas's local operations to supply natural gas to customers in London; and
- The HST.

This allocation method was reviewed and accepted as being reasonable by Wattsworth Analysis.

APPENDIX B - 2003-2019 HEATING & COOLING DEGREE DAYS FOR LONDON

Heating degree day (HDD) is a measurement tool used to estimate energy demand needed to heat a home or business. A similar measurement, cooling degree day (CDD), reflects the amount of energy used to cool a home or business.

It is based on the average outdoor air temperature over an entire day. The heating needs for a home or a building are generally directly proportional to the number of HDD at that location. Heating degree days are defined relative to a base temperature; the outside temperature above which a building needs no heating. For homes, a daily average temperature of 18 °C is used as this base. Therefore, if the average temperature for a day was 8 °C, then the HDD would be 10 for that day. Similarly, if the average temperature for a day was -2 °C, then the HDD would be 20 for that day. A typical winter month would have about 700 HDDs in London.

Environment Canada produces Climate Normal data ranges over a historic 30-year period. Over the last 10 years, most winters and summers have been warmer than they were over the 1971-2000 period.

Table B-1 – Annual Residential Heating and Cooling Degree-Days for London

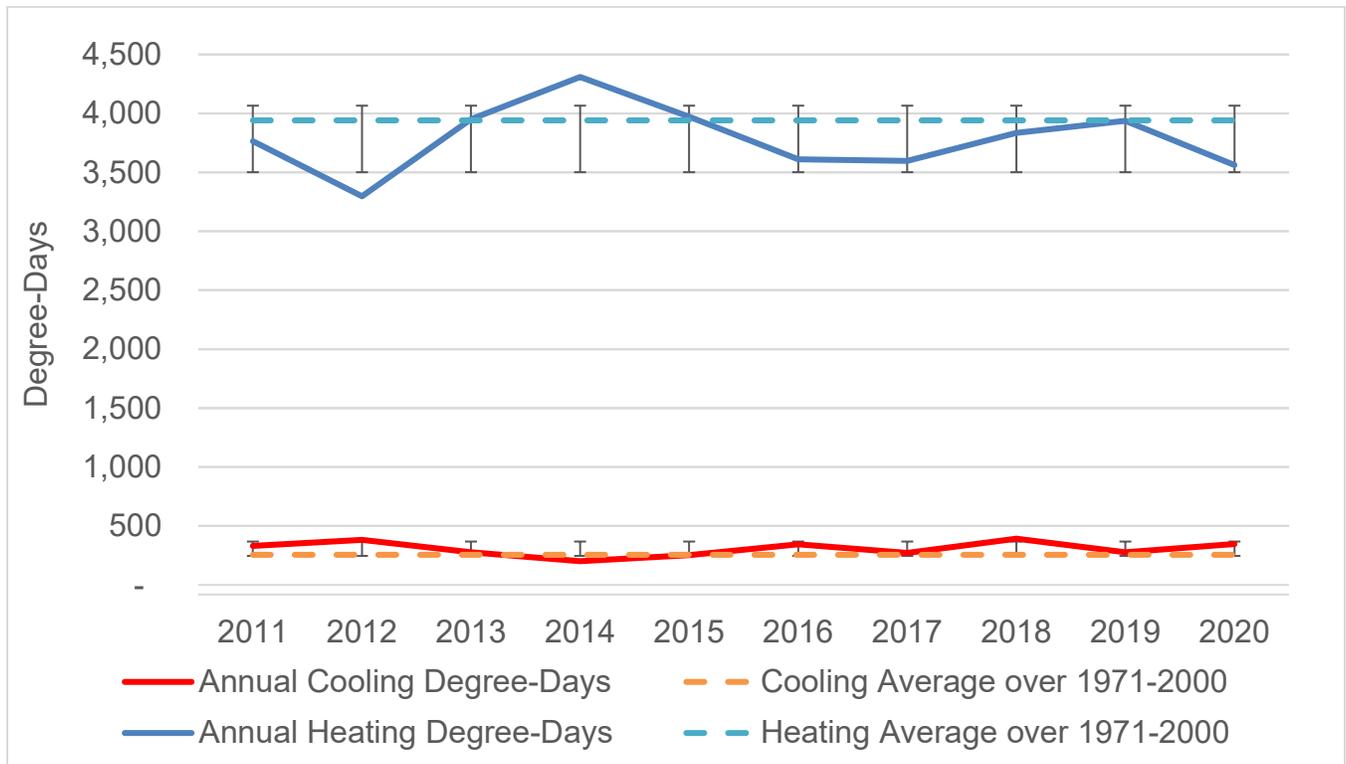
Year	Heating Degree-Days	Cooling Degree-Days	Heating - Difference from 30 Year Average	Cooling - Difference from 30 Year Average
2010	3,664	369	-7%	44%
2011	3,766	330	-4%	29%
2012	3,297	381	-16%	49%
2013	3,951	276	0%	8%
2014	4,309	201	9%	-21%
2015	3,971	254	1%	-1%
2016	3,615	343	-8%	34%
2017	3,597	271	-9%	6%
2018	3,836	392	-3%	53%
2019	3,937	277	0%	8%
2020	3,562	347	-10%	36%
Average for 2010-2020 period	3,773	313	-4%	22%
30-year average (1971-2000)	4,058	236		

Notes: 1. Climate Normal data based on the 1971-2000 period

2. Heating and cooling degree-days based on the daily average difference from 18°C

Using this data, it can be assumed that, over the last 10 years, building heating needs were about four per cent lower than they would have been back in the 1971-2000 period, and that air conditioning needs were 22 per cent higher.

Figure B-1 – Annual Residential Heating and Cooling Degree-Days for London



Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Outcome of Climate Lens Process Applied to Waste
Management Programs and Projects

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure the following report **BE RECEIVED** for information on how the Climate Lens Process has been applied to a broad range of plans, programs and projects in Waste Management.

Executive Summary

Greenhouse gas (GHG) increases and decreases, climate change and lifecycle of materials and processes have been considered a part of Waste Management services since 1995. Major city-wide waste management planning engagements that have included climate change considerations have occurred in 1997, 2007, 2013 and 2018. Now in 2020/2021, the application of the current Climate Lens Process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates & Multi-year Budgets
5. Building Climate Change Capacity

The implementation of the Climate Lens Process in Waste Management was a joint effort between the City's Climate Emergency Resource Team (CERT) and several representatives from Waste Management. The identification of target areas for climate emergency screening within the service, customization of the generic process to apply to those areas and the specifics related to the administrative implementation of process use in existing workflows were collaboratively created through workshops followed by document drafting and review. The customized Climate Emergency Screening Tool (CEST) for Waste Management was used in the joint effort.

Waste Management also served as a test group for the Corporation by addressing all five activity streams using the Climate Lens Process including developing a list of items to be incorporated immediately and next steps for action in a number of areas.

One of the first steps in the process was the creation of a Climate Emergency Issues Table (Table 1) focusing on the key areas of collection, waste reduction, diversion and resource recovery services and disposal (active and closed landfills). Review, discussion, use of the customized CEST and a review of the status of climate change being applied to waste management in other jurisdictions and past experience in London resulted in the following:

- Master Plans, Guidelines and Strategies - seven master plans, guidelines and strategies reviewed and next steps identified with respect to the Climate Lens Process (Table 2). In many cases, very thorough consideration of GHG generation, impacts and mitigative measures are evident.
- Existing and New Projects/Programs – six existing projects (Table 3) and 4 new projects (Table 4) will undergo further evaluation of climate change matters in the next three years based on a priority basis. The continuation of the W12A Landfill gas capture, flare and recovery is one of the highest priorities.

- Quick Assessment of Existing Operations – six areas of climate change mitigation and adaptation aspects related to day-to-day operations within Waste Management were identified.
- Annual Budget Updates & Multi-year Budgets - as part of enterprise-wide efforts to incorporate climate change considerations, annual budget amendment requests require the application of a climate lens to highlight potential opportunities and risks. Currently one 2022 Budget Amendment is being considered by Waste Management for the Annual Budget Update process. Once finalized, these details will be part of the 2022 budget process.
- Building Climate Change Capacity - the design and implementation of the Climate Lens Process provides an opportunity to increase the knowledge and understanding of climate emergency issues within staff and normalize the conversation about climate change. This stream focused on building climate change capacity within Waste Management staff and identified actions in the following areas: trainings, team meetings, professional development and networking, and internal coordination on shared objectives.

All five activity streams of the Climate Lens Process have been applied in Waste Management. The process has worked well. It has highlighted many positive aspects that are currently underway and has developed a path for existing projects and programs as well as new ones. Waste Management staff will be available to assist other Service Areas (and divisions within) of the Corporation as they are reviewed to both meet their own needs and overall Municipal Council direction with respect to the climate emergency.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of climate change mitigation, climate change adaptation, sustainable energy use, related environmental issues and the need for a more sustainable and resilient city in the development of its 2019-2023 Strategic Plan for the City of London. Specifically, London's efforts in waste management and climate change mitigation and adaptation contributes to four out of five Areas of Focus:

- Strengthening Our Community
- Building a Sustainable City
- Growing our Economy
- Leading in Public Service

Analysis

1. Background Information

1.1 Previous Reports Related to this Matter

- April 27, 2021, Strategic Priorities and Policy Committee, Development of the Climate Emergency Action Plan Update
- August 11, 2020, Strategic Priorities and Policy Committee, Climate Emergency Action Plan Update
- November 25, 2019, Strategic Priorities and Policy Committee, Climate Change Emergency – Update
- April 23, 2019, Climate Emergency Declared at Municipal Council

1.2 Overview of Previous Climate Change Actions in Waste Management Planning

Greenhouse gas increases and decreases, climate change and lifecycle of materials and processes have been considered a part of Waste Management services since 1995. Since the mid-1990s, the City's Waste Management System has been based on

a Continuous Improvement Strategy (management philosophy) and Sustainable Waste Management. This strategy, which was approved by Municipal Council in 1997, has been a successful foundation for the program. In 2001, the City of London was featured alongside communities from around the world in a book titled *Integrated Solid Waste Management: A Lifecycle Inventory Approach* (Second Edition, McDougall, White, Franke and Hindle, 2001).

Major city-wide waste management planning engagements that have occurred in the last 25 years include:

- 1997 - Continuous Improvement System and Sustainable Waste Management
- 2007 - A Road Map to Maximize Waste Diversion in London
- 2013 - Road Map 2.0 – The Road to Increased Resource Recovery and Zero Waste
- 2018 - 60% Waste Diversion Action Plan

Additional overview details can be found in Appendix A.

1.3 Overview of Climate Lens Process and Application in Waste Management

Objectives

The Climate Lens Process was designed to ensure that climate emergency issues are part of the decision-making processes throughout the Corporation. To date, it has been considered in a number of areas of the Corporation. The Climate Lens Process will take this experience and new knowledge to significantly increase climate emergency activities and actions.

It is important to note that the Climate Lens Process itself is not intended to function as a “stop/go” or “yes/no” decision-making tool, rather it will be a process used to assist staff and inform decision-making on project/policy/strategy development with respect to climate change considerations and could result in a modified project or program scope. The objectives associated with the creation and use of the Climate Lens Process are to:

1. Ensure climate emergency issues are included in decision-making and evaluation of existing plans, programs and projects.
2. Establish a clear process for accountability and tracking of climate emergency issues including collection of information on decision outcomes and tracking the progress of projects/programs implemented.
3. Elevate understanding of the importance of climate emergency issues in decision-making across the Corporation.

Climate Lens Process

The Climate Lens Process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates & Multi-year Budgets
5. Building Climate Change Capacity

The Climate Emergency Screening Tool (CEST) can be used in the Climate Lens Process especially when it is customized for an area. The customized CEST is used to guide the screening of projects and programs for key climate emergency issues and opportunities for improvement. Key questions relating to climate change mitigation (reduction of GHG emitted) and adaptation (reduction of risks and improvement of resilience to climate change impacts) are provided to direct the assessment in several key areas.

There are times when the CEST is not required. For example, activity streams #3, #4 and #5 may use other tools and techniques that better meet the needs and levels of review and discussion.

Initial Steps and Preparation - Waste Management

The implementation of the Climate Lens Process in Waste Management was a joint effort between the City's Climate Emergency Resource Team (CERT) and several Waste Management representatives. The identification of target areas for the climate emergency screening within the service, customization of the generic process to apply to those areas and the specifics related to the administrative implementation of process use in existing workflows were collaboratively created through workshops followed by document drafting and review. The customized CEST for Waste Management was used in the joint effort.

Operations within Waste Management touch upon numerous climate emergency issues and aspects, however the following were determined to be most impactful and thus formed the basis for customization of the Climate Lens Process and the creation of a Climate Emergency Issues Tables (Table 1).

Table 1 – Climate Emergency Issue Tables

Climate Emergency Mitigation Considerations	Climate Emergency Adaptation Considerations
Collection Services	
<p>Fossil fuel use in waste collection trucks currently emits about 1,800 tonnes GHGs per year (28% of fleet emissions). New compressed natural gas (CNG) trucks reduce emissions and allow for the potential use of renewable natural gas (RNG) as zero-emission fuel.</p> <p>Future changes to waste, recycling and Green Bin collection schedules due to source-separated organics program implementation will influence fuel use (i.e., more service will be provided which means more fuel).</p> <p>Route optimization to reduce fuel use.</p>	<p>Increased need for removal of waste materials due to extreme weather damages (e.g., basement flooding damages to drywall materials and furniture, etc.).</p> <p>Addressing increased heat stress on collection staff.</p>
Waste Reduction, Diversion and Resource Recovery	
<p>Ongoing work as part of the London Waste to Resources Innovation Centre, including work at Western University. Upcoming work to have an increased focus on the circular economy.</p> <p>Utilization of organic waste for additional RNG production; source-separated organics has the potential to supply an additional 70,000 GJ/year of RNG which would reduce GHG emissions by 4,000 tonnes/year.</p> <p>Mixed waste processing has the potential to produce an additional stream of organics for RNG production as well as the production of a refuse derived fuel (RDF) or solid recovered fuel (SRF).</p> <p>Increasing waste diversion and minimization reduces Scope 3 (consumption related) GHG emissions.</p>	<p>Increased need to divert and manage materials generated by extreme weather damages.</p>
Disposal (Landfill) Services (Active and Closed)	
<p>Collection and flaring of landfill methane in 2020 avoided 141,000 tonnes of GHG.</p> <p>Fugitive (not captured) methane emissions at W12A Landfill in 2020 were estimated to be 93,000 tonnes of GHG.</p>	<p>Severe weather impacts on landfill operations (e.g., increased stormwater management, leachate generation, onsite blowing litter, etc.).</p>

Climate Emergency Mitigation Considerations	Climate Emergency Adaptation Considerations
<p>Upgrading landfill gas to RNG; potential to supply over 380,000 GJ/year of RNG which would reduce GHG emissions by 17,000 tonnes/year.</p> <p>Closed landfill site methane emissions in 2020 were estimated to be 33,000 tonnes of GHG; based on waste-in-place models.</p> <p>Utilization of landfill sites for renewable energy projects (e.g., solar PV) or carbon sequestration (e.g., tree planting).</p> <p>Utilization of buffer agricultural lands for renewable energy projects (e.g., solar PV), carbon sequestration (e.g., tree planting), and/or regenerative agriculture.</p>	

2 Discussion and Considerations

This section includes the outcomes of the Climate Lens Process and the next steps to be taken for Waste Management in all five activity streams as follows:

- 2.1 Master Plans, Guidelines and Strategies
- 2.2 Existing and New Projects/Programs
- 2.3 Quick Assessment of Existing Operations
- 2.4 Annual Budget Updates & Multi-year Budgets
- 2.5 Building Climate Change Capacity

2.1 Master Plans, Guidelines and Strategies

The following master plans, guidelines and strategies, including status, are the key ones with respect to climate change matters (Table 2).

Table 2 – Review of Plans, Guidelines and Strategies

Master Plan, Guideline, Strategy	Description	Status and Next Steps
Business Plan	Updated as required as part of the Multi-year Budget (MYB) processes	Status – Complete Next Steps - Next major update likely for 2024 – 2027 MYB
Green Fleet Plan as part of the Corporate Energy Management Program (waste collection packers)	In October 2018, Council approved the switch from diesel powered waste collection vehicles to compressed natural gas (CNG) vehicles as packers are replaced. CNG vehicles are significantly cleaner, reducing GHG by about 12% annually, and significantly reducing tailpipe emissions of fine particulate matter (about 50% reduction) and nitrogen oxides (about 90% reduction).	Status – Complete Next Steps - Implementation underway
60% Waste Diversion action Plan (WDAP)	The 60% WDAP included an assessment of the lifecycle greenhouse gas emissions (GHG) impacts of the proposed new waste diversion measures, using Environment Canada’s GHG Calculator for Waste Management model and the U.S Environmental	Status - Complete Next Steps - Implementation underway

Master Plan, Guideline, Strategy	Description	Status and Next Steps
	Protection Agency's Waste Reduction Model (WARM, version 14 released March 2016). The proposed waste diversion measures are estimated to reduce GHG emissions by 17,000 to 27,000 tonnes annually.	
Long-term Resource Recovery Plan (Strategy)	This project involves the development of a plan to maximize waste reduction, reuse, recycling, resource recovery, energy recovery and/or waste conversion in an economically viable and environmentally responsible manner. The 60% Waste Diversion Action Plan is a major step for the long-term Resource Recovery Strategy.	Status - In progress Next Steps – Climate Lens Process to be applied
W12A Design & Operations Plan	This document, approved by the Ministry of the Environment Conservation & Parks (MECP), governs the operations of the W12A Landfill as part of the current Waste Environmental Compliance Approval (ECA).	Status - Complete. Next Steps - the current version is required to be followed until a new Design & Operations Plan is produced
Environmental Assessment (EA) Act, Environmental Protection Act (EPA) and Ontario Water Resources Act (OWRA)	The City is undertaking an EA for the Expansion of the W12A Landfill. One of the required technical studies looks at incorporating measures in the landfill expansion design that reduce both the potential impact of climate change on the landfill (i.e., climate change adaptation) and its potential impact on climate change (i.e., climate change mitigation). Following the EA, additional technical studies are required for the ECAs under the EPA (Waste and Air) and the OWRA that become part of the new Design & Operations Plan.	Status - In progress Next Steps – Climate change considerations included
Residual Waste Disposal Plan (Strategy)	Parallel to the EA and as part of the Residual Waste Disposal Plan, the City is developing municipal policies, procedures and practices with respect to the operations of the W12A Landfill site that will not likely be covered by the new ECA.	Status - In progress Next Steps - Climate Lens Process will be applied

2.2 Existing and New Projects/Programs

To ensure that the full lifecycle of major projects and programs within Waste Management purview incorporates climate emergency considerations, the following process was followed.

Review of Existing Projects/Programs

Depending upon the stage at which an existing project is, there should still be opportunities to adjust the project to address climate change mitigation and adaptation aspects. However, these opportunities will decrease the further along the project is within its implementation stage. Ongoing programs can be reviewed with the Climate

Lens Process to identify opportunities for improved climate action outcomes for consideration as part of continuous improvement efforts. The following existing programs will be reviewed over the next three years (Table 3).

Table 3 – Review of Existing Projects and Programs

Existing Project/Program	Review Period
Landfill gas capture, flare and recovery. This is a priority project that has been delayed during the pandemic and several adjusted policies in British Columbia and Ontario have occurred with respect to purchasing RNG.	Ongoing - 2022
Curbside waste collection including Green Bin implementation & processing	2021 – 2022
Curbside yard materials collection & processing	2021 - 2022
Multi-family building waste collection	2022 - 2023
EnviroDepot-based programs and operation	2022 - 2023
Closed landfill site management	2022 - 2023

New Project Initiation

As noted above, the 60% Waste Diversion Action Plan incorporates the climate change mitigation aspects for new projects associated with diverting materials from the landfill as well as recycled materials displacing raw materials. The Climate Lens Process will be used to review and document other climate change mitigation and adaptation aspects that may lead to opportunities for improvement in upcoming new projects (Table 4).

Table 4 – Review of New Projects

New Project Initiation	Review Period
Future restrictions and/or bans of materials collected garbage (e.g., ceramics, wooden furniture, carpet, mattresses)	2021 - 2022
EnviroDepots expansions/ upgrades	2022 - 2023
Use Environment Canada’s GHG Calculator for Waste Management model and the U.S Environmental Protection Agency’s Waste Reduction Model (WARM) across the revised City of London Waste Management system.	2022 - 2023
W12A Landfill operation (as part of the development of the work being completed as part of the EA, EPA and OWRA approvals processes and subject to future direction from MECP and Council)	Ongoing to 2023

2.3 Quick Assessment of Existing Operations

Climate change mitigation and adaptation aspects related to day-to-day operations within Waste Management have been identified as:

- Employee commuting
- Fleet vehicle (e.g., pickup trucks, packers, flusher, frontend loader, etc.) procurement (e.g., right-sizing, shared vehicles, electric vehicles)
- Fleet vehicle (e.g., pickup trucks, packers, flusher, frontend loader, etc.) operation (e.g., anti-idling, eco-driving techniques)
- Work-related travel (in town and out-of-town)
- Continued use of Teams/Zoom for as many in-town/out-of-town meetings as possible
- Contracts and contractor actions
- Material (e.g., paper) and energy (e.g., lighting) use minimization and reducing other non-essential inputs

These aspects will be addressed as part of Building Climate Change Capacity (Activity Stream #5) and participation in Waste Management projects.

2.4 Annual Budget Updates and Multi-year Budgets

As part of enterprise-wide efforts to incorporate climate change considerations, annual budget amendment requests require the application of a climate lens to highlight potential opportunities and risks. This process will be led by Finance, supported by the Climate Emergency Resource Team, but require that each Service Area understand and be able to apply the climate lens to their parts of the budget process. At this stage of development, additional direction on satisfying this requirement has been provided in the guidance documentation issued by Finance as part of initiation of the annual budget amendment process.

Currently one 2022 Budget Amendment is being considered by Waste Management for the Annual Budget Update process. Once finalized, these details will be part of the 2022 budget process.

2.5 Building Climate Change Capacity

The design and implementation of the Climate Lens Process provides an opportunity to increase the knowledge and understanding of climate emergency issues within staff and normalize the conversation about climate change. This is viewed as a key outcome of the work to date and will contribute to an enterprise-wide culture shift towards more sustainable development.

This stream focused on building climate change capacity within Waste Management and identified the following:

1. Training – New City staff will be provided with a clear understanding of climate emergency issues as part of the on-boarding process. The training and presentation materials created by the Climate Emergency Resource Team can be adapted for on-boarding training in discussion with People Services.
2. Team Meetings – Climate emergency issues will become part of regular team meetings in Waste Management. Training materials for new staff will also be used to update existing staff.
3. Professional Development and Networking - For Waste Management, continuing participation in professional development and peer networks is encouraged to increase staff understanding of climate change mitigation and adaptation aspects of waste management infrastructure as well as solutions to address these aspects. Managers are encouraged to note this objective as part of staff professional development and review processes.
4. Internal Coordination on Shared Objectives - Waste Management staff will also work with other Service Areas and the Climate Emergency Resource Team to advance cross-Service Area initiatives to address emissions reduction through procurement, fleet, finance, and other relevant functions (e.g., assessing opportunities to procure commonly used construction materials, supplies and services with lowered embedded, operation and/or transport GHG emissions).

Administrative Requirements – Waste Management

The Climate Lens Process lead within Waste Management will be a combination of the Manager, Waste Diversion and Division Manager, Waste Management. An annual update will be provided to the Deputy City Manager, Environment & Infrastructure with copies provided to the Climate Emergency Resource Team.

Further reporting will be discussed to ensure Municipal Council objectives are being met including the implementation of the Climate Emergency Action Plan (currently in development).

3.0 Financial Impact/Considerations

There are no specific financial implications associated with this information report. Budget and financing are in place for the current programs and projects. Where it is not in place, the required processes are being followed through Finance Supports.

Conclusion

All five activity streams of the Climate Lens Process have been applied in Waste Management. The process has worked well. It has highlighted many positive aspects that are currently underway and has developed a path for existing projects and programs as well as new ones.

Waste Management also served as a test group for the Corporation by addressing all five activity streams the Climate Lens Process including developing a list of items to be incorporated immediately and next steps for action in a number of areas.

Waste Management staff will be available to assist other Service Areas (and divisions within) of the Corporation as they are reviewed to both meet their own needs and overall Council direction with respect to the climate emergency.

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Appendix A Overview of Previous Climate Change Actions in Waste Management Planning

Appendix B Climate Emergency Screening Tool Customized for Waste Management

Appendix A

Overview of Previous Climate Change Actions in Waste Management Planning

This appendix contains a brief overview of 4 major city-wide waste management planning engagements that have occurred in the last 25 years and the one under development.

1997 Continuous Improvement System and Sustainable Waste Management

Since the mid-1990s, the City's Waste Management System has been based on a Continuous Improvement Strategy (management philosophy) and Sustainable Waste Management. This strategy, which was approved by Municipal Council in 1997, has been the foundation for going forward. It uses an active framework that recognizes integrated waste management as an important environmental service in the community. Greenhouse gas increases and decreases, climate change and lifecycle of materials and processes have been considered a part of Waste Management services since 1995.

By effectively allocating financial and human resources, this environmental service contributes to the protection of human health and the environment. By supporting an integrated system of waste reduction (i.e., not producing waste in the first place), recovery of materials that can be recycled and composted, and ensuring that what remains is handled in an environmentally responsible manner, this strategy provides the mechanism for continuous improvement of the waste management system. Since this strategy was approved over twenty years ago, London has steadily increased its performance to the current level of 45% waste diversion of residential waste while having one of the lowest total waste management costs in Ontario for urban centres (based on statistics compiled by the Municipal Benchmarking Network Canada).

2007 A Road Map to Maximize Waste Diversion in London

A Road Map to Maximize Waste Diversion in London (2007) outlined a number of options to achieve higher diversion rates and asked for feedback from the public.

Diversion measures implemented as a result of this process included new materials added to the Blue Box program (e.g., milk and juice cartons, drinking boxes, mixed plastics, steel paint cans, aerosol cans and cardboard cans), new materials added to the EnviroDepots (e.g., tires, appliances, fluorescent tubes and bulbs), second Blue Box provided to single family homes, reusable blue bags provided to apartment units, more blue carts supplied to apartment buildings, expansion of the Oxford EnviroDepot, increased days open at the Household Special Waste depot from one to five days and completion of a Green Bin pilot study.

2013 Road Map 2.0 – The Road to Increased Resource Recovery and Zero Waste

Road Map 2.0 The Road to Increased Resource Recovery and Zero Waste (2013) also outlined a number of options to achieve higher diversion rates and asked for feedback from the public.

Diversion measures implemented as a result of this process included the reduction in the garbage container limit from 4 to 3 containers per collection, construction of a fourth EnviroDepot to serve the north end of the city, new materials added to the Blue Box program (mixed polycoat), completed community composting pilot projects, completed food reduction awareness pilot projects and instituted the curbside collection and composting of Christmas trees.

2018 60% Waste Diversion Action Plan

The development of the 60% Waste Diversion Action Plan drew on a variety of sources of information, experience and insight from other waste management and environmental professionals.

This included a review of other Ontario and Canadian municipalities and the United States; consideration of regional resource recovery opportunities; engagement and feedback from the public; consideration and alignment with provincial strategies, direction and legislation; updating local waste composition data for curbside and multi-residential homes; and gathering information from the waste management and resource recovery industry.

The Action Plan proposes a set of 21 actions to achieve 60% diversion of residential waste by the end of 2022. The budget for the multi-year implementation (2020-2023 Multi-Year Budget Business Case #1) was approved March 2, 2020. Shortly after this date, the COVID-19 state of emergency was declared provincially on March 17, 2020, and locally March 20, 2020. A revised implementation plan and budget was approved by Municipal Council on January 12, 2021 that includes the implementation of a Green Bin program.

Long-term Resource Recovery Plan (in development)

To plan for the future, the City is developing a long-term Resource Recovery Plan. The Resource Recovery Plan involves the development of actions to maximize waste reduction, reuse, recycling and resource recovery in an economically viable and environmentally responsible manner.

The Resource Recovery Plan will identify:

- opportunities for advanced resource recovery and increased waste diversion through new, emerging and next generation technologies and where these technologies may play a role in London and area;
- the understanding of climate change impacts, both mitigation and adaptation;
- areas to reduce or maintain current costs of City programs;
- ways in which to support local job creation efforts;
- ways in which to maximize program convenience to Londoners; and,
- methods to align with Provincial direction and the *Waste Free Ontario Act, 2016*.

The 60% Waste Diversion Action Plan is a major step for the long-term Resource Recovery Strategy.

Appendix B
Climate Emergency Screening Tool Customized for
Waste Management



Climate Emergency Screening Tool

Incorporating Climate Considerations into Decision-making for Projects and Programs

Waste Management

Draft Version 8

June 2021

City of London

Project or Program Title

Provide a brief title that is used to identify the subject of evaluation

Project Description

Provide a brief project description that describes the type of project or program (e.g., new waste diversion program, landfill expansion, etc.), physical elements (location, materials, etc.), service(s) involved and any implementation specifics.

Project/Program Status

Please indicate the status of the project and add details in the comment area:

- Concept
- Proposal
- Environmental Assessment
- Design
- Pre-Construction
- Construction
- Operational

Context and Assumptions

Provide a brief description of any important contextual data and assumptions that impact the project design and/or purpose, or a reference to any studies that are relevant to the project.

Climate Emergency Screening – Aspect Analysis

A. Mitigation

1. *Does this project or program help to reduce the amount of organic material going to landfill?*

- Yes No Uncertain Not Applicable

Comments/Notes

2. Does this project or program help to reduce fugitive methane emissions from landfill sites?

Yes No Uncertain Not Applicable

Comments/Notes

3. Does this project help to reduce fossil fuel use?

Example: landfill gas utilization, biogas production & utilization, reduce vehicle trips, route optimization, improved energy/fuel efficiency, recycled content of product

Yes No Uncertain Not Applicable

Comments/Notes

4. Does this project help to reduce the upstream climate and other environmental impacts of producing goods and services?

Example: reduces emissions and resource depletion from raw material extraction & processing, extends useful life of a product, increases material recovery at end of product use

Yes No Uncertain Not Applicable

Comments/Notes

5. Does this project help to reduce greenhouse gas emissions by other means?

Example: carbon sequestration from trees, regenerative agriculture style land rehabilitation

Yes No Uncertain Not Applicable

Comments/Notes

6. Can this project provide an opportunity to reduce the greenhouse gas emissions intensity of construction materials used?

Yes No Uncertain Not Applicable

Comments/Notes

B. Adaptation

1. Will this project or program help to reduce the requirements for stormwater management?

Example: low-impact development measures, permeable pavement

Yes No Uncertain Not Applicable

Comments/Notes

2. Have future intense rainfall events been taken into consideration for this project or program?

Example: increased capacity of stormwater ponds and surface drainage system

Yes No Uncertain Not Applicable

Comments/Notes

3. Have extreme wind events been taken into consideration for this project or program?

Example: enhanced fencing or more frequent application of fill as cover to minimize blowing of landfill waste from the site

Yes No Uncertain Not Applicable

Comments/Notes

4. Will project landscaping provide for the protection and enhancement of London's Natural Heritage System?

Example: using low-maintenance native species in replanted areas, filling vegetation gaps in natural heritage corridors, supporting pollinators, removing invasive species

Yes No Uncertain Not Applicable

Comments/Notes

5. Have impacts from increased ambient air temperatures and more frequent extreme heat days during summer months been taken into consideration for this project or program?

Example: potential cooling requirements for staff, increased frequency of breaks, vulnerabilities in infrastructure or equipment to extreme heat

Yes No Uncertain Not Applicable

Comments/Notes

Opportunities

Based on the issues identified above, identify opportunities to revise the project to improve how climate change mitigation and adaptation aspects are addressed.

Recommendations

Have any recommendations surfaced that should be carried forward for this work? Is further analysis required? If so, what would be the desired outcome of the further analysis?

The Climate Emergency Resource Team is available to help with conducting further analysis or identifying the potential need for further analysis.

Step 1 – Internal Review (Internal Specialist Panel)

High-level quantification of climate mitigation aspects and climate adaptation aspects by internal staff can be completed with minimal additional effort and may provide sufficient clarity to inform decision-making. This includes the use of Environment Canada’s GHG Calculator for Waste Management model and the US EPA WARM tool to assess the lifecycle impacts of waste diversion options.

Step 2 – Detailed Internal Study (Internal Specialist Panel)

If the issues or uncertainties associated with the project require detailed quantification of climate mitigation aspects and climate adaptation aspects, particularly if new or detailed data analysis beyond the capabilities of existing tools established from previous work is required, a stand-alone report prepared by internal specialists may be required.

Step 3 – Engage External Qualified Specialists for a Specific Aspect

Specific issues or aspects may require external expertise to procure existing relevant data, conduct primary data collection, conduct data analysis and interpretation, prepare detailed modeling and/or assess risk to address specific aspects outside of internal staff expertise.

Step 4 – Consultant-Driven Comprehensive Climate Lens Assessment

A consultant-driven detailed climate lens assessment would be carried out as part of the scope of work for Individual Environmental Assessments, Municipal Class Environmental Assessments, and large infrastructure projects that may also be subject to the Government of Canada requirement to complete a GHG Mitigation Assessment and, in many cases, a Climate Change Resilience Assessment ([link](#)).

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Outcome of Climate Lens Screening Applied to Major
Transportation Projects

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions **BE TAKEN** with respect to the initial Climate Emergency screening of current major transportation projects:

- a) The Civic Administration **BE DIRECTED** to implement the project specific recommendations contained herein that includes:
 - i. Proceeding with the implementation of a number of transportation projects with consideration of the outcomes of the review as identified in this report;
 - ii. Suspending the Discover Wonderland Environmental Assessment noting that the role and function of this corridor will be considered as part of the future Mobility Master Plan;
 - iii. Suspending the corridor widening on Adelaide Street North noting that the Environmental Assessment for the Adelaide Street North should be finalized to inform complete streets intersection improvements at Sunningdale Road planned for 2025 and the remainder of the corridor improvements will be subject to further assessment under the future Mobility Master Plan;
- b) That, subject to Municipal Council approval of recommendation a), Civic Administration **BE DIRECTED** to adjust the Multi-Year Budget during the next appropriate update cycle; and
- c) The Civic Administration **BE DIRECTED** to review ongoing transportation projects to consider climate change mitigation and adaptation to ensure resiliency of critical transportation infrastructure.

Executive Summary

On April 23, 2019, Council approved a declaration of a climate emergency and requested Civic Administration to report back on tangible actions that the municipality can undertake. A report to the Strategic Priorities and Policy Committee on November 25, 2019 identified the next steps and highlighted the interrelationship between programs, projects and strategies designed to reduce energy use and increase climate change mitigation and adaptation. A subsequent report on April 27, 2021 provided an update regarding the status on actions, including the rollout and evolution of the awareness and screening process, community engagement and actions underway.

One of the action items identified in the initial report was for staff to complete an initial screening of current and planned major transportation projects using the interim Climate Emergency Screening Tool (CEST). This report provides the results of the review of current major transportation projects using the CEST. The reviewed projects include a variety of initiatives that represent the current diversified approach to sustainable transportation outlined in the Transportation Master Plan.

Projects that optimize and support sustainable mobility modes are recommended to proceed with consideration of the climate lens outcomes. The recommendations also

endorse a complete streets approach. In general, reconstruction of strategic streets in growing areas that are missing components of pedestrian, cycling and transit amenities are recommended for construction to a four-lane Civic Boulevard Complete Street standard as a cost-effective approach to enable sustainable mobility choices, support growth and accommodate municipal and emergency services. The widening of streets, particularly to six lanes, where the corridors are already relatively complete is recommended for further consideration under the future Mobility Master Plan. Of the 12 projects assessed, the review identified two initiatives that comprised capacity increases on relatively complete streets that are recommended to not proceed further at this time and be subject to further review in the upcoming Mobility Master Plan in case there are additional active transportation or transit needs that might influence their geometry:

- Suspending the Discover Wonderland Environmental Assessment that considers a six-lane widening of the Wonderland Road corridor; and,
- Suspending the corridor widening component of the Adelaide Street North Environmental Assessment between Fanshawe Park Road and Sunningdale Road.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of climate change mitigation, climate change adaptation, sustainable energy use, related environmental issues and the need for a more sustainable and resilient city in the development of its 2019-2023 Strategic Plan for the City of London. London's efforts in transportation and climate change mitigation and adaptation contribute to the five Areas of Focus:

- Strengthening Our Community
- Building a Sustainable City
- Growing our Economy
- Creating a Safe London for Women and Girls
- Leading in Public Service

Analysis

1.0 Background Information

In December 2019, Council directed staff to complete an initial screen of current major transportation projects using the interim screening Climate Emergency Evaluation Tool (CEET, which was subsequently changed to Climate Emergency Screening Tool – CEST during its evolution).

1.1 Previous Reports Related to this Matter

- June 19, 2012, Civic Works Committee, London 2030 Transportation Master Plan
- March 3, 2014, Civic Works Committee, London Road Safety Strategy
- September 7, 2016, Civic Works Committee, London ON Bikes Cycling Master Plan
- May 28, 2018, Civic Works Committee, Smart Moves Transportation Master Plan Accomplishments
- August 13, 2018, Civic Works Committee, Complete Streets Design Manual
- May 6, 2019, Strategic Priorities and Policy Committee, Approval of 2019 Development Charges By-Law and DC Background Study
- April 23, 2019, Climate Emergency Declared at Municipal Council
- November 25, 2019, Strategic Priorities and Policy Committee, Climate Change Emergency – Update
- August 11, 2020, Strategic Priorities and Policy Committee, Climate Emergency Action Plan Update
- April 27, 2021, Strategic Priorities and Policy Committee, Development of the Climate Emergency Action Plan Update

1.2 Overview of Climate Lens Process

The Climate Lens Process was designed to ensure climate emergency issues are incorporated into decision-making throughout the corporation in a consistent manner. It is important to note that the Climate Lens Process itself is not intended to function as a “stop/go” or “yes/no” decision-making tool, rather it is intended to assist staff and inform decision-making on project development with respect to climate change considerations.

The Climate Lens Process addresses the following five streams of activities, which together are meant to implement the process effectively across all Service Areas of the Corporation:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Annual Budget Updates and Multi-year Budgets
5. Building Climate Change Capacity

The work presented in this report focuses on the results of the second stream of the Climate Lens Process for the Transportation Services, which focuses on the review of 12 existing and planned projects.

1.3 Customized Screening Tool for Transportation Projects

The Climate Lens Process applied to existing and new projects and/or programs is defined by the implementation of a customized Climate Emergency Screening Tool (CEST) for transportation capital projects. The customized CEST is used to guide the screening of projects and programs for key climate emergency issues and opportunities for improvement. Key questions relating to climate change mitigation (reduction of greenhouse gasses emitted) and adaptation (reduction of risks and improvement of resilience to climate change impacts) are provided to direct the assessment in several key areas.

The customized Transportation Capital Project CEST template is included in Appendix A.

2.0 Discussion and Considerations

The City’s last comprehensive household travel survey, conducted in the fall of 2016, identified that Londoners make 1.63 million trips in a typical day. This equates to an average of 3.4 trips per day per person. More recently during the COVID-19 pandemic, traffic volumes on city streets have been highly variable. Traffic volumes on city streets declined significantly during the early stages of the pandemic and to a lesser extent in subsequent lockdowns. Recent data indicates that traffic volumes have rebounded to levels that are close to that in 2019. Trends in London and other Canadian cities also suggest increased pedestrian and cycling activities with a reduction in transit use. Prior to the pandemic the average trip length which varies by purpose and mode was 5.8 km within the census metropolitan area and 5.2 km within the city. Work trips are the longest with an average trip length of 9.1 km while school trips are the shortest with an average trip length of 4.2 km.

The Covid-19 pandemic has changed the way many people travel in London and across the country. It is expected that some of the changes will be temporary in nature while others will have permanent, lasting effects on traffic volumes, travel behavior and mode choice. Recognizing that travel behaviour and volumes continue to be influenced by constantly changing restrictions related to the pandemic, it is not possible to predict what a new baseline will look like and it may take some time to determine the ongoing impacts. Those changes will be assessed further as part of the new Mobility Master Plan, which is currently in the scoping stage.

There is a cost for mobility that spans economic, environmental and health realms.

Economic costs include infrastructure construction and maintenance costs for roads and parking, and the personal costs to own and operate a vehicle, risk and liability.

Environmental costs are the cost of pollutants emitted from motorized travel such as air pollution, greenhouse gases, noise emissions, water pollution and land use impacts. Health costs are the value of physical activity in preventing injury and disease as well as the cost of collision damage, injuries and fatalities.

As shown in the City's 2020 Greenhouse Community Energy Use & Greenhouse Gas Emissions Inventory, the impact of the pandemic on transportation energy use was significant. In particular:

- the amount of gasoline and diesel sold at London's gas stations dropped by 21% in 2020 compared with 2019 because of many London workplaces shifting to work from home as well as reduced trips associated with stay-at-home orders and similar restrictions (Source: Kent Marketing, 2020);
- less traffic, the desire for exercise, the desire to be outside, traveling alone, all contributed to the Londoners increasing the estimated total distance of trips taken by bike by 20% in 2020 compared to 2019 (Source: Google's Environmental Insights Explorer, London Transportation emissions, 2020); and,
- The number of vehicles registered in London in 2020 decreased by 6% compared to 2019 (Source: IHS Markit, 2020).

Even with the pandemic impacts, transportation still represented 41% of all greenhouse gas emissions in 2020. Personal vehicles accounted for most of these emissions, at about 740,000 tonnes, or 27% of all emissions. Based on data from Google's Environmental Insights Explorer, about one-third of all transportation GHG emissions are associated with trips that start and end within London. These are the trips that are the easiest to shift towards more sustainable transportation modes such as walking, cycling, and transit.

In recent years, the growth in the number of registered vehicles in London has greatly exceeded London's population growth. In 2010, there were about 203,000 vehicles registered in London. As of 2020, this had grown to over 273,000 vehicles – an increase of 35% in just ten years. Despite there being almost one vehicle for every adult in London (0.86 vehicles per person ages 20-84), the amount of transportation energy use per person is declining, supported primarily by a 24% reduction in fuel use per vehicle compared to 2010 levels.

How the 1.63 million daily trips in London are made is important for climate emergency evaluations. When compared to driving personal vehicles, transit provides a partial emission reduction and walking and bicycling provide a 100% comparative reduction. The benefits of more active transportation also include personal health benefits from physical activity.

The 2016 London household travel survey identified that "Auto Driver" is the dominant travel mode in London with 62.5% of total daily trips, followed by "Auto Passenger" at 14.1%. This share of auto travel is lower than other medium-sized urban areas in southern Ontario, such as Waterloo and Hamilton (72% and 68%, respectively, as recorded in the 2016 GTHA Transportation Tomorrow Survey). The daily share of transit trips is 7.6% among city residents. This level of transit use also compares well among cities of similar size to London, with transit shares in Waterloo and Hamilton at 4% and 7%, respectively, based on 2016 data. Walking represents 11.3% of trips and bicycles are used for 1.4% of trips. Note that this data was collected prior to the pandemic.

Measured trends over the previous 15 years indicate a decrease of 11% in the category of "Auto Driver". Approximately half of these trips have transitioned to "Auto Passenger" with the other half transitioning to walking and bicycling.

As London's population grows and the number of vehicles registered in London increases traffic congestion, there are often requests to meet this demand through road widening. However, the well-documented phenomena known as "induced demand" has shown that adding extra lanes for vehicles encourages more vehicle trips along that

route, eventually leading to a return to traffic congestion. This demonstrates the need to review roadway projects from a complete streets and strategic network perspective which considers future land use and growth while promoting increased use of more sustainable modes of travel.

2.1 Overview of Climate Change Impacts from Transportation Projects

Transportation projects touch upon numerous climate emergency issues and aspects, however the following considerations were determined to be most impactful and thus formed the basis for evaluation of projects with the customized CEST:

Climate Emergency Mitigation Considerations	Climate Emergency Adaptation Considerations
<p>Emissions: Reduce transportation emissions. Personal vehicles accounted for 740,000 tonnes of GHG emissions in 2020 (27% of total community emissions), with about one-third of GHG emissions associated with in-town trips</p> <p>Modal split: Improve mode split. 77% of in-town trips are made by automobile</p> <p>Modal split: Facilitate pedestrian, cyclist, transit, and goods movement within transportation planning and complete streets design</p> <p>Parking: Consider public EV charging & bike parking as part of street design</p> <p>Emissions: Reduce emissions from high-impact construction materials (e.g., concrete, asphalt, steel)</p>	<p>Urban heat island effect: Consider how dark road surfaces (i.e., asphalt) contribute to the urban heat island effect</p> <p>Green infrastructure: Plant street trees to provide shade for pedestrians as well as road surfaces. Street trees should consider the roadside environment</p> <p>Infrastructure resilience: Improve the extreme weather resilience of transportation infrastructure (e.g., intense rainfall events)</p> <p>Infrastructure resilience: Consider material choices that improve the resilience of infrastructure through increased freeze/thaw cycles</p> <p>Stormwater management: Incorporate low-impact development stormwater management improvement in road projects.</p>

2.2 Climate Lens Screening Outcomes

The customized Transportation Capital Projects CEST for projects and programs was applied to 12 current major projects. Findings from the use of the CEST are summarized in this report, focusing on emission reduction and climate adaptation elements already included in each of the projects and on elements or considerations that were identified as opportunities to improve the projects.

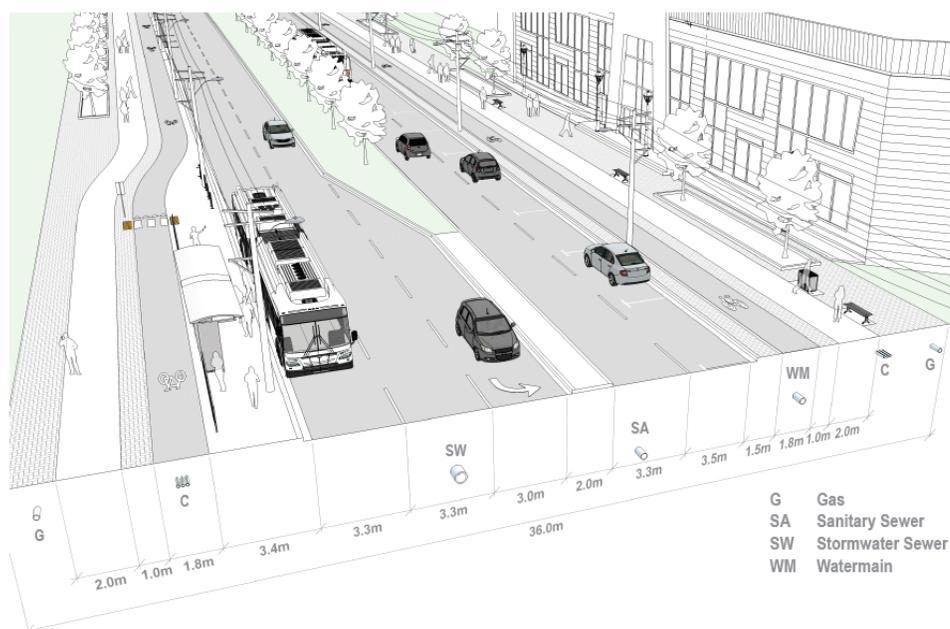
Individual reviews have been completed for a number of upcoming major transportation projects which are at various stages in the planning and design process. These reviews were completed using the current version of the customized Transportation Capital Projects Climate Emergency Screening Tool (CEST) which was developed by the City's Climate Emergency Resource Team with input from Transportation Planning and Design Division staff.

A number of common themes have arisen from the reviews that have been completed including:

- The conventional methods and materials associated with the construction of infrastructure projects involve significant GHG emissions from activities such as aggregate and cement production to the emissions from idling construction equipment.
- Projects that include roadway widening or otherwise increase vehicle throughput result in a net increase in GHG emissions from road use due to more vehicle

emissions. Variability in the predicted magnitude of the increase can be attributed to vehicle technology including the increased use of electrical vehicles. When compared to driving personal vehicles, transit provides partial emission reduction, and walking and bicycling provide a 100% comparative reduction. Creating better infrastructure that facilitates more pedestrian, cyclist, transit, and goods movement opportunities is an important consideration in the development of transportation projects in order to reduce emissions associated with the transportation network.

- Each transportation project is unique and addresses a variety of needs depending on the completeness of a street. Project needs include components such as active transportation, transit, traffic operations, geometrics, road safety, streetlighting, underground servicing, development access, emergency services and drainage. The reviews considered an evaluation of the current needs on each project. Where a two-lane street in an area of growth was deemed incomplete, reconstruction to a four-lane Civic Boulevard Complete Streets standard with walking, cycling and transit amenities and other services will ensure the project meets the long-term needs of the growing community. Construction of the full street cross section using the complete streets approach is a cost-effective way to provide more mobility choices and encourage active and sustainable city streets.
- Using the complete streets and multi-modal level of service approaches ensures that opportunities to improve mobility for all users are considered for each project which results in improvements to active transportation, transit facilities and the incorporation of green infrastructure to compliment roadway widening and provide environmental benefits.
- The approach of strategically considering roadway widening, only in strategic areas to address a range of transportation issues or to support development supports the development of a sustainable network. Roadway widening to solely accommodate general traffic leads to induced travel demand with additional trips, no mode shift incentive and a return to congestion. This approach and will be incorporated as part of the future Mobility Master Plan.



Example Cross Section from the Complete Streets Design Manual (Civic Boulevard)

- Transportation projects provide an opportunity to construct new infrastructure which meet current design standards, renew assets and often provides improved resiliency to the impacts of climate change.

- As part of the future Mobility Master Plan, there will also be an opportunity to review individual projects to assist in decision making associated with major roadway widenings to ensure that GHG emissions associated with the construction and operation of transportation infrastructure is mitigated to the greatest extent possible and that climate change adaptation and infrastructure resiliency is fully considered.

2.3 Recommendations

The results of the CEST reviews for individual projects have been summarized and provided in Appendix B. The key findings and some of the more significant recommendations from these project reviews include:

1. Discover Wonderland Environmental Assessment Study

The current partially completed environmental assessment that contemplates widening the road to six-lanes to accommodate general traffic is recommended not to proceed. The corridor is relatively complete with transit, sidewalks and cycling facilities. Widening to six lanes to address traffic congestion is predicted to experience a return of congestion due to induced demand while creating accessibility pressures. Additionally, widening to six-lanes would have a negative impact on the streetscape and impact connectivity and accessibility across the corridor. The corridor will be evaluated as part of the upcoming Mobility Master Plan with a focus on transit, high occupancy vehicle use and active transportation.

2. Adelaide Street and Wharncliffe Road Railway Underpass Projects

These projects are recommended to proceed as they improve and optimize existing corridors and provide significant benefits for a large number of residents. The localized improvements address specific traffic operational concerns to improve traffic and transit movement, emergency response and safety while also promoting increased use of sustainable transportation and reduced vehicle idling.

3. Adelaide Street North Widening from Fanshawe Park Road to Sunningdale

The corridor widening was previously deferred to 2029. Based on the relative completeness of this corridor that has curbs, sidewalks and cycling lanes on both sides, widening should remain deferred and be evaluated as part of the upcoming Mobility Master Plan to ensure that any future improvements align with the City's objectives related to land use, transit planning and promoting equity and sustainable transportation options. The nearly complete environmental assessment should proceed to council to inform improvements identified for the Sunningdale Road intersection to address localized safety and operational issues and improve active transportation in conjunction with other Sunningdale Road improvements.

4. Southdale Road West, Sunningdale Road and Dingman Drive

These roads currently exist predominantly at a "rural" standard and are missing components of walking, cycling, transit and other complete streets amenities. Additionally, there are specific needs such as profile adjustments for safety, drainage improvements to accommodate growth, emergency services, streetlighting and traffic signal needs. Based on the relative incompleteness of these existing streets, these reconstruction projects are recommended to proceed. Implementation of a Civic Boulevard Complete Street standard is a cost-effective approach to provide amenities for all modes, accommodate emergency services and support growth in these developing areas.

5. Bradley Avenue Extension

This new corridor has long been identified in area growth plans. It is recommended that detailed design proceeds with continued focus on ensuring transit is supported and more sustainable mobility options are accommodated in this corridor. The completion of Bradley Avenue from Jalna to Wharncliffe will

provide significant transportation networks benefits while supporting and providing access to ongoing development in the area. Construction of this new road to a four-lane corridor, while including all complete streets components, will ensure the project meets the long-term needs of the currently proposed and future developments.

6. Windermere Road

This project is currently being scoped through the environmental assessment and recommended to continue. The project has the potential to improve active transportation and localized operational issues in the area of the hospital and emergency access. This project will improve mobility and access for major destinations while also examining the provision of connectivity to major active transportation corridors.

7. Fanshawe Park Road / Richmond Street Intersection Improvements

It is recommended that this project, which is currently in the detailed design phase, proceeds. This project considers and accommodates future growth as part of the Masonville Secondary Plan. This project will reduce cut-through traffic in the surrounding neighbourhoods, improve intersection safety, improve pedestrian and cycling amenities and support transit.

8. The Transportation Intelligent Mobility Management System (TIMMS)

The implementation of this project should continue on a priority basis as it will provide for more efficient traffic signal timing, coordination and incident management capability which will benefit transit and other services. It will also provide environmental benefits through reduced vehicle idling and delays which reduces GHG emissions.

9. Downtown Loop

As one of the rapid transit projects, the Downtown Loop is a key component of the balanced and sustainable approach identified in the Smart Moves Transportation Master Plan. It is recommended that construction and detailed design proceeds with continued focus on ensuring rapid transit is supported and more sustainable mobility options are accommodated in this corridor. It is also recommended that opportunities from the Climate Lens Assessment study are reviewed and incorporated into the design, as appropriate. The Downtown Loop is considered to be representative of the three rapid transit projects and similar review results are expected for the Wellington Gateway and East London Link projects.

3.0 Financial Impact/Considerations

3.1 Key Issues

If approved, the recommendations from the CEST reviews and specifically any project cancellations or deferrals will trigger future capital and/or operating budget updates. Specific budgetary impacts will be assessed subject to council direction on the recommendations outlined in this report. It is anticipated that any required adjustments will be reflected in the 2024-2027 Multi-Year Budget once the Mobility Master Plan has been completed. Additional impacts to the capital plan may also be identified as part of the 2025 Development Charges Background Study.

Conclusion

An efficient, equitable and sustainable transportation system is essential to supporting the City's economy and quality of life for residents. This has never been more important than now considering the impacts associated with the Covid-19 pandemic and climate

change. The City's goal is to provide transportation choices for all residents, which are accessible, convenient, safe, affordable and attractive, including driving, walking, biking and transit. Londoners' travel choices influence the emission of greenhouse gases related to transportation.

The Climate Emergency Screening Tool (CEST) was created in order to provide a consistent approach to incorporate climate change considerations and analysis into project decision-making. The series of questions forming the body of the tool are meant to highlight the potential impacts and effects of the project being evaluated in relation to the climate emergency. The CEST itself is not intended to function as "stop/go" or "yes/no" decision-making tool. It is acknowledged that most activities undertaken by a municipality will have some degree of impact on the natural environment, particularly activities related to essential services like the provision of clean water, waste and resource management, storm water management and mobility. The CEST is meant to inform decision making and is not intended to be a stand-alone decision-making tool.

The intent of the CEST is to require decision-makers to apply a climate change lens to evaluate projects alongside conventional technical and environmental criteria and encourage the investigation and consideration of less-impactful alternatives, wherever feasible, desirable or required.

The recommendations herein endorse a strategic network perspective which considers future land use and growth combined with a complete streets approach for Transportation capital projects. In general, reconstruction of roads in growing areas that are missing components of pedestrian, cycling and transit amenities are recommended for construction to a four-lane Civic Boulevard Complete Street standard as a cost-effective approach to enable sustainable mobility choices and support growth and coordinate a variety of needs such as underground services, drainage, goods movement, green infrastructure and emergency services. The widening of corridors, particularly to six lanes, that are already mostly complete streets is recommended for reconsideration under the Mobility Master Plan development.

The development of the City's next Mobility Master Plan will begin in the near future. This study will provide an opportunity to further review major projects and create new initiatives with a climate change and sustainability perspective. This will combine city building and economic growth objectives with environmental sustainability, equity and accessibility. Recognizing the climate emergency declaration, the plan's targets will need to be firmly founded in, and plan to further enhance, the sustainability of a transportation system that contributes to reducing the impact of climate change.

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Appendix A Overview of the Climate Lens Process for Transportation Capital Projects

Appendix B Review of Major Transportation Projects

Appendix A: Overview of the Climate Lens Process for Transportation Capital Projects

Climate Emergency Screening Tool

Transportation Capital Projects Implementation Guide

July 2021 (V2)

Abstract: This guide details implementation of the Climate Emergency Screening process for transportation capital projects to ensure positive climate action is considered in relevant decision-making.

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1. Background

1.1. Genesis

The need for climate emergency screening process was identified as a key component of the City's response to the declaration of the climate emergency. The internal development of a generic, interim process was completed by the Climate Emergency Resource Team in Spring 2020 and formed the basis for which customized climate emergency screening processes were later created for each Service Area within the Corporation of the City of London.

1.2. Objectives

The climate emergency screening process was designed to get climate emergency issues into decision-making throughout the corporation. It is important to note that the climate emergency screening process itself is not intended to function as "stop/go" or "yes/no" decision-making tool, rather it will be a process used to assist staff and inform decision-making on project/policy/strategy development with respect to climate change considerations and could result in a modified project or program scope.

The goals associated with the creation and use of the climate emergency screening process are to:

1. Ensure climate emergency issues are included in decision-making and evaluation of existing practices can be robustly conducted.
2. Establish a clear process for accountability and tracking of climate emergency screening process decisions, including collection of information on decision outcomes.
3. Elevate understanding of the importance of climate emergency issues in decision-making across the Corporation.

1.3. Development Process

The implementation of the climate emergency screening process for transportation capital projects was a joint effort between the City's Climate Emergency Resource Team and key representatives from Transportation Planning & Design. The identification of target areas for climate emergency screening process application within the Division, customization of the generic process to apply to those areas, and the specifics related to the administrative implementation of process use in existing workflows were collaboratively created through workshops followed by document drafting and review.

1.4. Climate Emergency Issues for Transportation Capital Projects

Implementation of transportation capital projects touch upon numerous climate emergency issues and aspects, however the following were determined to be most impactful and thus formed the basis for customization of the climate emergency screening process:

Climate Emergency Mitigation	Climate Emergency Adaptation
<ul style="list-style-type: none"> - Emissions: Reduce transportation emissions. Personal vehicles accounted for 740,000 tonnes of GHG emissions in 2020 (27% of total community emissions), with about one-third of GHG emissions associated with in-town trips - Modal split: Improve mode split. 77% of in-town trips are made by automobile - Modal split: Prioritize pedestrian, cyclist, transit, and goods movement within transportation planning and road design - Parking: Consider public EV charging & bike parking as part of street design - Emissions: Reduce emissions from high-impact construction materials (e.g., concrete, asphalt, steel) 	<ul style="list-style-type: none"> - Urban heat island effect: Consider how dark road surfaces (i.e., asphalt) contribute to the urban heat island effect - Green infrastructure: Plant street trees to provide shade for pedestrians as well as road surfaces. Street trees should consider the roadside environment - Infrastructure resilience: Improve the extreme weather resilience of transportation infrastructure (e.g., intense rainfall events) - Infrastructure resilience: Consider material choices that improve the resilience of infrastructure through increased freeze/thaw cycles - Stormwater management: Incorporate low-impact development stormwater management improvement in road projects

2. Climate Emergency Awareness and Screening Process

The climate emergency screening process includes the following five streams of activities:

1. Master Plans, Guidelines and Strategies
2. Existing and New Projects/Programs
3. Quick Assessment of Existing Operations
4. Multi-year Budgets & Annual Budget Updates
5. Building Climate Change Capacity within the Service Area

2.1. Master Plans, Guidelines and Strategies

Master plans, guidelines and strategies that direct project work are key places where climate change considerations should be included. Should any such foundational documents be up for renewal, or if any new such foundational documents are in the works, this is an ideal time to ensure that climate change mitigation and adaptation aspects noted in section 1.4 above are incorporated.

If staff are involved in the creation or revision of master plans, guidelines or strategies, the Climate Emergency Resource Team can be available to discuss and/or assist with the incorporation of climate emergency considerations. It is recommended that a member of the Climate Emergency Resource Team be contacted to participate in early foundational document scoping or review planning (e.g. creating terms of reference) efforts, whenever possible.

In discussions with Transportation Planning & Design staff, it was noted that a new Mobility Master Plan is to be developed to supersede the existing Smart Moves London 2030 Transportation Master Plan and the Cycling Master Plan. The Climate Emergency Resource Team is available to assist with the development of the terms of reference for the new Mobility Master Plan.

The existing Complete Streets Design Manual is a relatively new document (2018) that incorporates most of the climate change mitigation and adaptation aspects noted in section 1.4 above, specifically:

- Walking
- Cycling
- Transit
- Through-Movement (Vehicles and Freight)
- Parking
- Green Infrastructure (e.g., street trees and low-impact development)
- Utilities

Some climate emergency aspects that are missing from the Complete Streets Design Manual include provisions for curbside electric vehicles charging in designated curbside parking in Main Street and Civic Boulevard street typologies.

New transportation projects undertaken by staff should incorporate the design considerations of the Complete Streets Design Manual to the greatest extent possible. Additional discussion is provided in section 2.2 below.

These existing plan documents will also be reviewed by the Climate Emergency Resource Team to identify opportunities to improve these plans when these are updated in the future:

- Complete Streets Design Manual (2018)
- Downtown Parking Strategy (2017)
- Neighbourhood Bike Parking Guidelines (2021)

- City of London Design Specifications and Requirements Manual (2021)

2.2. Existing and New Projects/Programs

To ensure that the full lifecycle of projects and programs incorporates climate emergency considerations, the following process will be followed. The process involves the use of a customized Climate Emergency Screening Tool (Appendix I).

2.2.1. New Project Initiation and Start-up

A Climate Lens Assessment is required for any project receiving Federal Government funding through the Investing in Canada Infrastructure Program or the Disaster Mitigation and Adaptation Fund. The scope of work to undertake such Climate Lens Assessments for projects should incorporate the London-specific climate change mitigation and adaptation aspects noted in section 1.4 above. In order to meet federal funding requirements, detailed analysis of project greenhouse gas emissions and potential climate change related impacts assessments are required (evergreen requirements: <https://www.infrastructure.gc.ca/pub/other-autre/cl-occ-eng.html>). These requirements go beyond the depth and intent of the Climate Emergency Screening Tool but are considered in the process as “Further Analysis”, which is detailed in Section 4 of this guide.

For projects not subject to the Federal Climate Lens Assessments but that require an Environmental Assessment (EA) or Municipal Class Environmental Assessment (MCEA), the identification of climate mitigation and adaptation aspects needs to be included within the Terms of Reference, as has recently been reiterated in responses received from the Ministry of Environment Conservation and Parks (MECP) on notices of commencement for wastewater projects requiring assessment approval. The Climate Emergency Screening Tool has been developed to assist with the identification of climate mitigation and adaptation aspects and is meant to supplement the content of the recently updated [“Considering Climate Change in the Environmental Assessment Process”](#) guide from the Ontario MECP.

If any projects or programs are being initiated that do not require either the Federal Climate Lens Assessment or any type of EA, the Climate Emergency Screening Tool can be applied early in the process to identify any opportunities for improvement.

2.2.2. New Project Detailed Design and Engineering

As noted above, the Complete Streets Design Manual incorporates most of the climate change mitigation and adaptation aspects relevant for transportation capital projects and, as such, these design considerations should be incorporated to the greatest extent possible for the street typology of the project. If a design consideration cannot be incorporated into the project, the rationale for its exclusion needs to be documented and alternative solutions evaluated to determine whether the relevant climate aspect can be addressed by other means. The Climate Emergency Screening Tool can be used to review and document deviations from the design manual at this stage. It is recommended that during detailed design start-up, any previously completed Climate

Emergency Screening Tool be reviewed and if no Climate Emergency Screening Tool had been applied to the project that one be used at this time.

2.2.3. Review of Existing Projects

Depending upon the stage at which an existing transportation capital project is, there will still be opportunities to adjust the project to address climate change mitigation and adaptation aspects. However, these opportunities will decrease the further along the project is within its implementation stage. Ongoing projects and programs (e.g. annual sidewalk program) can be reviewed with the Climate Emergency Screening Tool to identify opportunities for improved climate action outcomes for consideration as part of continuous improvement efforts.

For example, a project that is currently undergoing the Environmental Assessment process can have climate change mitigation and adaptation aspects added to the scope of work being undertaken, recognizing that there may be additional costs associated with a change to the scope of work for the consultant undertaking this work. However, a project that has already entered the construction phase will have few opportunities to modify.

2.3. Quick Assessment of Existing Operations

Climate change mitigation and adaptation aspects related to day-to-day operations within transportation include:

- Employee commuting
- Fleet vehicle procurement (e.g., right-sizing, shared vehicles, electric vehicles)
- Fleet vehicle operation (e.g., anti-idling, eco-driving techniques)
- Work-related travel (in town and out-of-town)
- Material (e.g., paper) and energy (e.g., lighting) use minimization

An evaluation of potential opportunities to reduce GHG emissions from operational activities within the service area should be conducted and revisited annually. An enterprise-wide, operational issues screening resource is under development to satisfy this requirement in a consistent, streamlined manner.

2.4. Multi-year Budgets & Annual Budget Updates

As part of enterprise-wide efforts to incorporate climate change considerations, annual budget amendment requests will require the application of a climate lens to highlight potential opportunities and risks. This process will be led by Finance, supported by the Climate Emergency Resource Team, but require that each Service Area understand and be able to apply the climate lens to their parts of the budget process. At this stage of development, additional direction on satisfying this requirement will be provided in the guidance documentation issued by Finance as part of initiation of the annual budget amendment process.

Given the 2021 announcement of Federal Government funding for active transportation infrastructure, there may be an opportunity to leverage senior government funding

programs to implement cycling projects currently identified in the Cycling Master Plan within the Multi-Year Budget.

Project budget estimates for upcoming projects being included within the Multi-Year Budget should incorporate the lifecycle capital and operating costs for the relevant design considerations from the Complete Streets Design Manual to the greatest extent possible.

2.5. Building Climate Change Capacity

The design and implementation of the climate emergency screening and awareness process provides an opportunity to increase the knowledge and understanding of climate emergency issues within staff and normalize the conversation about climate change. This is viewed as a key outcome of the work to date and will contribute to an enterprise-wide culture shift towards more sustainable development.

The stream of activities focused on building climate change capacity within each Service Area includes:

Training

New staff should be provided with a clear understanding of climate emergency issues related to the Service Area they are joining as part of the on-boarding process. The training and presentation materials created by the Climate Emergency Resource Team should be adapted for on-boarding training in concert with Human Resources.

Professional Development & Networking

Continuing participation in professional development and peer networks is encouraged to increase staff understanding of climate change mitigation and adaptation aspects of transportation infrastructure as well as solutions to address these aspects. Managers are encouraged to note this objective as part of staff professional development and review processes.

Internal Coordination on Shared Objectives

Staff will also work with other Service Areas and the Climate Emergency Resource Team to advance cross-Service Area initiatives to address emissions reduction through procurement, fleet, finance, and other relevant functions (e.g., assessing opportunities to procure commonly used construction materials with lowered embedded GHG emissions).

3. Administrative Requirements

3.1. Review and Sign-Off

The climate emergency screening lead is the Division Manager. All questions regarding the use and tracking of the climate emergency awareness and screening process for decision-making support should be directed here. The review and approval of climate

emergency awareness and screening process tools should be completed by the Manager responsible for the activity being reviewed.

3.2. Record-keeping & Communication

Once a Climate Emergency Screening Tool has been utilized to inform decision-making for a project or program, a copy should be forward to the climate emergency screening lead for filing. If any standing committee report is produced relating to the activity reviewed, the report author is encouraged to reference the Climate Emergency Screening Tool findings within the report for improved decision-making transparency.

4. Further Analysis

If the screening of any activity identified significant climate change mitigation and/or adaptation concerns (identified issues) or significant uncertainty due to lack of available data and/or understanding (uncertainty of issues), additional steps can be taken to provide clarity and/or alternative options analysis.

The Climate Emergency Resource Team is available to help, if required, with conducting further analysis, or identifying the potential need for further analysis.

Step 1 – Internal Review (Internal Specialist Panel)

High-level quantification of climate mitigation aspects and climate adaptation aspects by internal staff within the Division can often be completed with minimal additional effort and may provide sufficient clarity to appropriately inform decision-making.

If issues remain following engagement of internal experts on identified issues and/or uncertainties, or if aspects are more complex than can be managed with existing tools and competencies, move on to Step 2 (or Step 3, if the need for targeted external expertise is flagged right away).

For example, staff from Environmental Programs, Facilities, Fleet and/or City Planning may have relevant expertise that can be utilized to perform the required additional analysis (e.g., 2020 Electric Zamboni \$/GHG Emissions reduction analysis to support recommendations).

Step 2 – Detailed Internal Study (Internal Specialist Panel)

If the issues or uncertainties associated with the project require detailed quantification of climate mitigation aspects and climate adaptation aspects, particularly if new or detailed data analysis beyond the capabilities of existing tools established from previous work is required, a stand-alone report prepared by internal specialists may be required (e.g., 60% Waste Diversion Action Plan, need to reduce idling [report](#)).

If further issues remain, or if aspects are still complicated beyond the capabilities of internal staff, move on to Step 3 (or Step 4, if aspects are extremely complicated).

Step 3 – Engage External Qualified Specialists for Specific Aspect

For circumstances where decision-making needs require the assessment of a project

aspect that is outside the areas of expertise of internal staff, the need to engage an external qualified specialist may be identified. Specific issues or aspects may require external expertise to procure existing relevant data, conduct primary data collection, conduct data analysis and interpretation, prepare detailed modeling and/or assess risk to address specific aspects outside of internal staff expertise. Such external assistance in this step would be limited to the analysis of one or more specific aspects, but not a fulsome review of the entire project (e.g., engage a consultant for traffic emission models that would then go in to a staff report – i.e., \$10,000-\$25,000 level of effort).

Step 4 – Consultant-Driven Comprehensive Climate Lens Assessment

Recognizing that internal specialists may not be able to dedicate the amount of time required to fully assess all aspects of a very large and complex project (or may not have extensive enough expertise), a consultant-driven detailed climate lens assessment may be warranted. Such projects are likely to be those significantly large infrastructure projects that may also be subject to the Government of Canada requirement to complete a GHG Mitigation Assessment and, in many cases, a Climate Change Resilience Assessment ([link](#)). These assessments are anticipated to require significant investment from the City and involve detailed and extensive modeling, data analysis and comparative evaluation of feasible options.

Appendix I – Climate Emergency Screening Tool for Projects and Programs

Climate Emergency Screening Tool

Incorporating Climate Considerations into Decision-making for Projects

Transportation Capital Projects

Draft Version 8.1

May 2021

City of London

Project Title

Provide a brief project title that is used to identify the subject of evaluation

Project Description

Provide a brief project description that describes the type of project (street and intersection designs involved, etc.), physical elements (location, materials, etc.), service(s) involved and any implementation specifics.

Project Status

Please indicate the status of the project and add details in the comment area:

- | | |
|---|---|
| <input type="checkbox"/> Annual Program | <input type="checkbox"/> Pre-Construction |
| <input type="checkbox"/> Environmental Assessment | <input type="checkbox"/> Construction |
| <input type="checkbox"/> Design | <input type="checkbox"/> Operations |

Context and Assumptions

Provide a brief description of any important contextual data and assumptions that impact the project design and/or purpose, or a reference to any studies or data that are relevant to the project.

Climate Emergency Screening – Aspect Analysis

A. Mitigation

1. *Will this project help to reduce the number of trips taken by single-occupant vehicles in London?*

Yes No Uncertain Not Applicable

Comments/Notes

2. *Will this project help to improve pedestrian safety, connectivity, and provide accessibility?*

Yes No Uncertain Not Applicable

Comments/Notes

3. *Will this project provide cycling infrastructure that increases connectivity within the cycling network and is considered safe to use for cyclists of all ages and abilities?*

Yes No Uncertain Not Applicable

Comments/Notes

4. *Will this project help to improve the level of service for public transportation?*

Example: reduces delays for transit service, supports more frequent service, provides improved shelter and other amenities for transit users

Yes No Uncertain Not Applicable

Comments/Notes:

5. *Will this project help to improve the movement of goods within London?*

- Yes No Uncertain Not Applicable

Comments/Notes

6. *Are there elements of this project to help reduce fossil fuel use by other means?*

Example: reduces idling, provides bike parking, provides electric vehicle charging

- Yes No Uncertain Not Applicable

Comments/Notes

7. *Are there strategies that can be implemented to minimize the need for the removal of mature and healthy trees?*

- Yes No Uncertain Not Applicable

Comments/Notes

8. *Can this project provide an opportunity to reduce the greenhouse gas emissions intensity of construction materials used?*

- Yes No Uncertain Not Applicable

Comments/Notes



B. Adaptation

1. *Will this project help to reduce the demand on stormwater facilities/sewer infrastructures and/or improve quality of the stormwater?*

Example: low-impact development measures as per Complete Streets Design Manual, permeable pavement

Yes No Uncertain Not Applicable

Comments/Notes

2. *Has consideration been given to incorporate additional risk management measures to improve resilience to water course flooding or intense rainfall?*

i.e. does the project area have high risk for flooding or poor drainage (due to cumulative effects of surrounding development on stormwater control or otherwise, or any other conditions that may warrant designing above existing stormwater management standards)

Yes No Uncertain Not Applicable

Comments/Notes

3. *Will this project preserve and/or increase the number of street trees planted to provide shade for pedestrians and reduce the urban heat island effect?*

Yes No Uncertain Not Applicable

Comments/Notes

4. *Will project landscaping provide for the protection and enhancement of London's Natural Heritage System?*

Example: using low-maintenance native species in replanted areas, filling vegetation gaps in natural heritage corridors such as along streambanks near the project area

Yes No Uncertain Not Applicable

Comments/Notes

Opportunities

Based on the issues identified above, identify opportunities to revise the project to improve how climate change mitigation and adaptation aspects are addressed.

Recommended Changes

Have any recommendations surfaced that should be carried forward for this work? Is further analysis recommended? If so, what would be the desired outcome of the further analysis?

The Climate Emergency Resource Team is available to help with conducting further analysis or identifying the potential need for further analysis.

Step 1 – Internal Review (Internal Specialist Panel)

High-level quantification of climate mitigation aspects and climate adaptation aspects by internal staff can often be completed with minimal additional effort and may provide sufficient clarity to appropriately inform decision-making.

Step 2 – Detailed Internal Study (Internal Specialist Panel)

If the issues or uncertainties associated with the project require detailed quantification of climate mitigation aspects and climate adaptation aspects, particularly if new or detailed data analysis beyond the capabilities of existing tools established from previous work is required, a stand-alone report prepared by internal specialists may be required.

Step 3 – Engage External Qualified Specialists for a Specific Aspect

Specific issues or aspects may require external expertise to procure existing relevant data, conduct primary data collection, conduct data analysis and interpretation, prepare detailed modeling and/or assess risk to address specific aspects outside of internal staff expertise.

Step 4 – Consultant-Driven Comprehensive Climate Lens Assessment

A consultant-driven detailed climate lens assessment would be carried out as part of the scope of work for Individual Environmental Assessments, Municipal Class Environmental Assessments, and large infrastructure projects that may also be subject to the Government of Canada requirement to complete a GHG Mitigation Assessment and, in many cases, a Climate Change Resilience Assessment ([link](#)).

Appendix B

Review of Major Transportation Projects

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>1. Southdale Road West Improvements, Pine Valley Boulevard to Bostwick Road: An Environmental Assessment (EA) Study has been completed which recommends widening from 2 to 4 lanes as well as new cycling lanes and sidewalks.</p>	<p>New sidewalks on both sides of street, connected to bus stops and community destinations such as the new Bostwick Community Center.</p> <p>New bike paths in each boulevard; connected to major destinations; design considers cyclist safety through intersections.</p>	<p>Low impact development (LID) measures are included to improve stormwater conditions.</p> <p>New street trees will be planted which will support a healthy tree canopy along the corridor.</p>	<p>This project is recommended to proceed as it will focus on ensuring transit and emergency service mobility is supported. More sustainable mobility options are accommodated in this corridor which will support ongoing intensification which is occurring along this corridor. Construction of the new street cross section allows the City to introduce complete streets infrastructure into the design such as sidewalks, bike paths, street trees, vegetated medians, and LID storm water management features. This approach is the ideal way to provide more mobility choices and encourage active and sustainable city streets particularly where it is being coordinated with intensification and linking to major community destinations.</p>
<p>2. Discover Wonderland, Southdale to Sarnia Road: An EA Study has been initiated to identify long term corridor improvements and to review potential widening to six lanes.</p>	<p>The EA Study will assess opportunities for improved active transportation network and transit.</p> <p>Operation of a widened facility for use by transit or high occupancy vehicles would reduce the GHG footprint as compared to traditional roadway widening.</p>	<p>An improved corridor would provide new opportunities for active transportation, improved infrastructure resiliency and environmental measures. LID measures will be reviewed for feasibility during detailed design.</p>	<p>Widening of this corridor will have significant impacts to the environment and climate change associated with increased GHG emissions. Current project recommended to not proceed. Further assessment of the corridor is required in a master planning context. The upcoming Mobility Master Plan will provide an opportunity for further review of this project which would include the role and function of this corridor within the network with consideration of increased transit and high occupancy vehicle use and active transportation improvements. The current EA study is to be suspended until after completion of the upcoming Mobility Master Plan.</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>3. Dingman Drive, Hwy. 401 to Wellington Road and Dingman Drive /White Oak Road intersection: An EA Study has been completed which recommends corridor improvements to support development including active transportation. Improvements include widening of Dingman Drive from 2 to 4 lanes as well as new multi-use paths and sidewalks. A new roundabout is also proposed at the Dingman Drive /White Oak Road intersection. Design is underway for the corridor improvements.</p>	<p>New active transportation facilities will improve mobility to planned major destinations. A proposed roundabout at the White Oak Road intersection will provide safety and environmental benefits.</p>	<p>An improved corridor would provide new opportunities for improved infrastructure resiliency and environmental features, LID's and tree planting.</p>	<p>It is recommended that this project proceeds through design and construction. Construction of the full street cross section allows the City to introduce new complete streets infrastructure into the design such as sidewalks, bike paths, street trees, vegetated medians, and LID storm water management features. This rural road needs a variety of improvements to support upcoming development and provides for improved mobility for cyclists and pedestrians while also supporting the integrity of the adjacent provincial freeway system. Construction of this localized section of road to a four-lane corridor, while addressing the complete streets needs will create minor incremental impacts but will ensure the project will support and be compatible with currently proposed and future developments.</p> <p>The proposed roundabout will also provide environmental and safety benefits.</p>
<p>4. Adelaide Street North, Fanshawe Park Road to Sunningdale Road: An EA Study is being finalized which recommends corridor improvements. Improvements include widening of Adelaide from 2 to 4 lanes. Intersection improvements are also</p>	<p>Improved separated bike paths in each boulevard; connected to major destinations. Operation of a widened facility for use by transit or higher occupancy vehicles would reduce the footprint as compared to traditional roadway widening.</p>	<p>An improved corridor would provide opportunities for improved infrastructure resiliency and environmental features such as LIDs and landscaping.</p>	<p>The study and consultation for the EA is predominantly complete and pending Council approval and issuance of the completion notice, accordingly it is recommended for completion. Phasing of the EA recommendations should be reviewed with prioritization of the Sunningdale intersection to address short term safety and operational issues in coordination with Sunningdale corridor improvements. The remainder of the corridor improvements have been previously deferred and should be reconsidered as part of the upcoming transportation mobility plan as widening of this corridor will</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
recommended at Fanshawe Park and Sunningdale Roads to improve traffic operations, safety and active transportation.			<p>have impacts to the environment and climate change associated with increased GHG emissions without complete streets benefits. Further assessment of either potential mitigation and/or adaptation issues should be undertaken.</p> <p>The upcoming Mobility Master Plan will provide an opportunity for further review of this corridor including the future role with focus on increased transit and high occupancy vehicle use and active transportation improvements.</p>
<p>5. Bradley Avenue Extension, Jalna Blvd to Wharncliffe: An EA Study has been completed which recommends an alignment for a new 4 lane urban roadway including sidewalks and new boulevard cycling lanes. Design and property acquisition are currently underway.</p>	<p>New sidewalks and new bike paths in each boulevard; connected to major destinations.</p>	<p>A new corridor would provide opportunities for improved infrastructure resiliency and environmental features. Low impact development (LID) measures will be reviewed for feasibility during detailed design.</p>	<p>It is recommended that detailed design proceeds with continued focus on ensuring transit is supported and more sustainable mobility options are accommodated in this corridor. The completion of Bradley Avenue from Jalna to Wharncliffe will provide significant transportation networks benefits while supporting and providing access to ongoing development in the area. Construction of this new road to a four-lane corridor, while including all complete streets components will ensure the project will meet the long-term needs of the currently proposed and future developments. Construction of the full street cross section using the complete streets approach is the ideal way to provide more mobility choices and encourage active and sustainable city streets.</p>
<p>6. Fanshawe Park Road/Richmond Street Intersection: An EA Study has been completed which recommends intersection improvements which will improve traffic operations</p>	<p>Active transportation will be improved with new sidewalks meeting current accessibility requirements and new in-boulevard cycling lanes.</p>	<p>An improved intersection would provide opportunities for improved infrastructure resiliency and environmental features. While the corridor is constrained, opportunities for landscaping, street trees,</p>	<p>It is recommended that detailed design proceeds. This project considers and accommodates future growth as part of the Masonville Secondary Plan. This project will reduce cut-through traffic in the surrounding neighbourhoods, improve intersection safety, improve walking and cycling and support transit.</p>

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
and safety in the area while supporting intensification in the area through the ongoing Masonville Secondary plan. Design and property acquisition are currently underway.	The improvements include the addition of new turning lanes which will improve transportation mobility through this area for vehicles, transit and emergency services.	public spaces and improving the pedestrian realm are also being explored as part this project.	
7. Sunningdale Road, Wonderland to Adelaide: An EA Study has been completed which recommends widening of the road from 2 to 4 lanes, improvements to the active transportation network and road safety measures. Design and property acquisition are currently underway.	New sidewalks and new bike paths in each boulevard; connected to major destinations. The intersection improvements will provide safety and environmental benefits.	An improved corridor would provide opportunities for improved infrastructure resiliency and environmental features. Low impact development (LID) measures will be reviewed for feasibility during detailed design.	It is recommended that design and construction of this project proceeds with continued focus on ensuring transit is supported and more sustainable mobility options are accommodated in this corridor. This project will support ongoing development by creating better access, improve safety by addressing non-standard roadway profiles and improving sight lines and will add much needed new active transportation infrastructure.
8. Adelaide Street CPR Grade Separation, Central Avenue to McMahan Street: An EA Study has been completed which recommends lowering Adelaide St. to cross below the CP Rail crossing south of Oxford Street to eliminate the at-grade crossing. Design and	New multi-use paths on both sides of Adelaide Street as well as new cycling lanes on adjoining streets. New grade separation will improve crossing safety for cyclists, pedestrians and vehicles while reducing idling and delays associated with the existing at-grade crossing.	An improved corridor would provide opportunities for improved infrastructure resiliency and environmental features. A new pumping station is included in the project design to manage future intense rainfall events and prevent flooding on the underpass roadway.	Recognizing the benefits associated improved safety and traffic operations as well as improvements to active transportation, it is recommended that this project proceed to finalize the design through to construction. This project will improve rail crossing safety and eliminate delays and idling associated with the current at-grade railway crossing. The amount of cut-through traffic in the surrounding neighbourhoods will also be reduced as well as improved movement for emergency services. The project includes new multi-use paths along Adelaide Street. This project can

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
property acquisition are well advanced.			improve an existing four-lane corridor and support widening avoidance on parallel corridors.
9. Windermere Road, Western Road to Richmond Street: An EA Study is currently underway to review existing traffic operations and safety along this corridor and to identify improvements to the mobility of vehicles, emergency services, transit, cyclists and pedestrians.	While the outcome of the EA study is not known at this time, the expected outcome includes transit infrastructure improvements, active transportation improvements and intersection improvements to reduce vehicle congestion at peak times.	During the remainder of the EA phase greater examination of other GHG mitigation and adaptation measures should also be considered such as LID's, increased tree and vegetation plantings throughout the corridor as well as other measures that may be identified during the course of the study.	This project is currently being scoped through the EA Study and can improve active transportation and localized operational issues in the area of the hospital and emergency access. This project will improve mobility and access for major destinations while also examining the provision of connectivity to major active transportation corridors.
10. Wharnccliffe Road, Becher Street to Commissioners Road: Design is underway for the first phase of improvements which includes intersection improvements at Wharnccliffe and Horton including the replacement of the CN Rail bridge.	Intersection improvements will improve transportation mobility through this area for vehicles, transit and emergency services.	An improved corridor would provide opportunities for active transportation, improved infrastructure resiliency and environmental features.	It is recommended that this project proceeds through design and construction. The grade separation reduces idling and improves operations and safety at the existing intersection, reduces cut-through traffic in adjacent neighbourhoods and provides improved active transportation connectivity across the rail corridor. This project can improve and optimize an existing four-lane corridor and support widening avoidance on parallel corridors.
11. Transportation Intelligent Mobility Management System (TIMMS): The goals of this project are to reduce intersection delays, manage	Cameras will be placed across London on some of the City's busier roads to reduce intersection delays (ie reduce idling), manage incidents and	No impacts to stormwater facilities, trees or the natural heritage system are expected from this project. However, the communication	The implementation of this project should continue on a priority basis as it will provide for more efficient traffic signal timing, coordination and incident management capability which will provide benefits for transit and other services while

Project and Scope	Current Emission Reduction Aspects	Current Adaptation Aspects	Recommendations
<p>incidents, ensure shorter travel times for transit users and drivers, and prepare London’s transportation network for the future by installing transit signal priority and other traffic signal improvements – such as sensors and video cameras – along major corridors</p>	<p>ensure shorter travel times for transit users and drivers. The City uses LED lighting fixtures in all traffic signals and newer equipment is generally more energy efficient.</p>	<p>network backbone of this project will help in the resiliency of the traffic signal system under poor and extreme weather conditions and provide backbone capacity to other City services in the longer term, which may likely increase resiliency of infrastructure.</p>	<p>providing environmental benefits through reduced vehicle idling and delays which reduces GHG emissions.</p>
<p>12. Rapid Transit Downtown Loop: First phase of London’s new rapid transit system including five new rapid transit stops, road construction and boulevard enhancements, three traffic signal upgrades, street lighting upgrades, repair and replacement of aging water main, storm and sanitary sewers and new landscaping along Wellington Street.</p>	<p>A key component of this project includes new curbside bus only lanes with left-turn priority signal to improve traffic capacity and safety.</p> <p>The curbside only bus lanes and five new transit stops will connect directly to the sidewalks and pedestrian network for improved connectivity and accessibility.</p>	<p>A Climate Lens Assessment was completed for this project which assessed climate change hazards and potential impacts on the infrastructure components.</p>	<p>It is recommended that construction and detailed design proceeds with continued focus on ensuring rapid transit is supported and more sustainable mobility options are accommodated in this corridor. It is also recommended that opportunities from the Climate Lens Assessment study are reviewed and incorporated into the design, as appropriate.</p> <p>Construction of the full street cross section allows the City to introduce new complete streets infrastructure into the design such as; sidewalks, bike paths, street trees, vegetated medians, and LID storm water management features.</p> <p>The Downtown Loop is considered to be representative of the three rapid transit projects and similar review results are expected for the Wellington Gateway and East London Link projects.</p>

From: Rebecca Henkel
Sent: Thursday, August 26, 2021 1:55 PM
To: Morgan, Josh <joshmorgan@london.ca>; CWC <cwc@london.ca>
Subject: [EXTERNAL] Wonderland Rd

I just finished reading this article and I literally smacked myself in the forehead in disbelief. Do these people honestly think that if there were more bike lanes, more people would ride their bikes or consider taking an over-crowded, stinky, germ-infested bus to get around London?? That would be a BIG NO THANK YOU!! I'll drive myself in the comfort of my own car thank you very much.

I'm sure all these assessments and studies are just make-work projects to waste tax payer's money. London's traffic system is horrible and you can't use climate change as a reason not to make it better. The climate is going to change no matter what, the climate has been changing since the beginning of time.

It doesn't take a genius to know that Wonderland Road needs something done about it...but a bike lane is definitely not going to fix the problem...LOL

Oh yeah, one more thing...ya'll kicked an old lady out of her house to widen the train bridge on Wharncliffe Rd...nice, real nice. What's the hold up on that construction??

<https://london.ctvnews.ca/six-lane-wonderland-road-widening-may-be-stopped-after-climate-change-action-plan-flexes-muscle-1.5561510>



Six-lane Wonderland Road widening may be stopped after climate change action plan flexes muscle | CTV News

London, Ont. - Plans to widen traffic-clogged Wonderland Road to six lanes may soon be off the table. In a report to the Civic Works Committee, city engineers recommend council suspend the ...
london.ctvnews.ca

Rebecca (Becky) Henkel - Resident in Ward 7

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager, Environment & Infrastructure

Subject: Participation in the South London Air Monitoring Network
Pilot Project

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Environment & Infrastructure, the following actions be taken with respect to the South London Air Monitoring Network Pilot Project:

- a) the staff report dated August 31, 2021 containing details of the Ministry of the Environment, Conservation and Parks South London Air Monitoring Network Pilot Project **BE RECEIVED** for information;
- b) the attached proposed by-law (Appendix "A") **BE INTRODUCED** at the Municipal Council meeting on September 14, 2021 to:
 - i. approve, substantially in the form of, the single source negotiated agreement (Schedule "A" to the By-law) between the Corporation of the City of London and Envirosuite Limited, to supply and maintain six (6) ambient air monitors, one (1) weather station and electronic reporting to be used as part of the City's involvement in South London Air Monitoring Network Pilot Project which are noted herein; and
 - ii. authorize the Mayor and the City Clerk to execute the above-noted Agreement;
- c) the single source negotiated price **BE ACCEPTED** to hire Envirosuite Limited for a term of three years for a total estimated price of \$303,990 plus HST;
- d) the financing for the project **BE APPROVED** in accordance with the "Source of Financing Report" attached hereto as Appendix "B";
- e) Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this purchase;
- f) approval hereby given **BE CONDITIONAL** upon the Corporation entering into a formal contract or having a purchase order, or contract record relating to the subject matter of this approval; and
- g) Civic Administration **BE AUTHORIZED** to work with Western University (Western Engineering) on the South London Air Monitoring Network Pilot Project including a specific focus on the W12A Landfill with approved funds in 2021 and base program funds in 2022 (Program 480201.355000) in the amount of \$40,000 per year for two years; noting that City of London funds will be used by Western University to secure additional research funding through Mitacs and similar academic funding agencies.

Executive Summary

The geographic area of south London has a high concentration of industrial and waste management facilities including the Convertus (formerly Renewi Canada / Orgaworld) composting facility, the StormFisher Environmental Ltd. bioenergy facility, the City of London's W12A Landfill and several other private waste processing and handling

facilities in addition to a few facilities next to London (e.g., City of Toronto's Green Lane Landfill). For these facilities, the Ministry of Environment, Conservation and Parks (MECP) continues to receive odour complaints from the community.

In late 2019, MECP staff contacted the City of London regarding the development of an air and odour monitoring network Pilot Project (continuous monitoring, 24/7) for south London being modeled after air monitoring networks that exist in Ontario. The difference for the south London area Pilot Project is that the focus will be on odours. This will be the first Pilot Project of its kind in Ontario. The draft Project Charter has been prepared by MECP staff with input from the participants.

After reviewing different monitoring technologies in 2018 and 2019, StormFisher and Renewi (now Convertus), in consultation with MECP, selected a monitoring technology proposed by Envirosuite Canada Inc. <https://envirosuite.com/>. On July 21, 2020, Council directed Civic Administration to negotiate a single source agreement for the procurement of air and odour monitoring equipment and technical reporting with Envirosuite.

The Envirosuite platform involves a detailed air emissions dispersion modelling and reporting software, in combination with odour monitors and a local weather station, to both backtrack and forecast where odours may be coming from in the vicinity of the W12A Landfill. This system will use both real-time data and predictive modelling to help City staff minimize the impacts of odours on nearby Londoners. The system being proposed for W12A Landfill has been designed with input from City staff. Six odour monitors and one weather station will be installed as part of the Pilot Project. This platform and earlier versions have been installed in over 500 industrial operations including other landfill operations and wastewater treatment facilities.

Over the past 5 to 10 years, the top resident concerns living near the W12A Landfill site have always included odours. The City has made a number of capital investments and operational changes that have reduced the number of odour occurrences as part of its Odour Management Strategy for the current operation.

Perhaps more important, introducing a more sophisticated and scientific technology will assist the City in being proactive with respect to odour management and refer to this as part of the Environmental Assessment (EA) of the proposed expansion of the W12A Landfill and the subsequent technical studies required for *Environmental Protection Act* (EPA) approvals. Numerous additional benefits of the Pilot Project range from the ability to respond to odour complaints by better understanding and identifying odour intensity, trajectories and potential sources to the opportunity to learn and share better and best practices through MECP and directly with other operating landfills and other waste management facilities that could be potentially be located next to the W12A Landfill in the future.

The Envirosuite platform will also complement Mitacs-funded research being undertaken by Western University in partnership with the City of London and Golder Associates to identify opportunities for improving odour management strategies at the W12A Landfill. The City's contribution will be \$40,000 per year for two years.

Participation in the Pilot Project will require the procurement of air monitoring equipment, a weather station and software. The estimated cost for the project is \$303,990 over a three-year period including a one-time installation fee. Subject to Council approval, equipment would be installed in the fall 2021 with a tentative start-up date of October.

Linkage to the Corporate Strategic Plan

Municipal Council continues to recognize the importance of solid waste management and the need for a more sustainable and resilient city in the development of its 2019-2023 Strategic Plan for the City of London. Specifically, London's efforts in solid waste management address the three following areas of focus: Building a Sustainable City; Growing our Economy; and Leading in Public Service.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Some relevant reports that can be found at www.london.ca under Council and Committee meetings include:

- Pilot Project Technology for Air and Odour Monitoring in South London – Request to Negotiate a Single Source Agreement (July 14, 2020 meeting of the Civic Works Committee (CWC), Item #2.5)
- Odour Monitoring Pilot Program (June 18, 2018 meeting of the Community & Protective Services Committee (CPSC), Item #2.1)
- Proposed Public Nuisance By-law Amendment to Address Odour Monitoring Pilot Project (February 21, 2018 meeting of the CPSC, Item #9)
- Review of Impacts from Industrial Sources (Focus on Odour) and Potential Municipal Actions (Primarily South of Highway 401) August 28, 2017 meeting of Planning & Environment Committee (PEC), Item #16)
- Update & Next Steps – Review of Impacts from Industrial Sources (Focus on Odour) and Potential Municipal Actions (Primarily South of Highway 401), April 24, 2017 meeting of PEC, Item #4)
- Comments - Orgaworld Canada Ltd, November 13, 2012 meeting of PEC, Item #2)
- Various submissions and comments were made by delegations and participants at the Public Participation Meeting held on November 13, 2012

1.2 Context

The geographic area of south London has a high concentration of industrial and waste management facilities including the Convertus (formerly Renewi Canada / Orgaworld) composting facility, the StormFisher Environmental Ltd. bioenergy facility, the City of London's W12A Landfill and several other private waste processing and handling facilities. For these facilities, the Ministry of Environment, Conservation and Parks (MECP) continues to receive odour complaints from the community attributed to the local waste processing and handling industries.

Previously, the City has participated in other odour monitoring approaches in south London, most recently in the summer of 2018. This project was done in collaboration with StormFisher Environmental and Convertus. In the spring of 2019, StormFisher Environmental and Convertus began preliminary discussions with MECP to investigate the feasibility of an odour monitoring network in South London.

In late 2019, MECP staff contacted the City of London regarding the development of an air and odour monitoring network Pilot Project (continuous monitoring, 24/7) for south London being modeled after air monitoring networks that exist in Ontario. The difference for the south London area Pilot Project is that the focus will be on odours. This will be the first Pilot Project of its kind in Ontario. The draft Project Charter, prepared by MECP staff with input from the participants, is found in Appendix C.

The air and odour monitoring Pilot Project will be led, funded and implemented by local organizations, in partnership and coordination with the MECP. The MECP will also provide technical expertise and oversight during the implementation and operation of the network.

The Pilot Project would not impact MECP's compliance and abatement processes. The province will continue to ensure any adverse effects are resolved through compliance and enforcement measures and/or with operational and maintenance work conducted by the industry/facilities to mitigate odour and the network will help all stakeholders to address the subjectivity of odour sources and the receptors that may be detecting them.

After reviewing different monitoring technologies in 2018 and 2019, StormFisher and Renewi (now Convertus), in consultation with MECP, selected a monitoring technology proposed by Envirosuite Limited <https://envirosuite.com/>.

On July 21, 2020, the following motion was passed at Council:

- a) The Civic Administration **BE DIRECTED** to negotiate a single source agreement for the procurement of air and odour monitoring equipment and technical reporting services as per Section 14.4(e) of the Procurement of Goods and Services Policy with EnviroSuite Limited for a term of up to three years, with two, one-year extension options at the sole discretion of the City, IT BEING NOTED that the final contract will be subject to approval by Municipal Council and Civic Administration will report back on:
 - i. the outcome of the negotiation with EnviroSuite Limited;
 - ii. the final details and costs of the Pilot Project including how the City will be participating and the potential benefits to the community; and
 - iii. the benefits of the Pilot Project and its role in addressing elements of the Environmental Assessment for the Expansion of the W12A Landfill, current landfill operations and future operations.

The City of Toronto's Green Lane Landfill, located in Southwold Township along Highway 401, will also be part of the network.

2.0 Discussion and Considerations

This section contains details as follows:

- 2.1 Overview of Envirosuite Limited Technology and Negotiation
- 2.2 Benefits of the Pilot Project
- 2.3 Role of Western University
- 2.4 Next Steps

2.1 Overview of Envirosuite Limited Technology and Negotiation

The Envirosuite platform involves a detailed air emissions dispersion modelling and reporting software, in combination with odour monitors and a local weather station, to both backtrack and forecast where odours may be coming from in the vicinity of the W12A Landfill. This system will use both real-time data and predictive modelling to help City staff minimize the impacts of odours on nearby Londoners. The system being proposed for W12a Landfill has been designed with input from City staff. Six odour monitors and one weather station will be installed as part of the Pilot Project. This platform and earlier versions have been installed in over 500 industrial operations including other landfill operations and wastewater treatment facilities.

The Envirosuite platform provides three services for City staff:

1. Real-time odour and hydrogen sulphide monitoring,
2. Odour incident "back-tracking" capabilities, and
3. Odour forecasting for possible future odour impacts

The proposed system is also designed to work in concert with existing and planned Envirosuite platforms for StormFisher, Convertus, and the City of Toronto's Green Lane landfill site.

City staff completed the negotiation and reviewed the proposed agreement from Envirosuite. A number of adjustments were recommended by the City and accepted by Envirosuite. The Agreement is found in Appendix A (Schedule A).

2.2 Benefits of the Pilot Project

Over the past 5 to 10 years, the top resident concerns living near the W12A Landfill site have always included odours. The City has made a number of capital investments and operational changes that have reduced the number of odour occurrences as part of its Odour Management Strategy for the current operation.

Equally as important, introducing a more sophisticated and scientific technology will assist the City in being proactive with respect to odour management and refer to this as part of the Environmental Assessment (EA) of the proposed expansion of the W12A Landfill and the subsequent technical studies required for *Environmental Protection Act* (EPA) approvals. Additional benefits of the Pilot Project include:

- The opportunity for the City to take a leadership role alongside MECP staff and other participating facility owners to monitor, understand and address odours and odour complaints that arise;
- The ability to respond to odour complaints by better understanding and identifying odour intensity, trajectories and potential sources;
- The opportunity to learn and share better and best practices through MECP and directly with other operating landfills;
- The opportunity to learn about odour management challenges with respect to future potential resource recovery facilities to be located next to the W12A Landfill in the area designated for resource recovery;
- The potential, over time, to continue to improve performance and optimize operations to assist with mitigating odours through increased data and intelligence including data to support capital investment and other solutions;
- The opportunity for the City to share information with the community in a transparent format and with the MECP (the regulator of the landfill) by demonstrating measures of due diligence and continuous improvement; and
- The platform and Pilot Project will also support the proposed “one window” odour reporting platform being developed by MECP to manage multiple sources of odours in south London.

Further details and examples for real-time odour and hydrogen sulphide monitoring and odour incident “back-tracking” capabilities are found on the next two pages. Real-time monitoring is provided by six odour monitoring stations located around the perimeter of the landfill site as shown in Figure 1 below. Each station is equipped with a hydrogen sulphide (H₂S) concentration monitor and an odour intensity sensor.

Landfill gas contains hydrogen sulphide, known for its distinctive "rotten egg" odour, as well as organic sulphur compounds known as “mercaptans” known for their “putrid” odour. The ambient monitor measures both hydrogen sulphide and methyl mercaptan and reports these as equivalent hydrogen sulphide.

The Metal-Oxide Semiconductor (MOS) odour intensity sensor is an “electronic nose” that provides a second method for detecting odours.

**Figure 1 - Proposed Locations for Odour Monitors and Weather Station
(Source: Envirosuite, 2021)**

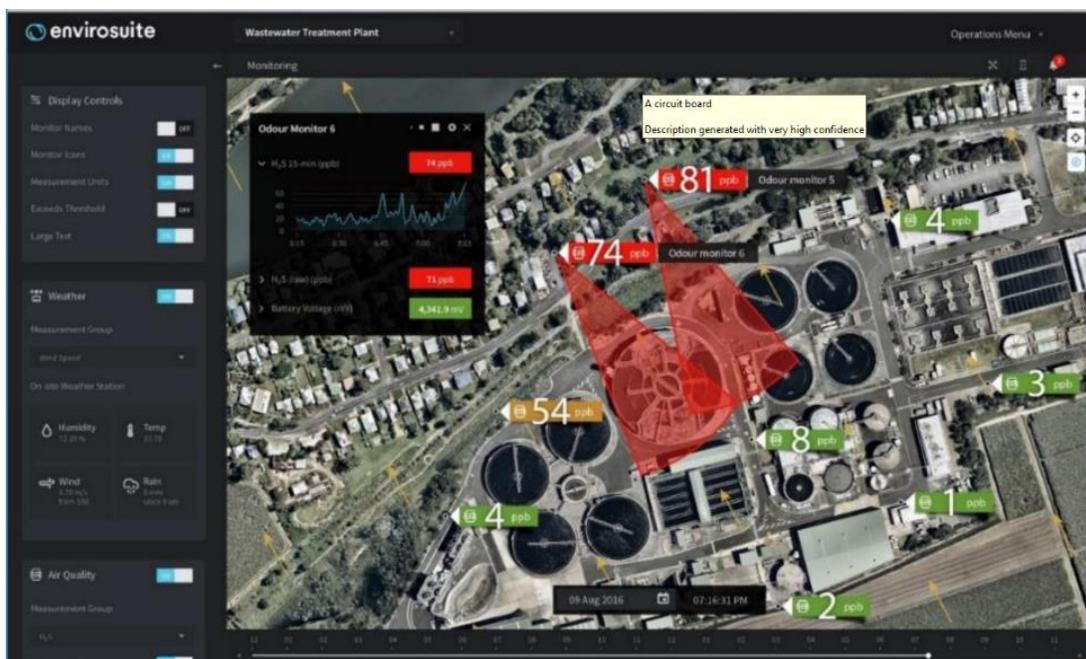


Real-time monitoring provides two critical advantages:

1. Consistency – the ability to identify odours with just your nose varies dramatically between different people and can even change over time for an individual (i.e., “getting used to the smell”), whereas hydrogen sulphide concentrations and odour intensity are objective measurements of what is in the air that stay consistent.
2. Timeliness – by the time City staff and/or MECP staff arrive at the scene of an odour complaint, the wind direction may have changed or the incident that may have caused the odour may have ended, whereas real-time monitoring allows City staff to go back to the exact time the complaint was received to see what the monitors detected.

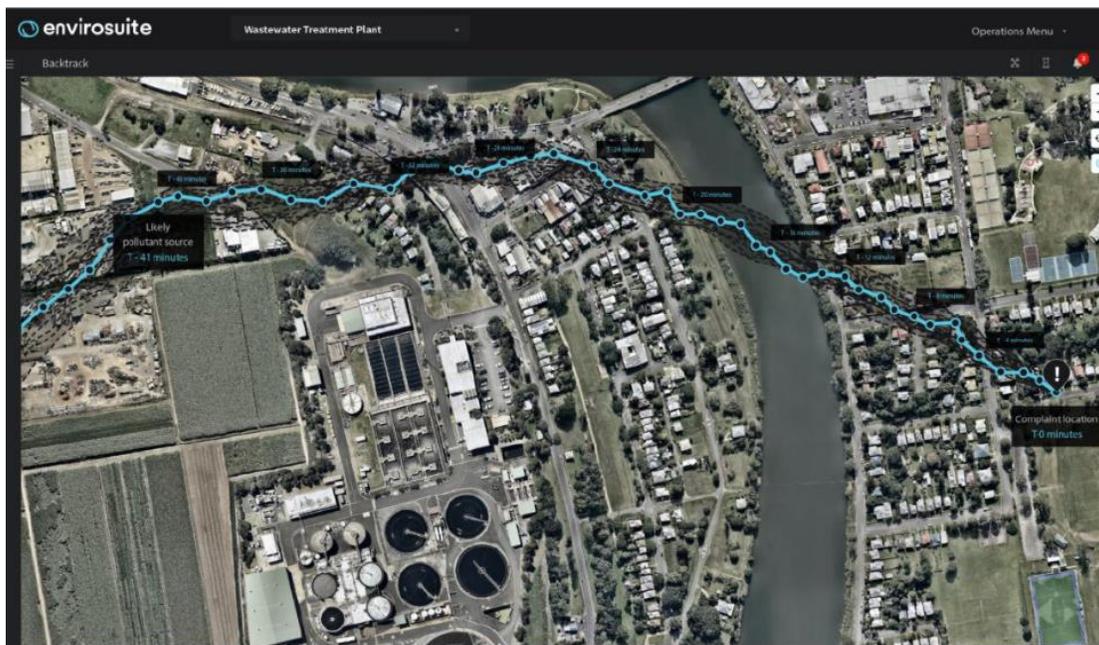
If increased levels of hydrogen sulphide and/or odour intensity are detected by one or more of the sensors, the weather station is used to help to determine where the odours may be coming from, as shown in the example in Figure 2.

**Figure 2 - Example of Real-time Detection of Potential Odour Emissions
(Source: Envirosuite, 2021)**



The odour incident “back-tracking” capabilities use the data from the weather station, combined with the location of an odour complaint, to see whether the odours might have come from as shown in the example in Figure 3.

Figure 3 - Example of the Odour Investigation Screen Showing the Back-trajectory to Possible Sources (Source: Envirosuite, 2021)



The odour forecasting capabilities use weather forecast data to alert City staff about upcoming weather conditions that could lead to odour complaints. City staff can then use this information to reschedule activities to help to reduce the potential for odours.

2.3 Role of Western University

The Envirosuite platform will also complement Mitacs-funded research being undertaken by Western University in partnership with the City of London and Golder Associates to identify opportunities for improving odour management strategies by:

1. Odour monitoring at the W12A landfill site
2. Regional odour monitoring in south London
3. Assessment of emerging practices for odour mitigation, including those with climate change mitigation co-benefits (e.g., adsorption of greenhouse gases using biochar in landfill cover), and
4. Analyzing the relationship between wind flow and the key regional features that influence the spread of odour from the landfill and other local sources

Specifically, the researchers from Western will be looking into how Envirosuite’s odour sensors respond to different types of odorous compounds that can be found in south London (e.g., those from organic waste management facilities or nearby agriculture and industrial processes) and whether it is possible for Envirosuite to be selective in identifying a specific odour source (i.e., is an odour from the landfill or manure spreading?). The researchers will utilize the data from Envirosuite’s sensors in air sampling studies and computer simulations to help understand Envirosuite’s application not only as a tool for odour monitoring but also as a tool in an overall odour prevention and mitigation strategies.

2.5 Next Steps

The next steps for the Pilot Project are identified in Table 1.

Table 1: Tentative Timetable and Remaining Steps

Tentative Timeframe	Remaining Steps
August 31, 2021	CWC meeting
September 14, 2021	Council approval
Late September	Execution of contract and ordering of equipment
August to November	Final coordination with MECP, other project partners, completion of website hosted by Envirosuite

October/November	Installation of equipment, calibration
Early December	Field measurements start (3 year Pilot Project)

3.0 Financial Impact/Considerations

Participation in the Pilot Project will require the procurement of air monitoring equipment, a weather station and software. The estimated cost for the project is \$303,990 over a three-year period (Table 2) including a one-time installation fee. The annual fee includes a 10% reduction per year of \$10,704. A one-year fee is \$107,034.

Table 2: Estimated Annual and Total Costs of Air Monitoring System at W12A Landfill

Year	Item	Estimated Cost
2021 – One time cost	Installation of Equipment	\$15,000
November 2021	Annual Fee	\$96,330
November 2022	Annual Fee	\$96,330
November 2023	Annual Fee	\$96,330
Total		\$303,990

Based on the multiple benefits of the Pilot Project including the existing landfill, preparing for the proposed future landfill expansion and the potential increase in other resource recovery facilities on lands near the W12A Landfill, this project will be funded from the New and Emerging Technologies (for Waste Management) capital account.

The work to be undertaken by the Western University research team will be funded with approved funds in 2021 and base program funds in 2022 (Program 480201.355000) in the amount of \$40,000 per year for two years. Western University will secure additional research funds (usually doubling the amount) through Mitacs and similar academic funding agencies. Currently one year funding has been obtained from Mitacs.

Conclusion

Based on the details presented in this report, further discussions with the MECP, other Pilot Project participants, Western University researchers, and review and negotiations with Envirosuite, City staff recommend a 3 year commitment to the South London Air Monitoring Network Pilot Project.

Prepared by: James Skimming, P.Eng.
Manager, Energy & Climate Change

Prepared by: Mike Losee, B.Sc.
Division Manager, Waste Management

Prepared and Submitted by: Jay Stanford MA, MPA
Director, Climate Change, Environment & Waste Management

Concurred by: Mat Daley
Director, Information Technology Services
Enterprise Supports

Recommended by: Kelly Scherr, P.Eng., MBA, FEC, Deputy City Manager,
Environment & Infrastructure

Appendix A A by-law to authorize and approve an Agreement between Envirosuite Canada Inc. and The Corporation of the City of London

Appendix B Source of Financing

Appendix C DRAFT - London District Project Charter London Air Monitoring Network

Appendix A

Bill No.
2021

By-law No. A.-

A by-law to authorize and approve an Agreement between Envirosuite Canada Inc. and The Corporation of the City of London and to authorize the Mayor and the City Clerk to execute the Agreement.

WHEREAS section 5(3) of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, provides that a municipal power shall be exercised by by-law;

AND WHEREAS section 9 of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act;

AND WHEREAS it is deemed appropriate for The Corporation of the City of London (the “City”) to enter into an Agreement with Envirosuite Canada Inc. for the procurement of air and odour monitoring equipment and technical reporting with respect to the W12A Landfill and the City’s participation in the South London Air Monitoring Network Pilot Project as proposed by the Ministry of the Environment, Conservation and Parks;

AND WHEREAS it is deemed appropriate to authorize the Mayor and the City Clerk to execute the Agreement on behalf of the City;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. The Agreement between The Corporation of the City of London and the Envirosuite Canada Inc., attached as Schedule A to this by-law, is hereby authorized and approved.
2. The Mayor and the City Clerk are hereby authorized to execute the Agreement authorized and approved under section 1 of this by-law.
3. This by-law shall come into force and effect on the day it is passed.

PASSED in Open Council September 14, 2021

Ed Holder
Mayor

Catharine Saunders
City Clerk

First Reading – September 14, 2021
Second Reading – September 14, 2021
Third Reading – September 14, 2021

SCHEDULE A

ENVIROSUITE SERVICE TERMS ("AGREEMENT")

1 Service

1.1 Parties

Envirosuite ("the Supplier") will provide the Services to the Customer set out in the Order Form ("Customer") on the terms of this Agreement.

1.2 Acceptance

Any use or access of the Services by the Customer constitutes acceptance of this Agreement.

1.3 Right to Use

The Supplier grants to the Customer a world-wide, non-exclusive, non-transferable right to use the Services and the Documentation for its internal business purposes.

2 Term

2.1 Initial Term

This Agreement commences on the Commencement Date and continues for the Initial Term unless otherwise terminated in accordance with the Agreement.

2.2 Extension

This Agreement will automatically extend for a further period of 12 months upon each anniversary of the Commencement Date unless either party provides at least 30 days prior notice. The Supplier will provide the

Customer with reasonable notice of any changes to the pricing for the Services.

2.3 Change to Services

The Customer may request a change to the modules and scope of Services. In the event that pricing and scope of Services is agreed between the parties in writing, this Agreement will automatically apply to any such changes

3 Use of Subscription Services

3.1 Customer Obligations

The Customer must:

- a. comply with all applicable laws, regulations, licences, in relation to the Services;
- b. ensure that the Customer Data that resides on, and is transmitted and received via the Services does not infringe any Intellectual Property rights of a third party or breach any privacy laws;
- c. not use the Services to store or transmit any viruses or other malicious code; d. provide industry standard virus protection mechanisms for its applications;
- d. keep all account identification and log-in information, including passwords, secure and confidential to prevent unauthorised access to or use of the Services and promptly notify Supplier of any unauthorised access or use;
- e. use the Services only for its internal business purposes and not purport to re-sell or licence the Services;
- f. comply with all reasonable and lawful directions of Supplier; and
- g. ensure that any Authorised Users are

properly trained in the use of the Services.

3.2 Suspension

The Supplier will have the right to suspend the Customer's access to the Services to prevent or mitigate damage to the Services or the systems of the Supplier.

4 Intellectual Property Rights

4.1 Ownership and use of Intellectual Property Rights

The parties agree that other than as provided in this clause 4 (Intellectual Property Rights), nothing in this Agreement transfers ownership in, or otherwise grants any rights in, any Intellectual Property Rights of a party.

4.2 Ownership in Services

In using the Services the Customer does not obtain any ownership or interest in the Services and the Customer acknowledges that the Supplier holds all Intellectual Property rights in the Services, including in any upgrade, enhancement or modification of the Services under this Agreement.

4.3 Data

The Supplier acknowledges that the Customer is the owner of the Intellectual Property Rights in the Customer Data. The Customer provides the Supplier with a license to use the Customer Data to provide the Services.

4.4 Related Services

The Supplier will irrevocably and unconditionally assign to the Customer on payment, any Customer Specific New Material.

5 Warranties

5.1 Compliance with Specifications

The Supplier warrants that the Services will materially comply with the Specifications and the Documentation when used in accordance with this Agreement.

5.2 Changes to the Services

The Supplier may make changes, modifications or enhancements to the Services and the Documentation upon reasonable notice to the Customer.

5.3 Implied Warranties

If the Supplier is in breach of any non-excludable condition or warranty implied by any statute or law, the Supplier's liability is limited to:

1. where Supplier has supplied Services, the cost of having the Services supplied again; and
2. where the Supplier supplied Equipment, the repair or replacement of the Equipment or the supply of equivalent Equipment.

5.4 Disclaimer

Except as expressly provided in the Agreement, neither the Supplier nor its subcontractors make any representation or warranties, express or implied, statutory or otherwise, regarding any matter, including the merchantability, suitability, originality, or fitness for a particular use or purpose, non-infringement or results to be derived from the use of the Services provided under the Agreement, or that the operation of the Services will be secure, uninterrupted or error free.

6 Confidentiality

6.1 Treatment of Confidential Information

Each party undertakes to keep the Confidential Information of the other party secret and to protect and preserve the confidential nature of all Confidential Information.

6.2 Use of Confidential Information

A Recipient may only use the Confidential Information of the Discloser for the purposes of performing the Recipient’s obligations or exercising the Recipient’s rights under this Agreement.

6.3 Disclosure of Confidential Information

A Recipient may not disclose Confidential Information of the Discloser to any person except to:

- a. Representatives of the Recipient who require it for the purposes of the Recipient performing its obligations or exercising its rights under this Agreement and then only on a need to know basis;
- b. with the prior written consent of the Discloser;
- c. if the Recipient is required to do so by law or a stock exchange; or
- d. if the Recipient is required to do so in connection with legal proceedings relating to this Agreement.

6.4 Disclosure by Recipient

A Recipient disclosing information under clause 6.3(a) or clause 6.3(b) must ensure that persons receiving Confidential Information are aware it is the other party’s Confidential Information and not to disclose

the information except in the circumstances permitted in clause 6.3.

6.5 Return of Confidential Information

Subject to clause 6.6 , on the Discloser’s request, the Recipient must, deliver to the Discloser or destroy, all documents or other materials containing or referring to the Discloser’s Confidential Information in the Recipient’s possession, power or control; or in the possession, power or control of persons who have received Confidential Information from the Recipient under clause 6.3(a) or clause 6.3(b) .

6.6 Exceptions

The obligation in clause 6.5 does not apply to Confidential Information of the Discloser that the Recipient requires in order to perform its obligations under this Agreement or is otherwise entitled to retain.

Nothing in clause 6 prevents or restricts the Customer from using or disclosing Customer Specific New Material, upon assignment thereof to the Customer pursuant to clause 4.4.

7 Fees & Taxes

7.1 Fees

The Supplier must provide the Services for the applicable Fee.

7.2 Fees inclusive of Taxes

All Fees exclude Taxes, whether increased, new or additional amounts and all freight, insurance, delivery and other expenses which may be incurred.

7.3 GST

- a. Unless otherwise expressly stated in this Agreement, prices or other sums payable or consideration to be provided under or in accordance with this Agreement are exclusive of GST.
- b. If a party makes a taxable supply under or in connection with this Agreement, the other party must pay to the supplier at the same time, and in addition to the GST-exclusive consideration, an amount equal to the GST payable on that supply.
- c. The supplier must, as a precondition to the payment of GST under clause 7.3(b), give the other party a tax invoice.
- d. If an adjustment event arises in connection with a supply made under this Agreement, the supplier must give the other party an adjustment note.
- e. If this Agreement requires one party to pay for, reimburse or contribute to any expense, loss or outgoing suffered or incurred by the other party, the amount required to be paid, reimbursed or contributed by the first party will be reduced by the amount of input tax credits (if any) to which the other party is entitled in respect of the reimbursable.

8 Invoicing and payment

8.1 Payment

- a. Customer will pay each invoice within thirty (30) days
- b. If Customer considers that an invoice is not correctly rendered, then Customer will notify the Supplier in writing setting out the reasons why Customer considers that the

invoice is not correctly rendered and identifying any amounts which are in dispute.

8.2 Invoice

For the purposes of this Agreement, an invoice is not correctly rendered unless:

- a. the amount specified in the invoice is correctly calculated in accordance with this Agreement; and
- b. the amount claimed in the invoice is due for payment.

9 Equipment

9.1 Equipment Supply

The Supplier will provide the Equipment as set out in an Order Form.

9.2 Title and risk

Title for any Equipment provided as managed Service will remain with the Supplier. The risk of loss or damage to the Equipment passes to Customers on the date the relevant Equipment is delivered to the delivery address. The Customer will ensure that the Equipment is covered by sufficient insurance to cover the full replacement value of the Equipment. The Customer will provide to the Supplier evidence of insurance coverage upon request by the Supplier.

11 Liability and indemnity

11.1 Liability

Subject to clause 11.2 (No limitation):

- a. neither party will be liable to the other party under or in respect of this Agreement for any Consequential Loss arising from negligence or breach of

- contract;
- b. the aggregate liability of either party whether in contract, tort (including negligence), statute or any other cause of action (other than the obligation to pay Fees) is limited to the amount paid by the Customer to the Supplier in the 12 months prior to the cause of action arising.

11.2 No limitation

Nothing in this Agreement operates to limit or exclude:

- a. liability that cannot be limited or excluded by law;
- b. Either party's liability in respect of the indemnity in clause 11.3 or 11.6; and
- c. Either party's liability resulting from its fraudulent or unlawful act or omission or any act or omission that results in personal injury, death or property damage.

11.3 Indemnity

- a. Supplier will defend Customer against claims brought by any third party alleging that Customer's use of the Services infringes any Intellectual Property Rights.
- b. The Supplier's obligations under Clause 11.3(a) will not apply to the extent the claim results from:
 - i. Customer's breach of the Agreement; or
 - ii. use of the Services in conjunction with any product or service not provided or recommended by the Supplier.
- c. In the event a claim is made or likely to be made, the Supplier may:
 - i. procure for Customer the right to

continue using the Services under the terms of the Agreement, or

- ii. replace or modify the Services to be non-infringing without material decrease in functionality.

11.4 Notification of a Claim

Customer will notify the Supplier in writing promptly after becoming aware of any Claim which might give rise to an indemnity by Supplier under clause 11.3 .

11.5 Customer obligations

In respect of any Claim notified under clause 11.4, Customer will provide the Supplier with reasonable assistance in conducting the defence of the Claim.

11.6 Customer and Supplier Indemnity

Each party will indemnify the other for any loss suffered by the other party or its Representatives, due to their negligence or breach of this Agreement.

11.7 Contribution

Any amount claimed by either party pursuant to the indemnities in clause 11.3 or 11.6 will be reduced proportionally to the extent the loss, damage, liability, claim or expense is directly caused by the negligence or breach of this agreement of the other party or its Representatives.

12 Termination

12.1 Termination for cause

Either party may terminate in whole or in part this Agreement immediately by giving notice in writing to the other party if:

- a. the other party commits a breach of this Agreement and the breach is incapable of remedy;

- b. the other party commits a breach of this Agreement that is capable of remedy and does not rectify that breach within 7 Business Days of first party issuing a notice of the breach; or
- c. a party is Insolvent.

12.2 Termination for Convenience

After the Initial Term, the Customer may terminate this Agreement on 30 days' notice without cause.

12.3 No other right of either party to terminate.

Other than as set out in this Agreement neither party may terminate any Order Form or this Agreement.

13 Consequences of termination

13.1 Payments and obligations on expiry or termination

Upon termination of this Agreement or an Order Form by Customer under clause 12.1, the Supplier will reimburse the Customer for the unused portion of any Fees paid in advance by Customer. To avoid doubt, the Customer will have no right to be reimbursed the unused portion of any Fees paid in advance by Customer upon termination of this Agreement or an Order Form by Customer under clause 12.2.

13.2 Preservation of rights

- a. Termination of this Agreement for any reason does not extinguish or otherwise affect any rights or remedies of either party which arose prior to the time of termination, or the provisions of this Agreement which by their nature survive termination.
- b. Without limiting the above, clause 4

(Intellectual Property Rights), 6 (Confidentiality), 8 (Invoicing and payment), 11 (Liability and indemnity), 13 (Consequences of termination), 17 (Assignment), 18 (Governing law), 19 (General) and 20 (Interpretation) survive termination of this Agreement.

14 Force majeure

14.1 Effects of Event

A party does not breach this Agreement and is not liable to the other party for a delay or failure to perform an obligation to the extent it results from a Force Majeure Event.

14.2 Obligation of affected party

The party affected by the Force Majeure Event must notify the other party of the Force Majeure Event as soon as reasonably practicable and must take all reasonable steps to limit the effects of Force Majeure Event.

14.3 Termination

If a Force Majeure Event occurs and its effect continues for a period of 20 Business Days, the Services affected by the Force Majeure Event may Be terminated at any time thereafter by either party giving written notice to the other party.

15 Notices

15.1 Form

Unless expressly stated otherwise in this Agreement, all notices, certificates, consents, approvals, waivers and other communications in connection with this Agreement must be in writing, signed by the sender (if an individual) or a person appointed as an authorised officer of the

sender and marked for the attention of the person identified by the other party as the contact person or, if the recipient has notified otherwise, then marked for attention in the way last notified.

15.2 Delivery

A communication must be:

- a. Left or mailed to the address notified by the recipient;
- b. sent by email to the email address notified by the recipient; or
- c. given in any other way permitted by law.

15.3 When effective

1. A communication will take effect from the time it is received unless a later time is specified.
2. If sent by post, a communication is taken to be received three days after posting (or seven days after posting if sent to or from a place outside Australia).
3. If sent by email, when the sender receives an automated message confirming delivery; or 30 minutes after the time sent (as recorded on the device from which the sender sent the email) unless the sender receives an automated message that the email has not been delivered, whichever happens first.

16 Disclosure or Promotion of this Agreement

The Customer agrees that the Supplier may from time to time disclose certain details regarding this Agreement (including but not limited to, the Customer's name, the Fees and a description of this Agreement):

1. as required by any stock exchange or law; or
2. for promotional purposes on the

Supplier's website, in promotional materials, press releases or other documents. The Customer will have the opportunity to approve, in advance, any promotional material that will be posted by the Supplier involving this agreement.

17 Assignment

17.1 Consent

Subject to clause 17.2, Neither party can assign, transfer, novate, encumber or otherwise deal with all or part of its rights or obligations under this Agreement without the other party's prior written consent.

17.2 Void Assignments

Any purported assignment, transfer, novation or other dealing with the rights under this Agreement that does not comply with clause 17.1 is void and has no effect.

18 Governing law

This Agreement is governed by the law in force in the Province of Ontario, Canada. Each party submits to the non-exclusive jurisdiction of the courts of that place.

19 General

19.1 Discretion in exercising rights

A party may exercise a right or remedy or give or refuse its consent in any way it considers appropriate (including by imposing conditions), unless this Agreement expressly states otherwise.

19.2 Partial exercising of rights

If a party does not exercise a right or remedy

fully or at a given time, the party may still exercise it later.

19.3 No liability for loss

A party is not liable for loss caused by the exercise or attempted exercise of, failure to exercise, or delay in exercising a right or remedy under this Agreement.

19.4 Approvals and consents

By giving its approval or consent a party does not make or give any warranty or representation as to any circumstance relating to the subject matter of the consent or approval

19.5 Remedies cumulative

The rights and remedies provided in this Agreement are in addition to other rights and remedies given by law independently of this Agreement.

19.6 Rights and obligations are unaffected

Rights given to the parties under this Agreement and the parties' liabilities under it are not affected by anything which might otherwise affect them by law.

19.7 Variation and waiver

A provision of this Agreement or a right created under it, may not be waived or varied except in writing, signed by the party or parties to be bound.

19.8 Indemnities

The indemnities in this Agreement are continuing obligations, independent from the other obligations of the Supplier under this Agreement and continue after this Agreement ends. It is not necessary for a party to incur expense or make payment before enforcing a right of indemnity under

this Agreement.

19.9 Further steps

Each party agrees, at its own expense, to do anything the other party asks (such as obtaining consents, signing and producing documents and getting documents completed and signed):

- a. to bind the party and any other person intended to be bound under this Agreement;
- b. to enable the party to exercise its rights; and
- c. to show whether the party is complying with this Agreement.

19.10 Prompt performance

If this Agreement specifies when the party agrees to perform an obligation, the party agrees to perform it by the time specified. Each party agrees to perform all other obligations promptly.

19.11 Construction

No rule of construction applies to the disadvantage of a party because that party was responsible for the preparation of, or seeks to rely on, this Agreement or any part of it.

19.12 Costs

The parties agree to pay their own legal and other costs and expenses in connection with the preparation, execution and completion of this Agreement and other related documentation except for stamp duty.

19.13 Entire agreement

This Agreement constitutes the entire agreement of the parties about its subject matter and supersedes all previous agreements, understandings and negotiations on that subject matter.

19.14 Severability

If the whole or any part of a provision of this Agreement is void, unenforceable or illegal in a jurisdiction it is severed for that jurisdiction. The remainder of this Agreement has full force and effect and the validity or enforceability of that provision in any other jurisdiction is not affected. This clause has no effect if the severance alters the basic nature of this agreement or is contrary to public policy.

19.15 No relationship

Nothing in this agreement will be taken to constitute the Supplier as an employee, agent, partner or joint venturer of Customer nor is the Supplier authorised to represent itself as acting, or to incur any obligation, on behalf of Customer.

20 Interpretation

20.1 Definitions

Authorised Users means the employees or contractors of the Customer who are entitled to use the Subscription Services.

Business Day means a day other than a Saturday, Sunday or public holiday in:

- a. the place of the Governing law; or
- b. where an obligation under this agreement is required to be performed in a particular place, that place.

Claim means any allegation, debt, cause of action, liability, claim, proceeding, suit or demand of any nature whatsoever arising and whether present or future, fixed or unascertained, actual or contingent whether at law, in equity, under statute or otherwise.

Commencement Date means the date specified under that heading in the Details. If there is no Commencement Date specified, then the Commencement Date is the date on which the last party executes this Agreement.

Confidential Information means:

- a. all confidential, non-public or proprietary information, regardless of how the information is stored or delivered, exchanged between the parties or their Representatives before, on or after the Commencement Date relating to the business, technology or other affairs of the Discloser of the information, including the details of the Services; and
- b. in the case of Customer, all Customer Data;

but does not include information:

- a. which is in or becomes part of the public domain other than through breach of this Agreement or an obligation of confidence owed to the Discloser; which the Recipient can prove by contemporaneous written documentation was:
- b. already known to it at the time of disclosure by the Discloser (unless such knowledge arose from disclosure of information in breach of an obligation of confidentiality); or
- c. independently developed by the Recipient without reference to the Confidential Information of the Discloser; or
- d. which the Recipient acquires from a source other than the Discloser or any of its representatives where such source is entitled to disclose it on a non-

confidential basis.

Consequential Loss means any indirect or consequential loss or damage which, although in the contemplation of the parties at the time they entered into this Agreement, is not a loss or damage which may fairly and reasonably be considered to arise naturally (that is, in the usual course of things) from the breach including, but not limited to, loss of profits, loss of data, loss of revenue, loss of opportunity or loss of goodwill.

Contract Representative means a person appointed by each party to be their representative for the purpose of managing this Agreement and any disputes arising under it.

Customer Data means all data, information, text, drawing or other material which is provided to the Supplier, or inputted into the Services, by the Customer.

Customer Specific New Material means any material created by the Supplier in the course of providing the Related Services that is based on or is a modification or enhancement of, the Customer Data.

Discloser means the party disclosing Confidential Information.

Documentation means any documentation provided by the Supplier which sets out the details of the Services.

Fee means the fee for the Services and any Equipment calculated in accordance with the Order Form.

Force Majeure Event means any of the

following causes provided that they are outside the reasonable control of the affected party and could not have been prevented or avoided by that party taking all reasonable steps including:

Government Agency means any governmental, semi-governmental, administrative, fiscal, judicial or quasi-judicial body, department, commission, authority, tribunal, agency or entity.

GST means any goods and services or value added tax.

A person is **Insolvent** if:

- a. it is (or states that it is) an insolvent under administration or insolvent;
- b. it is subject to any arrangement, assignment, moratorium or composition, protected from creditors under any statute or dissolved (in each case, other than to carry out a reconstruction or amalgamation while solvent on terms approved by the other parties to this Agreement); or an application or order has been made (and in the case of an application, it is not stayed, withdrawn or dismissed within 30 days), resolution passed, proposal put forward, or any other action taken, in each case in connection with that person, which is preparatory to or could result in any of (a), (b) or (c) above; or
- c. it is otherwise unable to pay its debts when they fall due; or
- d. something having a substantially similar effect to (a) to (d) happens in connection with that person under the law of any jurisdiction.

Initial Term means, unless stated otherwise in the Order Form, 12 months.

Intellectual Property Rights means all intellectual property rights including current and future registered and unregistered rights in respect of copyright, designs, circuit layouts, trade marks, trade secrets, know-how, confidential information, patents, invention and discoveries and all other intellectual property as defined in article 2 of the convention establishing the World Intellectual Property Organisation 1967.

Moral Rights means any moral rights including the rights described in Article 6b of the Berne Convention for Protection of Literary and Artistic Works 1886 (as amended and revised from time to time), being “droit moral” or other analogous rights arising under any statute that exist or that may come to exist, anywhere in the world.

Order Form means an order or proposal provided by the Supplier or the Reseller which sets out the details of the order to which this Agreement applies.

Receiver includes a receiver or receiver and manager.

Recipient means the party receiving Confidential Information.

Related Services means the professional services agreed in an Order Form.

Representative of a party includes an employee, agent, officer, director, auditor,

advisor, partner, consultant, contractor or sub-contractor of that party.

Reseller means an authorised reseller of the Supplier who has the direct relationship with the Customer.

Service Levels mean the Service Levels set out in the Documentation.

Services means all Subscription Services and Related Services required to be provided by the Supplier under this Agreement.

Subscription Services means the Software as a Service modules provided by the Supplier to the Customer as set out in the Order Form.

Taxes means taxes, levies, imposts, charges and duties (including stamp and transaction duties) imposed by any authority together with any related interest, penalties, fines and expenses in connection with them except if imposed on, or calculated having regard to, the net income of Supplier.

Term means the Initial Term as extended if applicable.

20.2 Headings

Headings are included for convenience only and are not to affect the interpretation of this Agreement.

Appendix "B"
Revised Date

#21123

August 31, 2021
(Award Contract)

Chair and Members
Civic Works Committee

RE: Participation in the South London Air Monitoring Network Pilot Project
(Subledger LF210002)
Capital Project SW6050 - New and Emerging Solid Waste Technologies
Envirosuite Limited - \$303,990.00 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing for this project is:

Estimated Expenditures	Approved Budget	This Submission	Balance for Future Work
Engineering	1,000,000	309,341	690,659
Construction	35,000,000	0	35,000,000
Total Expenditures	\$36,000,000	\$309,341	\$35,690,659
Sources of Financing			
Debenture Quota (Note 1)	11,700,000	0	11,700,000
Drawdown from Solid Waste Renewal Reserve Fund	16,351,532	309,341	16,042,191
Federal Gas Tax	7,948,468	0	7,948,468
Total Financing	\$36,000,000	\$309,341	\$35,690,659

Financial Note:

Contract Price	\$303,990
Add: HST @13%	39,519
Total Contract Price Including Taxes	343,509
Less: HST Rebate	-34,168
Net Contract Price	\$309,341

Note 1: Note to City Clerk: Administration hereby certifies that the estimated amounts payable in respect of this project does not exceed the annual financial debt and obligation limit for the Municipality from the Ministry of Municipal Affairs in accordance with the provisions of Ontario Regulation 403/02 made under the Municipal Act, and accordingly the City Clerk is hereby requested to prepare and introduce the necessary by-laws.

An authorizing by-law should be drafted to secure debenture financing for project SW6050 - New and Emerging Solid Waste Technologies for the net amount to be debentured of \$11,700,000.00.

Jason Davies
Manager of Financial Planning & Policy

Appendix C

DRAFT - London District Project Charter London Air Monitoring Network: 2019-2022

General Project Information

Client(s): StormFisher Environmental Ltd., Convertus (formerly Renewi), Ministry of the Environment, Parks and Conservation (MECP), City of London (W12A Landfill), City of Toronto (Green Lane)

Physical Address: multiple

Primary Environmental Officer(s): Sybil Kyba, Andrew Woodhouse, Jessica Ceneviva, Jeff Mills

Date of Initial Engagement: Spring 2019

Stakeholders: Local residents and businesses, StormFisher, Convertus, City of London, City of Toronto, Middlesex London Health Unit,

Environmental Plan Alignment

Clean Air

The ministry will work in partnership with municipalities, industry, public health units and other community stakeholders to address local air quality concerns and achieve air quality objectives.

Background and Purpose

The geographic area of south London has a high concentration of industrial facilities including the Convertus composting facility, StormFisher Environmental Ltd. bioenergy facility, the City of London's W12A landfill, the City of Toronto's Green Lane landfill, Ingredion, and several other private waste processing and handling facilities. The ministry continues to receive odour complaints from the community attributed to the manufacturing as well as waste processing and handling industries.

In the spring of 2019, StormFisher Environmental and Convertus began preliminary discussions with the ministry to investigate the feasibility of an odour monitoring network in London.

The London Air Monitoring network will be led, funded and implemented by local industry, in partnership and coordination with the ministry. The ministry will also provide technical expertise and oversight during the implementation and operation of the network.

This project charter defines the ministry's role/oversight in the development and implementation of an air monitoring network in London, as well as the goals and objectives of the industry network.

The London Air Monitoring network would not impact ministry compliance and abatement processes. The ministry will continue to ensure any adverse effects are resolved through proactive measures and/or compliance and enforcement measures and/or with operational and maintenance work conducted by the industry/facilities to mitigate odour. The network will help all stakeholders to address the subjectivity of odour sources and the receptors that may be detecting them.

Issues Summary

Local industry implemented facility improvements and best management practices to help mitigate odours in the community.

The ministry has also undertaken compliance and enforcement actions when waste handling, and processing, odours have impacted the community.

In order to further address odour concerns raised by the community, and the potential source of odours, local industry and municipalities, will lead the development of an air monitoring network, with the support of the ministry, to provide a more objective measure of odour in the community.

Project Objectives

The local industry and municipalities will:

1. Fund the implementation of the London Air Monitoring network.
2. Retain a qualified vendor to implement and operate the London Air Monitoring network.
3. Provide information to the local community at Community/Public Liaison Committees, or similar forums, to provide information, and invite feedback, about the implementation and functionality of the London Air Monitoring network. In the case of StormFisher Environmental, this will occur through its public liaison committee which has been meeting quarterly for a number of years.
4. StormFisher has been collecting air quality and meteorological data in London since at least July 1, 2020. Establish a website, or similar platform, to clearly display the information and make the data generated from the London Air Monitoring network available in “real time” to the community. Additional air monitors will be phased in as other participants join the network.

The industry led London Air Monitoring network will:

1. Assess current local air conditions. The minimal operational time and data validity of the air monitoring network should be 95% in any given year.
2. Ensure air monitoring equipment is maintained and operated according to manufacturer specifications and the [ministry operations manual for air quality monitoring in Ontario](#).
3. Utilize current and available technology to assist in the determination of the presence/absence of odours in the community.
4. Develop a data base of air quality and weather-related information that will help to continuously improve predicative modelling in the community. Maintain this database in a format that is publicly available online.

The ministry will:

1. Endorse, assist and support the London industry with engaging stakeholders to inform them of the implementation of the air monitoring network and to solicit feedback and help address concerns (where appropriate and feasible). This will include support and assistance at the public meetings or at StormFisher’s public liaison committee meetings.
2. Review, recommend and provide technical input and feedback, to the companies, on the location of equipment.
3. Review and provide technical input on the validity of the air monitoring equipment and the data generated from the London Air Monitoring network.
4. Endorse and assist with promoting a website, or similar online platform, for the London Air Monitoring network to clearly display and publicly share the data generated, where feasible.
5. Undertake an annual review, or more frequently as required, of the data generated from the London Air Monitoring network.
6. Ensure that routine voluntary or mandatory abatement actions are undertaken by industry to resolve any odour incidents identified in the community.

Project Outcomes

1. Local industry/municipalities develop and implement an Air Monitoring network in London.
2. Local industry/municipalities establish a website, or similar platform, to clearly display the information and make the data generated available in “real time”, and ensure historical data is also available online.
3. The air and meteorological data generated from the air monitoring network is publicly available to provide local residents/stakeholders with a better understanding of the current status of local air quality along with potential odours in the community.
4. The London Air Monitoring network will provide a more objective measure of odours, and their sources, in the community. Information from each monitor is representative of the odours present at that location.

Key Performance Indicators

- Reliable, publicly accessibility, data is generated from the London Air Monitoring network. The minimal operational time and data validity of the air monitoring network should be 95% in any given year.
- Industry/municipalities implement facility improvements and best management practices when information demonstrates odours are from a particular industry are in the community.
- Evaluation/review of data generated from the London Air Monitoring network will be used for continuous improvement by local industry, municipalities, and the ministry to address any odours in the community.
- The community, facilities, municipalities, and the ministry all have a better understanding of local air quality.
- Collaboration is improved between industry, municipalities, the public and the ministry to reduce and resolve odour concerns.

Communication and Reporting

Ministry commits to regular communication between the London District Office and individual stakeholders, including industry who request information. When possible, the ministry will collaborate with appropriate stakeholders and organizations to explore effective avenues of communication.

Industry and municipalities will provide an annual report to the ministry that provides a summary and assessment of the data and corrective actions related to the London Air Monitoring network.

Tools and Additional Project Resources

Document Tracking

Date	Summary of Changes	Author	Approval (Initial / Date)
December 17, 2019	V .02	MECP-SF comments	
March 23, 2020	V .03	City of London comments	
April 24, 2020	V .04	Formatting edits	
July 9, 2021	V.05	Bring to current year.	

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Anna Lisa Barbon, CPA, CGA
Deputy City Manager, Finance Supports

Subject: Single Source Additional Forestry Stump Cutter

Date: August 31, 2021

Recommendation

- a) That, on the recommendation of the Deputy City Manager, Finance Supports, the following actions **BE TAKEN** with respect to the purchase of a Tow-Behind Forestry Stump Cutter;
- b) Single Source negotiated price **BE ACCEPTED** to purchase one (1) 2021 Vermeer SC802 Stump Cutter for a total estimated price of \$88,000.00 + HST from Vermeer Canada Inc. 4191 Perkins Rd. London, ON. N6L1C2
- c) Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this purchase;
- d) Approval hereby given **BE CONDITIONAL** upon the Corporation entering into a formal contract or having a purchase order, or contract record relating to the subject matter of this approval in accordance with Sections 14.4(d) and 14.5(a)(ii) of the Procurement of Goods and Services Policy; and
- e) That the funding for this purchase **BE APPROVED** as set out in the Source of Financing Report attached, hereto, as Appendix A.

Executive Summary

The Parks and Forestry Division has identified a need for an additional stump cutter/grinder to be added into their fleet equipment line up to enhance their stump removal capabilities and services. The additional unit will help reduce the backlog of work caused by the pandemic and meet the growing demand caused by additional tree removals over the last several years due to disease and age.

Forestry currently has two crews assigned to stump removal and operate both an internal City owned unit as well as a supplemental rental stumper unit to meet the demand.

This report recommends that the rental unit be purchased through a single source procurement and added into the internal forestry equipment complement utilizing the rent to own option terms being offered, where 100% of the rental costs the City has paid on the rental can be applied towards the purchase price. Capital funding would pay the remaining balance to purchase the unit outright.

The rented unit is the same brand and model of our existing internal unit therefore provides operational efficiencies by reducing the time required to provide additional training for operators and technicians on the operation and maintenance of the unit.

The availability of this unit for purchase from the vendor presents an excellent opportunity for the City to secure the additional required assets to support operational demand, minimize operational disruption, secure required equipment in a timely and efficient way and maximize the value of rental costs spent to this point.

Linkage to the Corporate Strategic Plan

Building a Sustainable City

London's infrastructure is built, maintained, and operated to meet long-term needs of our community

- Manage assets to prevent future infrastructure gaps

Leading in Public Service

Londoners experience exceptional and valued customer service

- Increase responsiveness to our customers
- Increase efficiency and effectiveness of service delivery

Analysis

1.0 Background Information

The Forestry Operations group, working out of the Adelaide Operations Centre is responsible for a full range of forestry services in the Forest City. The program functions year-round and is responsible for primary activities such as responding to tree service request (trees@london.ca), tree trimming, maintenance and removal, elevating low limbs and conducting tree inspections due to poor health, infestation, or storm and wind damage.

Vehicles and equipment for the Forestry Division are an integral piece of delivering their services. The main equipment assets include high lift aerial bucket trucks, pick-up trucks, service trucks with canopy bodies, chippers, chain saws and stump grinder/cutters.

The stump grinder/cutter is a very specialized piece of equipment that is towed behind a pickup and positioned over the tree stump identified for removal. Once the stump grinder is set up the operator utilizes the handheld remote-control device to activate the large grinding/cutting wheel with teeth that is lowered gradually and articulated from side to side grinding the entire stump into wood chips. The crew then repurposes the wood chips and restoration crews finish the job with soil and turf as required.

In the spring of this year, Forestry identified a backlog of stump removal work that extended beyond the capacity of the one stump cutting crew. A second stumper was acquired through a rental agreement with Vermeer in consultation with Fleet and has been in service over the last several months however that rental agreement is set to expire at the end of September 2021.

In consultation with Vermeer Canada Inc. they have proposed that if interested, the stump cutter is available for purchase and they would support reallocating rental costs the City has paid to this point and apply 100% of the rental costs towards the purchase price under their rent to own program. The stump cutter purchase would include a three (3) year premium Warranty coverage period.

The existing City owned internal stump cutter is up for capital replacement in 2022. Therefore, should the ongoing need for two stump removal crews subside next year Forestry will have an opportunity to reevaluate the service and equipment requirements at the time and make any adjustment necessary.

Purchasing the same model of stump cutter as our internal unit greatly reduces the time required to provide additional training for operators and technicians on the operation and maintenance of the unit as both groups are familiar and have experience with this equipment. Standardizing units where possible builds operational efficiencies by reducing time and cost associated with key operational aspects like training, competency and parts inventories.

The Parks and Forestry Division with support from Fleet and Operational Services, has identified that the recommended solution provides a responsible and cost effective

solution to address the need for additional internal stump removal assets to meet the service demand.

2.0 Discussion and Considerations

2.1 Purchasing Process

A quote was received from Vermeer Canada Inc. for the purchase of the Vermeer Model SC802 Stump Cutter rental unit. The estimated purchase price of the unit is \$88,000.00 plus HST. The rent to own option will be utilized and 100% of the five (5) month rental costs \$37,400 (\$7,480 x 5 months) will be put towards the purchase price of the unit.

3.0 Financial Impact

3.1 Project Budget

Parks and Forestry will provide the capital budget and funding source for this purchase. The ongoing operating costs for fuel, maintenance, inspection, service, overhead and future capital replacement will be funded through the Fleet internal rental rate process and charged back to the respective service area. There will be operational, maintenance and future capital budget impacts associated with this purchase.

3.2 Project Funding

Funding for this purchase will be provided through the appropriate capital and operating accounts to be provided by Parks and Forestry. The estimated total cost after rent to own option is applied towards the purchase is \$50,600.00 plus HST. Final price will be negotiated with Vermeer Canada Inc. Funding details for this procurement are outlined in the Source of Financing attached as Appendix A.

Conclusion

The recommendation will provide good value, efficiencies and enhanced services to the citizens and businesses of London with a cost effective and timely method of addressing the operational requirements of the service area.

Fleet and Operational Services in conjunction with Parks and Forestry and Purchasing and Supply recommend approval for the single source purchase of one (1) Vermeer SC802 Stump Cutter for a total estimated price of \$50,600.00 + HST from Vermeer Canada Inc.

The recommendation provides the best overall value to the City of London having met the operational requirements and supporting a safe and healthy workplace.

Prepared by: Mike Bushby, B.A.
Division Manager, Fleet and Facilities
Finance Supports

Concurred by: Scott Stafford, B.A.
Director, Parks and Forestry
Environment and Infrastructure

Concurred by: Tim Wellhauser C.I.M
Director, Fleet and Facilities
Finance Supports

Recommended by: Anna Lisa Barbon, CPA, CGA
Deputy City Manager
Finance Supports

Attached: Appendix A – Source of Finance

Appendix "A"

#21139

August 31, 2021
(Award Contract)

Chair and Members
Civic Works Committee

RE: Purchase of a Tow-Behind Forestry Stump Cutter
(Work Order 2520058)
Capital Project UF2047 - Urban Forest Strategy
Vermeer Canada Inc. - \$88,000.00 (excluding HST)

Finance Supports Report on the Sources of Financing:

Finance Supports confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Finance Supports, the detailed source of financing for this project is:

Estimated Expenditures	Approved Budget	Committed To Date	This Submission	Balance for Future Work
Engineering	207,380	207,380	0	0
Construction	1,733,985	1,285,202	0	448,783
Vehicles and Equipment	84,461	32,970	51,491	0
Total Expenditures	\$2,025,826	\$1,525,552	\$51,491	\$448,783
Sources of Financing				
Capital Levy	2,025,826	1,525,552	51,491	448,783
Total Financing	\$2,025,826	\$1,525,552	\$51,491	\$448,783

Financial Note:

Contract Price	\$88,000
Less: Rental amount expended in operating budget	\$37,400
Contract Price	\$50,600
Add: HST @13%	\$6,578
Total Contract Price Including Taxes	\$57,178
Less: HST Rebate	-\$5,687
Net Contract Price	\$51,491

Jason Davies
Manager of Financial Planning & Policy

HB

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Anna Lisa Barbon, CPA, CGA
Deputy City Manager, Finance Supports

Subject: RFP 21-37 Supply and Delivery of CNG Split Stream Rear Loading Waste Collection Trucks

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Finance Supports:

- a) The submission from London Machinery Inc. (LMI) 15790 Robin's Hill Road, London, Ontario N5V 0A4 for the Supply and Delivery of Compressed Natural Gas (CNG) Split Stream Rear Loading Waste Collection Trucks at a total purchase price of \$10,755,520 excluding HST, **BE ACCEPTED**;
- b) Civic Administration **BE AUTHORIZED** to undertake all the administrative acts that are necessary in connection with this purchase;
- c) Approval hereby given **BE CONDITIONAL** upon the Corporation entering into a formal contract, purchase order, or contract record relating to the subject matter of this approval in accordance with Section 12.2 b) of the Procurement of Goods and Services Policy; and
- d) That the funding for this purchase **BE APPROVED** as set out in the Source of Financing Report attached, hereto, as Appendix A.

Executive Summary

Fleet and Operational Services in conjunction with staff from Climate Change, Environment and Waste Management initiated a Request for Proposals (RFP) for twenty-six (26) compressed natural gas (CNG) split stream rear loading waste and Green Bin collection trucks with Purchasing and Supply on June 9, 2021.

Based on the analysis and evaluation of the submissions received, Fleet Services and Waste Management recommend that RFP 21-37 be awarded to London Machinery Inc. (LMI). The recommendation provides the best overall value to the City of London having met the specifications, conditions, and operational requirements of the service area, and scoring the highest on the evaluation.

The RFP document and specifications were a product of an extensive equipment and service review by a task team focused to deliver on the two Council approved business plans:

1. Supporting waste diversion targets through the introduction of a "Green Bin" organic waste collection program beginning late fall of 2022; and
2. Replacing all waste collection trucks with CNG powered units in support of reducing greenhouse gas emissions as part of the Corporate Energy Management Conservation Demand Management (CDM) Plan and the declaration of a climate emergency.

The task team determined that rear loading waste collection trucks will continue to be the primary method of delivering residential collection services to Londoners. The new rear loading packers will be standardized to provide split stream collection capability (organic Green Bin material on one side and garbage on the other) and will be powered by CNG instead of diesel fuel.

The separation and management of useful organic materials through a Green Bin program increases waste diversion, creates jobs, reduces greenhouse gas, reduces landfill impacts, makes better use of materials and resources, and provides opportunities for the City to benefit in the future from the production of renewable energy sources like methane and renewable natural gas (RNG).

Linking very closely with the organic collection strategy is the fuel switching business case that will see the entire fleet of waste collection trucks being powered by CNG instead of the traditional diesel-powered trucks. Fuel switching to CNG reduces emissions and noise, removes toxic pollutants from the air, enhances lifecycle of the assets, has more stable less volatile pricing system, and is much less expensive than diesel fuel.

Moving to organic collection in concert with fuel switching to CNG-powered trucks provides the future groundwork to have a more sustainable closed loop strategy where collected household organic waste could be processed and used to create a source of renewable fuel and green energy.

Renewable energy sources reduce the impact of emissions and carbon on the environment and support the City's Corporate Energy Management Conservation Demand Management Plan (Green Fleet) and demonstrate a strong commitment and actions for change in line with the declaration of a climate emergency and the development of the Climate Emergency Action Plan.

Linkage to the Corporate Strategic Plan

Building a Sustainable City

London's infrastructure is built, maintained, and operated to meet long-term needs of our community

- Manage assets to prevent future infrastructure gaps
- Increase waste reduction, diversion, and resource recovery
- Conserve energy and increase actions to respond to climate change

Leading in Public Service

Londoners experience exceptional and valued customer service

- Increase responsiveness to our customers
- Increase efficiency and effectiveness of service delivery

Growing our Economy

- Increase partnerships that promote collaboration, innovation, and investment

Analysis

1.0 Background Information

There have been many changes and improvements in the waste collection and disposal sector over the last decade. In addition to the main objective of continuing to provide quality collection and disposal services to Londoners, Waste Management and Fleet Services Team have focused on improvements in the program to meet government regulations and key climate change and environmental sustainability objectives.

Two key aspects of the current 60% Waste Diversion Action Plan are to develop programs and processes that promote source separation and diversion, and second reduce harmful emissions caused by diesel powered vehicles that are contributing to

climate change and air quality impacts. Previous reports have been presented and prepared describing these plans and are listed below for reference.

Fuel Switching – Diesel to CNG for Waste Collection Trucks - Fleet and Waste Management Report to Civic Works Committee September 25, 2018

Updates - 60% Waste Diversion Action Plan Including the Green Bin (Revised Timetable) - Waste Management Report to Civic Works Committee, November 17, 2020 and approved during the Annual Budget Update, January 12, 2021

Since approval of these reports several task teams, consultants and working groups have developed specific objectives and action plans. Below is a summary and update to the two programs to provide context for this report and purchase recommendations.

Fuel Switching Business Case Update

- As of April 2021, six (6) waste collection units are now in service powered by CNG. This change has saved over \$300 per vehicle/month in fuel costs and reduced over 365 kg of GHG/vehicle/month;
- 50% of the Exeter Road Maintenance Operations Centre Facility has been converted to a certified CNG repair facility, with additional modifications initiated and slated for 2022;
- The plan to have all waste collection units powered by CNG by 2025 has now been moved up based on the waste management program changes. In the new plan the target is to have over 95% of the waste collection fleet powered by CNG by early 2023;
- The CNG fleet has supported one of the first commercially available CNG refueling stations in London by Clean Energy at the Flying “J” Truck Centre. This anchor tenant relationship has opened the door in London for both highway trucking and surrounding commercial fleets to consider moving into cleaner, renewable fuel options like CNG and renewable natural gas (RNG); and
- All the trucks being recommended in this report will be powered by CNG instead of the traditional diesel-powered trucks. Fuel switching to CNG reduces emissions and noise, removes toxic diesel exhaust pollutants from the air, enhances lifecycle of the assets, and is less expensive and more stable than diesel fuel pricing.

Green Bin Organic Collection Update

- An RFP is nearing completion and will be released shortly to select a company or companies to supply a kitchen container for indoor use to recover organics; supply and deliver to London homes a Green Bin curbside container (approximate size 45 litres); and supply and deliver a larger Green Bin curbside container (approximate size 80 litres or 120 litres) potentially for use in some townhome complexes where a smaller Green Bin is not practical;
- An RFP is nearing completion and will be released shortly to select a processor for Green Bin materials;
- Work is underway on a short-term alternative plan to start organic material diversion from a select number of apartment buildings to serve as a pilot project while a mixed waste processing solution is still being considered. This will be subject of a future report to Civic Works Committee;
- A dedicated campaign on food waste avoidance is being planned alongside actions being developed for the Climate Emergency Action Plan; and
- Work is underway on the potential of additional plastics recycling and recovery; increasing opportunities for textiles recycling; and increasing opportunities to divert bulky items including mattresses, furniture and carpet.

2.0 Discussion and Considerations

Based on the background above, an RFP was initiated by Fleet Planning after consultation with staff in Waste Management with an objective of acquiring twenty-six (26) CNG Split Stream Rear Loading Waste Collection Trucks.

As part of the packer assessment and replacement process, Waste Management, Fleet Planning and Fleet Maintenance teams were involved in the development and evaluation criteria of the RFP for vehicle specifications and operational requirements. Corporate Health and Safety were consulted around safety and ergonomic design of vehicles. Purchasing and Supply leads the process.

2.1 Purchasing Process

To maximize the competitive process an RFP process was chosen as the procurement method. An RFP format allowed interested bidders to showcase their products and solutions and provided the best method to ensure City specifications, expectations and value-added criteria were considered and evaluated.

Fleet and Operational Services initiated the RFP process on June 9, 2021, with Purchasing and Supply. The RFP closed on July 13, 2021, and six (6) bids were received and evaluated.

2.2 Evaluation and Results

The evaluation team was chaired by a Purchasing and Supply and consisted of staff representing Fleet and Operational Services, Waste Collection Operations and Climate Change, Environment & Waste Management. The following evaluation criteria was used to evaluate the submissions:

- Company Certification, Experience and Past Performance
- Specifications - Mandatory Requirements for both chassis and body
- Service Support, Delivery, Training, and Warranty
- Delivery schedule
- Price

After evaluation of the criteria and scoring of the six submissions, London Machinery Inc. was the winning bid having met the terms and conditions and in the view of the evaluation team offering the best overall value to the City of London. The recommended submission from London Machinery Inc. offers a Peterbilt 548 Cab and Chassis with a McNeilus 2566 split stream rear load body configuration.

Optional items identified in the submission that were negotiated include:

- increasing the CNG fuel tank storage capacity up to 75 DGE (Diesel Gallon Equivalent),
- extending the term of warranty coverage available for the engine and transmission components to five (5) years,
- adding towing coverage for the five (5) year warranty period, and
- purchasing and installing cart tippers on ten (10) of the split stream units.

2.3 Disposal of Decommissioned Units

The optimum life cycle is determined considering both the performance, reliability, and maintenance/repair cost aspects of aging equipment as well as the best time to remarket these assets for maximum resale values. Fleet Services in conjunction with the Manager of Purchasing and Supply evaluate various trade/sell options to provide the best value to the City. Retiring Fleet assets have a target salvage value of 15% (on average) based on experience.

Based on review of the trade options provided in the RFP, Fleet Planning in consultation with Purchasing and Supply will not be accepting the trade options submitted. All the decommissioned packers will be sold at public auction with the proceeds being utilized to help offset the cost of purchasing these units. The existing units will be decommissioned and disposed of after the new units arrive.

Trade in values were requested in the RFP as an optional item and did not directly form part of the bid selection criteria.

2.4 Extended Period of Time Required to Receive Vehicles

Ten (10) of these units are up now for replacement due to normal lifecycle renewal. The remaining units are made up of eight (8) existing single stream packers that will be retired early and eight (8) additional units to meet the Green Bin organic collection plan.

All existing units will remain in service as the replacement trucks are being built which is estimated to be between 14-16 months. The reason for the longer than normal build time is associated with market and manufacturing recovery challenges from the pandemic. Raw material shortages, production delays, labour challenges and backlog of orders are all impacting delivery times, order schedules and costs.

The supply chain challenges identified in this report for vehicle and equipment orders and delivery are consistent with many different manufacturing operations including the manufacture and delivery of green bins for organics collection. These pandemic-related challenges that exist in most parts of the world make it very challenging for manufacturers to predict exact delivery dates.

2.5 Tentative Rollout Plan for the Green Bin Program

It is currently anticipated that the Green Bin program rollout will begin as previously scheduled in fall 2022; however, it will be required to roll out over a longer period of time to match when collection vehicles will be delivered and ready for use.

In a report to CWC in November 2020 and approved in the 2021 Multi-year Budget Update (January 2021), the Green Bin implementation schedule was revised to a “Tentative start date roll-out in summer/early Fall 2022”. With the estimated build and delivery dates supplied by the recommended bidder, London Machinery Inc. now known, the rollout schedule phases beginning in September 2022 are tentatively set as follows:

Phase	Target Dates for Start-up of Green Bin Program	Approximate Number of Homes to be Served	Area of London
1 Note A	Early September, 2022	6,500	Lambeth, River Bend, rural and small community areas on the west/south side of London
Note B			Mid-November, 2020 – Collection Zone Adjustments
2	Mid-November, 2022	60,000	To be determined
3	Mid-January, 2023	60,000	To be determined

Table Notes:

A Green Bin and Blue Box will be weekly. Garbage collection will be collected every two weeks.

B All remaining areas shift to the new schedule based on 5 Collection Zones (instead of the current 6 Collection Zones).

Further details on the rollout schedule will be the subject of a future report to CWC when the results of the Green Bin cart RFP and processing of Green Bin materials are known in the fall of this year.

In addition, City staff are looking at a proposed opportunity to introduce source separated organics collection at 10 buildings (about 1,500 units) as part of a pilot project as the proposed mixed waste processing solution in Ontario is not operational at this time. This will be subject of a future report to CWC and require Council approval.

3.0 Financial Impact

3.1 Project Budget

Fleet and Operational Services set the project estimated capital budget at \$425,000 per truck for a total expected budget of \$11,050,000 excluding HST for twenty-six (26) trucks.

The recommended bid from London Machinery Inc. (LMI) has a base price of \$396,788 (excluding HST) per truck. Including the options of extended warranty, towing coverage and 75 DGE (Diesel Gallon Equivalent) fuel tank system the total price for sixteen of the units will be \$410,655 (excluding HST) per unit.

The remaining ten units will have the options identified above but will also be outfitted with Green Bin cart tippers. The total cost for those units being recommended is \$418,504 (excluding HST) per unit.

In summary the total cost for the purchase of the twenty-six (26) units with options will be \$10,755,520 (excluding HST) which is within the estimated budget for this purchase.

3.2 Project Funding

Funding details for this procurement are outlined in the Source of Financing (Appendix A).

Eighteen (18) of the twenty-six (26) waste collection trucks that are, or soon will be, up for lifecycle renewal will be funded using the approved Fleet capital replacement budget supplemented with additional funding from the approved Green Bin capital budget.

Capital requirements for the eight (8) additional units will be fully funded from the approved Green Bin capital budget as these units are all additional fleet assets being purchased to support organic waste collection needs.

The Green Bin capital budget is significantly funded from the Canada Community-Building Fund (formerly the Federal Gas Tax program).

Future capital and operating budgets will be impacted by the changes to the existing assets and the addition of more packers. Fleet Services have calculated the expected operational, fuel, maintenance and future replacement capital requirements. Rental rates for the Waste Management program will be adjusted accordingly beginning upon delivery (Fall of 2022). On an annual basis those rental rate costs will be evaluated and adjusted as required as more actual cost experience is acquired.

It is expected there will be lower maintenance costs with the CNG engine configuration, and the purchase of the 5-year extended warranty on both the engine and transmission will help offset the additional operating costs going forward.

As well, research indicates with the cleaner burning CNG engine it is very likely these assets can be extended for an additional year of lifecycle (up to 10 years) which will also help to support the costs to the program.

Fuel savings from CNG during the start up years will be going to pay back the loan from the Operating, Efficiency, Effectiveness and Economy Reserve Fund (EEE) for the CNG maintenance facility modifications required at Exeter Road Operations Centre.

Conclusion

Based on the analysis and evaluation of the submissions received, Fleet Services in conjunction with Solid Waste Management recommend that RFP 21-37 be awarded to London Machinery Inc., 15790 Robin's Hill Rd. London, Ontario N5V 0A4 for the supply and delivery of CNG Split Stream Rear Loading Waste Collection Trucks.

The recommendation provides the best overall value to the City of London having met the operational requirements, terms, and conditions of the RFP, scored the highest on the evaluation criteria, and is within the estimated budget established for the project.

Prepared by: Mike Bushby, B.A.
Division Manager, Fleet and Facilities Division
Finance Supports

Concurred by: Jay Stanford, MA, MPA
Director, Climate Change, Environment & Waste
Management, Environment & Infrastructure

Concurred by: Tim Wellhauser, CIM
Director, Fleet and Facilities
Finance Supports

Concurred by: Kelly Scherr, P.Eng., MBA, FEC
Deputy City Manager
Environment and Infrastructure

Recommended by: Anna Lisa Barbon, CPA, CGA
Deputy City Manager
Finance Supports

Attached: Appendix A – Source of Financing

Appendix "A"

#21152

August 31, 2021

(Award Consultant)

Chair and Members
Civic Works Committee

RE: RFP21-37 Supply and Delivery of CNG Split Stream Rear Loading Waste Collection Trucks

(Work Orders 2530316-2530331, 2487253-2487261, 2487274)

Capital Project ME202001 - Vehicles and Equipment Replacement - TCA

Capital Project SW6050 - New and Emerging Solid Waste Technologies

London Machinery Inc. - \$10,755,520.00 (excluding HST)

Finance and Corporate Services Report on the Sources of Financing:

Finance and Corporate Services confirms that the cost of this project can be accommodated within the financing available for it in the Capital Budget and that, subject to the approval of the Deputy City Manager, Environment and Infrastructure, the detailed source of financing is:

Estimated Expenditures	Approved Budget	Committed To This Date	This Submission	Balance for Future Work
ME202001 - Vehicles and Equipment Replacement - TCA				
Vehicles and Equipment	6,000,312	2,489,248	2,906,000	605,064
SW6050 - New and Emerging Solid Waste Technologies				
Consulting	1,000,000	309,341	0	690,659
Construction	26,961,182	0	0	26,961,182
Vehicles and Equipment	8,038,818	0	8,038,818	0
SW6050 Total	36,000,000	309,341	8,038,818	27,651,841
Total Expenditures	\$42,000,312	\$2,798,589	\$10,944,818	\$28,256,905
Sources of Financing				
ME202001 - Vehicles and Equipment Replacement - TCA				
Capital Levy	701,267	201,267	500,000	0
Drawdown from Fleet Renewal Reserve Fund	5,183,927	2,172,863	2,406,000	605,064
Drawdown from Self Insurance Reserve Fund	115,118	115,118	0	0
ME202001 Total	6,000,312	2,489,248	2,906,000	605,064
SW6050 - New and Emerging Solid Waste Technologies				
Debenture Quota	11,700,000	0	0	11,700,000
Drawdown from Solid Waste Renewal Reserve Fund	16,351,532	309,341	90,350	15,951,841
Canada Community-Building Fund (Federal Gas Tax)	7,948,468	0	7,948,468	0
SW6050 Total	36,000,000	309,341	8,038,818	27,651,841
Total Financing	\$42,000,312	\$2,798,589	\$10,944,818	\$28,256,905

Appendix "A"

#21152
August 31, 2021
(Award Consultant)

Chair and Members
Civic Works Committee

RE: RFP21-37 Supply and Delivery of CNG Split Stream Rear Loading Waste Collection Trucks
(Work Orders 2530316-2530331, 2487253-2487261, 2487274)
Capital Project ME202001 - Vehicles and Equipment Replacement - TCA
Capital Project SW6050 - New and Emerging Solid Waste Technologies
London Machinery Inc. - \$10,755,520.00 (excluding HST)

Financial Note:	ME202001	SW6050	Total
Contract Price	\$2,855,739	\$7,899,781	\$10,755,520
Add: HST @13%	371,246	1,026,972	1,398,218
Total Contract Price Including Taxes	3,226,985	8,926,753	12,153,738
Less: HST Rebate	-320,985	-887,935	-1,208,920
Net Contract Price	\$2,906,000	\$8,038,818	\$10,944,818

Jason Davies
Manager of Financial Planning & Policy

lp

Report to Civic Works Committee

To: Chair and Members
Civic Works Committee

From: Anna Lisa Barbon, CPA, CGA, Deputy City Manager, Finance Supports

Subject: COVID-19 Resilience Infrastructure Stream – Local Government Intake – Transfer Payment Agreement

Date: August 31, 2021

Recommendation

That, on the recommendation of the Deputy City Manager, Finance Supports, the attached proposed by-law (Appendix “A”) **BE INTRODUCED** at the Municipal Council meeting on September 14, 2021, to:

- (a) approve the Transfer Payment Agreement for the Investing in Canada Infrastructure Program (ICIP): COVID-19 Resilience Infrastructure Stream – Local Government Intake between Her Majesty the Queen in Right of Ontario as represented by the Minister of Infrastructure for the Province of Ontario and The Corporation of the City of London (the “Agreement”);
- (b) authorize the Mayor and the City Clerk to execute the Agreement;
- (c) delegate authority to the Deputy City Manager, Finance Supports to approve further Amending Agreements to the Agreement;
- (d) authorize the Mayor and the City Clerk to execute any amendments to the Agreement approved by the Deputy City Manager, Finance Supports; and,
- (e) authorize the Deputy City Manager, Finance Supports (or delegate) to execute any financial reports required under this Agreement.

Executive Summary

On August 5, 2020, the Federal Government announced a new funding program to help provinces and territories with social and economic recovery from the health and economic crisis brought on by COVID-19. On October 29, 2020, the Province of Ontario announced that London’s allocation under the COVID-19 Resilience Infrastructure Stream was \$5,520,798. On December 21, 2020, Civic Administration submitted applications for three Active Transportation projects and one Facilities project equal to the total amount of the allocation. The Facilities project was approved in March 2021 and the three Active Transportation projects were approved in May 2021. Work has been proceeding on these projects since approval.

This report introduces a by-law to authorize the Mayor and the City Clerk to execute the Transfer Payment Agreement and any future amending agreements between the Her Majesty the Queen in Right of Ontario as represented by the Minister of Infrastructure for the Province of Ontario and The Corporation of the City of London with respect to the COVID-19 Resilience Infrastructure Stream – Local Government Intake.

Linkage to the Corporate Strategic Plan

The following report supports the Strategic Plan through the strategic focus area of “Building a Sustainable City”, under the outcome of ensuring London’s infrastructure is built, maintained and operated to meet the long-term needs of our community.

Provincial investments supporting active transportation and recreational infrastructure in London represent important contributions to maintaining and improving the quality of life of all Londoners.

Analysis

1.0 Background Information

1.1 Previous Reports Related to this Matter

Civic Works Committee, November 17, 2020, Agenda Item 2.9, Active Transportation Infrastructure Plan. The report can be found on the City's website by visiting:

<https://pub-london.escribemeetings.com/filestream.ashx?DocumentId=75944>

2.0 Financial Impact/Considerations

On August 5, 2020, the Federal Government announced a new funding program to help provinces and territories with social and economic recovery from the health and economic crisis brought on by COVID-19. Funding previously set aside for the Green Infrastructure Stream under the Investing in Canada Infrastructure Program (ICIP) was reallocated to provide municipalities with access to federal funding to act quickly on pandemic-resilient infrastructure priorities. This new stream will provide \$1.05 billion in combined federal and provincial funding for Ontario's 444 municipalities.

On October 29, 2020, the Province of Ontario announced that London's allocation under the COVID-19 Resilience Infrastructure Stream was \$5,520,798. Program criteria restricted funding to community, recreation, health and education facility renovations; COVID-19 response infrastructure; active transportation; and disaster mitigation, adaptation, or remediation.

The Government of Canada will contribute 80% of project costs with 20% of project costs covered by Ontario. Municipalities are not required to match any percentage of funding for this program. Construction was to start no later than September 30, 2021, and the projects were to be completed by the end of 2021.

On November 17, 2020, the Civic Works Committee received a report regarding the Active Transportation Infrastructure Plan which presented a summary of active transportation infrastructure projects that were anticipated to be eligible for submission to available federal/provincial funding programs, including but not limited to the COVID-19 Resilience Infrastructure Stream. On November 17, 2020, the Province began accepting applications for this program, with a closing date of January 7, 2021.

On November 24, 2020, Municipal Council resolved:

That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer and the Managing Director, Parks and Recreation, the following actions be taken with respect to the staff report dated November 17, 2020, related to the Active Transportation Infrastructure Plan:

- a) *the summary of active transportation infrastructure projects, outlined in the above-noted staff report, that are anticipated to be eligible for submission to available federal/provincial funding programs, including but not limited to the COVID-19 Resilience Infrastructure Stream, BE RECEIVED;*
- b) *given that the intake for the COVID-19 Resilience Infrastructure Stream (RIS) is opening imminently and there is a need to act quickly to design, consult on and construct active transportation projects and undertake recreational facility upgrade projects, the Civic Administration BE DIRECTED to submit the following for consideration under the RIS:*
 - i) *active transportation projects totalling \$3.5 million; and,*
 - ii) *recreational facilities projects totalling \$2 million to upgrade aging HVAC equipment at Carling Arena and the Stronach Community Recreation Centre; it being noted that these upgrades will reduce energy costs, address climate change initiatives and maintain high levels of ventilation;*
- c) *the Civic Administration BE DIRECTED to take the necessary steps to reallocate the \$2 million of municipal funding currently budgeted for the above-noted HVAC replacement projects for use as the municipal contribution under the Public Transit Stream (PTS) for active transportation projects, resulting in funds being allocated to the above- noted projects through both funding streams; and,*

d) the remaining identified projects BE CONSIDERED for other available federal/provincial funding programs.

On December 21, 2020, Civic Administration submitted applications for three Active Transportation projects and one Facilities project. On March 12, 2021, the Facilities project was approved and on May 7, 2021, the three Active Transportation projects were approved (see **Appendix B - COVID-19 Resilience Infrastructure Stream - City of London Approved Projects** for details). According to the resolution, \$1.75 million, the revised amount of the Facilities project based on an updated calculation of eligible costs, was set aside for use as the municipal contribution under the Public Transit Stream (PTS) for active transportation projects. Work has been proceeding on these four projects since approval.

On August 10, 2021, the Province forwarded the transfer payment agreement covering all four approved projects. On August 12, 2021, Civic Administration was notified that the bilateral agreement between Ontario and Canada was amended. The construction start and end dates for the COVID-19 Resilience Infrastructure Stream were extended to September 30, 2023 and December 31, 2023 respectively.

The purpose of this report is to present for approval the transfer payment agreement between Her Majesty the Queen in Right of Ontario as represented by the Minister of Infrastructure for the Province of Ontario and The Corporation of the City of London with respect to the Investing in Canada Infrastructure Program (ICIP): COVID-19 Resilience Infrastructure Stream – Local Government Intake and to introduce a by-law to authorize the Mayor and the City Clerk to execute the agreement and any future amending agreements.

It should be noted that Article 9.2 – Indemnity requires the City to indemnify and hold harmless the Province from and against any loss or proceeding, unless solely caused by the Province’s negligence or wilful misconduct. Although this clause exposes the City to risk, the benefits of the Agreement outweigh the risks. Risk has confirmed the City can meet the insurance requirements in the Agreement.

As is standard in the provincial transfer payment agreements, the Agreement could be terminated on at least 30 days notice and the province could cancel all further installments of the Funds and demand the payment of any Funds plus any Interest Earned remaining in the possession or control of the City.

Conclusion

On October 29, 2020, the Province of Ontario announced that London’s allocation under the COVID-19 Resilience Infrastructure Stream was \$5,520,798. On December 21, 2020, Civic Administration submitted applications for three Active Transportation projects and one Facilities project. The Facilities project was approved in March 2021 and the three Active Transportation projects were approved in May 2021. Work has been proceeding on these projects since approval.

This report introduces a by-law to seek approval of the Transfer Payment Agreement between the Her Majesty the Queen in Right of Ontario as represented by the Minister of Transportation for the Province of Ontario and The Corporation of the City of London with respect to the COVID-19 Resilience Infrastructure Stream – Local Government Intake and authorize the Mayor and the City Clerk to execute the agreement and any future amending agreements.

Prepared by: Alan Dunbar, CPA, CGA, Manager, Financial Planning & Policy

Reviewed by: Kyle Murray, CPA, CA, Director, Financial Planning & Business Support

Recommended by: Anna Lisa Barbon, CPA, CGA, Deputy City Manager, Finance Supports

Appendix “A”

Bill No.
2021

By-law No.

A by-law to approve the Transfer Payment Agreement for Investing in Canada Infrastructure Program (ICIP): COVID-19 Resilience Infrastructure Team – Local Government Intake Stream Projects between Her Majesty the Queen in right of Ontario as represented by the Minister of Infrastructure for the Province of Ontario and The Corporation of the City of London (“Agreement”) and authorize the Mayor and City Clerk to execute the Agreement and any future amending agreements

WHEREAS subsection 5(3) of the *Municipal Act, 2001*, S.O. 2001, c. 25, as amended, provides that a municipal power shall be exercised by by-law;

AND WHEREAS section 9 of the *Municipal Act, 2001* provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act;

AND WHEREAS subsection 10(1) of the *Municipal Act, 2001* provides that a municipality may provide any service or thing that the municipality considers necessary or desirable for the public;

AND WHEREAS subsection 10(2) of the *Municipal Act, 2001* provides that a municipality may pass by-laws respecting, among other things: i) economic, social and environmental well-being of the municipality, including respecting climate change; and ii) financial management of the municipality;

NOW THEREFORE the Municipal Council of The Corporation of the City of London enacts as follows:

1. The Transfer Payment Agreement for Investing in Canada Infrastructure Program (ICIP): COVID-19 Resilience Infrastructure Team – Local Government Intake Stream Projects between Her Majesty the Queen in right of Ontario as represented by the Minister of Infrastructure for the Province of Ontario and The Corporation of the City of London (“Agreement”) attached as Schedule “1” to this by-law is hereby authorized and approved.
2. The Mayor and the City Clerk are hereby authorized to execute the Agreement authorized and approved under section 1 of this by-law.
3. The Deputy City Manager, Finance Supports is hereby authorized to approve amending agreements to the Agreement provided it does not increase the indebtedness or liabilities of The Corporation of the City of London under the Agreement.
4. The Mayor and City Clerk are hereby authorized to execute any amending agreements approved by the Deputy City Manager, Finance Supports under section 3 of this by-law.
5. The Deputy City Manager, Finance Supports, or their delegate, is hereby authorized to execute any financial reports required as a condition under the Agreement.

6. This by-law shall come into force and effect on the day it is passed.

PASSED in Open Council on September 14, 2021

Ed Holder
Mayor

Catharine Saunders
City Clerk

First Reading – September 14, 2021
Second Reading – September 14, 2021
Third Reading – September 14, 2021

**TRANSFER PAYMENT AGREEMENT
FOR THE INVESTING IN CANADA INFRASTRUCTURE PROGRAM (ICIP):
COVID-19 RESILIENCE INFRASTRUCTURE STREAM – LOCAL GOVERNMENT INTAKE**

THIS TRANSFER PAYMENT AGREEMENT for Investing in Canada Infrastructure Program (ICIP): COVID-19 Resilience Infrastructure Stream – Local Government Intake Stream Projects (the “**Agreement**”) is effective as of the Effective Date.

B E T W E E N:

Her Majesty the Queen in right of Ontario,
as represented by the Minister of Infrastructure

(“**Ontario**” or the “**Province**”)

- and -

Corporation of The City of London

(CRA# 119420883)

(the “**Recipient**”)

BACKGROUND

The Investing in Canada Infrastructure Program (“ICIP”) is a federal infrastructure program designed to create long-term economic growth, build inclusive, sustainable and resilient communities, and support a low-carbon economy.

The Government of Canada (“**Canada**”) announced, in its *Budget 2016* and *Budget 2017*, over \$180 billion for the ICIP to support sustainable and inclusive communities, while driving economic growth.

The Honourable Minister of Infrastructure and Communities and the Honourable Minister of Infrastructure entered into the Canada-Ontario Integrated Bilateral Agreement for the Investing in Canada Infrastructure Program for Canada to provide financial support to the Province.

Under the Bilateral Agreement, Canada agrees, amongst other things, to provide contribution funding to the Province under the COVID-19 Resilience Infrastructure stream of ICIP. This stream supports projects that support COVID-19 response and economic recovery efforts.

Also, under the Bilateral Agreement, Ontario agrees to identify projects and be responsible for the transfer of ICIP and provincial funds to eligible recipients pursuant to transfer payment agreements.

The Recipient has applied to the Province for ICIP funds to assist the Recipient in carrying out COVID-19 Resilience Infrastructure Stream – Local Government Intake stream projects.

The Province has submitted to Canada for approval and the Province and Canada have approved, in accordance with the terms and conditions set out in the Bilateral Agreement, the Projects as set out in Schedule “C” (Project Description, Financial Information, and Project Standards).

The Agreement sets out the terms and conditions upon which ICIP funds, up to the Maximum Funds, will be provided to the Recipient for carrying out each Project.

CONSIDERATION

In consideration of the mutual covenants and agreements contained in the Agreement and for other good and valuable consideration, the receipt and sufficiency of which are expressly acknowledged, the Province and the Recipient agree as follows:

1.0 ENTIRE AGREEMENT

1.1 **Schedules to the Agreement.** The following schedules and their sub-schedules form part of the Agreement:

Schedule “A” - General Terms and Conditions

Schedule “B” - Specific Information

Schedule “C” - Project Description, Financial Information, and Project Standards

- Sub-Schedule “C.1” Project Description and Financial Information

Schedule “D” - Reports

Schedule “E” - Eligible Expenditures and Ineligible Expenditures

Schedule “F” - Evaluation

Schedule “G” - Communications Protocol

Schedule “H” - Disposal of Assets

Schedule “I” - Aboriginal Consultation Protocol

Schedule “J” - Requests for Payment and Payment Procedures

Schedule “K” - Committee

1.2 **Entire Agreement.** The Agreement constitutes the entire agreement between the Parties in respect to the subject matter contained in the Agreement and supersedes all prior oral or written representations and agreements save and except for the Bilateral Agreement, which shall apply in accordance with section Subsection 2.1.

2.0 CONFLICT OR INCONSISTENCY

- 2.1 **Conflict or Inconsistency.** In the event of a conflict or inconsistency between any of the requirements of:
- (a) the Bilateral Agreement and the Agreement, the Bilateral Agreement will prevail to the extent of the conflict or inconsistency;
 - (b) the main body of the Agreement and any of the requirements of a schedule or a sub-schedule, the main body of the Agreement will prevail to the extent of the conflict or inconsistency;
 - (c) Schedule “A” (General Terms and Conditions) and any of the requirements of another schedule or a sub-schedule, Schedule “A” (General Terms and Conditions) will prevail to the extent of the conflict or inconsistency; or
 - (d) a schedule and any of the requirements of a sub-schedule, the schedule will prevail to the extent of the conflict or inconsistency.

3.0 EXECUTION, DELIVERY AND COUNTERPARTS

- 3.1 **One and the Same Agreement.** The Agreement may be executed in any number of counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.
- 3.2 **Electronic Execution and Delivery of Agreement.** The Parties agree that the Agreement may be validly executed electronically, and that their respective electronic signature is the legal equivalent of a manual signature. The electronic or manual signature of a Party may be evidenced by one of the following means and transmission of the Agreement may be as follows:
- (i) a manual signature of an authorized signing representative placed in the respective signature line of the Agreement and the Agreement delivered by facsimile transmission to the other Party;
 - (ii) a manual signature of an authorized signing representative placed in the respective signature line of the Agreement and the Agreement scanned as a Portable Document Format (PDF) and delivered by email to the other Party;
 - (iii) a digital signature, including the name of the authorized signing representative typed in the respective signature line of the Agreement, an image of a manual signature or an Adobe signature of an authorized signing representative, or any other digital signature of an authorized signing representative, placed in the respective signature line of the Agreement and the Agreement delivered by email to the other Party; or

- (iv) any other means with the other Party's prior written consent.

4.0 AMENDING THE AGREEMENT AND AGREEMENT REVIEW

- 4.1 **Amending the Agreement.** The Agreement may only be amended by a written agreement duly executed by the Parties.
- 4.2 **Agreement Review.** If, pursuant to section 25.10 (Review of Agreement) of the Bilateral Agreement, the Bilateral Agreement is reviewed after three or five years, or both, of the effective date of the Bilateral Agreement, and any changes to the Bilateral Agreement are required as a result, the Parties agree to amend the Agreement as necessary and in a manner that is consistent with such changes.

5.0 ACKNOWLEDGEMENT

- 5.1 **Acknowledgement from Recipient.** The Recipient acknowledges, in respect of the Projects, that:
 - (a) the Funds are to assist the Recipient to carry out the Projects and not to provide goods or services to the Province or Canada;
 - (b) the Province and Canada are not responsible for carrying out the Projects;
 - (c) the Province's and Canada's role in respect of the Projects is limited to making a financial contribution to the Recipient for the Projects, and the Province and Canada are not involved in the Projects or their operation;
 - (d) the Province and Canada are neither decision-makers nor administrators in respect of the Projects;
 - (e) the Province is bound by the *Freedom of Information and Protection of Privacy Act* (Ontario) and any information provided to the Province in connection with the Projects or otherwise in connection with the Agreement may be subject to disclosure in accordance with that Act;
 - (f) Canada is bound by the *Access to Information Act* (Canada) and any information provided to Canada by either the Province or the Recipient in connection with the Projects or otherwise in connection with the Agreement may be subject to disclosure in accordance with that Act;
 - (g) by receiving Funds, the Recipient may be subject to legislation applicable to organizations that receive funding from the Government of Ontario, including the

Broader Public Sector Accountability Act, 2010 (Ontario), the Public Sector Salary Disclosure Act, 1996 (Ontario), and the Auditor General Act (Ontario); and

(h) the Recipient has read and understood the Bilateral Agreement.

5.2 **Acknowledgement from Province.** The Province acknowledges that the Recipient may be bound by the *Municipal Freedom of Information and Protection of Privacy Act* (Ontario) and any information provided to the Recipient in connection with the Projects or otherwise in connection with the Agreement may be subject to disclosure in accordance with that Act.

6.0 CANADA'S RIGHTS AND INFORMATION SHARING WITH CANADA

6.1 **Third Party Beneficiary.** The Recipient agrees that, although the Agreement is between the Province and the Recipient, Canada is, in respect of the rights, covenants, remedies, obligations, indemnities, and benefits (together referred to as "**Rights**") undertaken or given to Canada in the Agreement, a third party beneficiary under the Agreement and is entitled to rely upon and directly enforce those Rights as if Canada were a party to the Agreement.

6.2 **Sharing of Information with the Province and Canada.** The Recipient agrees that, consistent with section 6.1 (Third Party Beneficiary) and for the implementation of the Bilateral Agreement:

- (a) the Province or Canada, or both, and in respect of Canada either directly or through the Province, may, upon Notice to the Recipient, request additional information from the Recipient including, without limitation, information for any determination under Article A.27.0 (Environmental Requirements and Assessments) and Article A.28.0 (Aboriginal Consultation);
- (b) if the Province or Canada, or both, provide the Recipient with Notice under paragraph 6.2(a), the Recipient will, within the timelines set out in the Notice, deliver the information to either the Province or Canada, or both, as required; and
- (c) the Province or Canada, or both, may share any information received from the Recipient pursuant to the Agreement with each other.

[SIGNATURE PAGE FOLLOWS]

The Parties have executed the Agreement on the dates set out below.

HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO, as represented by the Minister of Infrastructure

Date

The Honourable Kinga Surma
Minister of Infrastructure

AFFIX
CORPORATE
SEAL

CORPORATION OF THE CITY OF LONDON

Date

Name:
Title:

I have authority to bind the Recipient.

Date

Name:
Title:

I have authority to bind the Recipient.

[SCHEDULE "A" – GENERAL TERMS AND CONDITIONS FOLLOWS]

**SCHEDULE “A”
GENERAL TERMS AND CONDITIONS**

A.1.0 INTERPRETATION AND DEFINITIONS

A.1.1 **Interpretation.** For the purposes of interpretation:

- (a) words in the singular include the plural and vice-versa;
- (b) words in one gender include all genders;
- (c) the background and headings do not form part of the Agreement; they are for information and reference only and will not affect the interpretation of the Agreement;
- (d) any reference to dollars or currency will be in Canadian dollars and currency;
- (e) “shall” and “will” are used interchangeably in the Agreement and denote the same affirmative and imperative obligation on the applicable Party.
- (f) all accounting terms not otherwise defined in the Agreement have their ordinary meanings; and
- (g) “include”, “includes”, and “including” denote that the subsequent list is not exhaustive.

A.1.2 **Definitions.** In the Agreement, the following terms have the following meanings:

“Aboriginal Community” has the meaning ascribed to it in section I.1.1 (Definitions).

“Aboriginal Consultation Record” means the Aboriginal Consultation Record described in section I.3.1 (Requirements for Aboriginal Consultation Record).

“Agreement” means this agreement entered into between the Province and the Recipient, all of the schedules and sub-schedules listed in section 1.1 (Schedules to the Agreement), and any amending agreement entered into pursuant to section 4.1 (Amending the Agreement).

“Asset” means any real or personal property, or immovable or movable asset, acquired, purchased, constructed, rehabilitated, or improved, in whole or in part, with any of the Funds.

“Authorities” means any government authority, agency, body or department having or claiming jurisdiction over the Agreement or the Projects, or both.

“Bilateral Agreement” means the Canada-Ontario Integrated Bilateral Agreement for the Investing in Canada Infrastructure Program entered into between Canada and Her Majesty the Queen in right of Ontario, effective as of March 26, 2018, as amended.

“Business Day” means any working day the Province is open for business, Monday to Friday inclusive, excluding statutory and other holidays, namely: New Year’s Day; Family Day; Good Friday; Easter Monday; Victoria Day; Canada Day; Civic Holiday; Labour Day; Thanksgiving Day; Remembrance Day; Christmas Day; Boxing Day; and any other day on which the Province is not open for business.

“Canada” means, unless the context requires otherwise, Her Majesty the Queen in right of Canada.

“Canada’s Maximum Contribution” means, for each Project, the maximum contribution from Canada as set out in Sub-schedule “C.1” (Project Description and Financial Information).

“Committee” refers to a Committee established pursuant to section A.29.1 (Establishment of Committee).

“Communications Activities” means, but is not limited to, public or media events or ceremonies including key milestone events, news releases, reports, web and social media products or postings, blogs, news conferences, public notices, physical and digital signs, publications, success stories and vignettes, photos, videos, multi-media content, advertising campaigns, awareness campaigns, editorials, multi-media products, and all related communication materials under the Agreement.

“Construction Start” means the performance of physical activities in relation to the Project which results in changes which are visible to any person inspecting the site and are recognizable as the initial steps for the preparation of the land or the installation of improvements of fixtures, unless otherwise approved by Canada.

“Contract” means a contract between the Recipient and a Third Party whereby the Third Party agrees to supply goods or services, or both, in respect of any Project in return for financial consideration.

“Effective Date” means the date of signature by the last signing party to the Agreement.

“Eligible Expenditures” means the costs in respect of each Project that the Recipient has incurred and paid and that are eligible for payment under the terms and conditions of the Agreement, and that are further described in Schedule “E” (Eligible Expenditures and Ineligible Expenditures).

“Environmental Laws” means all applicable governmental, regulations, by-laws, orders, rules, policies, or guidelines respecting the protection of the natural

environment or the public, and the manufacture, importation, handling, transportation, storage, disposal, and treatment of environmental contaminants and includes, without limitation, the *Environmental Protection Act* (Ontario), *Environmental Assessment Act* (Ontario), *Ontario Water Resources Act* (Ontario), *Canadian Environmental Protection Act, 1999* (Canada), *Canadian Environmental Assessment Act, 2012* (Canada), *Fisheries Act* (Canada), the *Impact Assessment Act* (Canada), and the *Canadian Navigable Waters Act* (Canada).

“Evaluation” means an evaluation in respect of any Project, the Projects or the ICIP as described in Article F.1.0 (Project and ICIP Evaluations).

“Event of Default” has the meaning ascribed to it in section A.12.1 (Events of Default).

“Expiration Date” means the expiry date set out in Schedule “B” (Specific Information).

“Federal Approval Date” means the date on which Canada has approved each Project identified in Sub-Schedule “C.1” (Project Description and Financial Information).

“Funding Year” means:

- (a) in the case of the first Funding Year, the period commencing on the Effective Date and ending on the following March 31; and
- (b) in the case of Funding Years subsequent to the first Funding Year, the period commencing on April 1 following the end of the previous Funding Year and ending on the following March 31 or the Expiration Date, whichever comes first.

“Funds” means the money the Province provides to the Recipient pursuant to the Agreement.

“Holdback” means the Holdback described in and to be paid in accordance with section A.4.12 (Retention of Contribution) and Article J.6.0 (Holdback).

“ICIP” means the Investing in Canada Infrastructure Program, a federal infrastructure program described in the first paragraph of the “Background” to the Agreement.

“Indemnified Parties” means Her Majesty the Queen in right of Ontario and Her Majesty the Queen in right of Canada, and includes their respective ministers, officers, servants, agents, appointees and employees.

“Ineligible Expenditures” means the costs in respect of each Project that are ineligible for payment under the terms and conditions of the Agreement, and that are

described in Schedule “E” (Eligible Expenditures and Ineligible Expenditures).

“Interest or Interest Earned” means the amount of money earned by the Recipient from placing the Funds in an interest bearing account as set out under section A.4.4 (Interest-Bearing Account) of Schedule “A” of this Agreement, and includes any and all interest or other income generated from the Funds.

“Loss” means any cause of action, liability, loss, cost, damage, or expense (including legal, expert, and consultant fees) that anyone incurs or sustains as a result of or in connection with any Project or any part of the Agreement or the Bilateral Agreement.

“Maximum Funds” means the maximum Funds amount as set out in Schedule “B” (Specific Information).

“Notice” means any communication given or required to be given pursuant to the Agreement.

“Ontario’s Maximum Contribution” means, for each Project, the maximum contribution from Ontario as set out in Sub-schedule “C.1” (Project Description and Financial Information).

“Parties” means the Province and the Recipient.

“Party” means either the Province or the Recipient.

“Person” means, without limitation, a person, the Recipient, a Third Party, a corporation, or any other legal entity, and their officers, servants, employees, or agents.

“Proceeding” means any action, claim, demand, lawsuit, or other proceeding, whether in contract, tort (including negligence), or otherwise, that anyone makes, brings, or prosecutes as a result of or in connection with any Project or any part of the Agreement or the Bilateral Agreement.

“Progress Report” means the Progress Report described in Article D.1.0 (Reporting Requirements).

“Project” means any one of the undertakings described in Sub-schedule “C.1” (Project Description and Financial Information).

“Projects” means, collectively, the undertakings described in Sub-schedule “C.1” (Project Description and Financial Information).

“Records Review” means any assessment the Province conducts pursuant to section A.7.4 (Records Review).

“Remedial Period” means the period of time within which the Recipient is required to remedy an Event of Default, pursuant to paragraph A.12.3 (b), and includes any such period or periods of time by which the Province extends that time in accordance with section A.12.4 (Recipient Not Remediating).

“Reports” means the reports described in Schedule “D” (Reports).

“Requirements of Law” means all applicable requirements, laws, statutes, codes, acts, ordinances, approvals, orders, decrees, injunctions, by-laws, rules, regulations, official plans, permits, licences, authorizations, directions, and agreements with all Authorities, and includes the Environmental Laws.

“Substantial Completion” or **“Substantially Completed”** means, in respect of any Project, that the Project can be used for the purpose for which it was intended.

“Term” means the period of time described in section A.3.1 (Term).

“Third Party” means any person or legal entity, other than a Party, who participates in the implementation of any Project by means of a Contract.

“Total Financial Assistance” means for each Project, the total Project funding from all sources including, but not limited to, funding from federal, provincial, territorial, municipal, regional, band council, and Indigenous government sources; private sources; and in-kind contributions.

A.2.0 REPRESENTATIONS, WARRANTIES, AND COVENANTS

A.2.1 **General.** The Recipient represents, warrants, and covenants that, in respect of each Project:

- (a) it has, and will continue to have, the experience and expertise necessary to carry out the Project;
- (b) it is in compliance with, and will continue to comply with, all Requirements of Law related to any aspect of the Project, the Funds, or both;
- (c) unless otherwise provided for in the Agreement, any information the Recipient provided to the Province in support of its request for Funds (including, without limitation, any information relating to any eligibility requirements) was true and complete at the time the Recipient provided it and will continue to be true and complete;
- (d) the Project meets and will continue to meet all of the program’s eligibility criteria, construction conditions and the Recipient will abide by all of the Province’s and Canada’s respective requirements set out in the guidelines, including the

financial, contractual and reporting requirements;

- (e) the Project meets the outcomes of the COVID-19 Resilience Infrastructure Stream – Local Government Intake stream, being:
 - (i) To support COVID-19 response and economic recovery efforts.
- (f) The Project will be community-oriented, non-commercial in nature, and open for use to the public and not limited to a private membership; and
- (g) any Funds received have not displaced, and will continue to not displace, the Recipient's own funding and spending on public transit.

A.2.2 Execution of Agreement. The Recipient represents and warrants that it has:

- (a) the full power and authority to enter into the Agreement; and
- (b) taken all necessary actions to authorize the execution of the Agreement, in a manner that is satisfactory to the Province, including passing of a municipal by-law or council resolution authorizing the Recipient to enter into the Agreement, where required.

A.2.3 Governance. The Recipient represents, warrants, and covenants that it has, will maintain in writing, and will follow:

- (a) procedures to enable the Recipient to manage Funds prudently and effectively;
- (b) procedures to enable the Recipient to complete each Project successfully;
- (c) procedures to enable the Recipient to identify risks to the completion of each Project and strategies to address the identified risks, all in a timely manner;
- (d) procedures to enable the preparation and submission of all Reports required pursuant to Article A.7.0 (Reporting, Accounting, and Review); and
- (e) procedures to enable the Recipient to address such other matters as the Recipient considers necessary to enable the Recipient to carry out its obligations under the Agreement.

A.2.4 Supporting Proof. Upon the request of the Province, the Recipient will provide the Province with proof of the matters referred to in this Article A.2.0 (Representations, Warranties, and Covenants).

A.3.0 TERM OF THE AGREEMENT AND SUBSTANTIAL COMPLETION

A.3.1 **Term.** The term of the Agreement will commence on the Effective Date and will expire on the Expiration Date, unless terminated earlier pursuant to Article A.11.0 (Termination on Notice) or Article A.12.0 (Event of Default, Corrective Action, and Termination for Default).

A.3.2 **Substantial Completion.** The Recipient will ensure that each Project is Substantially Completed on or before December 31, 2021, or any other date subject to the prior written consent of the Province.

A.4.0 FUNDS AND CARRYING OUT THE PROJECTS

A.4.1 **Funds Provided.** The Province will:

- (a) provide the Recipient funding up to the Maximum Funds for the sole purpose of carrying out each Project;
- (b) provide the Funds to the Recipient in accordance with the request for payment and payment procedures provided for in Schedule “J” (Requests for Payment and Payment Procedures); and
- (c) deposit the Funds into an account the Recipient designates, provided that the account:
 - (i) is at a branch of a Canadian financial institution in Ontario; and
 - (ii) is solely in the name of the Recipient.

A.4.2 **Limitation on Payment of Funds.** Despite section A.4.1 (Funds Provided):

- (a) in addition to any other limitation under the Agreement on the payment of Funds, the Province is not obligated to provide:
 - (i) any Funds to the Recipient until the Recipient fulfils the special conditions listed in section A.31.1 (Special Conditions); and
 - (ii) any Funds to the Recipient until the Province and Canada are satisfied with the progress of any Project;
- (b) the Province, at its sole discretion, may adjust the amount of Funds it provides to the Recipient based upon the Province’s assessment of the information the Recipient provides to the Province pursuant to section A.7.2 (Preparation and Submission); and
- (c) any payment of Funds is subject to:

- (i) the requirements of the *Financial Administration Act* (Ontario), including the availability of an appropriation by the Ontario Legislature that is sufficient and constitutes lawful authority for the payment;
- (ii) ministerial funding levels in respect of transfer payments, the program under which the Agreement was made, or otherwise that are sufficient for the payment; and
- (iii) Canada's payment of funds to the Province, pursuant to the Bilateral Agreement, that are sufficient for the payment.

The Province, at its sole discretion, may reduce or cancel any amount of Funds or terminate the Agreement in response to a reduction or lack of federal or provincial government appropriation, ministerial funding levels, or Canada's payment of funds. Notwithstanding Article A.9.0 (Limitation of Liability and Indemnity), the Province will not be liable for any direct, indirect, consequential, exemplary, or punitive damages, regardless of the form of action, whether in contract or in tort (including negligence) or otherwise, arising from any reduction or cancellation of Funds. If any changes to the Agreement, including changes in respect of any Project, are required as a result, the Parties agree to amend the Agreement accordingly.

A.4.3 Use of Funds and Carry Out the Projects. The Recipient will, in respect of each Project, do all of the following:

- (a) carry out the Project in accordance with the Agreement;
- (b) use the Funds only for the purpose of carrying out the Project;
- (c) spend the Funds only on Eligible Expenditures as described in Schedule "E" (Eligible Expenditures and Ineligible Expenditures);
- (d) not use the Funds to cover any Ineligible Expenditure; and
- (e) not use the Funds to cover any Eligible Expenditure that has or will be funded or reimbursed by one or more of any third party, or ministry, department, agency, or organization of the Government of Ontario or of the Government of Canada.

A.4.4 Interest-Bearing Account. If for any reason, Funds were provided to the Recipient before the Recipient's immediate need for the Funds, the Recipient will place the Funds in an interest-bearing account solely in the name of the Recipient at a branch of a Canadian financial institution in Ontario. The Recipient will hold the Funds plus any Interest Earned in trust for the Province until the Funds are used in accordance with the Agreement.

A.4.5 Interest. If the Recipient earns any Interest on the Funds, the Province may do either

or both of the following:

- (a) deduct an amount equal to the Interest Earned from the remaining Funds, if any;
- (b) demand from the Recipient the payment of an amount equal to the Interest Earned.

A.4.6 Maximum Funds and Recovery of Excesses. The Recipient acknowledges that:

- (a) the Funds available to it pursuant to the Agreement will not exceed the Maximum Funds for each Project;
- (b) if Canada's total contribution from all federal sources in respect of any Project exceeds eighty percent of Total Eligible Expenditures, the Province may demand the return of the excess from the Recipient and the Recipient shall return the excess forthwith or the Province, at its discretion, may reduce the remaining Funds under the Agreement by an amount equal to the excess; and
- (c) if the Total Financial Assistance received or due in respect of any Project exceeds one hundred percent (100%) of Total Eligible Expenditures, the Province, at its sole discretion, may, up to the Maximum Funds, demand the return of the excess from the Recipient and the Recipient shall return the excess forthwith or the Province may reduce the remaining Funds under the Agreement by an amount equal to the excess.

A.4.7 Disclosure of Other Financial Assistance. The Recipient will inform the Province promptly of any financial assistance received in respect of any Project.

A.4.8 Rebates, Credits, and Refunds. The Province will, in respect of each Project, calculate Funds based on the actual costs to the Recipient to carry out the Project, less any costs (including taxes) for which the Recipient has received, will receive, or is eligible to receive, a rebate, credit, or refund.

A.4.9 Recipient's Acknowledgement of Responsibility for Projects. The Recipient will, in respect of each Project, assume full responsibility for the Project, including, without limitation:

- (a) complete, diligent, and timely Project implementation within the costs and timelines specified in the Agreement and in accordance with all other terms and conditions of the Agreement;
- (b) all of the costs of the Project, including, without limitation, unapproved expenditures, Ineligible Expenditures, and cost overruns, if any;
- (c) subsequent operation, maintenance, repair, rehabilitation, construction, demolition, or reconstruction, as required and in accordance with industry

standards, and any related costs for the full lifecycle of the Project; and

(d) the engineering work being undertaken in accordance with industry standards.

A.4.10 Increase in Project Costs. If, at any time during the Term the Recipient determines that it will not be possible to complete any Project unless it expends amounts in excess of all funding available to it (a “**Shortfall**”), the Recipient will immediately notify the Province of that determination. If the Recipient so notifies the Province, it will, within 30 days of a request from the Province, provide a summary of the measures that it proposes to remedy the Shortfall. If the Province is not satisfied that the measures proposed will be adequate to remedy the Shortfall, then the Province may exercise one or more of the remedies available to it pursuant to section A.12.4 (Recipient Not Remediating).

A.4.11 Recipient’s Request for Payment and Payment Procedures. The Recipient agrees to submit its requests for payment in accordance with the payment procedures provided for in Schedule “J” (Requests for Payment and Payment Procedures).

A.4.12 Retention of Contribution. The Province will retain 10% of the Maximum Funds in respect of each Project (“**Holdback**”) up until the Recipient has fulfilled all of its obligations under the Agreement for the Project.

A.5.0 RECIPIENT’S ACQUISITION OF GOODS OR SERVICES, CONTRACT PROVISIONS, AND DISPOSAL OF ASSETS

A.5.1 Acquisition. The Recipient will ensure that all Contracts are awarded in way that is:

- (a) is fair, transparent, competitive, and consistent with value for money principles, or in a manner otherwise acceptable to the Province and Canada; and
- (b) if applicable, is in accordance with the Canadian Free Trade Agreement and international agreements.

A.5.2 Non-Compliance with Acquisition Requirements. If the Province or Canada determines that a Contract is awarded in a manner that is not in compliance with the requirements in section A.5.1 (Acquisition), upon giving Notice to the Recipient, the Province may consider the expenditures associated with the Contract to be an Ineligible Expenditure.

A.5.3 Exemptions to Competitive Awarding. The Province and Canada may consent to the provision of exemptions from competitive awarding of Contracts on a case-by-case basis, in their sole and absolute discretion, if the Recipient:

- (a) provides a written request indicating the business case rationale for the exemption, in advance of the Contract being awarded;

- (b) attests to:
 - (i) following value-for-money procurement processes for materials and sub-contracts; and
 - (ii) following its own policies and procedures.

A.5.4 **Contract Provisions.** The Recipient will ensure that all Contracts are consistent with and incorporate the relevant provisions of the Agreement, including its insurance provisions. More specifically, but without limiting the generality of the foregoing, the Recipient agrees to include provisions in all Contracts to ensure:

- (a) that proper and accurate accounts and records are kept and maintained as described in the Agreement including, but not limited to, in paragraph A.7.3(a);
- (b) that all applicable Requirements of Law including, without limitation, labour and human rights legislation, are complied with; and
- (c) that the Contract secures the respective rights of the Province and Canada, and any authorized representative or independent auditor identified by the Province or Canada, and the Auditor General of Ontario and the Auditor General of Canada to:
 - (i) inspect and audit the terms of any Contract, record or account in respect of each Project; and
 - (ii) have free and timely access to the Project sites and facilities, and any records, documentation or information, as contemplated pursuant to section A.7.5 (Inspection and Removal).

A.5.5 **Disposal of Assets.** The Recipient will not, unless in accordance with the terms and conditions set out in Schedule “H” (Disposal of Assets), sell, lease, encumber, or otherwise dispose, directly or indirectly, of any Asset.

A.5.6 **Revenue from Assets.** If any Asset is used in such a way that over the course of a year revenues are generated from the Asset that exceed its operating expenses, the Recipient will notify the Province within 30 days of the end of the year where such profit was generated. The Province may require the Recipient to immediately pay to the Province a portion of the excess in the same proportion as the total cost of the Asset. This obligation will only apply during the Asset Disposal Period.

A.6.0 CONFLICT OF INTEREST

A.6.1 Conflict of Interest Includes. For the purposes of this Article A.6.0 (Conflict of Interest), a conflict of interest includes any circumstances where:

- (a) the Recipient or any person who has the capacity to influence the Recipient's decisions has outside commitments, relationships, or financial interests that could, or could be seen by a reasonable person to interfere with the Recipient's objective, unbiased, and impartial judgment in respect of any Project or the use of the Funds, or both; or
- (b) a former public servant or public office holder to whom any post-employment, ethics and conflict of interest legislation, guidelines, codes, or policies of Canada apply will derive a direct benefit from the Agreement, unless the provision or receipt of such benefits complies with such legislation, guidelines, policies, or codes.

A.6.2 No Conflict of Interest. The Recipient will carry out each Project and use the Funds without an actual, potential, or perceived conflict of interest unless:

- (a) the Recipient:
 - (i) provides Notice to the Province disclosing the details of the actual, potential, or perceived conflict of interest; and
 - (ii) requests the consent of the Province to carry out the Project with an actual, potential, or perceived conflict of interest;
- (b) the Province consents in writing to the Recipient carrying out the Project with an actual, potential, or perceived conflict of interest; and
- (c) the Recipient complies with any terms and conditions the Province may prescribe in its consent.

A.7.0 REPORTING, ACCOUNTING, AND REVIEW

A.7.1 Province and Canada Include. For the purpose of sections A.7.4 (Records Review), A.7.5 (Inspection and Removal) and A.7.6 (Cooperation), "Province" includes Canada and any auditor or representative that the Province or Canada, or both, may identify.

A.7.2 Preparation and Submission. The Recipient will:

- (a) submit to the Province at the address referred to in section A.15.1 (Notice in Writing and Addressed):

- (i) all Reports in accordance with the timelines and content requirements provided for in Schedule “D” (Reports); and
 - (ii) any other reports in accordance with any timelines and content requirements the Province may specify from time to time; and
- (b) ensure that all Reports and other reports are:
- (i) completed to the satisfaction of the Province; and
 - (ii) signed by an authorized signing officer of the Recipient.

A.7.3 Record Maintenance. The Recipient will keep and maintain until March 31, 2034:

- (a) proper and accurate financial accounts and records, kept in a manner consistent with generally accepted accounting principles, including but not limited to its contracts, invoices, statements, receipts, and vouchers and any other evidence of payment relating to the Funds or otherwise to each Project; and
- (b) all non-financial records and documents relating to the Funds or otherwise to each Project.

A.7.4 Records Review. The Province, at its sole discretion and expense, may, upon 24 hours’ Notice to the Recipient and during normal business hours, enter upon the Recipient’s premises to conduct an audit or investigation of the Recipient or any Project regarding the Recipient’s compliance with the Agreement, including assessing any of the following:

- (a) the truth of any of the Recipient’s representations and warranties;
- (b) the progress of the Project; or
- (c) the Recipient’s allocation and expenditure of the Funds.

A.7.5 Inspection and Removal. For the purposes of any Records Review, the Province may take one or more of the following actions:

- (a) inspect and copy any records or documents referred to in section A.7.3 (Record Maintenance);
- (b) remove any copies the Province makes pursuant to section A.7.5(a); and
- (c) share any documents, records and findings with Canada.

- A.7.6 **Cooperation.** To assist the Province in respect of its rights provided for in section A.7.5 (Inspection and Removal), the Recipient will cooperate with the Province by:
- (a) ensuring that the Province has access to the records and documents wherever they are located;
 - (b) coordinating access with any Third Party;
 - (c) assisting the Province to copy the records and documents;
 - (d) providing to the Province, in the form the Province specifies, any information the Province identifies; and
 - (e) carrying out any other activities the Province requests.
- A.7.7 **No Control of Records.** No provision of the Agreement will be construed so as to give the Province or Canada, or both, any control whatsoever over the Recipient's records.
- A.7.8 **Auditor General (Ontario and Canada).** The Province's rights under this Article A.7.0 (Reporting, Accounting, and Review) are in addition to any rights provided to the Auditor General of Ontario pursuant to section 9.2 of the *Auditor General Act* (Ontario) and to the Auditor General of Canada pursuant to section 7.1 of the *Auditor General Act* (Canada).
- A.7.9 **Sharing of Audit Findings and Reports.** The Recipient acknowledges that Canada and the Province may:
- (a) inform each other, and any of their respective authorized representatives and auditors, that an audit is being conducted; and
 - (b) share the findings of any audit or investigation, including any ensuing report, with each other and any of their respective authorized representatives and auditors.
- A.7.10 **Evaluation.** The Recipient agrees to participate in any Evaluation and comply with the requirements for such Evaluation that are set out in Schedule "F" (Evaluation).
- A.7.11 **Calculations.** The Recipient will make all calculations and prepare all financial data to be submitted in accordance with the generally accepted accounting principles in effect in Canada. These will include, without limitation, those principles and standards approved or recommended from time to time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, or any successor institute, applied on a consistent basis.
- A.7.12 **Adverse Fact or Event.** The Recipient will inform the Province immediately of any fact or event of which it is aware that has or will compromise, wholly or in part, any Project.

A.8.0 COMMUNICATIONS REQUIREMENTS

A.8.1 Communications Protocol. The Parties agree to be bound by the terms and conditions of the communications protocol provided for in Schedule “G” (Communications Protocol).

A.9.0 LIMITATION OF LIABILITY AND INDEMNITY

A.9.1 Province and Canada Limitation of Liability. In no event will any of the Indemnified Parties be held liable for any damages, including direct, indirect, consequential, exemplary, or punitive damages, regardless of the form of action, whether in contract, tort (including negligence), or otherwise, for:

- (a) any injury to any Person, including, but not limited to, death, economic loss, or infringement of rights;
- (b) any damage to or loss or destruction of property of, any Person; or
- (c) any obligation of any Person, including, but not limited to, any obligation arising from a loan, capital lease, or other long-term obligation

in relation to the Agreement, the Bilateral Agreement, or any Project or Projects.

A.9.2 Indemnification of the Province and Canada. The Recipient will indemnify and hold harmless the Indemnified Parties from and against any Loss and any Proceeding based upon or occasioned by:

- (a) any injury to any Person, including, but not limited to, death, economic loss, or any infringement of rights;
- (b) any damage to, or loss or destruction of, property of any Person; or
- (c) any obligation of any Person, including, but not limited to, any obligation arising from a loan, capital lease, or other long-term obligation,

except to the extent to which such Loss or Proceeding is caused by the negligence or wilful misconduct of any Indemnified Party in the performance of that Indemnified Party’s duties.

A.9.3 Recipient’s Participation. The Recipient will, at its expense, to the extent requested by the Province or Canada, or both, participate in or conduct the defence of any Proceeding against any of the Indemnified Parties and any negotiations for their settlement.

- A.9.4 **Province's Election.** The Province or Canada, or both, may elect to participate in, or conduct the defence of, any Proceeding by providing Notice to the Recipient of such election, without prejudice to any other rights or remedies of the Province under the Agreement or of the Province or Canada under the Bilateral Agreement, at law or in equity. If the Province, Canada, or the Recipient, as applicable, participates in the defence, it will do so by actively participating with the other's counsel.
- A.9.5 **Settlement Authority.** The Recipient will not enter into a settlement of any Proceeding against any of the Indemnified Parties unless the Recipient has obtained from the Province or Canada, as applicable, prior written approval or a waiver of this requirement. If the Recipient is requested by the Province or Canada to participate in or conduct the defence of any Proceeding, the Province or Canada, as applicable, will cooperate with and assist the Recipient to the fullest extent possible in the Proceeding and any related settlement negotiations.
- A.9.6 **Recipient's Cooperation.** If the Province or Canada conducts the defence of any Proceeding, the Recipient will cooperate with and assist the Province or Canada, as applicable, to the fullest extent possible in the Proceeding and any related settlement negotiations.

A.10.0 INSURANCE

- A.10.1 **Recipient's Insurance.** The Recipient represents, warrants, and covenants that it has, and will maintain at its own cost and expense, with insurers having a secure A.M. Best rating of B+ or greater, or the equivalent, all the necessary and appropriate insurance that a prudent person carrying out a project similar to each Project would maintain, including commercial general liability insurance on an occurrence basis for third party bodily injury, personal injury, and property damage, to an inclusive limit of not less than \$2,000,000.00 per occurrence, and including products and completed operations coverage with the endorsements identified below:
- (a) the Indemnified Parties as additional insureds in respect of liability arising in the course of performance of the Recipient's obligations under, or otherwise in connection with, the Agreement;
 - (b) a cross-liability clause;
 - (c) contractual liability coverage; and
 - (d) a 30-day written notice of cancellation.
- A.10.2 **Proof of Insurance.** At the request of the Province from time to time, the Recipient will:
- (a) provide to the Province, either:

- (i) annually, certificates of insurance that confirm the insurance coverage as provided in section A.10.1 (Recipient's Insurance); or
 - (ii) other proof that confirms the insurance coverage as provided for in section A.10.1 (Recipient's Insurance); and
- (b) provide to the Province a copy of any of the Recipient's insurance policies that relate to each Project or otherwise to the Agreement or both.

A.11.0 TERMINATION ON NOTICE

A.11.1 **Termination on Notice.** The Province may terminate the Agreement at any time without liability, penalty, or costs upon giving at least 30 days' Notice to the Recipient.

A.11.2 **Consequences of Termination on Notice by the Province.** If the Province terminates the Agreement pursuant to section A.11.1 (Termination on Notice), the Province may take one or more of the following actions:

- (a) Direct the Recipient not to incur any further costs for any Project subsequent to the Notice of termination. If the Recipient fails to comply with such direction and unless with the Province's prior written consent, the Recipient shall be solely responsible for any further costs incurred after such Notice was given;
- (b) cancel all further instalments of Funds; and
- (c) demand the payment of any Funds plus any Interest Earned remaining in the possession or under the control of the Recipient.

A.12.0 EVENT OF DEFAULT, CORRECTIVE ACTION, AND TERMINATION FOR DEFAULT

A.12.1 **Events of Default.** It will constitute an Event of Default if, in the opinion of the Province, the Recipient breaches any representation, warranty, covenant, or other material term of the Agreement, including:

- (a) failing to carry out any Project in whole or in part in accordance with the terms of the Agreement;
- (b) failing to use or spend Funds in accordance with the terms of the Agreement;
- (c) failing to provide, in accordance with section A.7.2 (Preparation and Submission), Reports or such other reports as the Province may have requested pursuant to the Agreement);

- (d) the Recipient's operations, its financial condition, its organizational structure or its control changes such that it no longer meets one or more of the eligibility requirements of the program under which the Province provides the Funds;
- (e) the Recipient makes an assignment, proposal, compromise, or arrangement for the benefit of creditors, or a creditor makes an application for an order adjudging the Recipient bankrupt, or applies for the appointment of a receiver; or
- (f) the Recipient ceases to operate.

A.12.2 Consequences of Events of Default and Corrective Action. If an Event of Default occurs, the Province may, at any time, and at its sole discretion, take one or more of the following actions:

- (a) initiate any action the Province considers necessary in order to facilitate the successful continuation or completion of any Project;
- (b) provide the Recipient with an opportunity to remedy the Event of Default;
- (c) suspend the payment of Funds for such period as the Province determines appropriate;
- (d) reduce the amount of the Funds;
- (e) cancel all further instalments of Funds;
- (f) demand from the Recipient the payment of any Funds plus any Interest Earned remaining in the possession or under the control of the Recipient;
- (g) demand from the Recipient the payment of an amount equal to any Funds the Recipient used, but did not use in accordance with the Agreement;
- (h) demand from the Recipient the repayment of an amount equal to any Funds the Province provided to the Recipient;
- (i) demand from the Recipient an amount equal to the costs the Province incurred or incurs to enforce its rights under the Agreement, including the costs of any Records Review and the costs it incurs to collect any amounts the Recipient owes to the Province; and
- (j) terminate the Agreement at any time, including immediately, without liability, penalty, or costs to the Province upon giving Notice to the Recipient.

A.12.3 Opportunity to Remedy. If, in accordance with paragraph A.12.2(b), the Province

provides the Recipient with an opportunity to remedy the Event of Default, the Province will provide Notice to the Recipient of:

- (a) the particulars of the Event of Default; and
- (b) the Remedial Period.

A.12.4 **Recipient Not Remediating.** If the Province provided the Recipient with an opportunity to remedy the Event of Default pursuant to paragraph A.12.2(b), and:

- (a) the Recipient does not remedy the Event of Default within the Remedial Period;
- (b) it becomes apparent to the Province that the Recipient cannot completely remedy the Event of Default within the Remedial Period; or
- (c) the Recipient is not proceeding to remedy the Event of Default in a way that is satisfactory to the Province,

the Province may extend the Remedial Period or initiate any one or more of the actions provided for in paragraphs A.12.2(a), (c), (d), (e), (f), (g), (h), (i) and (j).

A.12.5 **When Termination Effective.** Termination under this Article A.12.0 (Event of Default, Corrective Action, and Termination for Default) will take effect as provided for in the Notice.

A.13.0 FUNDS UPON EXPIRY

A.13.1 **Funds Upon Expiry.** The Recipient will, upon expiry of the Agreement, pay to the Province any Funds plus Interest Earned remaining in its possession, under its control, or both.

A.14.0 DEBT DUE AND PAYMENT

A.14.1 **Payment of Overpayment.** If at any time the Province provides Funds in excess of the amount the Recipient is entitled to under the Agreement, the Province may:

- (a) deduct an amount equal to the excess Funds plus any Interest Earned from any further instalments of Funds; or
- (b) demand that the Recipient pay to the Province an amount equal to the excess Funds plus any Interest Earned.

A.14.2 **Debt Due.** If, pursuant to the Agreement:

- (a) the Province demands from the Recipient the payment of any Funds, an amount equal to any Funds, or any other amounts owing under the Agreement; or
- (b) the Recipient owes to the Province any Funds, an amount equal to any Funds, or any other amounts under the Agreement, whether or not the Province has demanded their payment,

such amounts will be deemed to be debts due and owing to the Province by the Recipient, and the Recipient will pay the amounts to the Province immediately, unless the Province directs otherwise.

- A.14.3 **Interest Rate.** The Province may charge the Recipient interest on any money owing to the Province by the Recipient under the Agreement at the then-current interest rate charged by the Province of Ontario on accounts receivable.
- A.14.4 **Payment of Money to Province.** The Recipient will pay any money owing to the Province by cheque payable to the “Ontario Minister of Finance” and delivered to the Province at the address set out in Schedule “B” (Specific Information) for the purposes of Notice to the Province.
- A.14.5 **Failure to Repay.** Without limiting the application of section 43 of the *Financial Administration Act* (Ontario), if the Recipient fails to pay any amount owing under the Agreement, Her Majesty the Queen in right of Ontario may deduct any unpaid amount from any money payable to the Recipient by Her Majesty the Queen in right of Ontario.

A.15.0 NOTICE

A.15.1 **Notice in Writing and Addressed.** Notice will be:

- (a) in writing;
- (b) delivered by email, postage-prepaid mail, personal delivery, or courier; and
- (c) addressed to the Province and the Recipient as set out in Schedule “B” (Specific Information), or as either Party later designates to the other by Notice.

A.15.2 **Notice Given.** Notice will be deemed to have been given:

- (a) in the case of postage-prepaid mail, five Business Days after the Notice is delivered; and
- (b) in the case of email, personal delivery, or courier, on the date on which the Notice is delivered.

A.15.3 **Postal Disruption.** Despite paragraph A.15.2(a), in the event of a postal disruption:

- (a) Notice by postage-prepaid mail will not be deemed to be given; and
- (b) the Party giving Notice will provide Notice by email, personal delivery, or courier.

A.16.0 CONSENT BY PROVINCE OR CANADA AND COMPLIANCE BY RECIPIENT

A.16.1 **Consent.** When the Province or Canada provides its consent pursuant to the Agreement:

- (a) it will do so by Notice;
- (b) it may attach any terms and conditions to the consent; and
- (c) the Recipient may rely on the consent only if the Recipient complies with any terms and conditions the Province or Canada may have attached to the consent.

A.17.0 SEVERABILITY OF PROVISIONS

A.17.1 **Invalidity or Unenforceability of Any Provision.** The invalidity or unenforceability of any provision of the Agreement will not affect the validity or enforceability of any other provision of the Agreement.

A.18.0 WAIVER

A.18.1 **Waiver Request.** Either Party may, by Notice, ask the other Party to waive an obligation under the Agreement.

A.18.2 **Waiver Applies.** If in response to a request made pursuant to section A.18.1 (Waiver Request) a Party consents to a waiver, the waiver will:

- (a) be valid only if the Party that consents to the waiver provides the consent by Notice; and
- (b) apply only to the specific obligation referred to in the waiver.

A.18.3 **Waivers in Writing.** If a Party fails to comply with any term of the Agreement, that Party may only rely on a waiver of the other Party if the other Party has provided a written waiver in accordance with the Notice provisions in Article A.15.0 (Notice). Any waiver must refer to a specific failure to comply and will not have the effect of waiving any subsequent failures to comply.

A.19.0 INDEPENDENT PARTIES

A.19.1 **Parties Independent.** The Recipient is not an agent, joint venturer, partner, or employee of either the Province or Canada, and the Recipient will not represent itself in any way that might be taken by a reasonable person to suggest that it is, or take any actions that could establish or imply such a relationship.

A.19.2 **No Authority to Represent.** Nothing in the Agreement is to be construed as authorizing any Person, including a Third Party, to contract for or to incur any obligation on behalf of the Province or Canada, or both, or to act as an agent for the Province or Canada. The Recipient will take the necessary action to ensure that any Contract between the Recipient and a Third Party contains a provision to that effect.

A.20.0 ASSIGNMENT OF AGREEMENT OR FUNDS

A.20.1 **No Assignment.** The Recipient will not, without the prior written consent of the Province, assign any of its rights or obligations under the Agreement.

A.20.2 **Agreement Binding.** All rights and obligations contained in the Agreement will extend to and be binding on:

- (a) the Recipient's successors and permitted assigns; and
- (b) the successors to Her Majesty the Queen in right of Ontario.

A.21.0 GOVERNING LAW

A.21.1 **Governing Law.** The Agreement and the rights, obligations, and relations of the Parties will be governed by and construed in accordance with the laws of the Province of Ontario and the applicable federal laws of Canada. Any actions or proceedings arising in connection with the Agreement will be conducted in the courts of Ontario, which will have exclusive jurisdiction over such proceedings.

A.22.0 FURTHER ASSURANCES

A.22.1 **Agreement into Effect.** The Recipient will:

- (a) provide such further assurances as the Province may request from time to time in respect to any matter to which the Agreement pertains; and
- (b) do or cause to be done all acts or things necessary to implement and carry into effect the terms and conditions of the Agreement to their full extent.

A.23.0 JOINT AND SEVERAL LIABILITY

A.23.1 **Joint and Several Liability.** Where the Recipient is comprised of more than one entity, each entity will be jointly and severally liable to the Province for the fulfillment of the obligations of the Recipient under the Agreement.

A.24.0 RIGHTS AND REMEDIES CUMULATIVE & JOINT AUTHORSHIP

A.24.1 **Rights and Remedies Cumulative.** The rights and remedies of the Province under the Agreement are cumulative and are in addition to, and not in substitution for, any of its rights and remedies provided by law or in equity.

A.24.2 **Joint Authorship Of Agreement.** Each and every provision of this Agreement shall be construed as though both Parties participated equally in the drafting of same, and any rule of construction that a document shall be construed against the drafting party, including without limitation, the doctrine commonly known as contra proferentem, shall not be applicable to this Agreement. The Parties shall not seek to avoid a provision herein because of its authorship through recourse to a third-party, court, tribunal or arbitrator.

A.25.0 FAILURE TO COMPLY WITH OTHER AGREEMENTS

A.25.1 **Other Agreements.** If the Recipient:

- (a) has failed to comply with any term, condition, or obligation under any other agreement with Her Majesty the Queen in right of Ontario or one of Her agencies (a “**Failure**”);
- (b) has been provided with notice of such Failure in accordance with the requirements of such other agreement;
- (c) has, if applicable, failed to rectify such Failure in accordance with the requirements of such other agreement; and
- (d) such Failure is continuing,

the Province, at its sole discretion, may suspend the payment of Funds for such period as the Province determines appropriate and may demand immediate repayment or deduct such amounts owing plus any Interest Earned from the remaining Funds, if any, as a result of such Failure.

A.26.0 SURVIVAL

A.26.1 Survival. Any rights and obligations of the Parties that, by their nature, extend beyond the termination of the Agreement will continue in full force and effect for a period of seven years from the date of expiry or termination of the Agreement, unless otherwise specified herein. Surviving provisions include, without limitation, the following Articles, sections and paragraphs, and all applicable cross-referenced Articles, sections, paragraphs, schedules, and sub-schedules: Articles 1.0 (Entire Agreement), 2.0 (Conflict or Inconsistency), 5.1 (Acknowledgement from Recipient), 6.0 (Canada's Rights and Information Sharing with Canada), A.1.0 (Interpretation and Definitions) and any other applicable definitions, A.2.0 (Representations, Warranties, and Covenants), A.4.2(c), sections A.4.4 (Interest-Bearing Account), A.4.5 (Interest), A.4.6 (Maximum Funds and Recovery of Excesses), A.4.8 (Rebates, Credits, and Refunds), A.4.9 (Recipient's Acknowledgement of Responsibility for Projects), A.5.5 (Disposal of Assets), A.5.6 (Revenue from Assets), A.7.1 (Province and Canada Include), A.7.2 (Preparation and Submission) (to the extent that the Recipient has not provided the Reports or other reports as may have been requested to the satisfaction of the Province), A.7.3 (Record Maintenance), A.7.4 (Records Review), A.7.5 (Inspection and Removal), A.7.6 (Cooperation), A.7.7 (No Control of Records), A.7.8 (Auditor General (Ontario and Canada)), A.7.9 (Sharing of Audit Findings and Reports), A.7.10 (Evaluation), A.7.11 (Calculations), Articles A.8.0 (Communications Requirements), A.9.0 (Limitation of Liability and Indemnity), A.10.1 (Recipient's Insurance) (for a period of 90 Business Days from the date of expiry or termination of the Agreement of the Agreement), sections A.11.2 (Consequences of Termination on Notice by the Province), A.12.1 (Events of Default), paragraphs A.12.2(d), (e), (f), (g), (h) and (i), A.13.0 (Funds Upon Expiry), A.14.0 (Debt Due and Payment), A.15.0 (Notice), and A.17.0 (Severability of Provisions), section A.20.2 (Agreement Binding), and Articles A.21.0 (Governing Law), A.23.0 (Joint and Several Liability), A.24.0 (Rights and Remedies Cumulative & Joint Authorship), A.26.0 (Survival), A.27.0 (Environmental Requirements and Assessments), A.28.0 (Aboriginal Consultation), and A.31.0 (Special Conditions).

A.27.0 ENVIRONMENTAL REQUIREMENTS AND ASSESSMENTS

A.27.1 Federal Environmental Requirements. Without limitation to the Recipient's obligations to comply with Environmental Laws and for greater clarity:

- (a) no site preparation, removal of vegetation or construction will occur in respect of any Project; and
- (b) the Province will have no obligation to pay any Eligible Expenditures that are capital costs, as determined by the Province, until Canada is satisfied that federal requirements are met, and continue to be met, under the following:
 - (i) *Canadian Environmental Assessment Act, 2012* or the *Impact Assessment Act*,
 - (ii) other applicable environmental assessment legislation that is or may come

into force during the term of the Agreement; and

(iii) other applicable agreements between Canada and Aboriginal Communities.

A.27.2 **Assessments.** The Recipient will complete the assessments that are further described in Schedule “D” (Reports).

A.28.0 ABORIGINAL CONSULTATION

A.28.1 **Aboriginal Consultation Protocol.** The Parties agree to be bound by the terms and conditions of the Aboriginal Consultation Protocol provided for in Schedule “I” (Aboriginal Consultation Protocol).

A.28.2 **Legal Duty to Consult.** Until Canada and, if applicable, the Province are satisfied that any legal duty to consult and, where appropriate, to accommodate Aboriginal Communities, or any other federal consultation requirement, has been, and continues to be met:

- (a) no site preparation, removal of vegetation or construction will occur in respect of any Project; and
- (b) despite section A.4.1, the Province has no obligation to pay any Eligible Expenditures that are capital costs, as determined by the Province and Canada; and, for any Project requiring consultation, Canada and, if applicable, the Province must be satisfied that:
 - (i) Aboriginal Communities have been notified and, if applicable, consulted;
 - (ii) where consultation has occurred, the Recipient has provided a summary of consultation or engagement activities, including a list of Aboriginal Communities consulted, concerns raised, and how each of the concerns have been addressed or, if not addressed, an explanation as to why not;
 - (iii) the Recipient is carrying out accommodation measures, where appropriate; and
 - (iv) any other information has been provided which Canada or the Province, or both, may deem appropriate.

A.28.3 **Funding Conditional upon Meeting Aboriginal Consultation Obligations.** No Funds will be provided to the Recipient under the Agreement unless Canada and, if applicable in the opinion of the Province, the Province are satisfied that their respective obligations have been met in respect of the legal duty to consult and, if applicable, accommodate any Aboriginal Community.

A.29.0 COMMITTEE

- A.29.1 **Establishment of Committee.** The Province may, at its sole discretion, require the establishment of a committee to oversee the Agreement (the “Committee”).
- A.29.2 **Notice of Establishment of Committee.** Upon Notice from the Province, the Parties will hold an initial meeting to establish, in accordance with Schedule “K” (Committee), the Committee described in section A.29.1 (Establishment of Committee).

A.30.0 DISPUTE RESOLUTION

- A.30.1 **Contentious Issues.** The Parties will keep each other informed of any issues that could be contentious.
- A.30.2 **Examination by the Committee and Parties.** If a contentious issue arises and a Committee has been established under section A.29.1 (Establishment of Committee), the Parties will refer the contentious issue that may arise to the Committee for examination. In the absence of a Committee, the Parties will examine the contentious issue.
- A.30.3 **Potential Dispute Resolution by Committee.** The Committee or the Parties, as the case may be, will attempt, reasonably and in good faith, to resolve disputes as soon as possible and, in any event, within, for the Committee, 30 days, or, for the Parties, 90 days of receiving Notice of a contentious issue.
- A.30.4 **Dispute Resolution by the Parties.** If the Committee cannot agree on a resolution, the matter will be referred to the Parties for resolution. The Parties will provide a decision within 60 Business Days of the Notice.
- A.30.5 **Alternative Mechanisms for Dispute Resolutions.** Where the Parties cannot agree on a resolution, the Parties may use any alternative dispute resolution mechanisms available to them to resolve the issue.
- A.30.6 **Suspension of Payments.** The Province may suspend any payments related to any contentious issue or dispute raised by either Party, together with the obligations related to such issue, pending resolution.

A.31.0 SPECIAL CONDITIONS

- A.31.1 **Special Conditions.** The Province’s funding under the Agreement is conditional upon,
- (a) on or before the Effective Date, the Recipient having provided to the satisfaction of the Province with:

- (i) a copy of the by-law(s), council resolution(s) or both or any other necessary instrument applicable to the Recipient authorizing its entry into the Agreement;
 - (ii) the certificates of insurance or any other proof the Province may request pursuant to section A.10.2 (Proof of Insurance);
 - (iii) banking information, such as a void cheque or a bank letter, for an interest-bearing account in the name of the Recipient at a Canadian financial institution, into which the Province may transfer funds electronically; and
 - (iv) any other Reports requested by the Province in the format specified.
- (b) prior to submitting a request for payment in respect of any Project under the Agreement if required by the Province,
- (i) the Recipient having provided to the satisfaction of the Province with written confirmation that:
 - a. the Recipient is in compliance with all Environmental Laws, including the Recipient's obligations under section A.27.1 (Federal Environmental Requirements), and has obtained all necessary approvals and permits;
 - b. the Recipient has met any requirements under Article A.28.0 (Aboriginal Consultation) that may apply to the Project; and
 - c. the Recipient has the necessary ownership of any real property required for the completion of the Project; and
 - (ii) the Recipient having provided to the satisfaction of the Province with any required assessments pursuant to Article A.27.0 (Environmental Requirements and Assessments); and

For greater certainty, if the Province provides any Funds to the Recipient before the conditions set out in this Article A.31.0 (Special Conditions) have been met, and unless the Province has waived compliance with such condition in writing, the Province may exercise one or more of the remedies available to it pursuant to section A.12.2 (Consequences of Event of Default and Corrective Action).

END OF GENERAL TERMS AND CONDITIONS

[SCHEDULE "B" – SPECIFIC INFORMATION FOLLOWS]

**SCHEDULE “B”
SPECIFIC INFORMATION**

B.1.0 EXPIRATION DATE

B.1.1 **Expiration date.** The Expiration Date is **December 31, 2024.**

B.2.0 MAXIMUM FUNDS

B.2.1 **Maximum Funds.** Maximum Funds means, for each Project, the sum of Canada’s Maximum Contribution and Ontario’s Maximum Contribution as set out in Sub-schedule “C.1” (Project Description and Financial Information).

B.3.0 ADDRESSEES

B.3.1 **Addressees.** All Reports and Notices under the Agreement will be submitted to the Province at the address listed below:

<p>Contact information for the purposes of Notice to the Province</p>	<p>Address: Ministry of Infrastructure Infrastructure Program Delivery Branch 777 Bay Street, Floor 4, Suite 425 Toronto, Ontario, M7A 2J3</p> <p>Attention: Manager, Program Delivery Unit</p> <p>Email: ICIPCOVID@ontario.ca</p>
<p>Contact information for the purposes of Notice to the Recipient</p>	<p>Position: City Manager Address: City Hall 300 Dufferin Avenue, ON, London, N6A4L9 Email: llivings@london.ca</p>

[SCHEDULE “C” - PROJECT DESCRIPTION, FINANCIAL INFORMATION, AND PROJECT STANDARDS FOLLOWS]

SCHEDULE “C”
PROJECT DESCRIPTION, FINANCIAL INFORMATION, AND PROJECT STANDARDS

C.1.0 PROJECT DESCRIPTION

C.1.1 **Project Description.** The Recipient will carry out each Project as described in Sub-schedule “C.1” (Project Description and Financial Information). Notwithstanding anything to the contrary, the Construction Start for any Project must occur by September 30, 2021, or any other date with the prior written consent of the Province.

C.2.0 PROJECT STANDARDS

C.2.1 **Canada’s Requirements for Standards.** In addition to any other standards that the Recipient must meet or exceed for each Project, the Recipient will ensure the Project meets or exceeds the following:

- (a) any applicable energy efficiency standards for buildings outlined in Canada’s *Pan-Canadian Framework on Clean Growth and Climate Change* provided by Canada at www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html, or at any other location the Province may provide; and
- (b) the accessibility requirements of the highest accessibility standards published in Ontario, in addition to accessibility requirements in applicable provincial building codes and relevant municipal by-laws.

C.3.0 CHANGES TO THE PROJECT DESCRIPTION, FINANCIAL INFORMATION, TIMELINES, AND PROJECT STANDARDS

C.3.1 **Province’s and Canada’s Consent.** Any change to any Project will require the Province’s and Canada’s consent. When seeking to make a change in respect of any Project, the Recipient will submit updated Project information and any other information that the Province or Canada, or both, may require to the satisfaction of Canada and the Province.

**SUB-SCHEDULE “C.1”
PROJECT DESCRIPTION AND FINANCIAL INFORMATION**

(a) List of Projects

Project ID	Project Title	Federal Approval Date (MM/DD/YYYY)	Total Eligible Expenditures of the Project (\$)	Canada's Maximum Contribution (\$)	Percentage of Federal Support (%)	Ontario's Maximum Contribution (\$)	Percentage of Provincial Support (%)
2020-11-1-1466505009	Facility Infrastructure Renewal Program	02/19/2021	\$1,750,000.00	\$1,400,000.00	80%	\$350,000.00	20%
2020-12-1-1471802775	Boulevard Bicycle Path Improvements	05/04/2021	\$1,100,000.00	\$880,000.00	80%	\$220,000.00	20%
2020-12-1-1471807965	Downtown Sidewalk Improvements	05/04/2021	\$300,000.00	\$240,000.00	80%	\$60,000.00	20%
2020-12-1-1471809195	New Cycling Facilities	05/04/2021	\$2,370,798.00	\$1,896,638.40	80%	\$474,159.60	20%

(b) Project Description

- (i) Project - Facility Infrastructure Renewal Program, case # 2020-11-1-1466505009.

This project will upgrade HVAC and ventilation equipment in three recreational facilities to ensure safe and reliable recreational facilities for the public, improve safety from COVID-19 for staff and the public and reduce the amount of R22 refrigerant that contain harmful chlorofluorocarbons (CFC's).

Project activities include replacing the Heating Ventilation and Air Conditioning (HVAC) units with higher efficiency models, the roof mounted Energy Recovery Ventilation units (ERV's), the natural gas fired boiler with circulating pumps with higher efficiency models, and various refrigeration components such as circulating pumps, motors, and electrical infrastructure with higher efficiency options.

Anticipated outputs of the project include increased ventilation and improved indoor air quality (IAQ) for staff and the public, reduce amount of harmful CFCs, lessen the energy required to heat and cool the facilities and reduce green house gases.

- (ii) Project - Boulevard Bicycle Path Improvements, case # 2020-12-1-1471802775.

This project will provide improvements to the in-boulevard pathway system to increase cyclists comfort by reducing gaps in cycling infrastructure, improving the integration between cycling infrastructure and transit facilities. It will provide new dedicated cycling infrastructure along major intersections and side streets.

The scope of the project is to improve in-boulevard cycling paths on Fanshawe Park Road East between Medway Creek Bridge and Adelaide Street. This includes integrating local transit into the design of the cycling facilities in order to improve safety, comfort and separation between cyclists, pedestrians and transit users.

The approximate outputs for this project will generate 4.38km of new, improved in-boulevard cycling paths. The goal of these facilities is to increase cycling ridership, promote active transportation, improve safety and to provide residents with more transportation choices. These new cycling facilities will increase the separation and physical distancing between cyclists, pedestrians and transit users.

- (iii) Project - Downtown Sidewalk Improvements, case # 2020-12-1-1471807965.

This project will improve the sidewalk and boulevard system in the downtown core to increase comfort and accessibility for pedestrians.

The project scope includes sidewalk and boulevard improvements within the following locations in the Downtown Core: Richmond Street between Queens Avenue and Dundas Street, Carling Street, Richmond Street between Central Avenue and Hyman Street, Richmond Street between Mill Street and CPR, Hyman Street between Richmond Street and Wellington Street, and Wolfe Street between Wellington Street and Waterloo Street.

The project outputs include generating new sidewalk and boulevard paths within the downtown to create an improved pedestrian realm.

(iv) Project - New Cycling Facilities, case # 2020-12-1-1471809195.

The project will modify and increase cycling infrastructure in the City of London to provide residents with more transportation choices.

The project activities include installing new cycling facilities on Wavell Street/Brydges Street from Highbury Avenue North to Clarke Road, Saskatoon Street from Wavell Street to Dundas Street, as well as creating a protected intersection and new cycling facilities at the intersection of Ridout Street and Commissioners Road East.

The project will result in approximately 3.6km of new cycling facilities and one new protected intersection within the City of London.

[SCHEDULE “D” – REPORTS FOLLOWS]

SCHEDULE “D” REPORTS

D.1.0 REPORTING REQUIREMENTS

D.1.1 Reports. The Recipient, with respect to each Project, will submit all Reports to the Province in a manner, format, at such dates and with such content, as may be prescribed by the Province from time to time, at its sole discretion, prior to its required submission by the Province. Without limitation and at the sole discretion of the Province, Reports will include the following:

- (a) **Progress Reports.** The Recipient will submit Progress Reports to the Province in a format and on the dates to be prescribed by the Province. Progress Reports will be submitted by the Recipient no less frequently than twice a year;
- (b) **Claim Reports.** The Recipient, with respect to each Project, will submit one (1) request for payment for Eligible Expenditures in a format to be prescribed by the Province within 60 Business Days of reaching Substantial Completion. The request for payment must be submitted by an authorized representative of the Recipient and, subject to any other information the Province, at its sole discretion, may require from time to time, shall include:
 - (i) a detailed breakdown of invoices that are being claimed for reimbursement; and
 - (ii) copies of invoices.

Subject to the prior written consent of the Province, which shall be at the Province’s sole and absolute discretion, the Recipient may request in writing the submission of a request for payment on a more frequent basis. Notwithstanding anything to the contrary, such request shall in no circumstance be more frequent than once per quarter.

- (c) **Reporting Requirements at Project Substantial Completion.** Within 60 Business Days of reaching Substantial Completion, the Recipient shall submit:
 - (i) a declaration of project Substantial Completion;
 - (ii) a final Progress Report in a manner, format, and with such content as may be prescribed by the Province;
 - (iii) a copy of the report for the compliance audit carried out pursuant to Article D.4.0 (Compliance Audit(s));
 - (iv) a summary of any Communications Activities made for the Project; and,

- (v) a photograph of the Project.
- (d) **Other Reports.** Any other reports that the Province so directs on or before such date and with such content as the Province directs.

D.2.0 ABORIGINAL CONSULTATION RECORD

D.2.1 Inclusion of Aboriginal Consultation Record. The Recipient will include an updated Aboriginal Consultation Record, if consultation with any Aboriginal Community is required, in its Progress Report.

D.3.0 RISK ASSESSMENT

D.3.1 Further Details on Risk Assessment. Upon the Province's written request and within the timelines set out by the Province, the Recipient will provide further details on the risk assessment in respect of each Project.

D.4.0 COMPLIANCE AUDIT(S)

D.4.1 Compliance Audit(s). Without limiting the generality of section A.7.4 (Records Review), if requested by the Province from time to time, which request shall be at the Province's sole discretion, the Recipient, at its own expense, will forthwith retain an independent third party auditor to conduct one or more compliance audits of the Recipient or any Project. The audit will be conducted in accordance with Canadian Generally Accepted Auditing Standards, as adopted by the Canadian Institute of Chartered Accountants, applicable as of the date on which a record is kept or required to be kept under such standards. In addition, the audit will assess the Recipient's compliance with the terms of the Agreement and will address, with respect to each Project, without limitation, the following:

- (a) whether the Funds were spent in accordance with the Agreement and with due regard to economy, efficiency, and effectiveness;
- (b) the Project's progress or state of completion;
- (c) whether the financial information the Recipient provided is complete, accurate, and timely, and in accordance with the Agreement;
- (d) whether the Recipient's information and monitoring processes and systems are adequate to identify, capture, validate, and monitor the achievement of intended benefits of the Project;

- (e) the overall management and administration of the Project;
- (f) recommendations for improvement or redress; and
- (g) whether prompt and timely corrective action is taken on prior audit findings.

**[SCHEDULE “E” - ELIGIBLE EXPENDITURES AND INELIGIBLE EXPENDITURES
FOLLOWS]**

SCHEDULE “E”
ELIGIBLE EXPENDITURES AND INELIGIBLE EXPENDITURES

E.1.0 ELIGIBLE EXPENDITURES

E.1.1 Notwithstanding anything to the contrary herein the Agreement, for each Project, Eligible Expenditures shall only include those direct costs that are considered, in the Province’s and Canada’s sole and absolute discretion, to be directly necessary for the successful completion of the Project, and must be properly and reasonably incurred and paid to an arm’s length party as evidenced by invoices, receipts or other records that are satisfactory to the Province and Canada, in their sole and absolute discretion, and that are associated with the acquisition, planning, environmental assessments, design and engineering, project management, materials and construction or renovation of the Project. Eligible Expenditures exclude costs set out as Ineligible Expenditures in section E.2.1 below, but may include:

- (a) The incremental costs of the Recipient’s staff or employees provided that:
 - (i) The Recipient is able to demonstrate that it is not economically feasible to tender a Contract that ensures the acquisition of the required services at the best value for money; and
 - (ii) The arrangement is approved in advance in writing by the Province and Canada.
- (b) Any costs that are determined by the Province and Canada, in their sole discretion, to be Eligible Expenditures; and
- (c) Notwithstanding section E.2.1(a) of this Schedule, expenditures related to the Project associated with completing climate lens assessments or associated with Aboriginal consultation and engagement activities, if applicable, that were incurred after February 15, 2018.

E.2.0 INELIGIBLE EXPENDITURES

E.2.1 Without limiting the discretion of the Province and Canada in section E.1.1, for each Project, the following costs are Ineligible Expenditures and are therefore ineligible to be paid from the Funds:

- (a) Costs incurred prior to the Federal Approval Date;
- (b) Costs incurred after December 31, 2021 or any other date with the prior written consent of the Province;
- (c) All expenditures related to Contracts signed prior to the Federal Approval Date;
- (d) Costs incurred for terminated or cancelled Projects;

- (e) Costs related to developing a business case or proposal or application for funding;
- (f) Costs associated with the acquisition, expropriation or leasing of:
 - (i) Land,
 - (ii) Buildings, or
 - (iii) Other facilities
- (g) Costs associated with the acquisition or leasing of equipment other than equipment directly related to the construction, improvement, repair, rehabilitation or reconstruction of the Project where the Province has not provided its prior written approval;
- (h) Costs that have not been claimed for reimbursement by the date that is 60 Business Days following Substantial Completion;
- (i) Capital costs, including site preparation and construction costs, until Canada and if applicable the Province have confirmed in writing that environmental assessment and Aboriginal consultation obligations have been fully met and continue to be fully met;
- (j) Costs related to any component of the Project other than its approved scope;
- (k) Real estate fees and related costs;
- (l) Costs incurred for the general operation, repair and regularly scheduled maintenance of the Project;
- (m) Services or works normally provided by the Recipient, incurred in the course of implementation of the Project, except those specified as Eligible Expenditures;
- (n) Expenditures related to any goods and services which are received through donations or in-kind contributions;
- (o) Any overhead costs, including salaries and other employment benefits of any employees of the Recipient, its direct or indirect operating or administrative costs, and more specifically its costs related to planning, engineering, architecture, supervision, management and other activities normally carried out by its staff, except in accordance with the list of Eligible Expenditures above;
- (p) Unreasonable meal, hospitality or incidental costs or expenses of any Third Party;
- (q) Any amount for which the Recipient has received, will receive or is eligible to receive, a rebate, credit or refund, in full or in part;
- (r) Taxes of any kind;
- (s) Costs of relocating entire communities;
- (t) In the Province's sole discretion, the costs of communication activities undertaken by the Recipient that did not conform with the requirements of the Communications Protocol in Schedule "G";

- (u) Any amounts incurred or paid by the Recipient to an entity that is not at arm's length from the Recipient, except in accordance with the list of Eligible Expenditures above;
- (v) Costs incurred contrary to Article A.5.0 (Recipient's Acquisition of Goods or Services, Contract Provisions, and Disposal of Assets) of Schedule "A" (General Terms and Conditions) of this Agreement;
- (w) The costs, charges, penalties or fees incurred or paid by the Recipient in the process of having a cost determined to be an Ineligible Expenditure.
- (x) Costs, charges, penalties or fees incurred or paid by the Recipient that are a result of late or non-payment, rush requests, or contract termination or non-compliance;
- (y) Legal fees, financing charges and loan interest payments, including those related to easements (e.g., surveys);
- (z) Costs of furnishings and non-fixed assets which are not essential for the operation of the funded Asset or Project, as well as all costs associated with moveable assets or rolling stock;
- (aa) Any costs determined by the Province and Canada, in their sole discretion, to be associated with:
 - (i) tourism infrastructure;
 - (ii) a facility that serves as a home to a professional sports team; or
 - (iii) a planning project;
- (bb) Any other cost which is not specifically listed as an Eligible Expenditure under Article E.1.0 (Eligible Expenditures) and which, in the opinion of the Province, is considered to be ineligible.

[SCHEDULE "F" – EVALUATION FOLLOWS]

SCHEDULE “F” EVALUATION

F.1.0 PROJECT AND ICIP EVALUATIONS

- F.1.1 Recipient’s Participation in Project and ICIP Evaluations.** The Recipient understands that the Province or Canada, or both, may ask the Recipient to participate in one or more evaluations in respect of any Project or the ICIP during and for a period of up to six years after March 31, 2028. The Recipient agrees, if asked and at its own expense, to provide Project-related information to the Province or Canada, or both, for any evaluation.
- F.1.2 Results of Project and ICIP Evaluations.** The result of any evaluation carried under section F.1.1 (Recipient’s Participation in Project and ICIP Evaluations) will be made available to the public, subject to all applicable laws and policy requirements.

[SCHEDULE “G” – COMMUNICATIONS PROTOCOL FOLLOWS]

SCHEDULE “G” COMMUNICATIONS PROTOCOL

G.1.0 DEFINITIONS

G.1.1 **Definitions.** For the purposes of this Schedule “G” (Communications Protocol):

“**Joint Communications**” means events, news releases, and signage that relate to the Agreement or the Bilateral Agreement, or both, that are not operational in nature, and that are collaboratively developed and approved by,

- (a) in the case of the Bilateral Agreement, Canada, the Province and the Recipient;
and
- (b) in the case of the Agreement, the Province and the Recipient.

G.2.0 PURPOSE

G.2.1 **Purpose.** This communications protocol outlines the roles and responsibilities of each of the Parties to the Agreement in respect of Communications Activities related to each Project.

G.2.2 **Guidance.** This communications protocol will guide all planning, development and implementation of Communications Activities with a view to ensuring efficient, structured, continuous, consistent, and coordinated communications to the Canadian public.

G.2.3 **Application to Communications Activities.** The provisions of this communications protocol apply to all Communications Activities related to the Agreement and each Project.

G.3.0 GUIDING PRINCIPLES

G.3.1 **Information to Canadians.** Communications Activities undertaken through this communications protocol should ensure that Canadians are informed about the Project’s benefits, including the ways in which the Project helps improve their quality of life.

G.3.2 **Factors to Consider.** The scale and scope of Communications Activities undertaken for any Project will take into consideration the financial value, scope and duration of the Project and the feasibility of Joint Communications for such Communications Activities.

- G.3.3 **Deficiencies and Corrective Actions.** The Province will communicate to the Recipient any deficiencies or corrective actions, or both, identified by the Province, Canada or, as applicable, the Committee.
- G.3.4 **Approval of Communications Material.** The announcement or publication of the Project must be approved by the Parties and Canada prior to being carried out.
- G.3.5 **Costs of Communication Activities.** With the exception of advertising campaigns outlined in Article G.10.0 (Advertising Campaigns), the costs of Communication Activities and signage will follow the eligibility rules established in Schedule “E” (Eligible Expenditures and Ineligible Expenditures).

G.4.0 JOINT COMMUNICATIONS

- G.4.1 **Subject Matter.** The Parties and Canada may have Joint Communications about the funding and status of each Project.
- G.4.2 **Prior Knowledge and Agreement.** Joint Communications in respect of any Project should not occur without the prior knowledge and agreement of the Parties and Canada.
- G.4.3 **Recognition of the Province’s and Canada’s Contributions.** All Joint Communications material must be approved by the Province and Canada and will recognize the Province’s and Canada’s contribution or the Total Financial Assistance, or both, received in respect of any Project.
- G.4.4 **Notice and Timing.** The Recipient and the Province, on its own behalf or that of Canada, may request Joint Communications. The Party requesting the Joint Communications will provide at least 15 Business Days’ notice to the other Party. If the Communications Activity is an event, it will take place at a date and location mutually agreed to by the Parties and, if applicable, Canada.
- G.4.5 **Participation and Representatives.** The Party requesting a Joint Communications will provide the opportunity for the other Party and Canada to choose to participate and, if they do so choose, their own designated representative (in the case of an event).
- G.4.6 **English and French.** Canada has an obligation to communicate in English and French. Communications products related to events must be bilingual and include the Canada word mark and the logos of the Parties. In such cases, Canada will provide the translation services and final approval on products.
- G.4.7 **Table of Precedence for Canada.** The conduct of all Joint Communications will, as applicable, follow the *Table of Precedence for Canada* provided by Canada at

<https://www.canada.ca/en/canadian-heritage/services/protocol-guidelines-special-event/table-precedence-canada.html>, or at any other location as the Province may provide.

G.5.0 INDIVIDUAL COMMUNICATIONS

- G.5.1 **Canada's Obligations.** Notwithstanding Article G.4.0 (Joint Communications), the Parties agree that Canada or the Province, or both, have the right to communicate information to Canadians and Ontarians about the Agreement and the use of Funds to meet its legislated and regulatory obligations through their respective own Communications Activities.
- G.5.2 **Restrictions.** Each Party may include general ICIP messaging and an overview in respect of any Project in their own Communications Activities. The Province and the Recipient will not unreasonably restrict the use of, for their own purposes, Communications Activities related to any Project and, if the communications are web- or social-media based, the ability to link to it. Canada has also agreed, in the Bilateral Agreement, to the above.
- G.5.3 **Publication.** The Recipient will indicate, in respect of any Project-related publications, whether written, oral, or visual, that the views expressed in the publication are the views of the Recipient and do not necessarily reflect those of Canada and the Province.
- G.5.4 **Canada's Recognition in Documents.** In respect of any Project where the deliverable is a document, such as but not limited to plans, reports, studies, strategies, training material, webinars, and workshops, the Recipient will clearly recognize Canada's and the Province's respective financial contribution for the Project.
- G.5.5 **Acknowledgement of Support.** Unless the Province directs the Recipient to do otherwise, the Recipient will, in respect of any Project-related publications, whether written, oral, or visual, acknowledge the Province's and Canada's support for the Project.

G.6.0 OPERATIONAL COMMUNICATIONS

- G.6.1 **Responsibility of Recipient.** The Recipient is solely responsible for operational communications in respect of each Project, including but not limited to calls for tender, contract awards, and construction and public safety notices. Operational communications as described above are not subject to the *Official Languages Act* of Canada.

G.7.0 MEDIA RELATIONS

G.7.1 **Significant Media Inquiry.** The Province and the Recipient will share information promptly with the other Party and Canada if significant media inquiries are received or emerging media or stakeholder issues arise in respect of a Project or the ICIP.

G.8.0 SIGNAGE

G.8.1 **Recognition of Funding Contribution.** The Parties agree that Canada, the Province and the Recipient may each have signage recognizing their funding contribution in respect of each Project.

G.8.2 **Funding Recognition.** Unless otherwise agreed by Canada or the Province, or both, the Recipient will produce and install a sign to recognize the funding contributed by the Province or Canada, or both, at each Project site in accordance with, as applicable, their current respective signage guidelines. Federal sign design, content, and installation guidelines will be provided by Canada. Provincial sign design, content, and installation guidelines will be provided by the Province.

G.8.3 **Permanent Plaque.** Where the Recipient decides to install a permanent plaque or another suitable marker in respect of any Project, the Recipient will:

- (a) on the marker, recognize the Province's and Canada's contributions; and
- (b) prior to installing the marker, seek the prior written approval of both Canada and the Province, each respectively, for its content and installation.

G.8.4 **Notice of Sign Installation.** The Recipient will inform the Province of sign installations, including providing the Province with photographs of the sign, once the sign has been installed.

G.8.5 **Timing for Erection of Sign.** If erected, signage recognizing Canada's and the Province's respective contributions will be installed at the Project site(s) 30 days prior to the start of construction, be visible for the duration of the Project, and remain in place until 30 days after construction is completed and the infrastructure is fully operational or opened for public use.

G.8.6 **Size of Sign.** If erected, signage recognizing Canada's and the Province's respective contribution will be at least equivalent in size and prominence to Project signage for contributions by other orders of government and will be installed in a prominent and visible location that takes into consideration pedestrian and traffic safety and visibility.

G.8.7 **Responsibility of Recipient.** The Recipient is responsible for the production and installation of Project signage, and for maintaining the signage in a good state of repair during the Project, or as otherwise agreed upon.

G.9.0 COMMUNICATING WITH RECIPIENT

G.9.1 **Facilitation of Communications.** The Province agrees to facilitate, as required, communications between Canada and the Recipient for Communications Activities.

G.10.0 ADVERTISING CAMPAIGNS

G.10.1 **Notice of Advertising Campaigns.** Recognizing that advertising can be an effective means of communicating with the public, the Recipient agrees that Canada or the Province, or both, may, at their own cost, organize an advertising or public information campaign in respect of any Project or the Agreement. However, such a campaign will respect the provisions of the Agreement. In the event of such a campaign, Canada or the Province will inform each other and the Recipient of its intention no less than 21 Business Days prior to the campaign launch.

[SCHEDULE “H” – DISPOSAL OF ASSETS FOLLOWS]

SCHEDULE “H” DISPOSAL OF ASSETS

H.1.0 DEFINITIONS

H.1.1 **Definitions.** For the purposes of this Schedule “H” (Disposal of Assets):

“**Asset Disposal Period**” means the period commencing on the Effective Date and ending five (5) years after the Expiration Date.

H.2.0 DISPOSAL OF ASSETS

H.2.1 **Asset Disposal Period.** Unless otherwise agreed to by the Province, the Recipient will maintain the ongoing operations and retain title to and ownership of any Asset acquired in respect of any Project for the Asset Disposal Period.

H.2.2 **Disposal of Asset and Payment.** If, at any time within the Asset Disposal Period, the Recipient sells, leases, encumbers, or otherwise disposes, directly or indirectly, of any Asset other than to Canada, the Province, or a municipal or regional government established by or under provincial statute, the Province may require the Recipient to reimburse the Province or Canada, via the Province, for any Funds received for any Project.

[SCHEDULE “I” – ABORIGINAL CONSULTATION PROTOCOL FOLLOWS]

SCHEDULE “I” ABORIGINAL CONSULTATION PROTOCOL

I.1.0 DEFINITIONS

I.1.1 **Definitions.** For the purposes of this Schedule “I” (Aboriginal Consultation Protocol):

“**Aboriginal Community**”, also known as “Aboriginal Group”, includes First Nation, Métis, and Inuit communities or peoples of Canada.

“**Aboriginal Consultation Plan**” means the Aboriginal Consultation Plan described in section I.2.1 (Development of Plan).

I.2.0 ABORIGINAL CONSULTATION PLAN

I.2.1 **Development of Plan.** The Province, based on the scope and nature of the Project or at the request of Canada, may require the Recipient, in consultation with the Province or Canada, or both, to develop and comply with an Aboriginal consultation plan (“Aboriginal Consultation Plan”) in respect of each Project.

I.2.2 **Procedural Aspects of Aboriginal Consultation.** If consultation with Aboriginal Communities is required, the Recipient agrees that:

- (a) the Province or Canada, or both, may delegate certain procedural aspects of the consultation to the Recipient; and
- (b) the Province or Canada, or both, will provide the Recipient with an initial list of the Aboriginal Communities the Recipient will consult.

I.2.3 **Provision of Plan to Province.** If, pursuant to section I.2.1 (Development of Plan), the Province provides Notice to the Recipient that an Aboriginal Consultation Plan is required, the Recipient will, within the timelines provided in the Notice, provide the Province with a copy of the Aboriginal Consultation Plan.

I.2.4 **Changes to Plan.** The Recipient agrees that the Province or Canada, in the sole discretion of the Province or Canada and from time to time, may require the Recipient to make changes to the Aboriginal Consultation Plan.

I.3.0 ABORIGINAL CONSULTATION RECORD

I.3.1 **Requirements for Aboriginal Consultation Record.** If consultation with an Aboriginal Community is required, the Recipient will maintain an Aboriginal Consultation Record

and provide such record to the Province, and any update to it, as part of its reporting to the Province pursuant to section D.2.1 (Inclusion of Aboriginal Consultation Record).

I.4.0 RESPONSIBILITIES OF THE RECIPIENT

I.4.1 Notification to and Direction from the Province. The Recipient, with respect to each Project, will immediately notify the Province:

- (a) of contact by Aboriginal Communities regarding the Project; or
- (b) of any Aboriginal archaeological resources that are discovered in relation to the Project,

and, in either case, the Recipient agrees that the Province or Canada, or both, may direct the Recipient to take such actions as the Province or Canada, or both, may require. The Recipient will comply with the Province's or Canada's direction.

I.4.2 Direction from the Province and Contracts. In any Contract, the Recipient will provide for the Recipient's right and ability to respond to direction from the Province or Canada, or both, as the Province or Canada may provide in accordance with section I.4.1 (Notification to and Direction from the Province).

[SCHEDULE "J" – REQUESTS FOR PAYMENT AND PAYMENT PROCEDURES FOLLOWS]

**SCHEDULE “J”
REQUESTS FOR PAYMENT AND PAYMENT PROCEDURES**

J.1.0 PROCEDURES AND TIMING FOR REQUESTS FOR PAYMENT

- J.1.1 **Procedures.** The procedures provided for in Article J.2.0 (Procedures for Requests for Payment for Eligible Expenditures) of this Schedule “J” (Request for Payment and Payment Procedures) will apply to requests for payment that the Recipient submits to the Province under the Agreement.
- J.1.2 **Diligent and Timely Manner.** The Recipient will submit its requests for payment for Eligible Expenditures in respect of each Project to the Province in a diligent and timely manner.

J.2.0 PROCEDURES FOR REQUESTS FOR PAYMENT FOR ELIGIBLE EXPENDITURES

- J.2.1 **Timing, Reports and Documents.** The Recipient will submit each request for payment for Eligible Expenditures in respect of each Project to the Province in accordance with Schedule “D” (Reports) and, if the Province so requested pursuant to paragraph K.4.1(f), after review by the Committee.

J.3.0 PAYMENTS OF FUNDS

- J.3.1 **Payment by the Province.** Subject to the terms and conditions of the Agreement, upon receipt of a request for payment fully completed in accordance with this Schedule “J” (Requests for Payment and Payment Procedures), the Province will use its reasonable efforts to pay Funds to the Recipient based on the Recipient’s incurred and paid Eligible Expenditures up to the Maximum Funds, if due and owing under the terms of the Agreement. Claims will be reimbursed based on the Percentage of Provincial Support and the Percentage of Federal Support as set out in Sub-schedule “C.1” (Project Description and Financial Information).
- J.3.2 For greater certainty and without limitation, before the Province makes a payment to the Recipient, the following terms and conditions of the Agreement must be met, in the opinion of the Province or Canada, or both:
- (a) the conditions set out in paragraph A.4.2(c) of Schedule “A”;
 - (b) the special conditions listed in Article A.31.0 of Schedule “A” (Special Conditions);

- (c) receipt and acceptance by the Province of all required Reports and other reports, as applicable;
- (d) compliance with all applicable audit requirements under the Agreement; and
- (e) applicable communications requirements, as set out Schedule “G” (Communications Protocol).

J.3.3 The Province will under no circumstances be liable for interest for failure to make a payment within the time limit provided for in this Article J.3.0 (Payments of Funds).

J.4.0 TIME LIMITS FOR REQUESTS FOR PAYMENTS

J.4.1 **Timing.** The Recipient will submit all requests for payment within 60 Business Days of any Project’s Substantial Completion.

J.4.2 **No Obligation for Payment.** Notwithstanding anything to the contrary herein, the Province will have no obligation to make any payment for a request for payment that is received by the Province after 60 Business Days following the Substantial Completion of any Project.

J.5.0 FINAL RECONCILIATION AND ADJUSTMENTS

J.5.1 **Final Reconciliation and Adjustments.** For each Project, following the submission of the final Progress Report and the declaration of Substantial Completion, the Province will carry out a final reconciliation of all requests for payments and payments in respect of the Project and make any adjustments required in the circumstances.

J.6.0 HOLDBACK

J.6.1 **Holdback.** For each Project, the Province may hold back funding in accordance with section A.4.12 (Retention of Contribution).

J.7.0 FINAL PAYMENT

J.7.1 **Final Payment.** Subject to paragraph A.4.2(c) of Schedule “A” (General Terms and Conditions), the Province will pay to the Recipient the remainder of the Funds under the Agreement, including the Holdback, after all of the conditions under section A.4.12 (Retention of Contribution) of Schedule “A” (General Terms and Conditions) have been met.

[SCHEDULE “K” – COMMITTEE FOLLOWS]

SCHEDULE “K” COMMITTEE

K.1.0 ESTABLISHMENT OF COMMITTEE

K.1.1 Establishment and Term of Committee. If the Province requires the establishment of a Committee to oversee the Agreement, pursuant to section A.29.1 (Establishment of Committee), the Parties will, within 60 days of the Province providing Notice, hold an initial meeting to establish the Committee. The Committee’s mandate will expire on the Expiration Date of the Agreement.

K.2.0 COMMITTEE MEMBERS, CO-CHAIRS, AND OBSERVERS

K.2.1 Appointments by the Province. The Province will appoint two persons as members of the Committee.

K.2.2 Appointments by the Recipient. The Recipient will appoint two persons as members of the Committee.

K.2.3 Chairs of the Committee. The Committee will be headed by co-chairs chosen from its members, one appointed by the Province and one appointed by the Recipient. If a co-chair is absent or otherwise unable to act, the member of the Committee duly authorized in writing by the Province or the Recipient, as applicable, will replace him or her and will act as co-chair in his or her place.

K.2.4 Non-committee Member Staff. The Parties may invite any of their staff to participate in Committee meetings. The Province may invite up to two representatives from Canada to sit as observers on the Committee. For greater certainty, the staff and representative(s) from Canada will not be considered members and will not be allowed to vote.

K.3.0 MEETINGS AND ADMINISTRATIVE MATTERS

K.3.1 Rules of Committee. The Committee will:

- (a) meet at least two times a year, and at other times at the request of a co-chair; and
- (b) keep minutes of meetings approved and signed by the co-chairs as a true record of the Committee meetings.

K.3.2 Quorum. A quorum for a meeting of the Committee will exist only when both co-chairs are present.

K.4.0 COMMITTEE MANDATE

K.4.1 Mandate. Provided that no action taken by the Committee will conflict with the rights of the Parties under the Agreement, the mandate of the Committee will include, but not be limited to:

- (a) monitoring the implementation of the Agreement including, without limitation, the implementation of Schedule “G” (Communications Protocol), for compliance with the terms and conditions of the Agreement;
- (b) acting as a forum to resolve potential issues or disputes and address concerns;
- (c) reviewing and, as necessary, recommending to the Parties amendments to the Agreement;
- (d) approving and ensuring audit plans are carried out as per the Agreement;

- (e) establishing sub-committees as needed;
- (f) at the request of the Province, reviewing requests for payments; and
- (g) attending to any other function required by the Agreement, including monitoring project risk and mitigation measures, or as mutually directed by the Parties.

K.4.2 Committee Decisions. Decisions of the Committee will be made as follows:

- (a) the co-chairs will be the only voting members on the Committee; and
- (b) decisions of the Committee must be unanimous and recorded in writing.

K.5.0 ROLE OF THE RECIPIENT

K.5.1 Requirements. The Recipient undertakes to fulfill, in addition to any other requirements provided for in this Schedule “K” (Committee), the following:

- (a) establish a fixed location where the Agreement will be managed, and maintain it until the expiry of the Committee’s mandate and, if relocation is required, establish a new location;
- (b) prepare and retain, at the location described in paragraph K.5.1(a), and make available to the Committee, all documents needed for the work of the Committee, including payment request forms, approval documents, contracts, and agendas and minutes of meetings of the Committee and its subcommittees;
- (c) ensure that any audit required of the Recipient pursuant to the Agreement is carried out and the results are reported to the Committee;
- (d) ensure that administrative and financial systems are developed and implemented for any Project and the work of the Committee;
- (e) promptly inform the Committee of all proposed changes in respect of any Project; and
- (f) provide the Committee, as requested and within the timelines set by the Committee, and to the Committee’s satisfaction, project status information related to Schedule “D” (Reports).

Appendix “B”

COVID-19 Resilience Infrastructure Stream - City of London Approved Projects

Project Description	Total Project	Federal Contribution	Provincial Contribution
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Active Transportation Projects

New Cycling Facilities	\$2,370,798	\$1,896,638	\$474,160
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The project will modify and increase cycling infrastructure in the City of London to provide residents with more transportation choices.

The project activities include installing new cycling facilities on Wavell Street/Brydges Street from Highbury Avenue North to Clarke Road, Saskatoon Street from Wavell Street to Dundas Street, as well as creating a protected intersection and new cycling facilities at the intersection of Ridout Street and Commissioners Road East.

The project will result in approximately 3.6km of new cycling facilities and one new protected intersection within the City of London.

Boulevard Bicycle Path Improvements	\$1,100,000	\$880,000	\$220,000
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This project will provide improvements to the in-boulevard pathway system to increase cyclists comfort by reducing gaps in cycling infrastructure, improving the integration between cycling infrastructure and transit facilities. It will provide new dedicated cycling infrastructure along major intersections and side streets.

The scope of the project is to improve in-boulevard cycling paths on Fanshawe Park Road between Medway Creek Bridge and Adelaide Street. This includes integrating local transit into the design of the cycling facilities in order to improve safety, comfort and separation between cyclists, pedestrians and transit users.

The approximate outputs for this project will generate 4.38km of new, improved in-boulevard cycling paths. The goal of these facilities is to increase cycling ridership, promote active transportation, improve safety and to provide residents with more transportation choices. These new cycling facilities will increase the separation and physical distancing between cyclists, pedestrians, and transit users.

Downtown Sidewalk Improvements	\$300,000	\$240,000	\$60,000
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This project will improve the sidewalk and boulevard system in the downtown core to increase comfort and accessibility for pedestrians.

The project scope includes sidewalk and boulevard improvements within the following locations in the Downtown Core: Richmond Street between Queens Avenue and Dundas Street, Carling Street, Richmond Street between Central Avenue and Hyman Street, Richmond Street between Mill Street and CPR, Hyman Street between Richmond Street and Wellington Street, and Wolfe Street between Wellington Street and Waterloo Street.

The project outputs include generating new sidewalk and boulevard paths within the downtown to create an improved pedestrian realm.

Subtotal Active Transportation Projects	\$3,770,798	\$3,016,638	\$754,160
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Project Description	Total Project	Federal Contribution	Provincial Contribution
Facility Infrastructure Renewal Program	\$1,750,000	\$1,400,000	\$350,000

This project will upgrade HVAC and ventilation equipment in three recreational facilities to ensure safe and reliable recreational facilities for the public, improve safety from COVID-19 for staff and the public and reduce the amount of R22 refrigerant that contain harmful chlorofluorocarbons (CFC's).

Project activities include replacing the Heating Ventilation and Air Conditioning (HVAC) units with higher efficiency models, the roof mounted Energy Recovery Ventilation units (ERV's), the natural gas fired boiler with circulating pumps with higher efficiency models, and various refrigeration components such as circulating pumps, motors, and electrical infrastructure with higher efficiency options.

Anticipated outputs of the project include increased ventilation and improved indoor air quality (IAQ) for staff and the public, reduce amount of harmful CFCs, lessen the energy required to heat and cool the facilities and reduce greenhouse gases.

Grand Total	\$5,520,798	\$4,416,638	\$1,104,160
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Transportation Advisory Committee

Report

7th Meeting of the Transportation Advisory Committee

August 3, 2021

Advisory Committee Virtual Meeting - during the COVID-19 Emergency

Attendance PRESENT: D. Foster (Chair), A. Abiola, D. Doroshenko, B. Gibson, T. Kerr, T. Khan, P. Moore, M. Rice, M.D. Ross and S Wraight and J. Bunn (Committee Clerk)

ABSENT: G. Bikas

ALSO PRESENT: J. Kostyniuk, T. Macbeth, D. MacRae, A. Miller, E. Oladejo, J. Stanford and B. Westlake-Power

The meeting was called to order at 12:16 PM.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Consent

2.1 6th Report of the Transportation Advisory Committee

That it BE NOTED that the 6th Report of the Transportation Advisory Committee, from its meeting held on June 29, 2021, was received.

3. Sub-Committees and Working Groups

3.1 Presentation of TAC 20.8 Worksheet

That it BE NOTED that a verbal update from A. Abiola with respect to the Transportation Advisory Committee Work Plan Item 20.8 related to Managing Transport-Related green house gas emissions, was received.

3.2 TAC Evolution and Recommendation

That the following actions be taken with respect to the Transportation Advisory Committee (TAC) Evolution and Recommendation document, from D. Foster, as appended to the Agenda:

- a) the City Clerk BE ADVISED that the TAC has completed its evolution into a model Advisory Committee and should, therefore, maintain its current Terms of Reference make up and “at large” pilot;
- b) the City Clerk BE ADVISED that the progress of the TAC should be evaluated concurrently with the proposed, but as yet untested, Community Engagement Panel pilot concept; and,
- c) the above-noted document BE RECEIVED.

3.3 eBike Working Group Update - Verbal Update

That it BE NOTED that a verbal update from T Khan, D. Doroshenko and T. Kerr, and the attached E-Scooters Working Group Report, with respect to E-Scooters in London, were received.

3.4 Advisory Committee Pilots - SWOT Comparison

That it BE NOTED that the Strengths-Weaknesses-Opportunities-Threats (SWOT) Comparison document, from D. Foster, as appended to the Agenda, with respect to the Advisory Committee Pilots, was received; it being noted that the sub-committee of the Transportation Advisory Committee will convene to review and populate the SWOT document.

4. Items for Discussion

None.

5. Additional Business

5.1 (ADDED) Dundas Place Traffic Diversion Feedback

That it BE NOTED that the Memo, dated July 29, 2021, from D. Hall, Active Transportation Manager, with respect to Dundas Place Traffic Diversion Feedback, was received.

6. Adjournment

The meeting adjourned at 1:41 PM.

TAC WG Report - E-Scooters for London

Recap

In the TAC meeting held on June 29, 2021 under agenda item # 2.1, a presentation was made by the staff on the pilot project regarding e-scooters and cargo e-bikes.

An e-scooters Working Group (EWG) was formed to study the topic in London's context and prepare a brief report for the consideration of the Transportation Advisory Committee in its Aug. 3, 2021 meeting.

EWG was composed of following members:

- 1) Tariq Khan
- 2) Trevor Kerr
- 3) Dan Doroshenko

EWG held its meeting on **July 6, 2021**. EWG also invited Mr. Ashfaq Kash into the meeting to provide input from the **disability community's perspective**.

On **July 14, 2021**, the City asked residents and businesses to provide feedback using an automated, easy-to-use interactive web-form at City's website (https://getinvolved.london.ca/e-scooter/survey_tools/feedback-form1), regarding how e-scooters and large cargo e-bikes could be used in London. A precise but comprehensive list of FAQs has also been published on the City's website at <https://getinvolved.london.ca/e-scooter/widgets/93625/faqs#17539>.

Ontario's Announcement

On November 27, 2019, the Ontario Ministry of Transportation announced, effective January 1, 2020, a 5-year pilot to permit Electric Kick Scooters (e-scooters) on Ontario's roads. The marketing pitch was toned to help businesses expand and allow consumers and commuters more choice.

Observations on Ontario's Announcement

Although municipalities can choose whether to allow e-scooters as a mode of transportation within their jurisdictions, the province has set out the broad rules and requirements for e-scooters entitled Best Practice Guidelines for Municipalities-1.

Every municipality in Ontario is unique in terms of its topography, road infrastructure, trails and walking and cycling paths. Municipalities that intend to allow e-scooters to operate on their roads **must determine** where they can operate most safely in each unique environment and pass by-laws to permit their use.

In late summer 2021, London City Council will determine if private and public shared e-scooters will be allowed, where they can be used and where they can be parked on public properties. If a pilot is approved by Council and by-laws are introduced, an e-scooter share pilot program could start in early **spring 2022**.

E-Scooters - Trendy Thingy of Twenty Twenties

Micro mobility devices are the mode of active transportation driven/operated by users personally. These devices generally refer to bicycles, kick scooters, skateboards, hover-boards, etc. They are low speed, lightweight and portable hence they are also known as Personal Transportation Devices (PTDs).¹ E-Scooters are the latest addition to the family of PTDs and are gaining popularity exponentially around the globe.

The E-Scooters Share System was initially introduced in Santa Monica, CA in September 2017 and Canadians were not far behind to give it a try. The first electric scooter sharing system in Canada was in operation in the City of Waterloo as of October 2018. Soon after, similar systems began operation throughout Canada, including Kelowna, Calgary, Edmonton, and Montreal to name a few.

Over the past three years, e-scooter sharing systems/programs have sprung up worldwide. Their popularity has increased with every passing day. Under shared micro mobility settings, e-scooters are generally rented through a mobile app or kiosk and are meant for short point-to-point trips. In 2018 in the US, according to a recent study³, there were collectively 84 million trips made using shared micro mobility and out of 84 million trips, e-scooter trips, although e-scooter programs were not as extensive as other micro mobility shared programs, accounted for 38.5 million trips (46%)..

The e-scooter share systems, throughout the world, have developed love-hate relationships with their communities right from their introduction. Though its popularity has been exponential, criticism/opposition also grew very fast in parallel. Initially, most of the cities were caught unprepared in terms of appropriate regulations and infrastructure. We saw cities very quickly banning e-scooters in the 2020s but in 2021 we have seen cities reconsidering e-scooter programs and giving it another try with more caution and a great degree of regulation.

Common observation indicates many people use e-scooters as a novelty rather than an active mode of transportation. The use and popularity of this mode of hi-tech transportation is a typical classic example of the government catching up to technology and science innovation.

For some of the public it may be a fun and environmentally friendly replacement of automobiles for short distances; but for others, especially people with disabilities, it may be a terrifying prospect - deadly, silent single-rider-vehicles running in the streets or just left cluttered on the sidewalks causing injuries to pedestrians and the disabled. On sidewalks/walkways/footpaths, e-scooters pose a danger to wheelchair users as well as pedestrians particularly people who are blind or need hearing aids.

From a commuter's perspective, it is an emission-free and efficient mode of personal transportation. On the other hand, the rise of e-scooter use has also caused the rise of related accidents. The exact number of crashes involving e-scooters is said to be under-reported. Accidents are on the rise wherever e-scooters are being used either privately or under some share systems⁴.

A similar situation involves offences and crimes. Due to their speed and noiselessness, local police forces report these PDTs have become an attractive vehicle for some criminals.

Motorcycle / Cycle / or what?

Most of the e-scooter models don't have license plates or signaling ability. That may be the reason they are being seen in the e-bikes class. In the UK, e-scooters are covered by the Road Traffic Act - riders need a driving license, a tax must be paid to own one and insurance is required. Even then they can only be used on private lands or in designated trial areas. Riders can be prosecuted and their e-scooters can be confiscated if they're found to be breaking the law.

Reemergence

There are many factors involved in the e-scooters' continuous acceptance as a mode of transportation and unprecedented popularity:

- **Reconsideration by Cities:** During pandemic times the cities which initially rejected e-scooter programs have begun to reconsidered this decision. For example, in the UK, they were banned but as of June 2021, new 12-month trials are in progress in more than 40 towns and cities across the country. In London, trials are in operation in four different areas in the city. In Canada, e-scooter popularity is soaring and now policing is more towards enforcement rather than the education side.
- **Pandemic factor:** Individual, socially-distanced PDTs are in the backdrop of general hesitancy among people to avoid public transport.
- Transit users have always been looking for some mode of transportation which may facilitate them for the "first mile" or the "last mile" of their journey.
- Fun, easy and independent ride.
- Faster journey times than cars in narrow/small streets areas. "I took one from City Hall to the mall, it took six minutes. I was actually quite surprised at how reliable, efficient and easy they are to ride. The advantage is they will cut down on traffic in the downtown core." Mayor of Vernon BC⁵
- Cleaner, low-carbon alternative for those who can't or don't want to bike.
- GHG reducer: Personal transportation is generally the largest source of greenhouse gas emissions.

- No licensing requirements.

* <https://www.bbc.com/future/article/20200608-how-sustainable-are-electric-scooters>

- **Convenient and office friendly** - in contrast with biking, people may travel from office to office in office-business dress without sweating.
- Overhead and ownership free.

E-Scooter Trials - Canada

Despite this resurgence, early this year, the City of Toronto declined yet again to participate in trials on the recommendation of their Accessibility Advisory Committee. Montreal ran the pilot in summer 2019 but banned e-scooters in 2020 because of parking and operation related reasons⁶. On the other hand, the e-scooter sharing company Bird Bikeshare has permits in Kelowna and Neuron Mobility was given a permit in Vernon B.C. Permits were issued in Calgary, Edmonton, Ottawa and Windsor while Hamilton, Brampton and Mississauga are considering e-scooters. Calgary which ran a pilot between 2019 and 2020 recently decided to let e-scooters stay while Edmonton has continued its third trial season and . Waterloo continues to run its pilot From the mixed response in Canada, it is evident that ***e-scooters are an emerging mode of active transportation worldwide hence may not be ignored/banned without very valid and compelling reasons.***

Municipalities have both the authority and the responsibility to protect public health and ensure safety for its residents. As mentioned above, cities in Canada have taken varied approaches to managing shared micro-mobility on their streets and chosen to exercise their authority in different ways. Ontario has also provided a pilot framework and best practices document for the use of e-scooters in the province.

To allow pilots to be run within municipalities, there are provincial requirements and local considerations. Every municipality is required to satisfy provincial requirements while at the same time framing by-laws as per local requirements and considerations. If Council wishes to consider trials in London then, keeping in view the topography, infrastructure and local weather, the following recommendations may be considered

Consumer Reports Survey Results¹⁰ (conducted in March 2019 in the USA):

- 51% of e-scooter users ride on the sidewalk
- 27% of riders are uncertain of the traffic laws they should follow
- 26% ride in a bike lane
- 25% of riders say that pedestrians got in the way
- 18% of users ride in the street, but not a bike lane
- 20% of riders reportedly feel unsafe around car traffic
- 8% reported an e-scooter malfunctioned or didn't work properly

TAC Recommendations:

- Further study on the issues of public safety, liability and the licensing of Individual owners is required; therefore, e-scooters should not be approved for individual use at this time.
- A multi-staged third party Pilot program should be approved following the guidelines listed below.
- A budget should be established to ensure proper funding for a project co-ordinator to supervise the pilot, additional staff and operating expenses and enhanced enforcement capability.
- Trials may be multi-stage. In each stage, records of injuries, accidents, bylaw enforcement stats including fines and actual observations of rider behaviours and interactions with other modes of transportation should be closely monitored **8**
- A stage-gate approval process must be put in place to review results prior to any expansion of the pilot.
- Educational Institutions such as Western University and Fanshawe college should be invited to study/participate in the Pilot program.
- Public outreach plans should be developed and designed to engage, explain, educate and then enforce.
- The pilot should be added to the Work Plan of TAC and any other relevant Advisory Committee for evaluation, study and input.

Guidelines:

- Absolutely no compromise on safety and accessibility issues. The MTO's guidelines⁷ should be strictly followed.
- Pilot areas should initially be few and small in size (1-2 km in radius) and limited to:
 - established Bicycle lanes and pathways and /or temporary, created lanes
 - quiet roads in neighbourhoods with lower volumes of traffic
- The numbers of e-scooters in any trial jurisdiction should be kept low to avoid any traffic/congestion related issues.
- Each e-scooter participating in trails must have a **highly visible and unique identification number** and decals with raised lettering to make it easier to report improperly parked/left e-scooters (whether within or outside of geo-fenced areas).

- To encourage take-up during any such pilot, general permit fees for third-party providers should allow for incentives tied to increased ridership, a portion of which should allow for a reduction of user fees.
- **Parking:** A Docked system is preferred over the Dockless version but in the event they are ignored by user, e-scooters should be able to be parked upright and stabilized with a kickstand. Special emphasis should be given when selecting Docking/Parking spots to make sure that those parking spots may not cause any problems to road/street users. They should not block: disability parking and transfer zones, building/property entrances, pedestrian ramps and walkways, driveways, loading zones, transit stops, crosswalks, benches, parking meters, etc.
- **Liability:** This is a complex issue. Generally speaking, city approved third party e-scooter providers are well insured. Furthermore, users must agree to the terms of usage of the e-scooter. Accidents may occur due to malfunction, riders error, other road user's error, repair related issues on the road/paths, etc. so the City should require authorized e-scooter providers to demonstrate proof of insurance before they can operate legally. The City should also seek legal counsel on the development of contract language designed to limit liability risk to the City itself.
- Selected areas in terms of "first mile" & "last mile" for transit, especially in those new subdivisions where transit is not available or not planned, may be used for trials.
- School zones should be avoided in the initial stages of the pilot, however if and when they consider for study, operation timing should be after school hours.
- Best practices/lessons learned and experiences from other cities should be taken into consideration while planning for the pilot. Region of Waterloo has conducted a feasibility study⁹ on shared micro mobility, the points discussed/analyzed in the study may be considered from a London perspective while designing the trials.

References:

- 1) <https://news.ontario.ca/en/release/54754/ontario-announces-e-scooter-pilot-to-help-grow-ontarios-economy>
- 2) <https://www.berkley-tech.com/wp-content/uploads/2019/10/E-ScooterWhitepaper.pdf>
- 3) <https://nacto.org/shared-micromobility-2018/>
- 4) <https://ottawa.ctvnews.ca/ottawa-police-move-from-education-to-enforcement-as-e-scooter-popularity-soars-1.5527610>
- 5) <https://www.castanet.net/news/Vernon/341441/City-of-Vernon-launches-electric-scooter-program>
- 6) <https://www.toronto.com/news-story/10420394-e-scooter-companies-bullish-on-canada/>
- 7) <http://www.mto.gov.on.ca/english/vehicles/pdf/e-scooter-best-practices.pdf>
- 8) <https://www.publichealthontario.ca/-/media/documents/e/2021/e-scooter-injuries.pdf?la=en>
- 9) https://ehq-production-canada.s3.ca-central-1.amazonaws.com/0a0ae35cb7740b7c8e0a8a578d960f83e805289a/original/1616510983/5161543fb49015d332f8296a08b91389_Final_Report_-_Region_of_Waterloo_Shared_Micromobility_Feasibility_Study_2020_-_MCIP_15708_-_3205057.pdf?X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIBJCUK4ZO4WUUA%2F20210730%2Fca-central-1%2Fs3%2Faws4_request&X-Amz-Date=20210730T203524Z&X-Amz-Expires=300&X-Amz-SignedHeaders=host&X-Amz-Signature=255b72f15e306c4cf22f3656adb7807a3b0fe8d844d0d5c7e069bf32db5db2f3
- 10) <https://www.consumerreports.org/product-safety/deaths-tied-to-e-scooters/> “



London Civic Works Committee

London City Hall
300 Dufferin Ave,
London, ON N6B 1Z2

August 31, 2021

Regarding: Commercial e-scooters in the City of London

Dear Committee Members,

CNIB recommends that the City of London **ban the use of e-scooters** on all city roads, sidewalks, pathways, and in all other areas of the city. We urge the City of London to consider the recent decision by the City of Toronto to uphold a ban on e-scooters and City of Montreal's decision to ban e-scooters after they were introduced due to improper parking concerns. We request that the Civic Works Committee similarly prioritize the safety of vulnerable pedestrians by voting against commercial e-scooters in the city.

CNIB is pleased to see that the City of London is open to innovative approaches which have the potential to lessen greenhouse gases, reduce congestion on city streets, and better utilize public transit via first/last mile transportation. We applaud the City's decision to prioritize enforcement capabilities, use small pilot areas, include both visual and tactile identifiers on devices, and ensure that pedestrian areas are kept free from obstructions.

However, these measures are not sufficient to ensure the safety of vulnerable pedestrians, such as people who are blind or partially sighted. From consultations with our community members living in municipalities where e-scooters are permitted,



we know that e-scooters can create safety and accessibility barriers for people who are blind or partially sighted.

We ask that the Civic Works Committee consider the following in their upcoming decision.

Considerations

- Pedestrians who are blind or partially sighted may not be aware of an approaching e-scooter. An automatic acoustic alerting system must be in place to ensure pedestrian safety. An acoustic alerting system that relies on rider activation (such as a bell) is not sufficient to ensure the safety of vulnerable pedestrians, such as people who are blind or partially sighted, as riders may fail to activate the alert or may activate the alert beyond the point at which a pedestrian is able to react.
- Pedestrians who are blind or partially sighted are not able to navigate safely around an abandoned device or a device that is parked in a shared space or public pathway, which may result in injury. The Transportation Advisory Committee's recommendation of providing docking stations that people can choose to use is unrealistic in its expectation that it will stop people from parking wherever they choose and in dangerous and inappropriate locations. If the City introduces docking stations then it must require e-scooters to park in those designated spaces in order to mitigate dangerously parked e-scooters
- Docking stations and locking devices are not sufficient to mitigate the pedestrian safety hazards posed by e-scooters. In other jurisdictions where e-scooters are permitted, including Ottawa and Windsor, there have been significant issues with riders abandoning devices on sidewalks and in areas that block entrances, accessibility ramps, and accessible pedestrian signals. The Transportation Advisory

Committee's report references the Montreal project but fails to note that the Montreal project was cancelled due to issues with improperly parked and abandoned devices.

- The process for reporting an abandoned or improperly parked device must be simple, accessible, and widely advertised to the public to ensure that the impact of e-scooters is accurately captured, including incidents that cause minor injury and incidents involving the removal of abandoned devices by members of the public. It is likely that these minor incidents will occur more frequently than major incidents, and they should not be overlooked.
- E-scooters on sidewalks pose a critical safety risk to vulnerable pedestrians. Sidewalk riding is a major issue in jurisdictions where sidewalk riding has been banned. There is not an existing technological solution that is refined enough to geofence the sidewalk from the roadway.

Recommendations

1. E-scooters should be banned on all City of London roads, sidewalks, pathways, and in all other areas of the city until e-scooters and their operators are trained, licensed, insured, and fully regulated by the province of Ontario.
2. If e-scooters are permitted, they must be treated as bicycles and operators must follow the same rules of the road as cyclists.
3. If e-scooters are permitted, the City of London should ban e-scooters on sidewalks and in most parks, as well as multi use pathways.
4. If e-scooters are permitted, the City of London should limit speed to no more than jogging speed at most
5. If e-scooters are permitted, they should be prevented from operating in heavily populated and pedestrian dense areas through the use of geofencing
6. If e-scooters are permitted, an automatic acoustic alerting system should be mandated to ensure the safety of

vulnerable pedestrians, including people who are blind or partially sighted.

7. If e-scooters are permitted, they should only be parked in designated docking stations which are clearly marked and are cane detectible. We support repurposing car parking spaces for e-scooters, as this would help keep sidewalks clear from obstacles. If this is not possible, then riders should park close to other items within the furniture zone on the sidewalk, without encroaching on pedestrian spaces.
8. If e-scooters are permitted, designated parking areas must not impede a path of travel and a minimum of 1.8 meters space should exist around the parking area to enable pedestrians with sight loss to safely navigate around these designated areas.
9. If e-scooters are permitted, the process for reporting infractions should be simple and accessible, such as calls to 311. Additionally, the City of London should ensure the prominent placement of a scannable QR code on each device which is marked using tactile and high contrast lettering, similar to a motor vehicle license plate for identification purposes. These measures will ensure that all citizens, including those who are not able to see branding or information displayed on an e-scooter, have equal opportunity to report infractions.
10. If e-scooters are permitted, prompt action should be taken by e-scooter operators to remove a device and relocate it to a designated parking area when the device has been abandoned or improperly parked.
11. If e-scooters are permitted, the City of London should ensure effective enforcement of administrative penalties.



The above photo shows two e-scooters parked in an accessible parking space. The e-scooters are parked haphazardly in a parking space, impeding both cars and pedestrians.

We respectfully ask that the City of London give serious consideration to the safety of pedestrians who are blind or partially sighted and ban commercial e-scooters in all areas of the



city until e-scooters and their riders can be trained, licensed, insured, and regulated by the province of Ontario.

If you have any questions, please reach out to me at any time.

Sincerely,

Robert Gaunt
Executive Director, Ontario North and Ontario West
CNIB
T; 1-888-275-5332

About CNIB

Celebrating 100 years in 2018, CNIB is a non-profit organization driven to change what it is to be blind today. We deliver innovative programs and powerful advocacy that empowers people impacted by blindness to live their dreams and tear down barriers to inclusion. Now, as CNIB enters our second century of operation, we're going to be even bolder in tackling the issues before us.

To: CWC <cwc@london.ca>
Subject: [EXTERNAL] Delegation request

Hello,

My name is Sarah Besseau, I am the Coordinator of Advocacy and Community Outreach for Ontario West at the Canadian National Institute for the Blind. I would like to make a delegation request for the Civic Works Committee meeting on the 31st of August 2021, regarding my submission on CNIB's position on E-Scooters in London.

Best,

Sarah



Sarah Besseau (She/her)
Coordinator, Advocacy and Community Outreach. Ontario West
CNIB Foundation

From: Chris Schafer
Sent: Thursday, August 26, 2021 12:40 PM
To: CWC <cwc@london.ca>
Subject: [EXTERNAL] Bird Canada: Delegation Request

Hi,

I would like to delegation status to speak to Item 4.2 re Commercial E-scooters in the City of London - R. Gaunt, CNIB Foundation.

I would like to make a presentation virtually.

Chris Schafer
Vice President, Government Affairs
Bird Canada
www.birdcanada.co

**HONORARY PATRON /
PATRON HONORAIRE**

Her Excellency the Right Honourable
Julie Payette / Son Excellence la
très honorable Julie Payette
C.C., C.M.M., C.O.M., C.Q., C.D.
Governor General of Canada /
Gouverneure générale du Canada

PATRONS

The Honourable / L'honorable
David C. Onley,
O. Ont / O. Ont.

Bret "The Hitman" Hart

**HONORARY CHAIR /
PRÉSIDENT HONORAIRE**

The Honourable / L'honorable
David Peterson,
P.C., Q.C., / C.P., C.R.

**HONORARY CAMPAIGN CHAIR /
PRÉSIDENT HONORAIRE
DE LA CAMPAGNE**

William Shatner

**CHAIR / PRÉSIDENT DU CONSEIL
D'ADMINISTRATION**

Catherine Sherrard

**PRESIDENT & CEO /
PRÉSIDENT ET PDG**

Leonard Baker



E-Scooters Are a Safety and Accessibility Risk for London Residents with Disabilities

March of Dimes Canada Brief to the London Civic Works Committee on Commercial E-Scooters in the City of London

August 26, 2021

1. Introduction

March of Dimes Canada calls on the London Civic Works Committee to reject the proposal that City Council allow e-scooters in public spaces.

E-scooters pose a significant safety risk for people with physical disabilities, those who use mobility devices, seniors, and those with vision or hearing loss. As one of Canada's largest non-profit organizations supporting people living with disability, March of Dimes Canada has heard this firsthand from the people with disabilities that we serve, and from members of our broader disability stakeholder community.

A pilot project is not necessary to demonstrate that e-scooters will be dangerous for people with disabilities, as we already have the evidence from other jurisdictions. We call upon the committee to be a strong voice for accessibility and safety on this matter, and to reject the proposal before its August 31, 2021 meeting.

2. Dangerous Riding

E-scooters represent a safety risk for all pedestrians in the city. They are silent, unlicensed, uninsured, and move at speeds of up to 24 kilometres per hour. When a ride-sharing program is in place, they are often being operated by first-time riders. Unsurprisingly, these users often ride on sidewalks to avoid riding on busy city roads, despite prohibitions on sidewalk riding. Most jurisdictions that have authorized e-scooter use experience illegal sidewalk riding.¹

The safety and accessibility risks are compounded for pedestrians with disabilities. People with limited mobility often do not have the time or space to move out of the way of these fast-moving vehicles. Those with vision or hearing loss may not even realize that a scooter is approaching. This can result in collisions where both pedestrian and rider are injured. This is not a hypothetical scenario; in Calgary, there were 700 scooter-related emergency-room and urgent-care visits in the first season of their e-scooter pilot.² By the city staff's estimation, riding a shared e-scooter is "potentially about 350 times more likely to result in a serious injury than riding a shared bike on a per km basis."³

While City Council has not yet authorized the use of e-scooters on London streets, they are already being used for private use, on both roads and sidewalks. While the greatest risk of injuries is to e-scooter riders, concerns about pedestrian injuries are well-founded: an American study found nearly one in ten scooter-related injuries is experienced by a pedestrian,⁴ while a Danish study found 16% of those injured were non-riders, with a median age of 75 years.⁵

3. Improper Parking

In addition to dangerous riding, improper parking is a serious issue, with e-scooters littering public spaces. Illegally parked scooters are not only a trip hazard, but also create an accessibility challenge for pedestrians navigating the city's sidewalks. An otherwise accessible pathway may become impassible when improperly parked scooters block the sidewalk. Again, this is not merely theoretical; in Montreal, the city opted not to renew their e-scooter pilot, given that 80% of e-scooter users parked illegally, causing serious accessibility issues in the downtown core.⁶

4. Proposed Solutions Are Ineffective

We have seen in other cities that e-scooter rental companies have proposed a patchwork of solutions to mitigate the issues of dangerous riding and illegal parking. They suggest they will employ rider education, that they will mobilize their own staff to enforce safe riding, or that they will pilot geo-sensing technology. Unfortunately, none of these solutions is sufficiently mature and proven to ensure the safety and accessibility of pedestrians with disabilities.

In the City of Toronto, earlier this year, city staff and council were unanimous in upholding the ban on e-scooters.⁷ Having listened to the voices of the disability community, they found that the safety, liability and accessibility risks were unresolved for both privately-owned and rental e-scooters.⁸

The reality is that cities across Ontario do not have the resources for enforcement, our infrastructure is not yet designed for this new form of transportation, and that riders are still learning how to use the technology. None of the proposed workarounds will be a silver bullet – and we have seen this play out in other municipalities with pilot projects.

5. Financial and Liability Implications

We must also consider the significant financial and liability implications for riders, pedestrians, and the City of London. The commercial general liability insurance carried by e-scooter companies does not cover riders who injure someone else or cause damage to property, nor does it cover individuals struck by an e-scooter. In many cases, the City may be found partially or fully liable where their infrastructure has resulted in accidents.⁹ In some others, riders themselves may be found liable. The cost to individuals and taxpayers in the event of inevitable injuries must be thoroughly considered. As noted above, the City of Toronto found these issues too great a risk to proceed with their own pilot.

6. Conclusion

As we hope you will agree, now is not the time for an e-scooter pilot project in London. Continuing to prohibit e-scooters is aligned with the City's stated commitments in the London Plan to develop high-

quality public spaces that are safe and accessible, and to foster development that supports a positive pedestrian environment.

As stated by the City of London's Accessibility Advisory Committee in their June 24, 2021 letter, "with little to no benefit, yet so much risk, we see no reason to move forward with this project." We hope you will listen to the voices of London's disability community and prioritize safety and accessibility for all.

Thank you for the opportunity to represent the perspectives of the March of Dimes Canada community. We will be following this issue closely.

About March of Dimes Canada

Founded over 70 years ago, March of Dimes Canada is one of the country's largest non-profit organizations supporting people living with disability. Our mission is to maximize the independence, personal empowerment and community participation of people with physical disabilities. Our vision is to create a society inclusive of people with physical disabilities. Operating out of two sites in London, March of Dimes Canada has a long history of providing services, supports, and programs to Londoners with disabilities.

www.marchofdimes.ca

Facebook: /MarchofDimesCanada

Twitter: @marchofdimescda

¹ B. Gray, *E-Scooters – A Vision Zero Road Safety Approach*, City of Toronto Transportation Services Report to the Infrastructure and Environment Committee, June 24, 2020. Retrieved from <https://www.toronto.ca/legdocs/mmis/2020/ie/bgrd/backgroundfile-148266.pdf>

² E. Carpenter, "Injuries rise with popularity of e-scooters on Calgary streets," *CBC News*, July 21, 2020. Retrieved from <https://www.cbc.ca/news/canada/calgary/injuries-rise-with-popularity-escooters-calgary-streets-1.5657159>

³ Gray, 2020.

⁴ Gray, 2020.

⁵ S.N.F. Blomberg, et al., "Injury from electric scooters in Copenhagen: a retrospective cohort study," *British Medical Journal*, 2019, <https://bmjopen.bmj.com/content/9/12/e033988>.

⁶ R. Lau, "No more shared e-scooters in Montreal because they weren't being parked legally: city officials," *CTV News*, February 19, 2020. Retrieved from <https://montreal.ctvnews.ca/no-more-shared-e-scooters-in-montreal-because-they-weren-t-being-parked-legally-city-officials-1.4818347>

⁷ P. Tsekouras, "Toronto votes unanimously to opt out of e-scooter pilot," *CTV News*, May 5, 2021, Retrieved from <https://toronto.ctvnews.ca/toronto-votes-unanimously-to-opt-out-of-e-scooter-pilot-1.5415871>

⁸ B. Gray, *E-Scooters – Accessibility and Insurance Issues*, City of Toronto Transportation Services Report to the Infrastructure and Environment Committee, April 12, 2021. Retrieved from <https://www.toronto.ca/legdocs/mmis/2021/ie/bgrd/backgroundfile-165818.pdf>

⁹ Gray, 2020.

Accessibility for Ontarians with Disabilities Act Alliance
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Riding Electric Scooters in London is Dangerous and Must Remain Banned

AODA Alliance brief to the City of London Civic Works Committee
August 27, 2021
Via email: cwc@london.ca

On its agenda for its August 31, 2021 meeting, the Civic Works Committee of London City Council has an agenda item regarding the possibility of allowing electric scooters (e-scooters) in the City of London. The AODA Alliance submits this brief to London's Civic Works Committee on that agenda item, and requests an opportunity to make a presentation or deputation at that meeting via whatever virtual platform is being used.

In summary, London City Council must not unleash dangerous e-scooters in London. Riding e-scooters in public places in London is now banned and remains banned unless City Council legalizes them.

The non-partisan [AODA Alliance](http://www.aodaalliance.org) has played a leading role in raising serious disability safety and accessibility concerns with e-scooters. To learn more about the AODA Alliance's advocacy efforts to protect people with disabilities and others from the dangers that e-scooters pose, visit its [e-scooters web page](#).

The AODA Alliance strongly commends the London Accessibility Advisory Committee for recommending that e-scooters should not be allowed in London. The AODA Alliance asks the City of London Civic Works Committee to follow that advice, and to recommend the following:

1. London should not permit the use of e-scooters, and should not conduct a pilot project with e-scooters.
2. If the City of London is going to explore the possibility of allowing e-scooters, e-scooters should not be permitted if they present any risk to the health or safety of people with disabilities, seniors, children or others, or if they are prone to create new accessibility barriers that would impede people with disabilities within London.
3. At the very least, if this issue is not simply taken right off the table, before proceeding any further, City staff should investigate the dangers that e-scooters pose

for people with disabilities, seniors, children and others. A public consultation on that issue should be held, beyond a purely online digital survey form.

London should benefit from the extensive and commendable work done on this issue in Toronto. This past spring, Toronto City Council voted unanimously not to allow e-scooters, after very extensive consideration of the issue. Toronto City Staff undertook the most thorough investigation of this issue of any Ontario municipality, as far as we have been able to discover.

An initial July 2020 Toronto City Staff Report, supplemented by a second February 2021 Toronto City Staff report, together amply show that e-scooters endanger public safety in communities that have permitted them. Riders and innocent pedestrians get seriously injured or killed. They especially endanger seniors and people with disabilities. Blind people cannot detect silent e-scooters that can accelerate at them at over 20 KPH, driven by unlicensed, untrained, uninsured, unhelmeted fun-seeking riders. Left strewn on sidewalks, e-scooters are tripping hazards for people with vision loss and an accessibility nightmare for wheelchair users.

It is no solution to just ban e-scooters from sidewalks. The Toronto City Staff reports, referred to above, document the silent menace of e-scooters continuing to be ridden on sidewalks in cities that just ban them from sidewalks. London would need police officers on every block. Toronto City Staff reported to Toronto City Council last summer that no city that allows e-scooters has gotten enforcement right.

E-scooters would cost taxpayers a great deal. This would include new law enforcement, OHIP for treating those injured by e-scooters, and lawsuits by the injured. London has far more pressing budget priorities.

Especially with COVID still raging, London City Council should not be considering the legalization of dangerous e-scooters. In Toronto, a stunning well-funded behind-the-scenes feeding frenzy of back-room pressure by corporate lobbyists for e-scooter rental companies had inundated City Hall with for months. The corporate lobbyists want to make money on e-scooter rentals, laughing all the way to the bank, while injured pedestrians sob all the way to hospital emergency rooms. That the Toronto City Council unanimously said no to e-scooters despite this massive corporate lobbying should signal to London how important it is to stand up for people with disabilities and others endangered by e-scooters.

London City Council should not conduct an e-scooter pilot. A pilot to study what? How many of people living in or visiting London will be injured? We already know they will, from cities that have allowed them. It would be immoral to subject people in London to a City-wide human experiment, especially without their consent, where they can get injured. The call for a “pilot project with e-scooters is just the corporate lobbyists’ ploy to try to get their foot firmly planted in the door, so it will be harder to later get rid of e-scooters.

London, like the rest of Ontario, already has too many disability barriers that impede accessibility for people with disabilities. The Accessibility for Ontarians with Disabilities Act requires London and the rest of Ontario to become accessible to people with disabilities by 2025.

To allow e-scooters would be to make things worse, not better, by creating new barriers impeding people with disabilities.

E-scooters create problems for businesses, as well as for people with disabilities. That is why Toronto's Broadview Danforth BIA made an April 26, 2021 submission to the City of Toronto, set out below, that urged that e-scooters not be allowed. That BIA includes a part of Toronto that has similarities to downtown London.

Since we allow bikes, why not e-scooters? An e-scooter, unlike a bike, is a motor vehicle. As such, they should not be exempt from public safety regulations that apply to motor vehicles. A person who has never ridden an e-scooter can hop on one and instantly throttle up to race over 20 KPH. A person cannot instantly pedal a bike that fast, especially if they have never ridden a bike. In any event, London already has bikes. It does not need the dangers of e-scooters.

The [July 2020 Toronto City Staff Report](#) shows that e-scooters do not bring the great benefits for reduced car traffic and pollution that the corporate lobbyists for e-scooter rental companies claim.

London should now call a stop to its exploration of e-scooters. Its residents with disabilities, its seniors and others should not have to mount an advocacy effort like the one that was necessary in Toronto to prevent the City from exposing its residents and visitors to the proven dangers that e-scooters pose. This is so especially while they along with all others must continue trying to cope with the pandemic.

Please make London easier and not harder for people with disabilities, seniors and others to get around. Protect those who need safe, accessible streets and sidewalks, not the interests of corporate lobbyists.

These references to banning e-scooters do not refer to the very different scooters that some people with disabilities use for mobility devices. Those mobility devices are now permitted and of course, should remain permitted.

Learn more about the dangers that e-scooters pose to people with disabilities, seniors, children and others, by visiting the AODA Alliance [e-scooter web page](#) and by watching the AODA Alliance's short, [captioned video](#) on this issue. Read the AODA Alliance's [March 30, 2021 detailed brief](#) to Toronto City Council on e-scooters. Read the January 22, 2020 [open letter](#) to all municipalities and to Premier Doug Ford co-signed by 11 disability organization, that oppose e-scooters in Ontario.

Learn more about the AODA Alliance by visiting www.aodaalliance.org, by following @aodaalliance on Twitter, by visiting our Facebook page at www.facebook.com or by emailing us at aodafeedback@gmail.com.

April 26, 2021 Written Submission to the City of Toronto by the Broadview Danforth Business Improvement Area

April 26, 2021

TO: Infrastructure and Environment Committee Clerk

FROM: The Broadview Danforth BIA

RE: Item: 1E21.7 Pilot Project: Electric Kick-Scooters

I'm writing on behalf of the 355 business members in the Broadview Danforth BIA to support the recommendation being made by the General Manager, Transportation Services to decline the option to participate in O.Reg 389/19 Pilot Project for Electric Kick-Scooters. Our comments below can be shared with the Infrastructure and Environment Committee — meeting on April 28, 2021.

We have reviewed the components related to this proposed pilot project and have serious concerns that it would be very difficult to implement in a manner consistent with public safety and order.

Following a presentation made by Janet Lo from Transportation Services to BIAs, our key concerns are as follows:

Safety issues related to people with disabilities who use our sidewalks and wouldn't be able to safely continue doing so if e-scooters were allowed on sidewalks.

Safety issues related to all people using sidewalks — the potential of e-scooters being left on the sidewalks or tied to benches, tree guards etc. and falling over will lead to potential tripping hazards.

Lack of clarity on insurance coverage for riders, e-scooter rental companies and the general public who may be injured by e-scooter riders. Lack of City/police resources to enforce any kind of e-scooter laws. At the moment we have cyclists improperly using the roads and bike lanes and enforcement is almost non-existent. It's impossible to believe that enforcement will be available for e-scooters. Our businesses are fighting for their survival during this pandemic and the last thing we need is for customers to feel unsafe using our sidewalks.

Thank you for your time and consideration of our feedback on this issue.

Albert Stortchak
Board Chair
Broadview Danforth BIA

DEFERRED MATTERS

CIVIC WORKS COMMITTEE

as of August 23, 2021

File No.	Subject	Request Date	Requested/Expected Reply Date	Person Responsible	Status
1.	<p><u>Rapid Transit Corridor Traffic Flow</u> That the Civic Administration BE DIRECTED to report back on the feasibility of implementing specific pick-up and drop-off times for services, such as deliveries and curbside pick-up of recycling and waste collection to local businesses in the downtown area and in particular, along the proposed rapid transit corridors.</p>	December 12, 2016	Q3, 2021	K. Scherr J. Dann	
2.	<p><u>Garbage and Recycling Collection and Next Steps</u> That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, with the support of the Director, Environment, Fleet and Solid Waste, the following actions be taken with respect to the garbage and recycling collection and next steps: ii) an Options Report for the introduction of a semi or fully automated garbage collection system including considerations for customers and operational impacts.</p>	January 10, 2017	Q1, 2022	K. Scherr J. Stanford	
3.	<p><u>Bike Share System for London – Update and Next Steps</u> That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions be taken with respect to the potential introduction of bike share to London: that the Civic Administration BE DIRECTED to finalize the bike share business case and prepare a draft implementation plan for a bike share system in London, including identifying potential partners, an operations plan, a marketing plan and financing strategies, and submit to Civic Works Committee by January 2020; it being noted that a communication from C. Butler, dated August 8, 2019, with respect to the above matter was received.</p>	August 12, 2019	Q3, 2021	K. Scherr J. Stanford	

File No.	Subject	Request Date	Requested/Expected Reply Date	Person Responsible	Status
4.	<p><u>Best Practices for Investing in Energy Efficiency and GHG Reduction</u> That Civic Administration BE REQUESTED to develop a set of guidelines to evaluate efficiency and Greenhouse Gas reduction investments and provide some suggested best practices.</p>	June 18, 2019	Q4, 2021	K. Scherr J. Stanford	
5.	<p><u>MADD Canada Memorial Sign</u> That the following actions be taken with respect to the memorial sign request submitted by Shauna and David Andrews, dated June 1, 2020, and supported by Mothers Against Drunk Driving (MADD) Canada:</p> <p>a) the Civic Administration BE DIRECTED to engage in discussions with MADD Canada regarding MADD Canada Memorial Signs and bring forward a proposed Memorandum of Understanding with MADD Canada for Council's approval;</p> <p>it being noted that MADD will cover all sign manufacturing and installation costs;</p> <p>it being further noted that the Ministry of Transportation and MADD have set out in this Memorandum of Understanding ("MOU") the terms and conditions for the placement of memorial signs on provincial highways which is not applicable to municipal roads;</p> <p>it being further noted that MADD provides messages consistent with the London Road Safety Strategy; and,</p> <p>b) the Civic Administration BE DIRECTED to work with MADD Canada to find a single permanent location in London for the purpose of memorials.</p>	July 14, 2020	Q4, 2021	D. MacRae A. Salton	
6.	<p><u>Street Renaming By-law, Policies and Guidelines</u> That the following actions be taken with respect to the street renaming of Plantation Road:</p>	September 22, 2020	TBD	G. Kotsifas	

File No.	Subject	Request Date	Requested/Expected Reply Date	Person Responsible	Status
	b) the Civic Administration BE DIRECTED to undertake a review of City's By-laws, Policies and Guidelines relating to street naming processes and approvals and report back to the Civic Works Committee on any recommended changes to the process(es) that would support and implement the City's commitment to eradicate anti-Black, anti-Indigenous and people of colour oppression; it being noted that the report back is to include a review of the request set out in the above-noted petition, recognizing that, historically, the word "Plantation" has a strong correlation to slavery, oppression and racism;				
7.	<p><u>Updates - 60% Waste Diversion Action Plan Including Green Bin Program</u></p> <p>d) the Civic Administration BE DIRECTED to:</p> <p>i) continue to prioritize work activities and actions that also contribute to the work of the London Community Recovery Network; and,</p> <p>ii) submit a report to the Civic Works Committee by June 2021 that outlines advantages, disadvantages, and implementation scenarios for various waste reduction and reuse initiatives, including but not limited to, reducing the container limit, examining the use of clear bags for garbage, mandatory recycling by-laws, reward and incentive systems, and additional user fees.</p>	November 17, 2020	Q3, 2021	K. Scherr J. Stanford	
8.	<p><u>Green Bin Program Design - Community Engagement Feedback</u></p> <p>That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer the following actions be taken with respect to the staff report dated March 30, 2021, related to the Green Bin Program Design and Community Engagement Feedback:</p> <p>e) the Civic Administration BE DIRECTED to report back at a future meeting of the Civic Works Committee on the outcome of the procurement processes and provide details on the preferred mix of materials to collect in the Green Bin and any final design adjustments based on new information; and,</p>	March 30, 2021	TBD, September 2021	K. Scherr J. Stanford	

File No.	Subject	Request Date	Requested/Expected Reply Date	Person Responsible	Status
	f) the Civic Administration BE DIRECTED to report back to the Civic Works Committee by September 2021 on municipal programs options, advantages, disadvantages and estimated costs to address bi-weekly garbage concerns.				
9.	<p><u>Imperial Road Sidewalk - Councillor M. Cassidy</u> That the Civic Administration BE DIRECTED to report back to a future meeting of the Civic Works Committee with the results of the photometric study on Imperial Road and the detailed design of the proposed sidewalk on the east side of Imperial Road prior to tendering or commencing work; it being noted that a communication, dated March 24, 2021, from Councillor M. Cassidy, with respect to this matter, was received.</p>	March 30, 2021	TBD	K. Scherr D. MacRae	
10.	<p><u>3rd Report of the Cycling Advisory Committee</u> b) the following actions be taken with respect to a City of London PumpTrack: ii) the Civic Administration BE REQUESTED to report back on the process and fees associated with a feasibility study with respect to the establishment of a pumptrack facility in the City of London; it being noted that the communication, as appended to the agenda, from B. Cassell and the delegation from S. Nauman, with respect to this matter, was received</p>	May 11, 2021	TBD	K. Scherr, S. Stafford	

Cycling Advisory Committee

Report

The 7th Meeting of the Cycling Advisory Committee

August 18, 2021

Advisory Committee Virtual Meeting - during the COVID-19 Emergency

Attendance PRESENT: J. Roberts (Chair), D. Doroshenko, B. Hill, J. Jordan, E. Raftis, and O. Toth; A. Pascual (Committee Clerk)

ABSENT: I. Chulkova, C. DeGroot, M. Mur, and T. Wade

ALSO PRESENT: K. Burns, G. Dales, D. Hall, D. MacRae, L. Maitland, J. Stanford, and B. Westlake-Power.

The meeting was called to order at 4:05 PM; it being noted that the following Members were in remote attendance: D. Doroshenko, B. Hill, J. Jordan, E. Raftis, J. Roberts, and O. Toth.

1. Call to Order

1.1 Disclosures of Pecuniary Interest

That it BE NOTED that no pecuniary interests were disclosed.

2. Scheduled Items

2.1 Bus Stops with Protected Bike Lanes

That it BE NOTED that the presentation from D. Hall, Active Transportation Manager, with respect to Bus Stops with Protected Bike Lanes, was received.

3. Consent

3.1 6th Report of the Cycling Advisory Committee

That it BE NOTED that the 6th Report of the Cycling Advisory Committee, from its meeting held on July 27, 2021, was received.

3.2 Dundas Place Traffic Diversion Feedback

That the following actions be taken with respect to the memo related to Dundas Place Traffic Diversion Feedback:

a) a Sub-Committee BE ESTABLISHED to prepare comments and feedback with respect to the Dundas Place Traffic Diversion and report back to the Cycling Advisory Committee at their next meeting; and,

b) the above-noted memo from D. Hall, Active Transportation Manager, BE RECEIVED.

3.3 Public Meeting Notice - Zoning By-law Amendment - 496 Dundas Street

That the following actions be taken with respect to the Public Meeting Notice, dated August 11, 2021, from I. de Ceuster, Planner I, related to a Zoning By-law Amendment for the property located at 496 Dundas Street:

a) the developer of the property BE REQUIRED to provide short term bicycle parking space to support commercial use; and,

- b) the above-noted Notice BE RECEIVED.

4. (ADDED) Deferred Matters/Additional Business

4.1 (ADDED) Bike Lock-Up Facilities

That the following actions be taken with respect to bike lock-up facilities:

- a) the Municipal Council and Civic Administration BE ADVISED that the Cycling Advisory Committee (CAC) supports the petition calling for the creation of bike lock-up facilities in the City of London and that the CAC is appreciative of the bike locker pilot project that is being launched in the City of London;

it being noted that the delegation and the petition from S. Carr with respect to this matter was received.

5. Adjournment

The meeting adjourned at 5:25 PM.